



Glendenning Road Data Centre

Biodiversity Development Assessment Report

Final Report

Prepared for LCI Consultants

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Biosis acknowledges the Aboriginal and Torres Strait Islander peoples as Traditional Custodians of the land on which we live and work. We pay our respects to the Traditional Custodians and Elders past and present and honour their connection to Country and ongoing contribution to society.

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Glossary

Assessment Area	All land within 1,500 m of the subject land
BAM	NSW Biodiversity Assessment Method 2020
BAM-C	BAM Calculator
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity Development Assessment Report
Biodiversity SEPP	<i>State Environmental Planning Policy (Biodiversity and Conservation) 2021</i>
Biosecurity Act	NSW <i>Biosecurity Act 2015</i>
Blacktown LEP	<i>Blacktown Local Environmental Plan 2015</i>
Blacktown DCP	<i>Blacktown Development Control Plan 2015</i>
BOS	Biodiversity Offsets Scheme
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
Cth DCCEEW	Australian Commonwealth Department of Climate Change, Energy, the Environment and Water
Development footprint	The area of land that is directly impacted by the proposal
Development site	The broader area in which the subject land is located
DoIW	Directory of Important Wetlands
DP	Deposited Plan
DPHI	NSW Department of Planning, Housing and Infrastructure
DPI	NSW Department of Primary Industries
Ecosystem credits	A measurement of the value of EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur with PCT. Ecosystem credits measure the loss in biodiversity values at a development
Ecosystem credit species	Threatened species whose occurrence can generally be predicted by vegetation surrogates and/or landscape features, or that have a low probability of detection using targeted surveys. A targeted survey is not required to identify or confirm the presence of ecosystem credit species.
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
GDE	Groundwater Dependent Ecosystem
GIS	Geographic Information System
IBRA	Interim Biogeographic Regionalisation of Australia
LEP	Local Environmental Plan
LGA	Local Government Area

Locality	Area located within a 10 km radius from the subject land
MNES	Matters of National Environmental Significance protected by a provision of Part 3 of the EPBC Act
MW	Megawatt
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
PCT	Plant Community Type
Planning SEPP	<i>State Environmental Planning Policy (Planning Systems) 2021</i>
Resilience and Hazards SEPP	<i>State Environmental Planning Policy (Resilience and Hazards) 2021</i>
SAIL	Serious and Irreversible Impact
SEARs	Secretary's Environmental Assessment Requirements
SEPP	NSW State Environmental Planning Policy
Species credits	A class of biodiversity credits required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates.
Species credit species	Threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence or components of their habitat. A targeted survey or an expert report is required to confirm the presence of these species on the subject land. Alternatively, the proponent may elect to assume the species is present for development/clearing projects only.
SSD	State Significant Development
SSDA	State Significant Development Application
Subject land	The areas within or the combined areas of the development footprint, and any indirect and prescribed impacts.
TBDC	Threatened Biodiversity Data Collection
TEC	Threatened Ecological Community
TBDC	Threatened Biodiversity Data Collection
TMP	Traffic Management Plan
TPZ	Tree Protection Zone
VI	Vegetation integrity
VMP	Vegetation Management Plan
WM Act	<i>NSW Water Management Act 2000</i>

Certification and Declarations

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

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

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

Signature:



Date:

31/10/2025

**BAM Assessor Accreditation
Number:**

BAAS17051

Summary

Biosis Pty Ltd was commissioned by LCI Consultants to undertake a biodiversity assessment for a proposed Data Centre campus at 2 Glendenning Road, Glendenning (Lot 2 DP 1137162) in New South Wales (NSW) (Figure 1). The development will involve the construction and operation of three data centre buildings and associated infrastructure, with a total power consumption of approximately 235 megawatts (MW).

The proposed development satisfies the definition of State Significant Development (SSD) pursuant to Part 2.2 (State significant development) and Schedule 1 Clause 25 (Data centres) of *State Environmental Planning Policy (Planning Systems) 2021* (Planning SEPP), as the campus is to be used for the storage of data and related information technology hardware that has a total power consumption of more than 15 MW. As such a State Significant Development Application (SSDA) will be lodged to the NSW Department of Planning, Housing and Infrastructure (DPHI), which requires the support of an Environmental Impact Statement (EIS) in accordance with Section 4.12(8) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

As entrance to the Biodiversity Offset Scheme (BOS) is mandatory for SSD applications, a Biodiversity Development Assessment Report (BDAR) is required to be prepared for the project by an Accredited Assessor in accordance with the NSW Biodiversity Assessment Method (BAM) and the NSW *Biodiversity Conservation Act 2016* (BC Act). This BDAR has been prepared by Mitch Palmer, an Accredited Assessor (BAAS17051), to accompany the SSDA, and describes the outcome of the development assessment case (00049847) conducted consistent with the BAM.

Field investigation, undertaken in accordance with the BAM, identified 1.02 hectares of native vegetation within the development footprint, representing two threatened ecological communities (TECs) under the BC Act:

- *Cumberland Plain Woodlands in the Sydney Basin Bioregion* (Critically Endangered Ecological Community [CEEC]).
- *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (Endangered Ecological Community [EEC]).

No TECs listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were determined to be present within the subject land.

Avoidance of native vegetation, TECs and threatened species habitat have been undertaken to restrict impacts to a total of 1.02 hectares of the 1.87 hectares of native vegetation located within the development site, comprising of Plant Community Type (PCT) 3320, PCT 3975 and PCT 4023. The total area of avoided vegetation across the development site including non-native vegetation is 2 hectares. Consideration has been given to avoiding and minimising impacts to biodiversity where possible during the assessment and detailed design. Mitigation and management measures will be put in place to adequately address the direct, indirect and prescribed impacts associated with the development.

A total of two threatened species were recorded or assumed present within the subject land for the purpose of the current assessment, and the vegetation integrity (VI) score of the vegetation to be impacted was calculated as between 31.3 and 60.9, whereby Benchmark (pristine) condition vegetation would receive a VI score of 100.

Targeted surveys have been undertaken for 14 threatened species as part of the current assessment with one threatened species Downy Wattle *Acacia pubescens* (Vulnerable, BC Act) detected as part of these surveys.

As threatened species habitat was identified within the development footprint, and the VI score of the vegetation to be impacted was calculated as being ≥ 20 , in accordance with Section 10 of the BAM, both ecosystem credit and species credit offsets are required to be secured for the proposed development. The calculated offset credit obligation is:

- 1 ecosystem credit for direct impacts to PCT 3320.
- 7 ecosystem credit for impacts to 3975.
- 11 ecosystem credits for impacts to PCT 4023.
- 11 species credits for impacts to 0.54 ha of Downy Wattle habitat.
- 1 species credit for impacts to 0.04 ha of Swift Parrot habitat.

The above credit obligation would need to be satisfied prior to the proposed construction of the development taking place.

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

Stage 1 – Biodiversity Assessment

1 Introduction

Biosis Pty Ltd was commissioned by LCI Consultants to undertake a biodiversity assessment for a proposed Data Centre campus at 2 Glendenning Road, Glendenning (Lot 2 DP 1137162) in NSW (Figure 1).

The proposed development satisfies the definition of SSD pursuant to Part 2.2 (State significant development) and Schedule 1 Clause 25 (Data centres) of the Planning SEPP, as the campus is to be used for the storage of data and related information technology hardware that has a total power consumption of more than 15 MW. As such a SSDA will be lodged to the DPHI, which requires the support of an EIS in accordance with Section 4.12(8) of the EP&A Act.

As entrance to the BOS is mandatory for SSD applications, a BDAR is required to be prepared for the project by an Accredited Assessor in accordance with the BAM and the BC Act. This BDAR has been prepared by Mitch Palmer, an Accredited Assessor (BAA17051), to accompany the SSDA. This BDAR describes the outcome of the development assessment case (00049847) conducted consistent with the BAM.

1.1 Project description

The proposed development is known as the Glendenning Road Data Centre and includes the construction and operation of three data centre buildings and associated infrastructure, with a total power consumption of approximately 235 MW.

The subject site for the proposed development is located at 2 Glendenning Road, Glendenning and is legally described as Lot 2 DP 1137162. It is zoned E4 General Industrial under the *Blacktown Local Environmental Plan 2015* (Blacktown LEP).

The subject site comprises a total area of 10.45 hectares and exhibits a primary frontage to Glendenning Road at the western boundary for approximately 295 metres. A secondary frontage to Woodstock Avenue is located along the southern boundary, for a length of approximately 335 metres (Figure 1).

The subject site comprises three existing warehouse buildings that undertake various operations, including storage and logistics and a transport vehicle centre. The buildings are positioned toward the Glendenning Road frontage and cover approximately one half of the subject site. The remainder of the subject site to the rear is vacant and contains a mix of grass, native vegetation and sporadic trees. A patch of mature native vegetation exists along the southern boundary, which is identified as high biodiversity value. An established landscaping strip is located along the Glendenning Road frontage, providing some screening of the existing buildings.

Vehicle access is obtained via four vehicle crossings off Glendenning Road, which provide separate access for the two large tenants. Vehicle access is also provided off Woodstock Avenue for the southern tenant.

The subject site is traversed by overhead high voltage transmission lines and towers, managed by Endeavour Energy. A drainage reserve also exists directly north of the subject site, which is managed by Blacktown City Council.

The subject site is surrounded by industrial land to the north, west and south (refer to the site context in Figure 2). Directly adjoining the subject site to the east is the Nurragingy Reserve, which falls under the jurisdiction of the Western Parklands. The Eastern Creek is located within the reserve and runs along the

eastern boundary of the subject site. The closest residential area is located approximately 400m to the west of the subject land on the opposite side of the Westlink M7 Motorway.

The subject site is depicted in Figure 1 below.



Figure 1 Aerial Map of Subject Site (Source: NearMap, 2024)

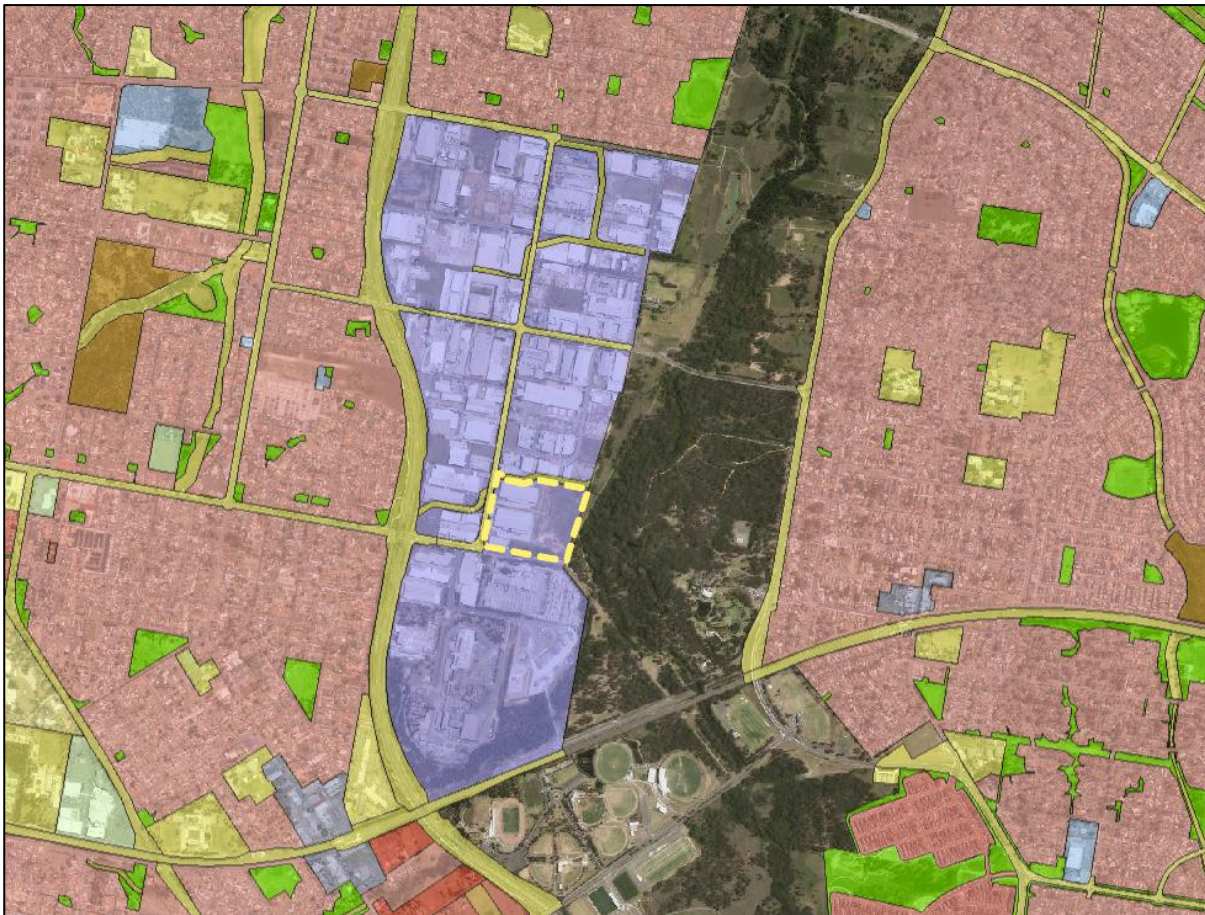


Figure 2 Site Context and Zoning (Source: Blacktown Local Environmental Plan, 2024)

The proposed development seeks consent for the following aspects of development:

- Site preparation and establishment works including:
 - Bulk earthworks to create proposed site levels.
 - In-ground building services and utility work.
 - Clearance of trees and vegetation within the proposed development extent.
- Construction and operation of 3 data centre buildings, known as DC01, DC02 and DC03, comprising:
 - A total Gross Floor Area of 50,233 m² (DC01 – 19,985 m², DC02 – 10,263 m² and DC03 – 19,985 m²).
 - A maximum building height of 45.3 m, including 5 storeys for each building.
 - 3 internal substations.
 - A total Information Technology capacity of approximately 193.6 MW (DC01 – 79.2 MW, DC02 – 35.2 MW and DC03 – 79.2 MW).
- Total diesel fuel storage of 2,736,030 L within underground bulk fuel storage tanks and generator day tanks.
- 97 back-up generators across the full development.
- External plant and equipment (including water tanks and pump rooms).
- Installation of evaporative cooling units.
- 3 vehicle crossovers to Glendenning Road and internal access roads.

- Security fencing surrounding the development, including a controlled entry and exit point.
- 165 on-site car parking spaces (including 6 accessible parking spaces and 12 Electric Vehicle parking spaces).
- Landscaping across the subject site.
- Hours of operation being on a 24 hours per day, 7 days per week basis.

The proposed works would be constructed in three stages, as follows:

- **Stage 1:** The first stage would include the construction of DC01, located at the rear of the subject site. The three existing site buildings would be demolished.
- **Stage 2:** The second stage would involve the construction of DC02.
- **Stage 3:** The construction of DC03.

1.2 Purpose of this assessment

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

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

All biodiversity assessments have been undertaken in accordance with the BAM, and this BDAR has been prepared and reviewed by Accredited Assessor Mitch Palmer (BAAS17051). This BDAR describes the outcome of the development assessment case (00049847) conducted consistent with the BAM.

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

The terms development site, development footprint, subject land and assessment area are used throughout this BDAR and are defined below. These areas are shown on (Figure 3)

- The development site, or also known as subject site, is located at 2 Glendenning Road, Glendenning within the Blacktown Local Government Area (LGA) and is legally described as Lot 2 DP 1137162. The site's primary frontage is to Glendenning Road along the western boundary for approximately 295 metres. A secondary frontage to Woodstock Avenue is located along the southern boundary, for a length of approximately 335 metres. The development site is the same as the subject site described in Section 1.1, however 'development site' is the accepted terminology for use under the BAM. The total area of the development site is 10.45 ha.
- The development footprint comprises the area of direct impact associated with the proposed development. This includes all areas within the proposed outer security fence line, as well as

proposed driveways, a swale, existing planted garden beds, proposed landscaping areas, and any areas of proposed demolition or vegetation clearance, including that within a 3-metre unsecure zone extending externally from the outer security fence line. The total area of the development footprint is 8.22 ha.

- The subject land occurs across most of the development site, extending also into the road corridor of Glendenning Road, as well as the drainage reserve located directly north of the development site. It encompasses the development footprint, as well as a 10-metre buffer around areas of native vegetation clearance, to account for indirect impacts of the proposed works such as fragmentation or soil erosion. The total area of the subject land is 9.21 ha. The drainage reserve within the subject land exists across Lot 15 DP 864587 and Lot 1002 DP 814284. The subject land is wholly located with the Blacktown LGA and the Greater Sydney Local Land Services (LLS) region. The subject land is zoned as E4 General Industrial, SP2 Local Road, and SP2 Drainage.
- The assessment area includes the subject land and the area of land within the 1,500 m buffer zone surrounding the subject land, as required for assessment under the BAM.

1.3 Sources of information

Sources of information used in the assessment included relevant databases, spatial data, literature and previous site reports. In order to provide a context for the assessment area, records of flora and fauna from within 10 kilometres (the locality) were collated from the following databases and datasets were reviewed:

- Commonwealth Department of Climate Change, Energy, the Environment and Water (Cth DCCEEW) Protected Matters Search Tool for matters protected by the EPBC Act.
- NSW BioNet - the database for the Atlas of NSW Wildlife, NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW), for species, populations and ecological communities listed under the BC Act.
- NSW BAM Calculator (BAM-C).
- Biodiversity values map (NSW DCCEEW 2025a).
- Native vegetation regulatory map (NSW DCCEEW 2025b).
- BAM Important Areas maps (DPIE 2024).
- PlantNET (The Royal Botanic Gardens and Domain Trust) (RBGDT 2024).

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

- The NSW PCTs, as held within the BioNet Vegetation Classification database (NSW DCCEEW 2024a).
- Relevant vegetation mapping, such as:
 - *NSW State Vegetation Type Map [MH1] (C2.0M2.0)* (NSW DCCEEW 2024d).
 - *The Native Vegetation of the Sydney Metropolitan Area - Version 3.1 VIS_ID 4489* (OEH 2016).

Basemap data was obtained from NSW Land and Property Information 1:25,000 digital topographic databases with cadastral data obtained from LPI digital cadastral database.

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

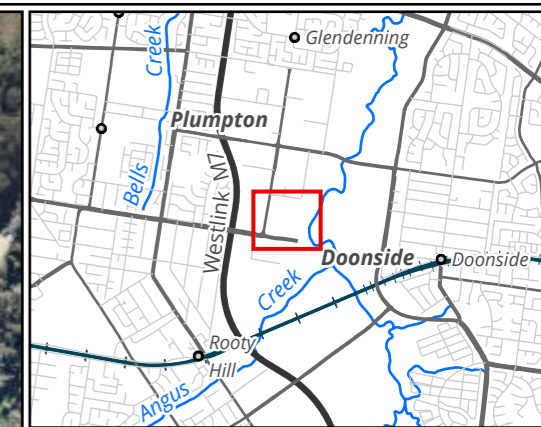
- Catchment Boundaries of New South Wales dataset.
- Mitchell Landscapes Version 3.0.

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

1.4 Legislative requirements

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

- *Environment Protection and Biodiversity Conservation Act 1999.*
- *Environmental Planning and Assessment Act 1979.*
- *Biodiversity Conservation Act 2016.*
- *Fisheries Management Act 1994.*
- *Biosecurity Act 2015.*
- *State Environmental Planning Policy (Biodiversity and Conservation) 2021*
- *State Environmental Planning Policy (Resilience and Hazards) 2021*
- *Blacktown Development Control Plan 2015.*
- *Blacktown Local Environment Plan 2015.*



- Legend**
- Subject land
 - Development site
 - Development footprint

Figure 3 Subject land



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



Matter: 40798, Date: 05 December 2024.
 Prepared for TL, Prepared by HL, Last edited by: hiswoyo
 Location: P:\40700s\40798\Mapping\40798_Glendenning_Rd_BDAR.aprx
 Layout: 40798_F3_SubjectLand

2 Landscape Context

This chapter describes the landscape and site context of the subject land, describing the landscape features present within the subject land and the 1,500 metre buffer assessment area, as required by the BAM (DPIE 2020a). Figure 4 and Figure 5 shows the location of the subject land and assessment area, and landscape features present within these areas.

2.1 Subject land description

The subject land is located approximately 300 metres east of the M7 Motorway and directly west of the Nurragingy Reserve, within the Blacktown LGA. The subject land is located between the suburbs of Rooty Hill and Dean Park within Western Sydney, approximately 36 kilometres north-west of Sydney Central Business District. The subject land is currently mainly used for storage and logistics warehousing, with a transport vehicle storage centre located within the south-western corner of the subject land. The subject land is surrounded by industrial land to the north, west and south (Figure 4). Directly adjoining the subject land to the east is the Nurragingy Reserve, which falls under the jurisdiction of the Western Parklands. The Eastern Creek, a Strahler order 4 system, is located within the reserve and runs along the eastern boundary of the subject land. The subject land has been subject to extensive vegetation clearing, which occurred in the early 2000s. As a result, native vegetation is limited, primarily consisting of scattered patches of regenerating canopy species and planted native vegetation in the eastern, undeveloped portion of the subject land. In areas of regrowth, there is a lack of midstory vegetation, and the ground layer is predominantly made up of exotic weeds and grasses. However, higher-quality remnant vegetation is present along the southern boundary of the subject land, which may provide a refuge for mobile fauna species. Along the drainage line within northern boundary of the subject land, a vegetation corridor provides additional habitat connectivity. Vegetation within the subject land is sparsely connected to larger, intact patches to the east, including those associated with Eastern Creek and Nurragingy Reserve.

The northern portion of the subject land occurs within the South Creek Alluvial soil landscape of the Penrith 1:100k soil landscape map, while the southern portion occurs within the Blacktown Residual landscape (Hazelton & Tille 1990) (Figure 4). The South Creek landscape is characterised by floodplains, valley flats and drainage depressions of the channels of the Cumberland Plain. The flat to gently sloping alluvial plain consists of quaternary alluvium derived from Wianamatta Group shales and Hawkesbury Sandstone. Dominant soil materials include clay and clay-loam, with generally low fertility, low available water capacity and high erodibility. The landscape is largely reserved for recreational use such as playing fields, parks and reserves, or left unused. Vegetation across the landscape reflects its frequent inundation. Much of this landscape has been previously cleared and is now dominated by exotic species, however, areas of remnant vegetation often include tree species Broad-leaved Apple *Angophora subvelutina*, Cabbage Gum *Eucalyptus amplifolia* and Swamp Oak *Casuarina glauca*. Species characteristic of areas of still water include Tall Spike Rush *Eleocharis sphacelata* and *Juncus usitatus*, while elevated streambanks may contain Paperbarks *Melaleuca* spp. and Tea Trees *Leptospermum* spp. (Hazelton & Tille 1990).

The Blacktown soil landscape is characterised by gently undulating rises on Wianamatta Group shales. Broad rounded crests and ridges, with gently inclined slopes occur across the land. Soils are generally shallow to moderately deep hardsetting mottled soils of brown, red, yellow, or grey clay or clay-loam. Soils generally have low to moderate fertility and low to moderate available water capacity, with moderate erodibility. The landscape's land uses include residential, horticulture and animal husbandry, with areas of light and heavy industrial use. The landscape has been almost completely cleared of characteristic open dry sclerophyll

forest. Original open-forests and woodland were dominated by Forest Red Gum *Eucalyptus tereticornis*, Narrow-leaved Ironbark *E. crebra*, and Grey Box *E. moluccana* (Hazelton & Tille 1990).

2.1.1 Native vegetation cover

Vegetation within the assessment area (within the 1,500 metre buffer area) was assessed using aerial photographic interpretation, field survey results and existing vegetation mapping. Figure 6 details PCTs identified from existing vegetation mapping, and the current assessment, as occurring within the assessment area. Conservation status of the communities is also provided.

The total area of the 1,500-metre buffer around the subject land is approximately 904 hectares, with the area of native vegetation mapped within the buffer being 180 hectares. This is a native vegetation cover of 20% (>10-30% class as defined in Section 3.2.3 of the BAM (DPIE 2020a)) and this value was entered into the BAM calculator.

This 1,500-metre buffer assessment area includes approximately 724 hectares of cleared land.

2.1.2 IBRA Bioregions and subregions

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

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

2.1.3 Rivers and streams

No waterways exist within the subject land. The development site is located within the Greater Sydney LLS Region and the Hawkesbury catchment. The closest waterway is Eastern Creek, which exists as a fourth order Strahler stream approximately 70 metres to the east of the subject land. This creek is considered Key Fish Habitat as mapped by the NSW Department of Primary Industries (DPI) (DPI 2013).

2.1.4 Wetlands

One ephemeral wetland depression exists within the centre of the subject land, however, no areas within, adjacent or downstream of the subject land, are mapped as an important wetland in the DoIW of Australia (Cth DCCEEW 2019).

2.1.5 Connectivity

Due to historical clearing, vegetation within the subject land is limited and consists mainly of scattered patches of regenerating canopy species and planted native vegetation. Higher-quality remnant vegetation is concentrated along the southern boundary, where it provides a potential refuge for mobile fauna species. A riparian corridor to the north contributes to broader habitat connectivity, though vegetation within the subject land remains sparsely linked to larger intact patches to the east, such as those associated with Eastern Creek and Nurragingy Reserve. Two large commercial warehouse buildings occupy the western portion of the subject land, fragmenting natural habitats and limiting connectivity for species dependent on continuous cover.

2.1.6 Geological features

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

2.1.7 Areas of outstanding biodiversity value

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

2.1.8 NSW (Mitchell) Landscape

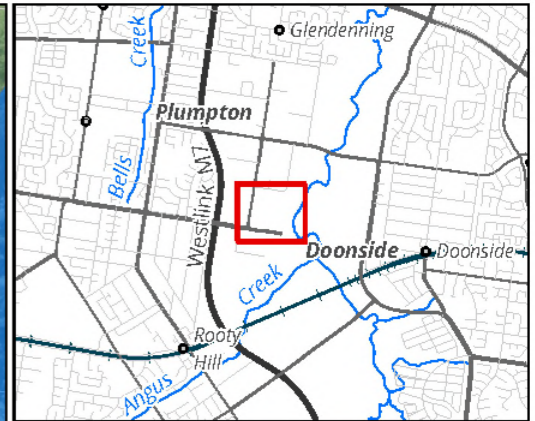
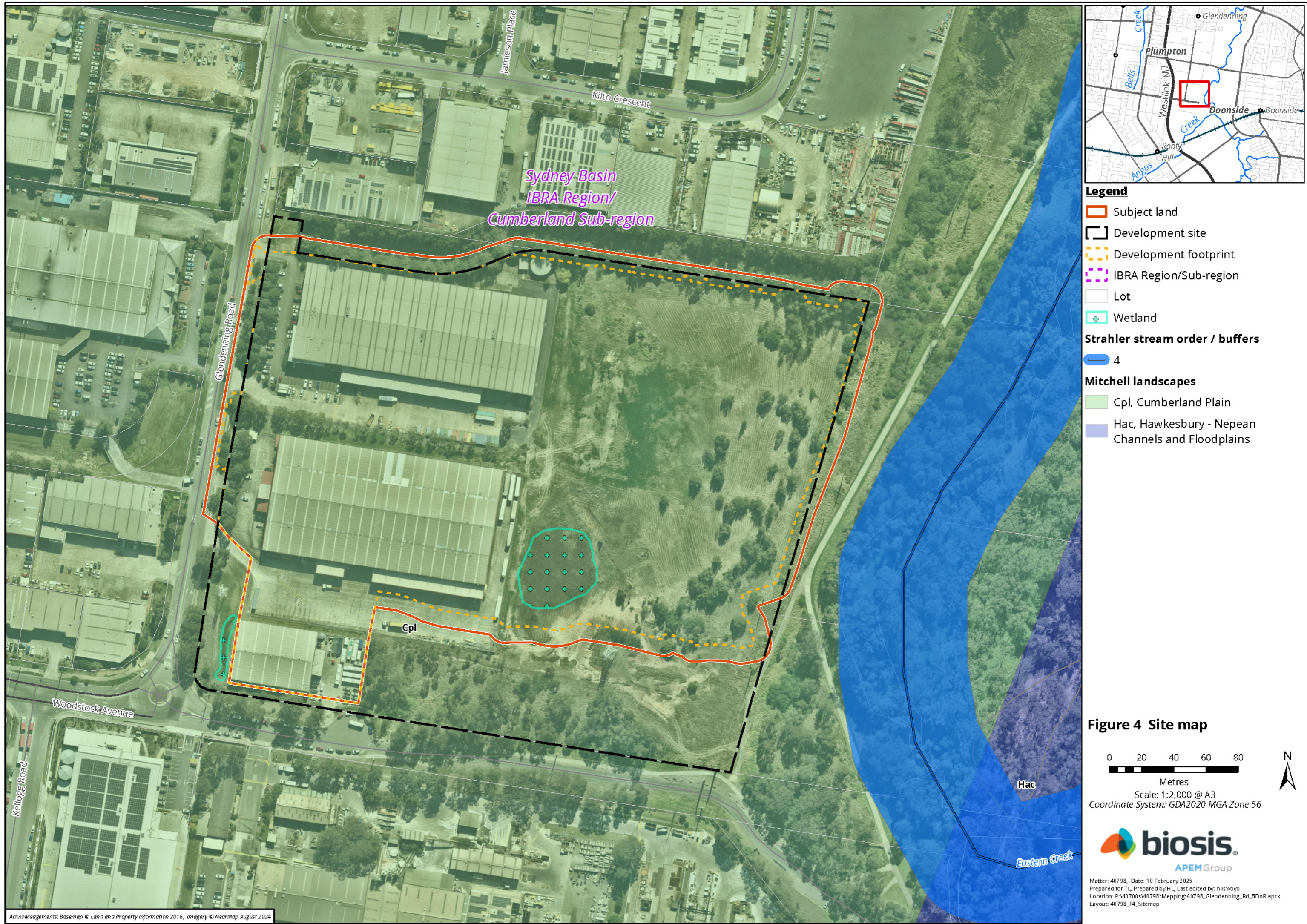
The subject land occurs within the Cumberland Plain Mitchell landscape. The Cumberland Plain landscape group consists of low rolling hills and valleys with a general elevation of 30 to 120 metres and local relief of 50 metres, in a rain shadow area between the Blue Mountains and the coast, NSW. The landscape group primarily consists of horizontal Triassic shales and lithic sandstones, Tertiary river gravels and sands, Quaternary alluvium, pedal uniform red to brown clays, red and brown texture-contrast soils and yellow harsh texture-contrast soils. The composition of the soil is highly influential on the vegetation communities observed. As such, the landscape is associated with woodlands and open forest of Grey Box, Forest Red Gum, Narrow-leaved Ironbark, Thin-leaved Stringybark *Eucalyptus eugenioides*, Cabbage Gum and Broad-leaved Apple, Native Blackthorn *Bursaria spinosa*, Swamp Oak and Paperbark species (Department of Environment & Climate Change NSW 2002).

2.1.9 Hydrology

The site is not mapped as having Groundwater Vulnerability under the Blacktown LEP.

2.1.10 Mapped Important Area

The subject land contains areas mapped as Swift Parrot Important Habitat (DPIE 2024). Important Habitat is mapped to protect critical areas for this endangered species, focusing on key foraging sites across their migratory range in NSW. Aspects associated with this important habitat mapping is discussed further in this report.



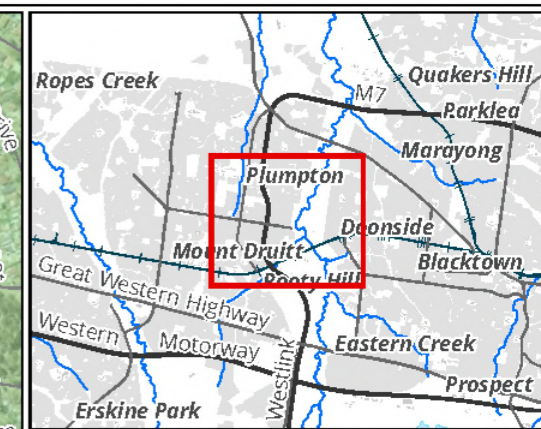
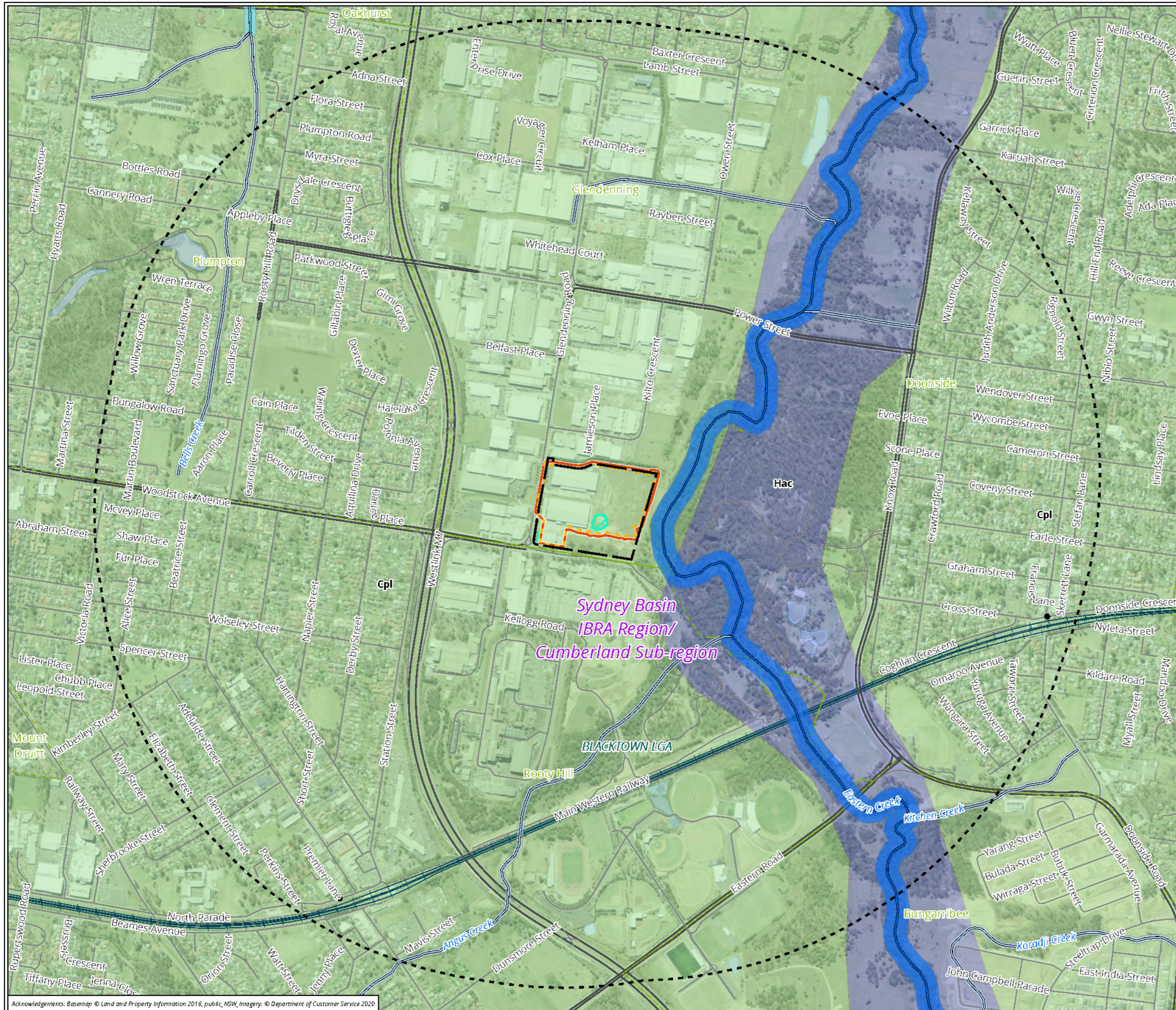
- Legend**
- Subject land
 - Development site
 - Development footprint
 - IBRA Region/Sub-region
 - Lot
 - Wetland
- Strahler stream order / buffers**
- 4
- Mitchell landscapes**
- Cpl, Cumberland Plain
 - Hac, Hawkesbury - Nepean Channels and Floodplains

Figure 4 Site map

0 20 40 60 80
Metres

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

Matter: 40798, Date: 10 February 2025
Prepared for TL, Prepared by HL, Last edited by: hlswayo
Location: P:\40700sv\40798\Mapping\40798_Glendenning_Rd_BDAR.aprx
Layout: 40798_F4_Sitemap



Legend

- Subject land
- Development site
- Development footprint
- Assessment area
- IBRA Region/Sub-region
- Local Government Area (LGA)
- Wetland

Strahler stream order / buffers

- 1
- 2
- 4

Mitchell landscapes

- Cpl, Cumberland Plain
- Hac, Hawkesbury - Nepean Channels and Floodplains

Figure 5 Location map

0 100 200 300 400
Metres

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

Matter: 40798, Date: 10 February 2025
Prepared by TL, Prepared by HL, Last edited by: hlswayo
Location: P:\40798\40798\Mapping\40798_Glendenning_Rd_BDAR.aprx
Layout: 40798_FS_Location

3 Native vegetation

The subject land supports native vegetation with varying ranges of disturbance, being largely limited to scattered patches of regenerating canopy species and planted native vegetation. Exotic vegetation, including planted gardens and turfed areas, is also present throughout the subject land. Better-quality remnant vegetation is restricted to the southern boundary of the development site and is not proposed to be directly impacted by the project.

3.1 Native vegetation and habitat assessment

3.1.1 Native vegetation extent

The extent of native vegetation, TECs, and vegetation integrity within the subject land was determined using the results of site investigations and Section 4 of the BAM (DPIE 2020a). Figure 6 provides a map of the native vegetation extent recorded within the subject land and development footprint, as assessed during field investigations undertaken in July and September 2024. The figure includes also includes all areas of native vegetation (native ground cover and areas with canopy) within the broader assessment area, as determined based on desktop vegetation mapping projects (NSW DCCEEW 2024d) and aerial imagery. Areas not shown as native vegetation cover within Figure 6, are considered cleared / non-native vegetation, and are addressed further below in Section 3.1.5.

3.1.2 Review of existing information

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

- *NSW State Vegetation Type Map [MH1] (C2.0M2.0) (NSW DCCEEW 2024d).*
- *The Native Vegetation of the Sydney Metropolitan Area - Version 3.1 VIS_ID 4489 (OEH 2016).*
- Database searches.

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

3.1.3 Field investigation of biodiversity values

A systematic biodiversity assessment was conducted on 18 July 2024 (vegetation mapping) and 20 September 2024 (collection of BAM vegetation plots) under the terms of Biosis' Scientific Licence issued by NSW DCCEEW under Part 2 of the BC Act (SL100758, expiry date 30 June 2026). Fauna habitat survey was conducted under approval CSB 17/892 from the NSW Animal Care and Ethics Committee (expiry date 31 January 2028). Details regarding nomenclature, permits and licenses, and general survey limitations are provided in Appendix 1.

Assessment in accordance with the BAM was overseen by Accredited Assessor Mitch Palmer of Biosis (BAAS17051).

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

- The identification and mapping of PCTs according to the structural definitions held in the BioNet Vegetation Classification database, with reference to information provided in NSW *State Vegetation Type Map* (NSW DCCEEW 2024d).
- Undertaking floristic plots within each vegetation zone in accordance with Section 4 of the BAM (DPIE 2020a), considering varying condition states and avoidance of ecotones, areas of disturbance, and edges.
- The identification of native and exotic plant species, according to the Flora of NSW (Harden 1992, 1993, 2000, 2002) with reference to recent taxonomic changes.
- Incidental observations using the “random meander” method (Cropper 1993).
- Identification of previous and current factors threatening the ecological function and survival of native vegetation within and adjacent to the development site.
- An assessment of the natural resilience of the vegetation of the site.
- Identifying and mapping fauna habitats (e.g., hollow-bearing trees, rock outcropping etc.), assessing their condition and value to threatened fauna species, and considering threatened species’ habitat constraints.
- Observations of animal activity and searches for indirect evidence of fauna (such as scats, nests, burrows, hollows, tracks, scratches and diggings).
- Targeted surveys for threatened fauna species.

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

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

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

Areas of native vegetation for which a PCT could validly be assigned were identified and delineated in the field, and their condition determined and assigned (Figure 7). Identification of PCTs within the subject land was confirmed with reference to the community profile descriptors (and diagnostic species tests) held within the NSW *State Vegetation Type Map* (NSW DCCEEW 2024d) and NSW BioNet Vegetation Classification database (NSW DCCEEW 2024a). Locations of floristic plots surveyed are shown on Figure 8.

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

3.1.4 Local data


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

3.1.5 Non-native vegetation

A total of 3.81 ha of the subject land is mapped as exotic vegetation, which had no native over-storey or mid-storey cover and met the definition of non-native vegetation.

Areas not shown as native vegetation cover within Figure 6, and which do not provide habitat for threatened species, are not included for further assessment in accordance with Section 4.1.2 of the BAM (DPIE 2020a). Non-native vegetation which does provide habitat for threatened species is required to be assessed. A description of non-native vegetation areas within the subject land is provided in Table 1 below.

Table 1 Exotic vegetation

Exotic vegetation	
Extent within subject land	3.81 ha
Description	This vegetation type was represented by areas of turf and exotic grass, with occasional planted canopy species. Dominant grass species present included Common Couch <i>Cynodon dactylon</i> , Kikuyu <i>Cenchrus clandestinus</i> , and Rhodes Grass <i>Chloris gayana</i> . Some exotic herbaceous and woody weeds were also present in these areas, such as Common Vetch <i>Vicia sativa</i> , Purpletop <i>Verbena bonariensis</i> , Sheep Sorrel <i>Acetosella vulgaris</i> , Lamb's Tongues <i>Plantago lanceolata</i> , White Clover <i>Trifolium repens</i> , Spear Thistle <i>Cirsium vulgare</i> , Burr Medic <i>Medicago polymorpha</i> , Fireweed <i>Senecio madagascariensis</i> , and Pampas Grass <i>Cortaderia selloana</i> .
Survey effort	One BAM plot (B06) was collected over the course of the field assessment (Figure 8).
Photo	 <p style="text-align: center;">Photo 1 Exotic vegetation within the subject land</p>

3.1.6 Plant community types

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

- PCT 3320 - *Cumberland Shale Plains Woodland* (Table 2).
- PCT 3975 - *Southern Lower Floodplain Freshwater Wetland* (Table 3).
- PCT 4023 - *Coastal Valleys Swamp Oak Riparian Forest* (Table 4).

In addition to the above, planted native vegetation was recorded within the subject land. This includes vegetation that could not be reasonably assigned to a PCT, but comprises of plants native to NSW, as per the NSW *Local Land Services Act 2013* (LLS Act). This definition states that “A plant is native to New South Wales if it was established in New South Wales before European settlement”. This planted native vegetation has been described in Table 5, and its value as habitat discussed further in Section 3.1.8.

Table 2, Table 3 and Table 4 provide detailed descriptions of the three PCTs and their conditions recorded within the subject land. These PCTs are also shown in Figure 8.

Table 2 PCT 3320 - Cumberland Shale Plains Woodland

PCT 3320 - Cumberland Shale Plains Woodland	
Common name	Cumberland Shale Plains Woodland
Vegetation formation	Grassy Woodlands
Vegetation class	Coastal Valley Grassy Woodlands
Extent within subject land	0.07 ha including: <ul style="list-style-type: none"> • 0.01 ha in low condition. • 0.06 ha in planted condition.
Condition	PCT 3320 within the subject land was recorded in low and planted condition states. The planted condition type is associated with vegetation present in landscaped gardens and street trees which contain a mosaic of species that can be reasonably assigned to PCT 3320.
Description	<p>PCT 3320 is typically characterised by a tall sclerophyll open forest or woodland with a sparse mid-stratum of soft-leaved shrubs and small trees with a grassy ground cover on the undulating Wianamatta Group shale plains of western Sydney. The canopy very frequently includes Forest Red Gum and Grey Box, with ironbarks occasionally present. The sparse shrub to small tree layer very frequently includes Native Blackthorn and one or more species of Acacia, of which Parramatta Wattle <i>Acacia parramattensis</i> and Black Wattle <i>Acacia decurrens</i> are the most frequent and abundant.</p> <p>The ground layer consists of grasses, forbs, twiners and hardy small ferns, dominant species include Weeping Grass <i>Microlaena stipoides</i> var. <i>stipoides</i>, Kangaroo Grass <i>Themeda triandra</i>, Kidney Weed <i>Dichondra repens</i>, Blue Trumpet <i>Brunoniella australis</i>, Poison Rock Fern <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i> and Twining Glycine <i>Glycine clandestina</i>. Within the subject land, vegetation can be described as existing in the following condition states:</p> <p>Planted condition occurs as planted Grey Box in gardens with other planted midstory natives including Crimson Bottlebrush <i>Callistemon citrinus</i> and Black Tea-tree <i>Melaleuca bracteata</i>.</p> <p>Low condition occurs as remnant patches with Forest Red Gum and Grey Box canopy, but with a reduced midstory of Native Blackthorn and Parramatta Wattle and high weed density. Weed species include Cobbler’s Peg <i>Bidens pilosa</i>, Spear Thistle, Common Sowthistle <i>Sonchus oleraceus</i>, Rhodes Grass and Bridal Creeper <i>Asparagus asparagoides</i>. Native understory species are sparse but include Native Raspberry, Variable Glycine and Weeping Grass.</p> <p>Moderate condition occurs as a remnant patch along the southern boundary of the development site, however, this is not proposed to be impacted by the project. This patch has a Forest Red Gum and Grey Box canopy with a dense midstory cover of Native and Parramatta Wattle. The groundcover in these patches has native species including Blueberry Lily, False Sarsaparilla <i>Hardenbergia violacea</i>, Native Raspberry <i>Rubus parvifolius</i>, Variable Glycine <i>Glycine tabacina</i>, and Weeping Grass.</p>

PCT 3320 - Cumberland Shale Plains Woodland	
Survey effort	Three BAM plots (Planted condition: B07; Moderate condition: B04; Low condition: B05) were collected over the course of the field assessment (Figure 8).
Justification of PCT	<p>PCT 3320 has been determined present in the subject land, based on the following characteristics:</p> <ul style="list-style-type: none"> • Occurs in Sydney Basin Bioregion and Cumberland IBRA subregion. • Grassy Woodland vegetation formation. • Dominant canopy species are Forest Red Gum and Grey Box. • Dominant shrub species are Native Blackthorn and Parramatta Wattle. <i>Acacia implexa</i> (associated with related PCT 3319) is absent. • Diagnostic understory species are present including Weeping Grass, and Variable Glycine.
TEC Status	<p>PCT 3320 is associated with three TECs:</p> <ul style="list-style-type: none"> • <i>Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest</i> (CEEC, EPBC Act). • <i>Cumberland Plain Woodland in the Sydney Basin Bioregion</i> (CEEC, BC Act). • <i>Shale Gravel Transition Forest in the Sydney Basin Bioregion</i> (EEC, BC Act). <p>All patches of PCT 3320 in the subject land are consistent with the listing requirements (NSW Scientific Committee 2009) for the BC Act listed <i>Cumberland Plain Woodland</i> CEEC due to occurrence on the Cumberland Plain Mitchell Landscape (shale and sandstone), and diagnostic canopy and understory species. The BC Act <i>Shale Gravel Transition Forest</i> is not present due to incorrect landscape position (OEH 2022), and because species within patches of PCT 3320 within the development site are more so characteristic of the Cumberland Plain Woodland CEEC.</p> <p>The large remnant patch of moderate and low condition PCT 3320 located along the southern lot boundary is consistent with the EPBC Act <i>Cumberland Plain Shale Woodlands</i> Critically Endangered Ecological Community (CEEC), however, this is not located within the development footprint. This patch meets the key diagnostic features and minimum condition threshold (Commonwealth of Australia 2010) of this CEEC, including:</p> <ul style="list-style-type: none"> • Native tree species are present and have a minimum projected foliage cover of 10%. • The patch is greater than 0.5 ha. • The patch contains at least one tree per ha that has a hollow and is over 80 cm diameter at breast height. • The perennial native understory vegetative cover present is made up of >30% native species. <p>None of the patches of PCT3320 directly impacted by the development footprint satisfy the listing criteria of the EPBC Act community.</p>
Estimate of percent cleared value of PCT (BioNet)	93.03 %

PCT 3320 - Cumberland Shale Plains Woodland

PCT 3320 – Planted condition



Photo 2 Planted condition PCT 3320

PCT 3320 – Low condition



Photo 3 Low condition PCT 3320 within the development site

PCT 3320 – Moderate condition

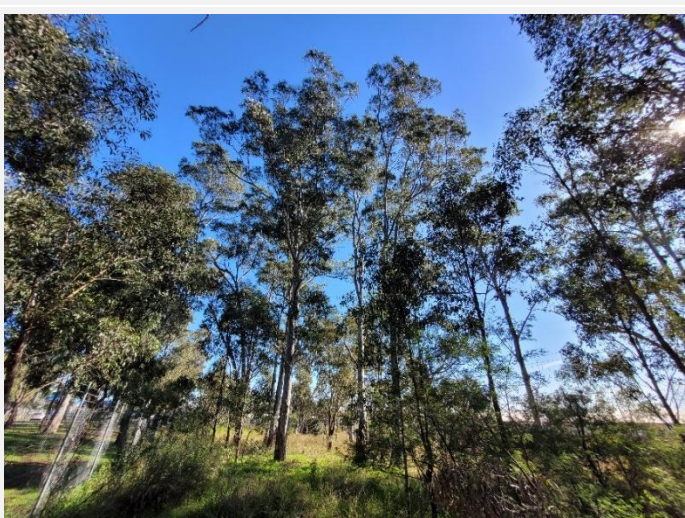


Photo 4 Moderate condition PCT 3320

Table 3 PCT 3975 - Southern Lower Floodplain Freshwater Wetland

PCT 3975 - Southern Lower Floodplain Freshwater Wetland	
Common name	Southern Lower Floodplain Freshwater Wetland
Vegetation formation	Freshwater Wetlands
Vegetation class	Coastal Freshwater Lagoons
Extent within subject land	0.19 ha in low condition.
Condition	The community is generally in a low condition due to the highly disturbed nature of vegetation present.
Description	<p>PCT 3975 is typically characterised as a tall to very tall freshwater sedgeland or forbland occurring in depressions on Quaternary alluvial deposits (primarily backswamps with organic-rich mud, silt or clay soils) on coastal floodplains of the Central Coast and South Coast botanical divisions. This PCT describes non-woody freshwater wetlands on Quaternary alluvium south from the Hunter valley that are not dominated by Common Reed <i>Phragmites australis</i> or <i>Eleocharis equisetina</i>. The grasses Common Couch and Water Couch <i>Paspalum distichum</i> and the reed Broad-leaved Cumbungi <i>Typha orientalis</i> commonly occur with sparse cover.</p> <p>Low condition Two separate patches of PCT 3975 occur within the development site, however, only one of these exists within the subject land. This patch within the subject land occurs as a patch of scattered sedges in a low-lying depression in an area surrounded by exotic grasslands. A high cover of weeds is also present within this patch, and it is subject to regular slashing. Native species in this PCT include regenerating saplings of Forest Red Gum, Broad-leaved Cumbungi, Hyssop Loosestrife <i>Lythrum hyssopifolia</i>, Slender Spike Rush <i>Eleocharis gracilis</i>, <i>Cyperus polystachyos</i> and <i>Juncus usitatus</i>. Weed species are dominant and include Rhodes Grass, Fireweed, Purpletop and Smooth Catsear <i>Hypochaeris glabra</i>.</p>
Survey effort	One BAM plot (B03) was collected over the course of the field assessment (Figure 8).
Justification of PCT	<p>PCT 3975 has been determined present in the subject area based on the following characteristics:</p> <ul style="list-style-type: none"> • Occurs in Sydney Basin Bioregion and Cumberland IBRA subregion. • Freshwater Wetland vegetation formation. • Largely as non-woody freshwater wetland, however, sparse emergent eucalypts may be present. In this case emergent Forest Red Gum is present. • Not dominated by Common Reed or <i>Eleocharis equisetina</i>. • Common native species present are grass Couch Grass, <i>Juncus</i> and <i>Eleocharis</i> species, and reed Broad-leaved Cumbungi. • Often occurs and able to endure in disturbed environments. • Assessed against new non-woody freshwater wetland PCT 4055, however, diagnostic flora species of this PCT are absent from the subject land.
TEC Status	<p>PCT 3975 is associated with one TEC:</p> <ul style="list-style-type: none"> • <i>Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i> (EEC, BC Act). <p>The species diversity and composition associated with PCT 3975 within the subject land are notably lower than those described in the final determination for the above listed TEC. The species present are primarily pioneer species that have established in response to the site's periodically wet conditions. In addition, the final determination 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</p>


PCT 3975 - Southern Lower Floodplain Freshwater Wetland	
	part of this community. With the above factors in consideration, PCT 3975 within the subject land is not considered to be associated with the EEC.
Estimate of percent cleared value of PCT (BioNet)	92.99 %
PCT 3975 - Low condition	 <p>Photo 5 Low condition PCT 3975</p>

Table 4 PCT 4023 - Coastal Valleys Swamp Oak Riparian Forest within the development site

PCT 4023 - Coastal Valleys Swamp Oak Riparian Forest	
Common name	Coastal Valleys Swamp Oak Riparian Forest
Vegetation formation	Forested Wetlands
Vegetation class	Coastal Floodplain Wetlands
Extent within subject land	0.54 ha
Condition	PCT 4023 within the development site occurs as patches in a low condition, subject to regeneration.
Description	<p>PCT 4023 typically exists as a tall <i>Casuarina</i> open forest with a dense grassy ground layer that is found adjacent to streams or on river flats. The canopy is one of the distinguishing features of this PCT, very frequently including a high cover of relatively young Swamp Oak <i>Casuarina glauca</i> amongst a mix of old and young eucalypts. There is a dense ground cover, typical of river flat forests, that is typically comprised of grasses, forbs, twiners and ferns.</p> <p>Low condition regenerating patches occur within the subject land with a Swamp Oak canopy and occasional Forest Red Gum. Native midstory features Black Wattle but has been largely modified due to historic clearing. Native understory species include Kidney Weed, Variable Glycine, False Sarsaparilla <i>Hardenbergia violacea</i> and Common Reed. Weed cover is high and includes <i>Paspalum</i>, Lantana <i>Lantana camara</i>, Lamb's Tongue <i>Plantago lanceolata</i>, Curled Dock <i>Rumex crispus</i>, African Lovegrass <i>Eragrostis curvula</i> and Rhodes Grass.</p>
Survey effort	One BAM plot (B02) was collected over the course of the field assessment (Figure 8).



PCT 4023 - Coastal Valleys Swamp Oak Riparian Forest	
Justification of PCT	<p>PCT 3975 has been determined present in the subject land, based on the following characteristics:</p> <ul style="list-style-type: none"> • Occurs in Sydney Basin Bioregion and Cumberland IBRA subregion. • Forested Wetland vegetation formation. • Diagnostic flora canopy species Swamp Oak is present and dominant. Occasional Forest Red Gum. • Sparse to absent shrub layer that has been modified due to historic clearing, however diagnostic midstory species Native Blackthorn is present on site. • PCT within the subject land is distinct from other PCTs common within the locality, due to the presence of Swamp Oak. • Diagnostic native understory species present including Weeping Grass, Kidney Weed and Variable Glycine.
TEC Status	<p>PCT 4023 is associated with two TECs:</p> <ul style="list-style-type: none"> • <i>Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community</i> (EEC, EPBC Act). • <i>Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i> (EEC, BC Act). <p>All patches of PCT 4023 within the subject land were determined to meet the scientific determination for <i>Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i> (EEC) under the BC Act, based on species composition and landscape positioning.</p> <p>Vegetation did not meet condition thresholds outlined in the Listing Advice for the EPBC Act listed community (DoEE 2018) as patches were not large enough to meet the criteria threshold and did not support a 'predominantly native understorey'.</p>
Estimate of percent cleared value of PCT (BioNet)	78.22 %
PCT 4023 - Low condition	
<p>Photo 6 Low condition regenerating PCT 4023</p>	

Table 5 Planted native vegetation

Planted native vegetation	
Extent within subject land	0.26 ha
Description	<p>This vegetation type is associated with vegetation within the subject land that cannot be reasonably assigned to a PCT.</p> <p>Planted vegetation within the subject land that meets the above definition primarily includes canopy tree species such as Spotted Gum <i>Eucalyptus maculata</i>, Fringed Wattle <i>Acacia fimbriata</i> and Tuckeroo <i>Cupaniopsis anacardioides</i>, as well as other NSW native shrub species, such as Crimson Bottlebrush <i>Callistemon citrinus</i>, and Brush Cherry <i>Syzygium australe</i>.</p>
Survey effort	One BAM plot (B01) was collected over the course of the field assessment (Figure 8).
Planted native vegetation	 <p>Photo 7 Planted native vegetation</p>

3.1.7 Threatened ecological communities

Vegetation to be impacted within the subject land was found to represent two TECs listed under the NSW BC Act, and were not consistent with any TECs listed under the Commonwealth EPBC Act, as outlined in Table 6 below and illustrated on Figure 10.

Table 6 Summary of BC Act TECs within the subject land

BC Act TEC	Listing status	Development footprint (ha)
<i>Cumberland Plain Woodland in the Sydney Basin Bioregion</i>	CEEC	0.06
<i>Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	EEC	0.54

One patch of PCT 3320 along the southern lot boundary, consisting of areas of low and moderate condition, was found to be consistent with *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest*, listed as a CEEC under the EPBC Act. However, this patch is not proposed to be impacted under the current proposal.

3.1.8 Planted native vegetation

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

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

Table 7 Planted native vegetation - streamlined assessment

Decision Key		Assessment
1. Does the planted native vegetation occur within an area that contains a mosaic of planted and remnant native vegetation and which can be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal?		Partially. Some planted native vegetation contains a mosaic of species that can be reasonably assigned to PCT 3320. However, a separate patch to the above cannot be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal - Go to question 2.
2. Is the planted native vegetation:	a. planted for the purpose of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9(2.), and	No.
	b. the primary objective was to replace or regenerate a plant community type or a threatened plant species population or its habitat?	No – Go to 3.
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: <ul style="list-style-type: none"> a. a species recovery project b. Saving our Species project c. other types of government funded restoration project d. condition of consent for a development approval that required those species to be planted or translocated for the purpose of providing threatened species habitat e. legal obligation as part of a condition or ruling of court. This includes regulatory directed or ordered remedial plantings (e.g. Remediation Order for clearing without consent issued under the BC Act or the Native Vegetation Act) f. ecological rehabilitation to re-establish a PCT or TEC that was, or is carried out under a mine operations plan, or g. approved vegetation management plan (e.g. as required as part of a Controlled Activity Approval for works on waterfront land under the NSW Water Management Act 2000)? 		No – Go to 4.
4. Was the planted native vegetation (including individuals of a threatened flora species) undertaken voluntarily for revegetation, environmental rehabilitation or restoration without a legal		No – Go to 5.

Decision Key	Assessment
obligation to secure or provide for management of the native vegetation?	
5. Is the native vegetation (including individuals of a threatened flora species) planted for functional, aesthetic, horticultural or plantation forestry purposes? This includes examples such as: windbreaks in agricultural landscapes, roadside plantings (including street trees, median strips, roadside batters), landscaping in parks, gardens and sport fields/complexes, macadamia plantations or Teatree farms?	Yes – The vegetation was likely planted for aesthetic and functional reasons. The vegetation must be assessed in accordance with Section D2 of the BAM (DPIE 2020a) - Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied).
6. Is the planted native vegetation a species listed as a widely cultivated native species on a list approved by the Secretary of the Department (or an officer authorised by the Secretary)?	N/A.

In accordance with Section D2 (of Appendix D of the BAM), the assessor must assess the suitability of the planted native vegetation for use by threatened species and record any incidental sightings or evidence (e.g. scats, stick nests) of threatened species credit species using, inhabiting or being part of the planted native vegetation.

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

The planted native vegetation within the subject land has been assessed for habitat use by threatened species. The planted native vegetation is considered likely to be utilised as part of foraging movements by several threatened species, including the Large-eared Pied Bat, Little Bent-wing Bat and Large Bent-wing Bat. The planted native vegetation may also be utilised on occasion as part of foraging and dispersal movements by mobile ecosystem credit species listed in Section 4 of this report. Actions to avoid and minimise impacts to the threatened species, as well as retained vegetation and general fauna within the subject land are outlined in Section 5 of this BDAR.

3.2 Vegetation integrity assessment

3.2.1 Vegetation zones and patch size class

PCTs within the subject land were assessed and stratified, based on broad condition state, into vegetation zones in accordance with Section 4.3 of the BAM, and as described in Table 2 to Table 5 above. This resulted in five vegetation zones identified. Table 8 describes each of the zones and provides details on the numbers of BAM floristic plots undertaken in each zone.

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

Native vegetation within the subject land was mapped sequentially and it was found to form part of a very large patch of connecting vegetation with an area of >100 hectares. The connected vegetation comprises intact native vegetation associated with Nurragingy Reserve and the riparian corridor of the Eastern Creek.

Patch size classes for each vegetation zone are also outlined in Table 8 below and shown on Figure 10.

Table 8 Vegetation zones within the subject land

Vegetation zone	Plant Community Type	Condition	BAM plots completed	Area (ha) within the subject land	Area (ha) within the development footprint	Max. patch size development footprint
3320_Planted	PCT 3320 Cumberland Shale Plains Woodland	Planted	1	0.06	0.06	>100 ha
3320_Moderate		Moderate	1	-	-	>100 ha
3320_Low		Low	1	0.01	-	>100 ha
3975_Low	PCT 3975 Southern Lower Floodplain Freshwater Wetland	Low	1	0.19	0.19	>100 ha
4023_Low	PCT 4023 Coastal Valleys Swamp Oak Riparian Forest	Low	1	0.93	0.54	>100 ha

3.2.2 Vegetation integrity

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

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

The minimum number of BAM plots per vegetation zone was determined using Table 3 of the BAM (DPIE 2020a). In total, seven BAM plots have been completed within the vegetation zones present across the broader subject land, with five of these completed within the native vegetation zones, and a further two BAM plots completed in areas of non-native or planted vegetation that did not comprise a PCT (B01 and B06). Two BAM plots (B04 and B05) are not located within the final development footprint for the proposed works, however, details of all seven BAM plots are provided in Table 9 and shown on Figure 8.

Table 9 BAM plots completed within the development site

BAM plot reference	Vegetation zone
40798.B01	Planted natives
40798.B02	4023_Low
40798.B03	3975_Low
40798.B04	3320_Moderate
40798.B05	3320_Low
40798.B06	Exotic vegetation

BAM plot reference	Vegetation zone
40798.B07	3320_Planted

Assessment of vegetation integrity was undertaken using standard benchmark data as outlined in the BAM and held in the BioNet Vegetation Classification database. As BAM plots B01, B04, B05, and B06 are either not located within the final development footprint, or did not conform to any PCTs, no further assessment of these plots is required. A list of flora species was compiled for each BAM plot completed and is included in Appendix 2. Records of all flora species will be submitted to NSW DCCEEW for incorporation into the Atlas of NSW Wildlife.

3.2.3 Vegetation integrity score

Plot data was entered into the BAM calculator to determine vegetation integrity score. Plot data is presented in 0, with vegetation integrity scores for each vegetation zone within the development footprint provided in Table 10.

Table 10 Vegetation zone integrity scores of zones within the development footprint

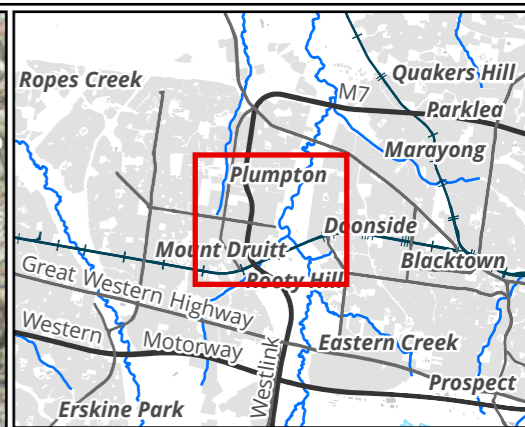
Vegetation zone	Composition score	Structure score	Function score	VI score*	Hollow bearing trees present
3320_Planted	22.1	43	32.2	31.3	No
3975_Low	21	59.3	1.5	60.9	No
4023_Low	33.3	46.3	43.8	40.7	No

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

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

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

As such, ecosystem credit offsets are required for vegetation zones 3320_Planted, 3975_Low, and 4023_Low as the VI scores for all three are ≥ 20 .



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

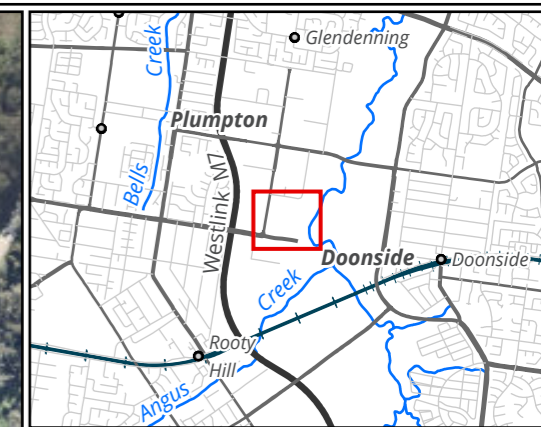
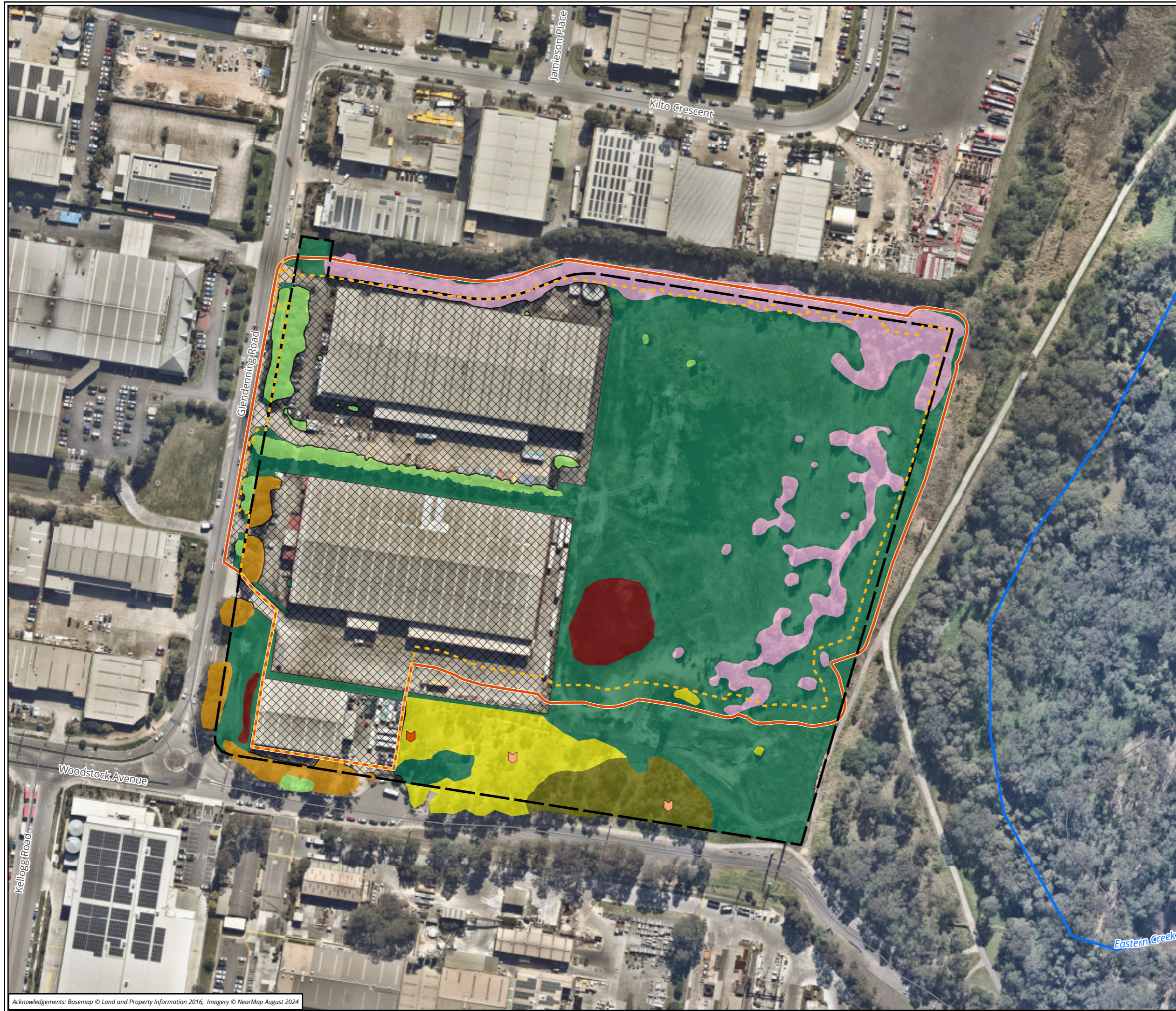
Figure 6 Native vegetation extent

0 100 200 300 400
 Metres
 Scale: 1:12,000 @ A3
 Coordinate System: GDA2020 MGA Zone 56



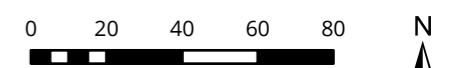
Matter: 40798, Date: 06 February 2025
 Prepared for TL, Prepared by HL, Last edited by: hliswoyo
 Location: P:\40700s\40798\Mapping\40798_Glendenning_Rd_BDAR.aprx
 Layout: 40798_F6_NativeVeg

Acknowledgements: Basemap © Land and Property Information 2016, NSW Public Imagery:



- Legend**
- Subject land
 - Development site
 - Development footprint
- Hollow-bearing Trees**
- ♣ Hollow-bearing Tree
 - ♣ Stag Tree
- Vegetation communities - Biosis**
- 3320 - Cumberland Shale Plains Woodland (Low)
 - 3320 - Cumberland Shale Plains Woodland (Moderate)
 - 3320 - Cumberland Shale Plains Woodland (Planted)
 - 3975 - Southern Lower Floodplain Freshwater Wetland (Low)
 - 4023 - Coastal Valleys Swamp Oak Riparian Forest (Low)
 - Planted natives
 - Exotic
 - Cleared

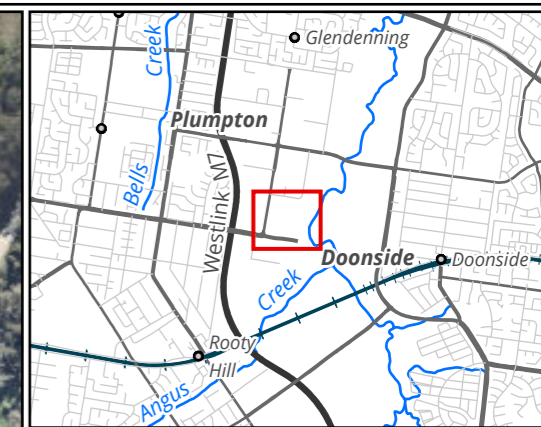
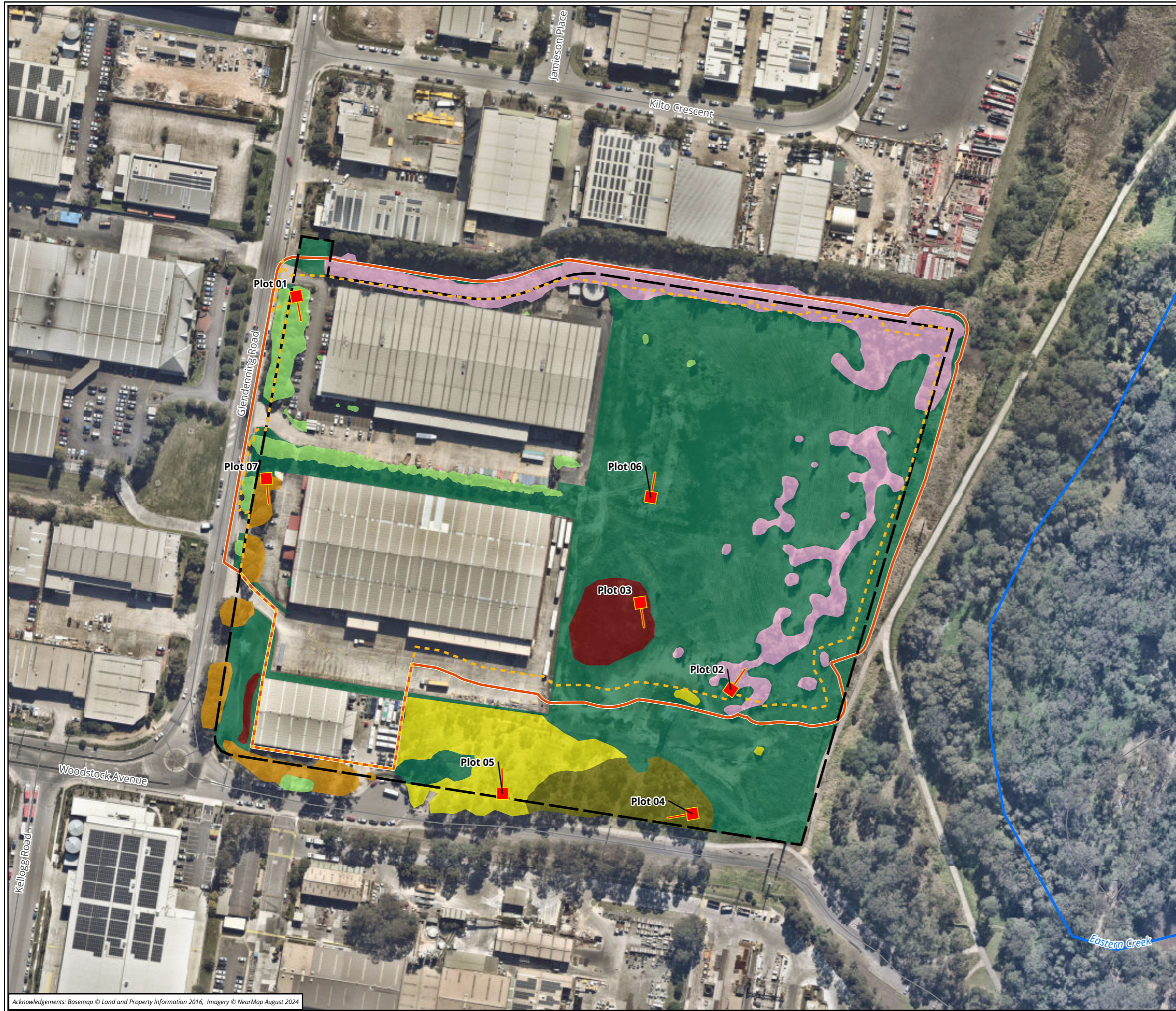
Figure 7 Vegetation within the subject land



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

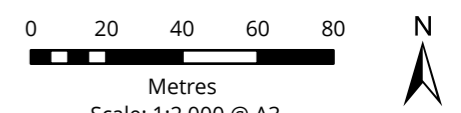


Matter: 40798, Date: 10 February 2025,
 Prepared for TL, Prepared by HL, Last edited by: hiswoyo
 Location: P:\40700s\40798\Mapping\40798_Glendenning_Rd_BDAR.aprx
 Layout: 40798_F7_BiosisVeg_wHBT



- Legend**
- Subject land
 - Development site
 - Development footprint
 - BAM plot
- Vegetation zones - Biosis**
- 3320_Low
 - 3320_Moderate
 - 3320_Planted
 - 3975_Low
 - 4023_Low
 - Planted natives
 - Exotic vegetation

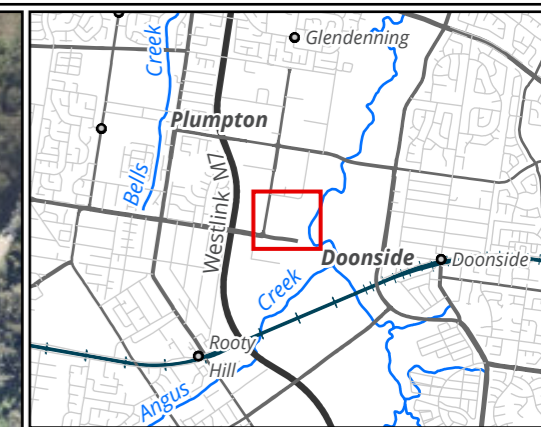
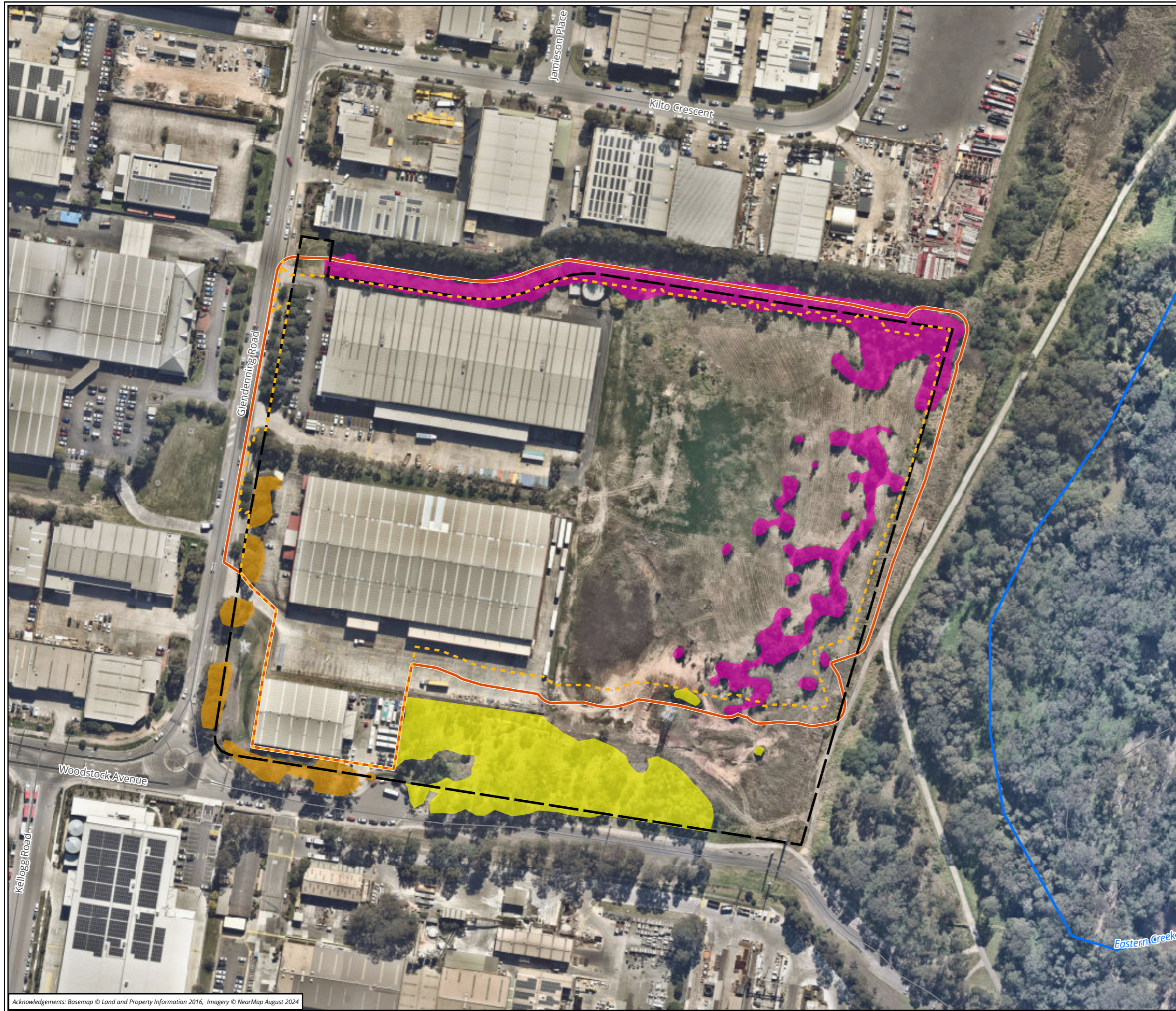
Figure 8 Vegetation zones and plot locations



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



Matter: 40798, Date: 10 February 2025,
 Prepared for TL, Prepared by HL, Last edited by: hiswoyo
 Location: P:\40700s\40798\mapping\40798_Glendenning_Rd_BDAR.aprx
 Layout: 40798_F8_VegZones



- Legend**
- Subject land
 - Impact type**
 - Development site
 - Development footprint
 - Threatened Ecological Communities**
 - Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CEEC, EPBC Act)
 - Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)
 - Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)

Figure 9 Threatened ecological communities within the subject land

0 20 40 60 80 N

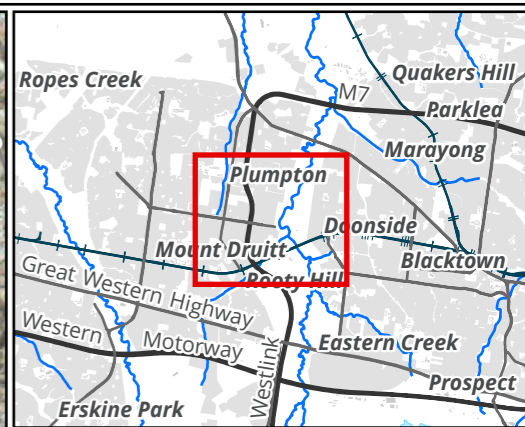
Metres

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

biosis
APEM Group

Matter: 40798, Date: 10 February 2025,
Prepared for TL, Prepared by HL, Last edited by: hiswoyo
Location: P:\40700s\40798\Mapping\40798_Glendenning_Rd_BDAR.aprx
Layout: 40798_F10_TECs

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap August 2024



Legend

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

Patch sizes

- ≥ 100 Ha (3320_Low, 3320_Moderate, 3320_Planted, 3975_Low, 4023_Low)

Figure 10 Patch size locations

0 100 200 300 400
Metres
Scale: 1:12,000 @ A3
Coordinate System: GDA2020 MGA Zone 56

biosis
APEM Group

Matter: 40798, Date: 06 February 2025
Prepared for TL, Prepared by HL, Last edited by: hliswoyo
Location: P:\40700s\40798\Mapping\40798_Glendenning_Rd_BDAR.aprx
Layout: 40798_F9_PatchSize

Acknowledgements: Basemap © Land and Property Information 2016, NSW Public Imagery.

4 Threatened species

4.1 Ecosystem credit species

A list of predicted species (ecosystem credit species) expected to occur within the subject land was generated as per Section 5 of the BAM (DPIE 2020a). Impacts to these species require assessment, however, targeted survey is not required as these species are assumed to occur, based on the occurrence of the PCTs, habitat constraints, native vegetation cover in the landscape and calculated patch sizes. These species are identified as ecosystem credit species in the TBDC. Table 11 lists the ecosystem credit species that could not be discounted, based on geographical restrictions or a lack of suitable habitat, from using the subject land on occasion.

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

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

Species name	Common name
<i>Botaurus poiciloptilus</i>	Australasian Bittern
<i>Rostratula australis</i>	Australian Painted Snipe
<i>Ixobrychus flavicollis</i>	Black Bittern
<i>Falco subniger</i>	Black Falcon
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork
<i>Limosa limosa</i>	Black-tailed Godwit
<i>Oxyura australis</i>	Blue-billed Duck
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)
<i>Irediparra gallinacea</i>	Comb-crested Jacana
<i>Calidris ferruginea</i>	Curlew Sandpiper
<i>Stagonopleura guttata</i>	Diamond Firetail
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat
<i>Pandion cristatus</i>	Eastern Osprey
<i>Petroica phoenicea</i>	Flame Robin
<i>Stictonetta naevosa</i>	Freckled Duck
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat
<i>Miniopterus australis</i>	Little Bent-winged Bat
<i>Hieraaetus morphnoides</i>	Little Eagle

Species name	Common name
<i>Glossopsitta pusilla</i>	Little Lorikeet
<i>Anthochaera phrygia</i>	Regent Honeyeater
<i>Varanus rosenbergi</i>	Rosenberg's Goanna
<i>Petroica boodang</i>	Scarlet Robin
<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo
<i>Chthonicola sagittata</i>	Speckled Warbler
<i>Circus assimilis</i>	Spotted Harrier
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll
<i>Lophoictinia isura</i>	Square-tailed Kite
<i>Lathamus discolor</i>	Swift Parrot
<i>Neophema pulchella</i>	Turquoise Parrot
<i>Daphoenositta chrysoptera</i>	Varied Sittella
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle
<i>Epthianura albifrons</i>	White-fronted Chat
<i>Hirundapus caudacutus</i>	White-throated Needletail
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat

4.2 Species credit species

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

provides the lists of species credit species predicted to occur within the subject land based on the IBRA subregion(s) on/within which the project occurs, the native vegetation cover present within the 1500 metre buffer area, the PCTs present within subject land, and patch sizes listed in Table 8.

The potential for a species to occur within the subject land was assessed in accordance with Section 5.2 of the BAM (DPIE 2020a) and species with geographical restrictions, or habitat constraints not present, were not required to be assessed. A total of 32 species credit species have been excluded from occurring within the subject land based on a lack of suitable habitat. The subject land has experienced substantial degradation since it was completely cleared in the early 2000s. Currently, any vegetation within the development footprint lacks complex structure and is limited to regrowth, consisting mainly of scattered, regenerating trees with no midstory and a ground layer dominated by exotic weeds and grasses. The initial clearing contributed to the introduction and spread of invasive weed species, which have since proliferated, outcompeting native species, and further degrading the habitat. This lack of structural diversity, native understory, and habitat quality creates conditions unsuitable for most threatened species.

Species credit species that have been excluded from the current assessment are detailed below in Table 12.

Table 12 Summary of excluded species credit species

Species name	Common name	Exclusion rationale
Flora		
<i>Commersonia prostrata</i>	Dwarf Kerrawang	Habitat degraded
<i>Deyeuxia appressa</i>	-	Habitat degraded
<i>Eucalyptus benthamii</i>	Camden White Gum	Habitat degraded
<i>Eucalyptus glaucina</i>	Slaty Red Gum	Habitat degraded
<i>Gyrostemon thesioides</i>	-	Habitat degraded
<i>Hibbertia puberula</i>	-	Habitat degraded
<i>Maundia triglochinosoides</i>	-	Habitat degraded
<i>Micromyrtus minutiflora</i>	-	Habitat degraded
<i>Persicaria elatior</i>	Tall Knotweed	Habitat degraded
<i>Pimelea curviflora</i> var. <i>curviflora</i>	-	Habitat degraded
<i>Pimelea spicata</i>	Spiked Rice-flower	Habitat degraded
<i>Pomaderris brunnea</i>	-	Habitat degraded
<i>Pomaderris prunifolia</i> - endangered population	-	Habitat degraded
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	Habitat degraded
<i>Senna acclinis</i>	Rainforest Cassia	Habitat degraded
<i>Wahlenbergia multicaulis</i> - endangered population	-	Habitat degraded
Birds		
<i>Anthochaera phrygia</i>	Regent Honeyeater (Breeding)	Habitat constraints (important area mapping)
<i>Burhinus grallarius</i>	Bush Stone-curlew	Habitat constraints (lack of fallen or standing dead timber).
<i>Calidris ferruginea</i>	Curlew Sandpiper (Breeding)	Habitat constraints (important area mapping)
<i>Collocephalon fimbriatum</i>	Gang-gang Cockatoo (Breeding)	Habitat constraints (lack of suitable hollows)
<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo (Breeding)	Habitat constraints (lack of suitable hollows)
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (Breeding)	Habitat constraints (lack of stick nests)
<i>Hieraaetus morphnoides</i>	Little Eagle	Habitat constraints (lack of stick nests)
<i>Limosa limosa</i>	Black-tailed Godwit (Breeding)	Habitat constraints (important area mapping)
<i>Lophoictinia isura</i>	Square-tailed Kite (Breeding)	Habitat constraints (lack of stick nests)
<i>Ninox connivens</i>	Barking Owl	Habitat constraints (lack of suitable hollows)
<i>Ninox strenua</i>	Powerful Owl	Habitat constraints (lack of suitable hollows)

Species name	Common name	Exclusion rationale
<i>Pandion cristatus</i>	Eastern Osprey (Breeding)	Habitat constraints (lack of stick nests)
<i>Tyto novaehollandiae</i>	Masked Owl	Habitat constraints (lack of suitable hollows)
Mammals		
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	Habitat degraded
<i>Petaurus norfolcensis</i>	Squirrel Glider	Habitat degraded
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox (Breeding)	Habitat constraints (lack of breeding camps)

A detailed assessment of potential for occurrence, further justification for exclusion, and potential for impact, for all species credit species predicted to occur within the subject land is provided in Appendix 4. Species credit species considered to potentially occur within the subject land, and thus are considered 'candidate species credit species'. All candidate species credit species considered as part of this assessment, and their associated method of assessment, are listed in Table 13 (flora species) and Table 14 (fauna species).

One species credit species not predicted by the BAM-C to occur within the subject land (Downy Wattle) was added to the assessment as a candidate species credit species as it was observed during field investigations.

Threatened flora

Habitats for threatened flora species within the subject land are largely considered degraded due to the high degree of vegetation clearance and management. Open areas are typically dominated by exotic grasses and herbaceous exotics, as well as opportunistically regenerating Swamp Oak, all species that are well suited to the low lying and typically damp habitat. This comprises the habitats associated with PCT 4023 and PCT 3975 within the subject land.

Patches of planted PCT 3320 and planted natives along the western boundary of the development footprint also do not provide suitable habitat for threatened flora species due to their urbanised state and prior disturbance.

Table 13 provides a list of candidate flora species credit species considered in this assessment, each species' required survey period and the relevant method of assessment. Further detail of the targeted surveys undertaken are provided below.

Table 13 Candidate flora species credit species

Species name	Common name	Survey period	Method of assessment
<i>Acacia pubescens</i>	Downy Wattle	Year-round	Targeted survey
<i>Dillwynia tenuifolia</i>	-	August – October	Targeted survey
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	Juniper-leaved Grevillea	Year-round	Targeted survey
<i>Persoonia nutans</i>	Nodding Geebung	Year-round	Targeted survey
<i>Pultenaea parviflora</i>	-	September – November	Targeted survey
<i>Pultenaea pedunculata</i>	Matted Bush-pea	September – November	Targeted survey
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> - endangered population	-	November – February	Targeted survey

As mentioned above, Downy Wattle was subject to targeted flora surveys in September 2024 as it was recorded during field investigations. Further details for these surveys are provided in section 4.2.1 below.

Threatened fauna

Fauna habitat assessment was undertaken to determine whether the vegetation to be impacted by the proposed development contained microhabitats suitable to support the candidate fauna species credit species, as outlined in Appendix 4.

Similar to threatened flora, habitats for threatened fauna species within the subject land are largely considered degraded due to the high degree of prior disturbance. As such, much of the vegetated areas within the development footprint are comprised of exotic grasses and planted native vegetation including planted PCT 3320. The remaining patches of native vegetation within the subject land consist of highly modified communities in a relatively poor condition, including regenerating PCT 4023, with canopy cover comprising almost exclusively of Swamp Oak, and a small ephemeral wetland, constituting PCT 3975. Patches of PCT 4023 and PCT 3975 within the subject land, while degraded, may provide habitat for threatened frog, bird, mammal, and invertebrate species.

The main areas of potential fauna habitat within the development site were represented by the patch of low and moderate condition PCT 3320 along the southern boundary of the site, which is not proposed to be impacted by the works, as well as low condition regenerating PCT 4023 along the northern boundary of the site. The only hollow-bearing trees to exist within the development site are located within the patch of low and moderate condition PCT 3320 which is outside of the development footprint. Finally, human-made structures, including warehouses and water tanks to be demolished, while currently in use and thus often subject to high levels of noise and light, have the potential to provide roosting habitat for microbat species.

Table 14 provides a list of candidate fauna species credit species considered in this assessment, each species' required survey period, and the relevant method of assessment. Further detail of the assessment undertaken are provided below.

Table 14 Candidate fauna species credit species

Species name	Common name	Survey period	Method of assessment
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	December – January	Targeted survey
<i>Lathamus discolor</i>	Swift Parrot	-	Survey not required. Assessed based on important habitat mapping
<i>Litoria aurea</i>	Green and Golden Bell Frog	November – March	Targeted survey
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	Year-round	Targeted survey
<i>Miniopterus australis</i>	Little Bent-winged Bat	December – January	Targeted survey
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	December – January	Targeted survey
<i>Myotis macropus</i>	Southern Myotis	October – February	Targeted survey
<i>Phascolarctos cinereus</i>	Koala	Year-round	Targeted survey

The subject land partially contains areas mapped within the important habitat map for the Swift Parrot. Therefore, as per section 5 of the BAM, this species has been included for assessment based on impacts to

vegetation within the important habitat mapped area within the subject land, and targeted surveys will not be required for this species.

Further to this, a fauna habitat assessment was undertaken to determine whether the vegetation to be impacted by the proposed development contains microhabitats suitable to support the candidate fauna species credit species, as outlined in Appendix 4.

All candidate fauna species within Table 14 were considered to potentially have habitat within the subject land, or within proximity to the subject land, and as such, these species were subject to targeted survey, except in the case of Swift Parrot. A full list of fauna recorded within the subject land is included in Appendix 3

4.2.1 Threatened species survey details

Two rounds of targeted flora surveys were completed to inform the current assessment. These surveys were undertaken in September 2024 and January 2025. Threatened fauna surveys were undertaken throughout December 2024 and January 2025.

Weather observations for each survey date are shown in Table 15, using information from the Australia Government Bureau of Meteorology website for the local Horsley Park weather station.

Table 15 Weather observations during targeted flora and fauna surveys (Horsley Park, NSW)

Survey undertaken	Survey date	Temperature (°C)		Rain (mm)
		Min.	Max.	
Targeted flora surveys	16/09/2024	5.1	20.8	0
Microbat harp trapping	18/12/2024	15.9	23.9	6
	19/12/2024	15	25.1	2.4
Green and Golden Bell Frog surveys	8/01/2025	16.3	20.5	7.4
Cumberland Plain Land Snail spotlighting Green and Golden Bell Frog surveys Koala spotlighting	9/01/2025	15.8	25	16.6
Microbat harp trapping	13/01/2025	19	32.9	0
Cumberland Plain Land Snail spotlighting Diurnal snail surveys Koala spotlighting Microbat harp trapping Targeted flora surveys	14/01/2025	21.1	32.4	0
Cumberland Plain Land Snail spotlighting Green and Golden Bell Frog surveys Koala SATs and diurnal snail surveys Koala spotlighting	29/01/2025	16.9	26.5	0.4
	30/01/2025	18.9	24.6	0.4

Information from the Australia Government Bureau of Meteorology website (Bureau of Meteorology 2024).

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

Threatened Flora

Two separate rounds of targeted surveys for threatened flora species were undertaken on 16 September 2024 and 14 January 2025. Weather observations for this survey date are shown above in Table 15.

Justification of survey method and effort

Survey guidelines followed included:

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

Survey effort was considered adequate for the area of potential habitat within the subject land and development footprint. Targeted flora survey effort is depicted in Figure 11.


Timing of survey


Flora surveys were conducted in accordance with the seasonal requirements detailed in the TBDC survey notes for most candidate flora species. However, due to timing constraints, the following species were surveyed outside of the listed survey period:

- *Dillwynia tenuifolia*
- *Pultenaea parviflora*
- Matted Bush Pea *Pultenaea pedunculata*

Despite the seasonal timings mentioned in the TBDC survey guides, each of the above species is known to flower sporadically throughout the year, dependent on seasonal conditions. To ensure that the surveys were effective despite being conducted outside the listed survey period, reference populations of these species were assessed in nearby locations to confirm that they were flowering at the time of the surveys. A summary of these reference population assessments is provided in Table 16 below.

Table 16 Reference population surveys

Species name	Common name	Reference population location	Photo
<i>Dillwynia tenuifolia</i>	-	Three reference populations for the species were surveyed, with each population containing flowering individuals. These populations were located at: <ul style="list-style-type: none"> • Windsor Downs Nature Reserve • Castlereagh Nature Reserve • Wianamatta Nature Reserve 	 <p>Photo 8 <i>Dillwynia tenuifolia</i> 09/01/2025</p>

Species name	Common name	Reference population location	Photo
<i>Pultenaea parviflora</i>	-	Three reference populations for the species were surveyed, with each population containing flowering individuals. These populations were located at: <ul style="list-style-type: none"> • Windsor Downs Nature Reserve • Castlereagh Nature Reserve • Wianamatta Nature Reserve 	 <p>Photo 9 <i>Pultenaea parviflora</i> 09/01/2025</p>

A reference population survey for Matted Bush Pea was not able to be conducted due to the absence of known populations within proximity to the study area.

No *Dillwynia* spp. or *Pultenaea* spp. (threatened or non-threatened) were detected during either round of flora surveys. Patches of vegetation subject to targeted flora surveys are small (< 1 ha), and surveys were conducted by an experienced senior botanist with prior experience with each species being surveyed outside of season. These species are generally visually distinctive and detectable, and the absence of any Pea species during the targeted flora surveys provides confidence that the species are not present.

Survey personnel and relevant experience

Targeted flora surveys were undertaken by the Biosis ecologists listed in Table 17.

Table 17 Targeted flora survey personnel and relevant experience

Staff member	Role	Relevant experience
Jake Schwebel	Senior Botanist	Over 3 years' experience in ecological consulting. Experience includes vegetation mapping, habitat assessments for threatened species and targeted flora surveys in NSW, with particular focus on surveys within the Sydney and western Sydney regions.
Natasha Zahra	Botanist	Over 3 years' experience in ecological conservation and bush regeneration. Experience includes vegetation mapping, targeted survey for threatened species, seasonal floristic monitoring, and bushland restoration.
Rosie Gray	Botanist	Over 3 years' experience undertaking ecological survey in the Sydney Basin Bioregion, combined with a strong background in bush regeneration. Experience includes vegetation and habitat mapping, threatened flora targeted survey, and seasonal floristic monitoring.
Todd Horton	Botanist	Over 2 years' experience in ecological consulting. Experience includes vegetation mapping, habitat assessments for threatened species and targeted surveys across NSW, with particular focus on surveys within the Sydney, south coast, and western Sydney regions.

Survey results

Table 18 provides a summary of the results of the targeted flora surveys completed.

Table 18 Summary of targeted flora survey method and results

Species name	Common name	Survey method	Survey results	Species polygon (ha)
<i>Acacia pubescens</i>	Downy Wattle	5-10 m wide parallel field traverses in suitable habitat	8 individuals recorded	0.54
<i>Dillwynia tenuifolia</i>	-	5-10 m wide parallel field traverses in suitable habitat	Not recorded during surveys	Not required
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	Juniper-leaved Grevillea	5-10 m wide parallel field traverses in suitable habitat	Not recorded during surveys	Not required
<i>Persoonia nutans</i>	Nodding Geebung	5-10 m wide parallel field traverses in suitable habitat	Not recorded during surveys	Not required
<i>Pultenaea parviflora</i>	-	5-10 m wide parallel field traverses in suitable habitat	Not recorded during surveys	Not required
<i>Pultenaea pedunculata</i>	Matted Bush-pea	5-10 m wide parallel field traverses in suitable habitat	Not recorded during surveys	Not required
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> – endangered population	-	5-10 m wide parallel field traverses in suitable habitat	Not recorded during surveys	Not required

Samples of Downy Wattle were verified and confirmed by the Royal Botanical Gardens (Appendix 4).

Fauna habitat assessments

Fauna habitat assessment was undertaken to determine the presence of microhabitats and other critical habitat components (habitat constraints) suitable for all fauna species outlined in Table 14 and Appendix 4. Habitat assessments focused on the presence of the following features within the subject land:

- Habitat trees including large and/or hollow-bearing trees, stick nests, availability of flowering shrubs and canopy/understorey feed tree species.
- Soil type and presence of cliffs, overhangs and other rocky areas.
- Condition and type of native vegetation and the presence of exotic species.
- Presence and condition of pools and waterways.
- Quantity of ground litter and woody debris.
- Searches for indirect evidence of fauna (i.e. feathers, tracks and scats).
- General degradation of the site as a result of past and current disturbances such as vegetation clearing and industrial land management practices.

- Topography and landscape morphology.
- Presence of Flying-fox camps.

Several habitat features with potential to support threatened species credit species were identified during these habitat assessments. These features have been summarised in Table 19.

Table 19 Habitat features with potential to support threatened species credit species

Habitat feature	Presence within the development footprint
Hollow-bearing trees	Due to the degraded nature of the subject land, no hollow-bearing trees are present within the development footprint. However, three hollow bearing trees, supporting medium sized hollows (50-149mm), are present within the broader development site. These occur along the southern border of the subject land, in the areas supporting PCT 3320. These hollow-bearing trees will be retained throughout the works and are not expected to be impacted.
Feed tree species	Native tree species within the subject land may provide suitable foraging resources for mobile species known to occur in urban environments. The subject land was largely lacking in trees and shrubs providing food resources for smaller mammals.
Caves and rocky overhangs	There are no caves or rocky overhangs within the subject land. No other suitable roosting habitat for cave-roosting bats (such as culverts, mine shafts etc.) were recorded.
Rocky outcrops and sandstone crevices	There are no rocky outcrops or sandstone crevices within the subject land.
Major and minor watercourses and waterbodies.	There are no waterbodies within the subject land. The closest waterway is Eastern Creek, which exists as a fourth order Strahler stream approximately 70 metres to the east of the subject land. No impacts to this waterway are expected. An ephemeral wetland lies at the centre of the subject land and becomes periodically inundated after rainfall events. This area is expected to be fully removed as part of the proposed development. However, given its degraded condition, with a high level of weed infestation and a cycle of drying between rainfalls, it is unlikely to provide suitable habitat to support any threatened species
Woody debris and leaf litter	Throughout the subject land, leaf litter and woody debris are limited. Most of the vegetation consists of Swamp Oak trees, which predominantly drop needles rather than broad leaves, resulting in minimal traditional leaf litter. Woody debris is also sparse due to historical disturbances that have disrupted natural vegetation structures. Any leaf litter present is primarily the result of dieback among unmanaged exotic grasses, which have dried out and died, adding to the ground cover but not providing the typical habitat complexity associated with native leaf litter or woody debris. Small patches associated with garden beds and planted native vegetation occur, however due to historical ground disturbance and the highly modified nature of the vegetation present, these areas are considered unsuitable for providing habitat for threatened species.

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

Targeted fauna survey effort is depicted in Figure 11.

Frogs

Targeted visual-aural surveys were undertaken for Green and Golden Bell Frog. Surveys were undertaken by two ecologists across four evenings (8 to 9 January, and 29 to 30 January 2025) from sunset. Survey methods involved undertaking aural-visual transects within areas of suitable habitat by two ecologists. Calls were played at regular intervals (every 50 m) along each transect.

Survey method and effort

Survey method and effort conformed to the BAM survey guideline *NSW Survey Guide for Threatened Frogs* (DPIE 2020c).

Justification of survey method and effort

The TBDC and *NSW Survey Guide for Threatened Frogs* (DPIE 2020c) specify that targeted survey for Green and Golden Bell Frog should be undertaken over at least four nights between November and March, and that the first and last day of survey are a minimum of 14 days apart. Surveys were undertaken in January, with 20 days between the two surveys periods, each of which consisted of two nights of survey, thus satisfying these timing requirements. Confirmation of calling individuals and the presence of tadpoles at the nearby Sydney Olympic Park reference population was obtained prior to the commencement of surveys.

Surveys were undertaken in the evenings following moderate rainfall, with 12.4 millimetres (mm) of rain recorded at Horsley Park on 7 January, 7.4 mm recorded on 8 January, and 16.6 mm recorded on 9 January. January had a total recorded rainfall of 116 mm at Horsley Park, while 77.2 mm of this was recorded in between the first and second survey period. This included a period of heavy falls totalling 26.8 mm and 38.2 mm on 11 and 16 January, respectively. The ephemeral wetland within the subject land was observed to be flooded with water at the time of frog surveys.

Moderate showers occurred at the development site during the undertaking of targeted surveys for Green and Golden Bell Frog on 8 and 9 January 2025, with a combined total rainfall of 24 mm, while light showers occurred during surveys on 29 and 30 January 2025, with 0.4 mm of rainfall occurring on each night.

Timing of survey

Visual-aural surveys were undertaken on the evenings of 8 to 9 January 2025, and 29 to 30 January 2025, in accordance with the *NSW Survey Guide for Threatened Frogs* (DPIE 2020c).

Survey personnel and relevant experience

Frog surveys were undertaken by the Biosis ecologists outlined in Table 20.

Table 20 Targeted frog survey personnel and relevant experience

Staff member	Role	Relevant experience
Tara Lillicot	Zoologist	Over 3 years' experience in environmental consulting including over 1.5-years' experience conducting fauna surveys with various techniques including Koala SAT and snail surveys, call/playback surveys for threatened amphibians and birds, bat ultrasonic detection and harp trapping, reptile and mammal spotlighting, and stag-watching for threatened cockatoos. Zoological experience also includes a further two-years' experience in captive animal research, handling and husbandry

Staff member	Role	Relevant experience
Rachel Moore	Zoologist	Over 3 years' experience in fauna ecology, including experience with various fauna survey techniques including harp trapping, Koala SAT surveys, spotlighting, Elliot trapping, pitfall trapping, reptile funnel trapping, bat ultrasonic detection surveys, and visual transect surveys for threatened birds. An additional 12 years' experience in wildlife caring, survey and identification throughout Australia and South Africa prior to this.
Natasha Zahra	Botanist	Over 3 years' experience in ecological conservation and bush regeneration. Experience includes vegetation mapping, targeted survey for threatened species, seasonal floristic monitoring, bushland and habitat restoration, and riparian revegetation.
Todd Horton	Botanist	Over 2 years' experience in ecological consulting. Experience includes vegetation mapping, habitat assessments for threatened species and targeted surveys across NSW, with particular focus on surveys within the Sydney, south coast, and western Sydney regions.

Results

No Green and Golden Bell Frogs were recorded during targeted surveys, nor were any other threatened amphibian species. The following non-threatened species were recorded:

- Brown-striped Frog *Limnodynastes peronii*.
- Common Eastern Froglet *Crinia signifera*.
- Peron's Tree Frog *Litoria peronii*.
- Screaming Tree Frog *Litoria quiritatus*.

Limitations

Reference sites were not checked for Green and Golden Bell Frog on the day/night of surveys; however, the species was known to be calling in the western Sydney Region (Sydney Olympic Park) in November and December 2024. Despite the lack of reference site checks, the weather conditions during survey were considered to be optimal, being warm and humid, and preceded by heavy rain which inundated the wetlands within the subject land. Additionally, common frog species for the region were heard in full chorus during the survey, with a notable increase in calling activity during the 8-9 January survey period, indicating that conditions were generally suitable for frog activity.

Gastropods

Diurnal targeted surveys for the Cumberland Plain Land Snail were undertaken by two ecologists on 14, 29 and 30 January 2025, with nocturnal spotlighting surveys undertaken on 8, 9, 29 and 30 January 2025.

Survey method and effort

The diurnal survey methodology consisted of meandering transects within areas of suitable habitat. Diurnal transect surveys were completed in conjunction with targeted flora surveys, which consisted of 5 – 10 metre spaced transects.

The nocturnal survey methodology consisted of spotlighting over five nights by two ecologists undertaking meandering transects within areas of potential habitat at a very slow walking pace. Ecologists targeted micro-

habitats for snails during these surveys and all patches of native vegetation were spotlighted over a minimum of two replicate nights.

Supplementary survey effort for threatened snails was also conducted during Koala Spot Assessment Technique (SAT) (Phillips & Callaghan 2011) surveys, during which at least 30 microhabitats were sampled around a central survey point. Each microhabitat sample was searched for a minimum of two person minutes with ecologists gently raking leaves and woody debris searching for live snails or empty shells, as well as signs of Koala.

Justification of survey method and effort

Diurnal surveys for Cumberland Plain Land Snail were conducted concurrently with targeted flora surveys, with two ecologists surveying all areas of suitable native vegetation by 5 - 10 metre spaced transects. The ecologists conducting the surveys had suitable experience to be able to distinguish native snails from introduced species, and any snail shells that could not be readily identified within the field, were collected for identification by an invertebrate expert.

The described diurnal survey effort above is considered consistent with the diurnal survey methods detailed in the TBDC, which recommend undertaking meandering transect across suitable habitat, searching for empty shells, and targeted microhabitats likely to be utilised by the species (i.e., leaf litter, decorticated bark, coarse woody debris, grass clumps and discarded rubbish). While no specific survey effort in terms of transect length or spacing are detailed within TBDC, patches of vegetation subject to survey for Cumberland Plain Land Snail within the development site are small (< 1 ha) and consist largely of sparse vegetation, allowing for confidence in the ability to detect threatened gastropods during such surveys.

Nocturnal spotlighting surveys were also undertaken in accordance with the survey methods detailed in TBDC. This includes undertaking surveys between dusk and dawn, in ideal conditions including after rainfall when the topsoil and leaf litter is wet, the humidity is high (approximately >75%), and in temperatures >12 degrees Celsius. High levels of invertebrate activity during nocturnal surveys, including slugs, introduced snails, and spiders, suggest that conditions were optimal at the time of survey.

Further supplementary survey of Cumberland Plain Land Snail followed published survey recommendations (NPWS 2000), and was completed in combination with Koala SAT surveys. Searches included turning over logs and other ground litter which provide moist refugia, targeted live snails and snail shells, as well as Koala scat. The SAT technique allows search effort to be quantified while also ensuring a minimum search time at each habitat patch.

Surveys for the species were not conducted within planted PCT 3320 at the western boundary of the subject land as suitable habitat for the species was not deemed present. This was due to the absence of woody debris which provide sheltering habitat for the species, and due to the isolation of the planted patch from the patch of higher-quality PCT 3320 at the southern boundary of the development site, where the species was identified.

During surveys, a number of snail shells were collected for further identification and sent to an invertebrate expert for positive identification.

Timing of survey

This species may be surveyed at any time of year (NSW DCCEEW 2025c). The detection of shells allows for identification of the species even when live snails are not present or active.

Survey personnel and relevant experience

Gastropod surveys were undertaken by the Biosis ecologists outlined in Table 21.

Table 21 Targeted gastropod survey personnel and relevant experience

Staff member	Role	Relevant experience
Tara Lillicot	Zoologist	Over 3 years' experience in environmental consulting including over 1.5-years' experience conducting various fauna surveys with including spotlighting, Koala SAT surveys and snail surveys. Zoological experience includes a further 2 years' experience in animal research, handling and husbandry, inclusive of invertebrates. Experience includes detection and identification of <i>Meridolum</i> snails in the Cumberland Plain region.
Jake Schwebel	Senior Consultant	Over 3 years' experience in ecological consulting. Experience in a wide a variety of ecological survey, including habitat assessments and targeted surveys, with a particular focus on biodiversity assessment and survey across the Cumberland Plain region. Experience includes detection and identification of <i>Meridolum</i> snails in the Cumberland Plain region.
Rachel Moore	Zoologist	Over 3 years' experience in fauna ecology, including experience with various fauna survey techniques including spotlighting, Koala SAT surveys and snail surveys. Experience includes detection and identification of <i>Meridolum</i> snails in the Cumberland Plain region.
Natasha Zahra	Botanist	Over 3 years' experience in ecological conservation and bush regeneration. Experience includes vegetation mapping, habitat assessment, and targeted survey for threatened species, with a particular focus in the Cumberland Plain region.
Todd Horton	Botanist	Over 2 years' experience in ecological consulting. Experience includes vegetation mapping, habitat assessments for threatened species and targeted surveys across NSW, with particular focus on surveys within the Sydney, south coast, and western Sydney regions. Experience includes detection and identification of <i>Meridolum</i> snails in the Cumberland Plain region.

Results

A number of live gastropods were identified during both diurnal and nocturnal surveys. These included Brown Garden Snail *Cornu aspersum*, Asian Trampsnail *Bradybaena similaris*, and Giant Garden Slug *Limax maximus*, which could be confidently identified as non-native species in the field.

Two samples of shells which could not be positively identified as introduced species were sent to an invertebrate expert for identification. These were positively identified as Cumberland Plain Land Snail shells, likely 1-2 years old. However, both of these shells were located within the patch of PCT 3320 along the southern lot boundary of the development site, which is not proposed to be impacted by the works.

Sufficient survey was completed to indicate that the species is not inhabiting PCT 4023 and PCT 3975 within the subject land which present as much lower quality habitat for the species than the patch of PCT 3320 in which they were identified. These PCTs are also not associated with the species (NSW DCCEEW 2025c).

Limitations

Surveyors had sufficient experience to distinguish *Meridolum* or *Pommerhelix* land snails from the more common introduced species. If any shells similar to these native snail genera were detected, these were collected and sent to an expert to confirm identification.

During surveys, two suspected Cumberland Plain Land Snail shells were sent to an invertebrate expert and confirmed to be from the suspected species. All other snail shells located within the development site were readily identifiable as an Asian Tramp Snail due to the presence of a distinctive reddish stripe, or as a Brown Garden Snail, due to the size and distinct banded pattern of the shell.

Mammals

As the TBDC requires two survey methodologies to be used for Koala, spotlighting and SAT surveys were undertaken for the species. Koala spotlighting surveys were undertaken on 6-7, 14 and 29-30 January 2025, with SATs undertaken on 29 January 2025.

Survey method and effort

The following survey guidelines were used to inform the targeted surveys for mammals:

- *Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide* (DPE 2022a).
- *Survey guidelines for Australian threatened mammals* (DEWHA 2011).

Justification of survey method and effort

Spotlighting and SAT surveys were undertaken for Koala throughout January 2025. The spotlighting surveys were undertaken independently but concurrently with those undertaken for Cumberland Plain Land Snail and Green and Golden Bell Frog, with one ecologist focusing on the forest canopy, and one ecologist focussing on the ground. While spotlighting surveys were undertaken to target Koala, these surveys also would have assisted in the detection of Squirrel Glider, Eastern Pygmy-possum and Grey-headed Flying-fox (excluded as candidate species) if they had been present. Ecologists also recorded all incidental observations of mammals during these surveys. All patches of native vegetation were spotlighted on at least two separate occasions, in line with the koala survey guidelines (DPE 2022a). Patches of vegetation subject to survey for Koala are small (< 1 ha) and consist of largely sparse vegetation, allowing for all patches to be sufficiently surveyed within the two replicates.

SAT surveys were undertaken across patches of native vegetation within the subject land, with two SATs being undertaken in patches of PCT 4023 and another two undertaken amongst planted natives. PCT 3320 in a planted condition along the western boundary of the development site was excluded from survey, due to the lack of mature habitat trees for the species within this planted garden. Tall security fencing around the perimeter of this planted patch and its associated warehouse also provides a barrier for Koala movement into the patch.

Where patches did not contain 30 habitat features for searching, such as within patches of planted vegetation within the north-western portion of the subject land, all available habitat features were searched. This survey effort exceeds the required SAT survey effort detailed within the Koala survey guide, which requires at least three SAT surveys to be conducted within areas of suitable koala habitat on sites where suitable koala habitat is <5 hectares.

Timing of survey

Spotlighting and SAT surveys were undertaken in January 2025 in accordance with the survey timing provided in TBDC (DPE 2023a), which allows for koala surveys to be undertaken year-round.

Survey personnel and relevant experience

Terrestrial and arboreal mammal surveys were undertaken by the Biosis ecologists outlined in Table 22.

Table 22 Targeted mammal survey personnel and relevant experience

Staff member	Role	Relevant experience
Tara Lillicot	Zoologist	Over 3 years' experience in environmental consulting including over 1.5-years' experience conducting various fauna surveys with including spotlighting, Koala SAT surveys and snail surveys. Zoological experience includes a further 2 years' experience in animal research, handling and husbandry, inclusive of invertebrates. Experience includes detection and identification of <i>Meridolum</i> snails in the Cumberland Plain region.
Rachel Moore	Zoologist	Over 3 years' experience in fauna ecology, including experience with various fauna survey techniques including spotlighting, Koala SAT surveys and snail surveys. Experience includes detection and identification of <i>Meridolum</i> snails in the Cumberland Plain region.
Natasha Zahra	Botanist	Over 3 years' experience in ecological conservation and bush regeneration. Experience includes vegetation mapping, habitat assessment, and targeted survey for threatened species, with a particular focus in the Cumberland Plain region.
Todd Horton	Botanist	Over 2 years' experience in ecological consulting. Experience includes vegetation mapping, habitat assessments for threatened species and targeted surveys across NSW, with particular focus on surveys within the Sydney, south coast, and western Sydney regions. Experience includes detection and identification of <i>Meridolum</i> snails in the Cumberland Plain region.

Results

No signs of koala were observed within the subject land, such as scats, tracks or scratches on trees. No koalas were observed during spotlighting surveys.

Several Grey-headed Flying-fox (Vulnerable, EPBC Act and BC Act) were observed flying over the subject land, or foraging on flowering eucalypts along the edge of Glendenning Road which occur within the subject land but are not proposed to be directly impacted by the proposed works. However, no signs of Grey-headed Flying-fox breeding camps were observed within the subject land, and thus the species has been excluded as a species credit species for the project. It is likely that flying-foxes observed within the subject land were travelling towards the site from the closest Grey-headed Flying-ox camp, the Ropes Creek camp, located approximately 4.5 kilometres south-west of the subject land (Cth DCCEEW 2024).

No other mammals were observed within the subject land during targeted surveys.

Limitations

Spotlighting surveys are limited by animal movement which can be impacted by extreme temperatures, rainfall, or high wind. As such, surveys are recommended not to be undertaken in these conditions, as per the

Koala survey guide (DPE 2022a). The success of spotlighting surveys is also dependent on the density of vegetation and the sloping of the land, as this may impact 'eye shine' detectability. In order to reduce the impact of these limiting factors, surveys were undertaken in dry and calm conditions, and were ceased when rainfall was any heavier than a light drizzle, such as on the evening of 7 January 2025, when moderate rainfall began during targeted surveys.

The detectability of scats during SAT surveys is also dependant on the amount of groundcover, as well as recent rainfall and associated insect activity (DPE 2022a). As such, it is recommended that SAT surveys are not undertaken during rainfall, or within three days of rainfall. SAT surveys were undertaken on 29 January 2025, with 0.4 millimetres of rainfall occurring on this day, and a total of 2.4 millimetres occurring within the three days prior to these surveys, between 26-28 January 2025. However, given the limited amount of rain, and that SAT surveys were also conducted in areas without dense groundcover, surveys were conducted with confidence that scats would be detected if present.

Microbats

Microbat habitat searches and passive ultrasonic detection were undertaken on 18 July 2024. These surveys were undertaken to determine if the human-made structures being removed from the development site are being utilised as roosting habitat by microbat species. Passive ultrasonic detection surveys were undertaken to address the prescribed impact associated with removal of human-made structures and non-native vegetation under Section 6.1.2 of the BAM (DPIE 2020a).

Harp trapping was also completed in December 2024 and January 2025 to identify any threatened breeding microbats within the subject land.

Survey method and effort

Diurnal microbat habitat searches were undertaken on the three warehouses within the development site on 18 July 2024. Two ecologists searched for signs of microbat activity around the exterior of the warehouses, including:

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

A handheld Echo Meter ultrasonic bat detector was carried around the site during microbat habitat investigations and placed against any visible openings on the outside of the buildings, in order to detect and record any calls of microbats.

Targeted surveys were also undertaken via harp trapping on the nights of 18-19 December 2024 and 13-14 January 2025. These were completed using standard 4.2 m² traps strung with ≤ 3 kilogram monofilament nylon lines. Traps were set before sunset each evening and placed in key flyways, along the edge of drainage lines, and over wetlands to maximise capture potential. Trap locations were rotated nightly to reduce the risk of trap avoidance, with careful consideration given to selecting areas likely to intersect bat activity.

Traps were checked twice each night, once at approximately 10 pm and again pre-dawn, before being closed to prevent non-target captures during daylight hours. An Echo Meter was also carried whenever ecologists were attending site at dusk, in order to capture the calls of any microbats that may be emerging from roosts.

The combination of trapping and active monitoring provided a robust approach to assessing bat presence and habitat use in the subject land.

Justification of survey method and effort

The three buildings located within the development site are less than 20 years old, being built sometime between 2005 and 2013 (NSW Spatial Services 2025). These buildings were largely made of brick and due to their somewhat recent construction, were found to be in a good state of repair, with virtually no suitable entry points visible from the exterior.

It was possible to comprehensively search the exterior of each building. While access to the internal spaces of these buildings was not possible, the likelihood of microbats being able to enter and exit the buildings freely in order to roost is very low, given the lack of entry points on the exterior of the buildings.

Nocturnal microbat surveys (harp trapping) followed the NSW Survey Guide ‘Species credit threatened bats and their habitats’ (DPIE 2021 a) developed for the survey of species credit microbat species in accordance with the BAM. The active searches of potential habitat areas (fly ways, buildings and waterbodies) using an Echo Meter was supplementary to the required survey effort under the BAM. Given the absence of high-quality vegetation, waterways and caves within the subject land, the likelihood of threatened microbats roosting, breeding, or foraging within the subject land is quite low, and as such the combination of trapping and active monitoring is considered sufficient to detect the presence of any microbats that may be located within the subject land.

Timing of survey

Harp trapping was undertaken on the nights of 18 and 19 December 2024, and 13 and 14 January 2025, in accordance with the ‘Species credit’ threatened bats and their habitats BAM guideline (DPIE 2021a).

This allowed for surveys to be conducted in 2-night periods, with at least 14 nights in between, as per the survey guidelines for Large Bent-winged Bat and Little Bent-winged Bat (DPIE 2021a).

Survey personnel and relevant experience

Microbat surveys were undertaken by the Biosis ecologists outlined in Table 23.

Table 23 Microbat habitat survey personnel and relevant experience

Staff member	Role	Relevant experience
Tara Lillicot	Zoologist	Over 3 years' experience in environmental consulting including over 1.5-years' experience conducting fauna surveys with various techniques including Koala SAT and snail surveys, call/playback surveys for threatened amphibians and birds, bat ultrasonic detection and harp trapping, reptile and mammal spotlighting, and stag-watching for threatened cockatoos. Zoological experience also includes a further two-years' experience in captive animal research, handling and husbandry.
Jake Schwebel	Senior Consultant	Over 3 years' experience in ecological consulting. Experience includes vegetation mapping, habitat assessments for threatened species and targeted threatened species surveys in NSW, with particular focus on surveys within the Sydney and western Sydney regions.
Rachel Moore	Zoologist	Over 3 years' experience in fauna ecology, including experience with various fauna survey techniques including harp trapping, Koala SAT surveys, spotlighting, Elliot trapping, pitfall trapping, reptile funnel

Staff member	Role	Relevant experience
		trapping, bat ultrasonic detection surveys, and visual transect surveys for threatened birds. An additional 12 years' experience in wildlife caring, survey and identification throughout Australia and South Africa prior to this.
Natasha Zahra	Botanist	Over 3 years' experience in ecological conservation and bush regeneration. Experience includes vegetation mapping, targeted survey for threatened species, seasonal floristic monitoring, bushland and habitat restoration, and riparian revegetation.

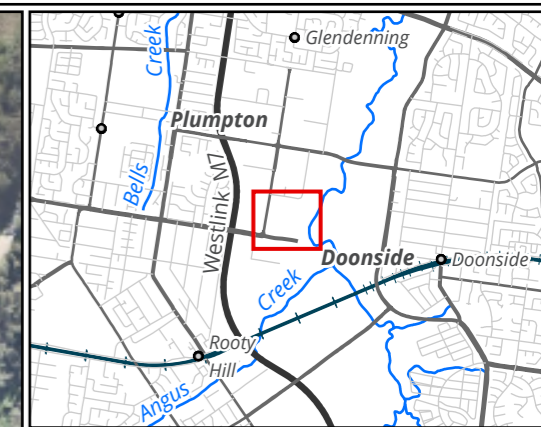
Results

No microbats or secondary evidence of microbats was observed during habitat and roost searches in July 2024. No microbats were recorded via Echo Meter during these habitat searches.

Over the four-night survey period in January 2025 no bats were captured in the harp traps, despite multiple checks at 10 pm and pre-dawn. One microbat was observed flying in and out of the drainage easement to the north of the development site, and their call was recorded using an Echo Meter. Analysis of this call identified the observed individual as a Gould’s Wattled Bat *Chalinolobus gouldii*.

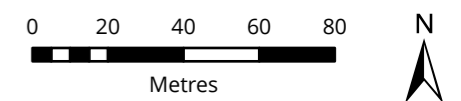
Limitations

Microbat surveys for breeding bats are limited by the successful trap rate of harp traps, which is generally considered to be low (Berry et al. 2004). Harp trapping was also limited by the access to suitable flyways due to the open nature of the subject land following widespread historical vegetation clearance. Harp trap surveys were undertaken across periods of suitable weather for microbat species.



- Legend**
- Subject land
 - Development site
 - Development footprint
 - Flora survey tracks - January 2025
 - Flora survey tracks - September 2024
 - Flora survey tracks - July 2024
- Threatened flora records - Biosis**
- Downy Wattle - *Acacia pubescens*

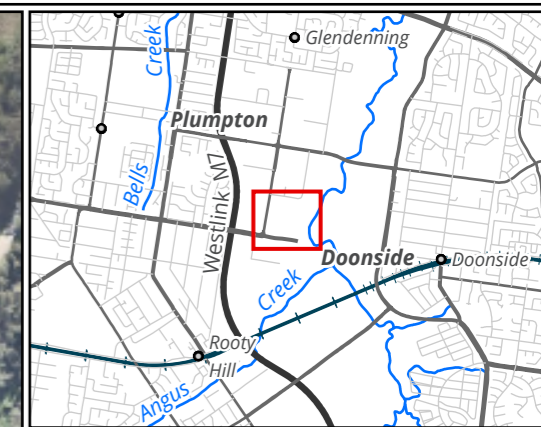
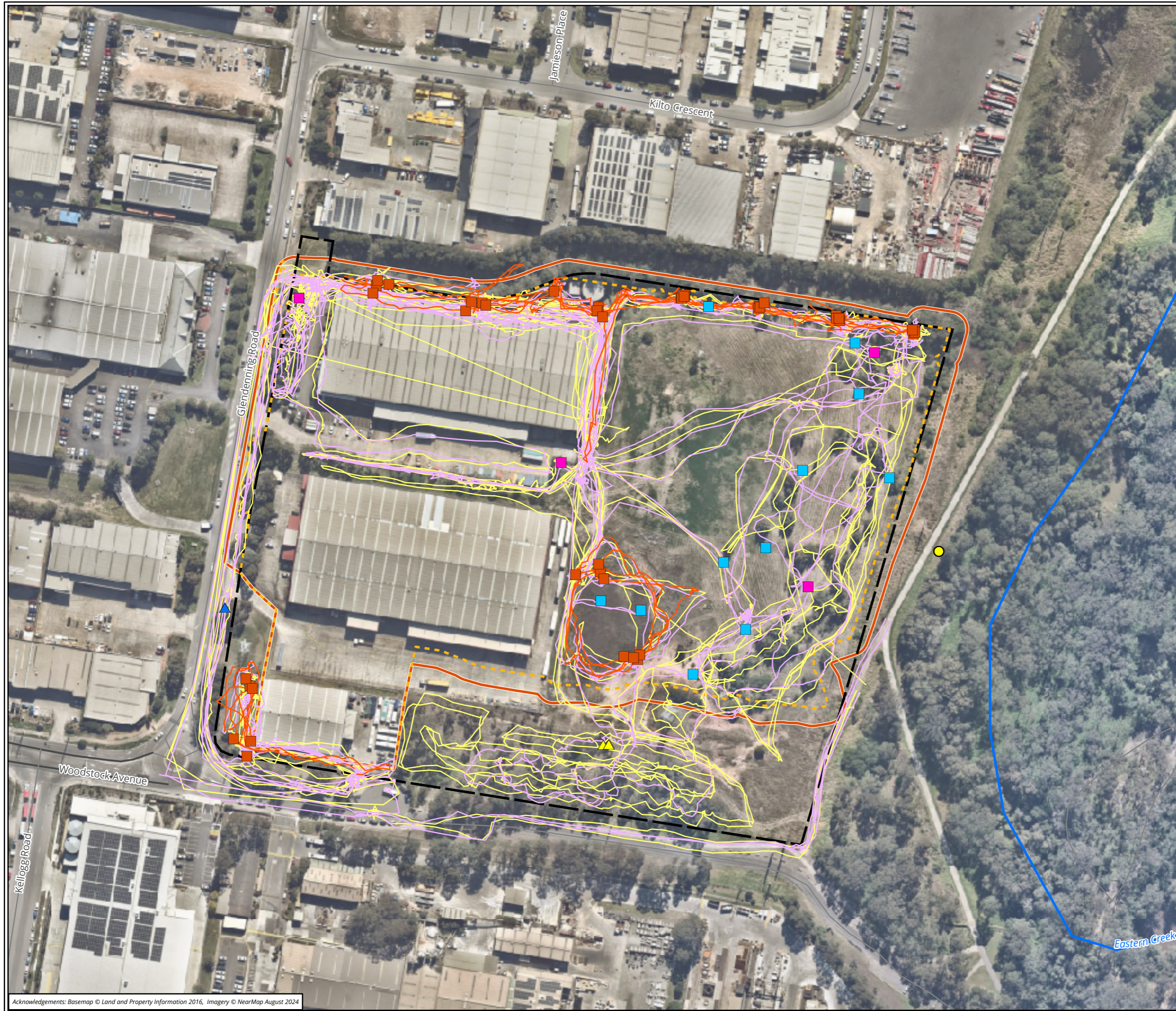
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Figure 11.1 Targeted species - Flora



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 Coordinate System:
 GDA2020 MGA Zone 56

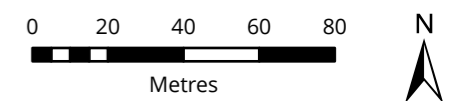


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- Legend**
- Subject land
 - Development site
 - Development footprint
 - Microbat harp trap
 - Koala SAT survey
 - Green and Golden Bell Frog call playback
- Survey tracks**
- Green and Golden Bell Frog transect
 - Cumberland Plains Land Snail spotlighting
 - Koala spotlighting
- Threatened fauna records - BioNet**
- Cumberland Plain Land Snail - *Meridolum corneovirens*
- Threatened fauna records - Biosis**
- Cumberland Plain Land Snail - *Meridolum corneovirens*
 - Grey-headed Flying-fox - *Pteropus poliocephalus*

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Figure 11.2 Targeted species
- Fauna



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biosis
 APEM Group

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4.2.2 Appropriate local data

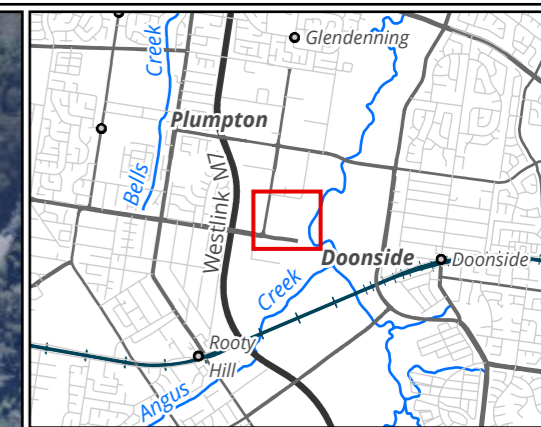
No appropriate local data has been used for threatened species assessment, and standard benchmarks apply.

4.2.3 Threatened species summary and polygons

Table 24 provides details of threatened species impacted by the project and outlines the attributes that comprise the threatened species polygons. The presence of threatened species impacted by the project is illustrated in Figure 12.

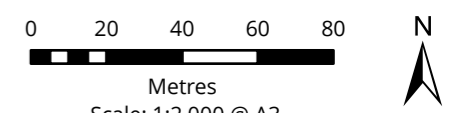
Table 24 Threatened species polygons within the development footprint

Threatened species	Impact (ha)	Unit of measure	Biodiversity risk weighting	Polygon attributes
Flora				
Downy Wattle	0.54	Area	2.0	The species polygon was calculated by area of habitat. Given the species was recorded in an isolated location, all 'dispersal' habitat was included in the species polygon. This includes PCT 4023 within the development footprint.
Fauna				
Swift Parrot	0.04	Area	3.00	All areas mapped as containing 'important habitat' for the species.



- Legend**
- Subject land
 - Development site
 - Development footprint
- Threatened species polygons**
- Swift Parrot
 - Acacia pubescens*

Figure 12 Threatened species polygons



Metres
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 Coordinate System:
 GDA2020 MGA Zone 56



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 Layout: 40798_F12_ThrSpecPoly

Stage 2 — Impact Assessment (Biodiversity Values)

5 Avoid and minimise impacts

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

- Modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology.
- Routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route.
- Alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location.
- Alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site.
- Efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design.
- Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal.

5.1 Actions to avoid/minimise project impacts

The project occurs within a highly disturbed footprint, which has been subject to substantial degradation and clearing since the early 2000s. The development site is significantly degraded and largely consists of exotic grassland and planted urban gardens, with patches of regenerating vegetation within the eastern portion of the site. Two of the proposed new data centres will be built in place of existing warehouses and concrete hardstand within the western portion of the development site, with the third data centre (DC01) proposed to be built within the eastern portion. Efforts have been made throughout the design process to limit the development footprint to areas of non-native vegetation and areas of low-quality vegetation or habitat, whilst retaining the areas of highest value within the development site.

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

- Locating the proposed development within an area that lacks significant biodiversity values.
- Where native vegetation and threatened species habitat is impacted, it is within areas that have low vegetation integrity scores (<40), and primarily disturbs areas of exotic grassland and exotic vegetation.
- Avoids areas that are mapped on the important habitat map.
- Does not include any identified breeding habitat for candidate threatened species (such as nest trees or caves).

From the beginning of the site attainment and design process, the proponent has exercised their due diligence by selecting a site based on its existing degraded state following the completion

of a biodiversity due diligence assessment and in consideration of its prior use for industrial purposes, to ensure that the proposed development aligns with the existing land use of the local setting, and avoids encroachment on previously unimpacted, high-quality natural habitats.

The main impacts to native vegetation associated with the project are associated with scattered patches of regenerating native vegetation (PCT 4023) throughout the development footprint. While these patches do align with a TEC, these fragmented patches of vegetation are highly degraded and are largely present within an area of open exotic grassland. The project has been designed to avoid direct impacts in the southern portion of the site where significant biodiversity values have been identified, as shown on Figure 14. This has involved significant design considerations, effectively reducing the available land within the project area for development and the capacity of the project. By siting the data centre as proposed, approximately 2.2 hectares within the southern portion of the development site is located outside of the development footprint, representing 21% of the total development site area. As a result, 0.69 hectares of low and moderate condition EPBC-listed Cumberland Plain Woodland CEEC, representing approximately 37% of the total native vegetation within the development site. A total of 0.04 hectares of Swift Parrot Important Habitat within the development site is also proposed to be cleared as a result of the project, representing 9% of the total 0.52 hectares of Important Habitat located within the development site. The majority of this habitat exists within the southern portion of the development site. This habitat will be retained and remains contiguous with further mapped important habitat for the species, located immediately south of the development site. This contiguous patch of vegetation to be retained within and adjacent to the development site comprises a total of 0.64 hectares of Swift Parrot important Habitat.

A retaining wall exists within the southwest of the development site and is incorporated into the project's detailed design. This retaining wall, and the elevation of the EPBC-listed patch on a hill, provides the patch with geographical isolation from the development footprint, resulting in an unlikely occurrence of indirect impacts to this high-value vegetation. By incorporating this retaining wall into the design, it enables the construction of perimeter security fencing within the southern portion of the development site in a way that avoids impact to the site's highest-value vegetation, and limits vegetation impacts within the subject land to that of only planted and low condition vegetation zones. Security fencing positioning throughout the remainder of the site has also been reviewed to avoid impacts to existing native vegetation along the northern, eastern and western boundaries, while in consideration of project objectives and site constraints including electrical easements, infrastructure standards including security requirements, the location of services, and standoff requirements.

In addition to avoiding areas of remnant vegetation in the southern portion of the development site, further effort has been made to avoid impacts to native vegetation across the subject land, including areas of low condition, planted or regenerating vegetation. Drainage infrastructure, located within the north-eastern corner of the subject land has been subject to significant review and refinement to avoid and minimise impacts to identified Swift Parrot Important Habitat. This has included optimising the position of culverts and the wastewater discharge point, to reduce the required vegetation disturbance associated with construction and allow for the maximum retention of canopy trees, which comprise PCT 4023. This has enabled the maximum possible avoidance of native vegetation in the area in respect of the topology of the site and required storm water discharge location. In respect to redesign of these aspects of the project, consideration was given to the species of trees being removed from the mapped Swift Parrot habitat. According to the project's arboricultural report (Capability Green Co. 2024), the canopy and mid-storey tree and shrub species identified within the Swift Parrot Important Habitat mapped area include Cabbage Gum, Swamp Oak and Black Wattle. These are not identified as Swift Parrot preferred foraging species with NSW according to the '*National Recovery Plan for the Swift Parrot (Lathamus discolor)*' (DCCEEW 2024), of which includes Mugga Ironbark *E. sideroxylon*, Grey Box *E. microcarpa*, White Box *E. albens*, Yellow Box *E. melliodora*, Swamp

Mahogany *E. robusta*, Forest Red Gum *E. tereticornis*, Blackbutt *E. pilularis*, and Spotted Gum *Corymbia maculata*.

During the detailed design stage of the project, further consideration was also given to the location and extent of roadways and water tanks within the subject land, as well as the extent of required cut and fill works, in regard to impacts to native vegetation and habitat. The roadways traversing the north and east of DC01 have been reduced in width from preliminary designs, to minimise encroachment into native vegetation along the northern boundary of the development site. Water tanks and underground tanks have also been located to avoid interaction with native vegetation as far as practicable. In making these design amendments, the extent of cut and fill works required for the project has been reduced, ultimately reducing the level of disturbance to native vegetation within the subject land.

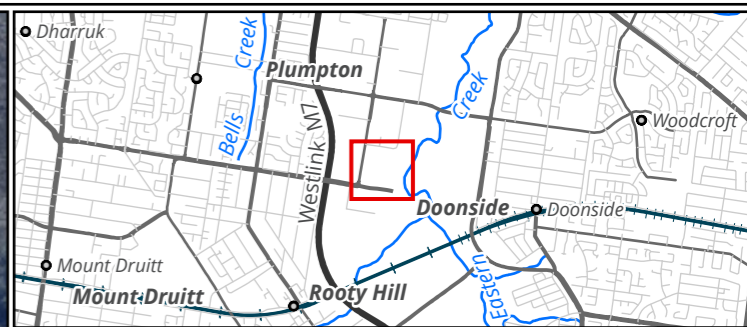
Approximately 0.25 hectares of land within the south-western corner of site will also be revegetated following demolition of existing infrastructure, to allow for a 1:1 ratio replacement of all trees proposed to be removed from the subject land. The land is proposed to be landscaped utilising locally native species characteristic of PCTs identified within the subject land, including PCT 3320 and PCT 4023. These species are also characteristic of the Cumberland Plain Woodland CEEC located adjacent to the proposed revegetation area, allowing for a net increase in patch size of the EPBC-listed CEEC (Figure 14). Proposed revegetation is to occur in alignment with the project's Landscaping plan (Geospace 2024), which also includes the replanting of four threatened flora species, local to the Cumberland Plain:

- Juniper-leaved Grevillea *Grevillea juniperina* subsp. *Juniperina* (Vulnerable, BC Act).
- *Pimelea curviflora* var. *curviflora* (Vulnerable, EPBC Act and BC Act).
- *Pultenaea parviflora* (Endangered, BC Act and Vulnerable, EPBC Act).
- Matted Bush-pea *Pultenaea pedunculata* (Endangered, BC Act).

Of these species, Juniper-leaved Grevillea, *Pultenaea parviflora* and Matted Bush-pea are also considered candidate species for the current assessment.

Recommendations are provided in Section 5 of this BDAR which include measures to mitigate residual impacts after all measures to avoid and minimise impacts have been considered.

The final proposal footprint (including construction and operation) as well as demonstrated prescribed impacts and indirect impact zones where applicable is shown in Figure 15 and Figure 16.



- Legend**
- Subject land
 - Development site
 - Development footprint
- Threatened flora records - Biosis**
- Downy Wattle - *Acacia pubescens*
- Threatened fauna records - Biosis**
- Land Snail - *Meridolum corneovirens*
 - Grey-headed Flying-fox - *Pteropus poliocephalus*
- Threatened fauna records - BioNet**
- Land Snail - *Meridolum corneovirens*
- Hollow-bearing Trees**
- Hollow-bearing Tree
 - Stag Tree
- Threatened Ecological Communities**
- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CEEC, EPBC Act)
- Threatened species polygons**
- Acacia pubescens*
 - Swift Parrot
- Vegetation zones - Biosis**
- 3320_Low
 - 3320_Moderate
 - 3320_Planted
 - 3975_Low
 - 4023_Low
 - Planted natives
 - Exotic vegetation
- Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)**
- Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)**

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Figure 13 Final development footprint

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

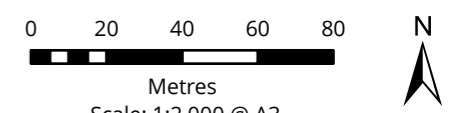
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 Layout: 40798_F13_FinalDevFootprint

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- Legend**
- Subject land
 - Development site
 - Development footprint
 - Area of avoidance
- Vegetation zones - Biosis**
- 3320_Low
 - 3320_Moderate
 - 3320_Planted
 - 3975_Low
 - 4023_Low
 - Planted natives
 - Exotic vegetation
- Threatened Ecological Communities**
- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CEEC, EPBC Act)
 - Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)
 - Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)
- Threatened species polygons**
- Acacia pubescens*
 - Swift Parrot
- Hollow-bearing Trees**
- Hollow-bearing Tree
 - Stag Tree
- Threatened fauna records - Biosis**
- ▲ Cumberland Plain Land Snail - *Meridolum corneovirens*
 - ▲ Grey-headed Flying-fox - *Pteropus poliocephalus*
- Threatened fauna records - BioNet**
- Cumberland Plain Land Snail - *Meridolum corneovirens*
- Threatened flora sightings - Biosis**
- Downy Wattle - *Acacia pubescens*

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Figure 14 Alternate options and avoidance



Scale: 1:2,000 @ A3
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 Layout: 40798_F14_Avoidance

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap August 2024

6 Impacts that are unable to be avoided

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

6.1 Direct impacts

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

Direct impacts arising from the project include:

- Removal of 0.06 ha of *Cumberland Plain Woodland in the Sydney Basin Bioregion* (CEEC, BC Act).
- Removal of 0.54 ha of *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (EEC, BC Act).
- Removal of 1.02 ha of native vegetation comprising:
 - 0.06 ha of Planted condition PCT 3320.
 - 0.19 ha of Low condition PCT 3975.
 - 0.54 ha of Low condition PCT 4023.
 - 0.22 ha of Planted Natives which could not be assigned a PCT.
- Removal of 3.41 ha of exotic vegetation.
- Removal of 0.04 ha of Swift Parrot foraging habitat (Important Area), associated with Low condition PCT 4023.
- Removal of eight Downy Wattle individuals, and 0.54 ha of potential Downy Wattle dispersal habitat associated with Low condition PCT 4023.
- Removal of potential foraging and breeding habitat for threatened flora and fauna species.

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

A summary of PCTs and zones directly impacted is demonstrated in Table 25. A summary of direct impacts to species credit species, the majority of which have been assumed present pending further targeted surveys in early 2025, is demonstrated in Table 26.

Table 25 Summary of direct impacts to vegetation

Zone	PCT	TEC	Area within subject land (ha)	Area impacted (ha) directly in development footprint	VI Score
3320_Planted	PCT 3320 Cumberland Shale Plains Woodland	Yes	0.07	0.06	31.3

Zone	PCT	TEC	Area within subject land (ha)	Area impacted (ha) directly in development footprint	VI Score
3975_Low	PCT 3975 <i>Southern Lower Floodplain Freshwater Wetland</i>	No	0.19	0.19	60.9
4023_Low	PCT 4023 Coastal Valleys Swamp Oak Riparian Forest	Yes	0.93	0.54	40.7
Planted natives	-	No	0.26	0.22	-
Exotic vegetation	-	No	3.81	3.41	-

Table 26 Summary of direct impacts to species credit habitat or individuals

Species	Sensitivity	Area (ha)
Flora		
Downy Wattle	High Sensitivity to Gain	0.54
Fauna		
Swift Parrot	Moderate Sensitivity to Gain	0.04

6.1.1 Loss of hollow bearing trees

No hollow bearing trees were identified within the development footprint.

6.2 Indirect impacts

Potential indirect impacts arising from the project are outlined and addressed in Table 27 and shown on Figure 15.

Table 27 Assessment of indirect impacts

Indirect impact	Impacted entities (PCT/threatened entity and their habitats)	Extent	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase	Likelihood and consequences
Inadvertent impacts on adjacent habitat or vegetation	PCT 3320 and PCT 4023	Up to 0.43 ha of indirect impacts to native vegetation, including: <ul style="list-style-type: none"> Up to 0.001 ha of planted condition PCT 3320. Up to 0.01 ha of low condition PCT 3320. Up to 0.38 ha of low condition PCT 4023. 	Ongoing	Medium-term	Construction / Operation	Impacts to adjacent vegetation during construction and operational phase can be prevented or minimised through appropriate exclusion fencing, implementation of a Construction Environmental Management Plan (CEMP) detailing best practice environmental protection measures, and stormwater controls, and by ensuring any lighting is directed towards the developed area, rather than towards the adjacent retained habitats.
Reduced viability of adjacent habitat due to edge effects	PCT 3320 and PCT 4023	Up to 0.43 ha of indirect impacts to native vegetation, including: <ul style="list-style-type: none"> Up to 0.001 ha of planted condition PCT 3320. Up to 0.01 ha of low condition PCT 3320. Up to 0.38 ha of low condition PCT 4023. 	Ongoing	Medium-term	Construction / Operation	Adjacent habitats are currently subject to a high degree of edge effects due to prior clearing and surrounding existing residential and industrial land use. Since vegetation within the subject land is highly fragmented, and little (1.02 ha) vegetation is to be removed from the subject land, an increase to edge effects is not expected to occur to the remnant vegetation surrounding the subject land as a result of the proposed development. This is primarily due to the already fragmented state of these small vegetation patches. The removal of vegetation from the development footprint will result in minimal new interfaces for the remaining vegetation patches from which edge effects may occur.
Reduced viability of adjacent habitat due to	PCT 3320 and PCT 4023	Up to 0.43 ha of indirect impacts to native vegetation, including:	Ongoing	Medium-term	Construction / Operation	It is predicted that the adjacent habitat will be impacted in a small way by noise, dust and light spill, during construction and operation of the future development of the subject land. However,

Indirect impact	Impacted entities (PCT/threatened entity and their habitats)	Extent	Frequency	Duration (long-term/short-term/medium-term)	Project phase	Likelihood and consequences
noise, dust or light spill		<ul style="list-style-type: none"> Up to 0.001 ha of planted condition PCT 3320. Up to 0.01 ha of low condition PCT 3320. Up to 0.38 ha of low condition PCT 4023. 				this will be managed via best practices outlined in a CEMP. The subject land also already occurs as an industrial area, and light and noise pollution are most likely moderate. This will likely not substantially increase due to the proposed future development.
Transport of weeds and pathogens from the site to adjacent vegetation	PCT 3320 and PCT 4023	Up to 0.43 ha of indirect impacts to native vegetation, including: <ul style="list-style-type: none"> Up to 0.001 ha of planted condition PCT 3320. Up to 0.01 ha of low condition PCT 3320. Up to 0.38 ha of low condition PCT 4023. 	Ongoing	Medium-term	Construction / Operation	Weeds occurring within the subject land are common with those occurring within adjacent vegetation to be retained. Increased transport of pathogens and weeds is unlikely to occur but will be managed by biosecurity measures outlined in the CEMP.
Increased risk of starvation, exposure and loss of shade or shelter	PCT 3320 and PCT 4023	Up to 0.43 ha of indirect impacts to native vegetation, including: <ul style="list-style-type: none"> Up to 0.001 ha of planted condition PCT 3320. Up to 0.01 ha of low condition PCT 3320. Up to 0.38 ha of low condition PCT 4023. 	Ongoing	Medium-term	Construction / Operation	The habitat present in the subject land is considered marginal for most fauna species given the disturbed condition. The proposed future development will not result in an increased risk of starvation, exposure and loss of shade or shelter to native species due to the small total area of vegetation being removed, and the sub-optimal proportion of the habitats available within the subject land, compared to the broader locality.

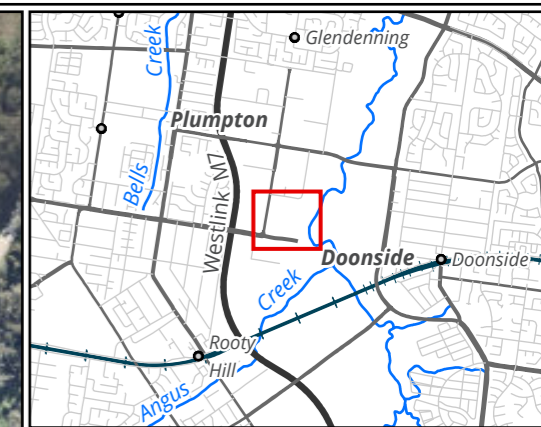
Indirect impact	Impacted entities (PCT/threatened entity and their habitats)	Extent	Frequency	Duration (long-term/short-term/medium-term)	Project phase	Likelihood and consequences
Loss of breeding habitats	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	No specialist breeding habitat will be indirectly impacted by the proposed future development. Retained vegetation in adjacent lots provides higher quality habitat and will not be reduced by the proposed works. Direct impacts to frog breeding habitat has been assessed in Section 6.1.
Trampling of threatened flora species	Downy Wattle	8 individuals	Infrequent - During construction	Short-term	Construction	One threatened flora species (Downy Wattle) was recorded within the subject land and will be directly impacted by the proposed works. Impacts to the species have been considered in this report. Pre-work toolbox talks which educate staff on the ID characteristics of Downy Wattle can also be completed so that workers can identify any individuals that may be encountered on the subject land.
Inhibition of nitrogen fixation and increased soil salinity	Not applicable.	Not applicable.	Not applicable.	Not applicable.	Not applicable.	Any future excavations or soil disturbance resulting from the future development of the subject land would be largely restricted to the development footprint of the existing warehouses and concrete hardstand, or areas having undergone significant previous disturbance through historical vegetation clearance. As such, it is not considered likely that the future development of the subject land would result in substantial changes to the level of nitrogen fixation or soil salinity in the locality.
Fertiliser drift	PCT 3320 and PCT 4023	Up to 0.43 ha of indirect impacts to native vegetation, including:	Infrequent – during landscape setup	Short-term	Construction	Widespread fertiliser use is not expected as part of the proposed project except within initiation of proposed newly landscaped areas, and as such, works are not expected to significantly contribute to fertiliser drift into surrounding areas, as

Indirect impact	Impacted entities (PCT/threatened entity and their habitats)	Extent	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase	Likelihood and consequences
		<ul style="list-style-type: none"> Up to 0.001 ha of planted condition PCT 3320. Up to 0.01 ha of low condition PCT 3320. Up to 0.38 ha of low condition PCT 4023. 				<p>landscaped areas are designed to be low maintenance long-term. However, works associated with vegetation management should be undertaken in accordance with the project Landscaping Plan, as well as a site-specific Vegetation Management Plan (VMP) or Operations Environmental Management Plan (OEMP), including the use of fertilisers.</p>
Rubbish dumping	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	<p>The subject land is currently partially cleared and located within an industrial area, adjacent to a publicly accessible Reserve. This presents an opportunity for people to illegally dump rubbish. It is likely that the heightened security of the subject land following development, including double fencing with a secure zone between, as well as increased video surveillance, would lead to a decrease in the potential for illegal dumping. Standard environmental controls for the development would ensure potential impacts are minimised.</p>
Wood collection	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	<p>Future development proposed within the subject land is unlikely to increase access to any retained vegetation, beyond current access capacity. Based on the future industrial use of the subject land, future landholders are not expected to be likely to undertake wood collection within the retained vegetation to a level that it will have a detrimental effect. Unauthorised access and collection of wood is expected to be minimal due to the proposed high security measures employed within the subject land following development.</p>

Indirect impact	Impacted entities (PCT/threatened entity and their habitats)	Extent	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase	Likelihood and consequences
Removal and disturbance of rocks, including bush rock	Not applicable	Not applicable	Not applicable	Not applicable	Construction	Based on the field investigations undertaken for the proposed modification, the subject land does not support natural bush rock, however, large sandstone boulders were observed in a pile adjacent to the northern boundary; likely left on site following bush regeneration of the drainage line adjacent to the site. While these large boulders do not make for highly suitable fauna habitat, they should be managed via best practice mitigation measures outlined in a CEMP, including re-use where possible.
Increase in predators	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	The subject land already occurs within an urbanised setting with pets, such as dogs and cats, being common. The proposed development would not “open up” large areas of habitat that may encourage predatory species to move into the area. There is potential for lighting during construction and operation of the proposed modification to attract predators and/ or prey; however, it is not expected that this would be substantial given the current and proposed land use.
Increase in pest animal populations	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	The proposal occurs in an urbanised area with impacts including introduced domestic pets such as cats <i>Felis catus</i> currently occurring within the locality. Pest animals such as Rats <i>Rattus rattus</i> and European Rabbit <i>Oryctolagus cuniculus</i> are also widely spread within the Blacktown region and are likely to occur across the locality. The proposal will not result in an increase in available habitat for these species and is unlikely to lead to an increase

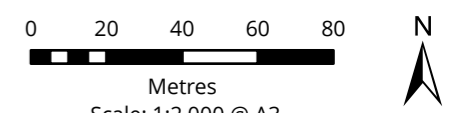
Indirect impact	Impacted entities (PCT/threatened entity and their habitats)	Extent	Frequency	Duration (long-term/short-term/medium-term)	Project phase	Likelihood and consequences
						in pest animal populations. Suitable waste disposal implemented during and post construction will further reduce the resources available for pest species.
Changed fire regimes	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	The proposal occurs in an existing industrial area, with industrial activities already undertaken within the subject land. As such, future land use is unlikely to see an increased risk of fire. The proposal includes the implementation of appropriate asset protection zones, as well as the construction of 15 water tanks, Fire Pump Room, and roadways of a minimum 6 m width to allow for entry of emergency service vehicles into the site, if required. Given the fire mitigation systems proposed, fire regimes are unlikely to be changed as a result of the project.
Disturbance to specialist breeding and foraging habitat, e.g. Beach nesting for shorebirds	Swift Parrot	0.15 ha of Swift Parrot Important Habitat within the subject land to be impacted, with 0.10 hectares of this to be indirectly impacted.	Ongoing	Long-term	Construction/ Potential to be long-term	Mapped Important Areas for Swift Parrot pertains to foraging habitat within the region. No breeding habitat for the species occurs within NSW. The proposal will impact a small amount (0.15 ha) of mapped habitat within the subject land, with only 0.04 ha of this being directly cleared under the proposal. See Section 8.2 and Appendix 6 for further assessment of these impacts in the associated SAIL assessment. No other specialist breeding or foraging habitat is proposed to be impacted by the project.

Indirect impact	Impacted entities (PCT/threatened entity and their habitats)	Extent	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase	Likelihood and consequences
Fragmentation of movement corridors	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	The major movement corridor within the locality occurs to the north, south and east of the subject land, connecting vegetation within the northern portion of the subject land to the vegetation within the Nurragingy Reserve immediately east of the subject land. Movement corridors are somewhat limited in availability across the locality due to substantial development within the locality, which has the potential to disrupt the flow of genetic material. The proposed development would result in the removal of 1.02 ha of low-quality native vegetation; however, much of this vegetation occurs in an already fragmented state. Impacts to native vegetation would not fragment any habitat corridors or create a barrier to dispersal of species across the landscape.



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

Figure 15 Estimated zones of indirect impacts



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



Matter: , Date: 10 February 2025,
 Last edited by: hliswoyo
 Location: P:\40700s\40798\Mapping\40798_Glendenning_Rd_BDAR.aprx
 Layout: 40798_F15_IndirectImpacts

6.3 Prescribed impacts

Identification and assessment of prescribed biodiversity impacts are outlined and addressed in Table 28, and the section below, and shown in Figure 16.

Table 28 Identification of prescribed impacts

Prescribed impact	Description of relevant habitat features associated with prescribed impacts	Threatened species likely to utilise habitat features associated with prescribed impact	Importance of habitat feature to impacted species
<p>Karst, caves, crevices, cliffs, rocks and other geological features of significance</p>	<p>No karst, caves, crevices, or cliffs exist within the subject land. A pile of sandstone boulders exists within close proximity to the northern boundary of the subject land.</p>	<p>Threatened microbat species may utilise karst, caves, cliffs and rocks within the broader landscape, however, no threatened microbats which are reliant on these habitat features were recorded within the subject land during targeted surveys.</p>	<p>These features provide habitat for threatened microbats who utilise caves/karsts/crevices as roosting and breeding habitat. No such habitat was detected within the subject land during this assessment.</p>
<p>Occurrences of human-made structures and non-native vegetation</p>	<p>A total of three separate buildings (enclosed structures with four walls and a roof) are found in the development footprint. These will be demolished to allow for landscaping and the construction of three new data warehouses.</p> <p>Non-native vegetation, comprising mostly exotic grasslands, is the dominant vegetation type within the subject land.</p>	<p>Threatened microbat species may utilise man-made structures, however, no threatened microbats were recorded within the subject land during targeted surveys and active monitoring surveys.</p> <p>Non-native vegetation within the subject land is not considered to support any threatened species.</p>	<p>Human-made structures can provide potential for roosting habitat for threatened microbat species. No such habitat was detected during this assessment.</p>
<p>Corridors or other areas of connectivity linking habitat for threatened entities</p>	<p>The removal of 1.02 ha of native vegetation is expected to have little impact on the connectivity of threatened species habitat. The subject land is highly fragmented and subject to previous disturbance associated with past and current land uses.</p> <p>The subject land is located adjacent to the following vegetated areas:</p> <ul style="list-style-type: none"> • Eastern Creek riparian corridor to the east. • Remnant native vegetation to the east, 	<p>Green and Golden Bell Frog may utilise corridors along riparian areas as foraging and dispersal habitat. Cumberland Plain Land Snail, threatened birds, and Koala may also utilise vegetation, which is present within vegetation corridors. These species have not been detected within the subject land.</p>	<p>The vegetated areas create potential foraging habitat for ecosystem and candidate bird and bat species. However, the project is not likely to result in the isolation or fragmentation in habitat connectivity for any threatened or non-threatened fauna species.</p>

Prescribed impact	Description of relevant habitat features associated with prescribed impacts	Threatened species likely to utilise habitat features associated with prescribed impact	Importance of habitat feature to impacted species
	<p>spanning the majority of the Nurragingy Reserve.</p> <ul style="list-style-type: none"> • Regenerating vegetation corridor along the drainage line directly north of the development site. • Remnant Cumberland Plain Woodland along the southern boundary of the development site, outside of the development footprint. 		
Water bodies or any hydrological processes that sustain threatened entities	<p>A wetland occurs within the subject land, which has developed in a land depression developed as a result of previous bulk earthworks within the subject land to accommodate prior construction activities.</p>	<p>Green and Golden Bell Frog and threatened wetland birds may utilise the wetland as foraging and dispersal habitat. As this wetland is ephemeral in nature, holding water only after substantial rain events and drying up in dry weather, it is unlikely that Green and Golden Bell Frog is utilising the wetland as breeding habitat given their Spring and Summer breeding period. These species have not been detected within the subject land.</p>	<p>This wetland may provide foraging and dispersal habitat for Green and Golden Bell Frog, or wetland birds. It is unlikely that this ephemeral wetland is significant for any population of these which exist within the locality, particularly due to the subject land's proximity to the perennial Eastern Creek, and its vegetated riparian corridor within Nurragingy Reserve directly east of the subject site.</p>
Protected animals that may use the proposed wind farm development site as a flyway or migration route	<p>There are no wind turbines involved in this project.</p>	<p>Not applicable.</p>	<p>Not applicable.</p>
Where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community	<p>A large portion of the proposed internal roadways and carparks within the development footprint occur along existing driveways and carparks. Given the subject land is already largely cleared of vegetation and includes existing driveways and carparks to service the existing warehouses, it is unlikely that many species are utilising the subject land for dispersal.</p>	<p>Threatened amphibian or wetland bird species, microbats, and Koala, may traverse through the subject land on occasion, likely from the adjacent Nurragingy Reserve or Eastern Creek.</p>	<p>Wetland birds are generally alert when in open spaces and highly mobile, capable of moving out of the way of vehicles. Threatened microbats, amphibians, and Koala are at very low risk of vehicle strike at speeds less than 15 km/hr.</p>

Prescribed impact	Description of relevant habitat features associated with prescribed impacts	Threatened species likely to utilise habitat features associated with prescribed impact	Importance of habitat feature to impacted species
	<p>However, it is possible that such species as wetland birds, microbats, Koala or Green and Golden Bell Frog are entering the subject land, most likely from the high-quality habitat to the east of the subject land boundary, within Nurragingy Reserve and the Eastern Creek riparian corridor, and traversing through the site. However, the instance of this is likely to be quite low, and posted speed limits of 15 km/hr across the subject land will ensure risk of vehicle strike is not increased.</p>		

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

Nature

No karst, caves, crevices or cliffs exist within the subject land, and thus these are not proposed to be directly impacted by the proposed works. Indirect impacts to threatened microbats associated with caves and cliffs assumed to exist within the broader landscape are assessed in Section 6.2.

Within the property boundary, a large pile of sandstone blocks exists along the northern boundary of the subject land. These same sandstone blocks have been used to create the retaining walls lining either side of the drainage easement which occurs directly north of the study site. It is likely that the blocks which exist within the subject site were left in the location following completion of the drainage easement construction works. These blocks do not provide suitable refuge for any listed candidate species and are unlikely to provide highly suitable refuge for any fauna species due to their large size and lack of crevices within and between blocks.

Extent

One pile of large sandstone blocks exists within the north-eastern portion of the subject land are proposed for removal.

Duration

Permanent.

Consequences

Detailed in Table 28.

6.3.2 Human-made structures and non-native vegetation

Nature

Removal of structures as part of the proposed development will cause the loss of potential, but suspected currently unoccupied, roosting habitat for microbats. Roosting habitat is of poor quality as the buildings within the subject land lack cracks, crevices, or similar sheltered interior spaces which are accessible from the outside.

Non-native vegetation, largely in the form of exotic grasslands, would be cleared from the subject land. This vegetation is unlikely to provide suitable habitat for native flora and fauna, except for occasional dispersal habitat for wetland bird and frog species.

Extent

Three warehouses and a water tank would be removed from the subject land and replaced with the three new main data centre buildings, as well as 15 new water tanks and several ancillary buildings, such as a proposed security office. This proposed development may produce an increased risk of avian-building collisions within the locality, due to the increased size and height of proposed buildings, as well as increased light pollution causing disorientation. Avian-building collision risk is of particular concern to migratory species, such as Swift Parrot, which are known to occur within the adjacent Nurragingy Reserve.

Up to 3.41 hectares of exotic vegetation will be removed from the subject land, which comprises almost entirely of exotic grasslands.

Duration

Construction and operation.

Consequences

Detailed in Table 28.

6.3.3 Habitat connectivity

Nature

The subject land is connected along the northern and southern lot boundaries to a large patch of native vegetation adjacent to the eastern boundary of the subject land, comprising the Nurragingy Reserve and the riparian corridor associated with Eastern Creek. This large patch of remnant vegetation extends towards north and south. It is expected that these areas to the east of the subject land would be the primary means of movement for local fauna. Given that the subject land exists on the edge of an industrial area which has been largely cleared of native vegetation, the subject land does not exist as a means of habitat connectivity within the landscape.

The patches of remnant vegetation along the northern and southern boundaries of the subject land are proposed to remain largely untouched by the proposed development. Revegetation works through site landscaping will prove to replace any trees removed from the site at a 1:1 ratio, and ultimately increase the size of the patch of remnant vegetation along the southern boundary which maintains connectivity with the large patch of remnant vegetation to the east of the subject land.

Extent

Up to 0.54 hectares of PCT 4023 will be removed from the eastern portion of the subject land. This includes remnant vegetation along the northern boundary associated with the vegetated drainage easement, and sparse patches of PCT 4023 which exist amongst exotic grasslands within the eastern portion of the subject land. Up to 0.19 hectares of PCT 3975 will also be removed from the subject land, which may provide foraging and/or dispersal habitat for frogs or wetland birds. Up to 0.06 hectares of planted PCT 3320 and 0.24 hectares of planted natives will be cleared from landscaped gardens along the western boundary of the development site.

Duration

Construction and operation.

Consequences

Detailed in Table 28.

6.3.4 Water bodies, water quality and hydrological processes

Nature

Wetland birds may use the emergent aquatic vegetation within the on-site wetland for low-quality foraging habitat. However, these features are very nutrient poor and ephemeral in nature, and therefore are unlikely to support quantities of aquatic invertebrates or tadpoles that could provide important food resources for migratory birds. Common frog species also utilise these features and Southern Myotis may utilise them as low-quality foraging habitat, the latter only during when under infrequent inundation. The proposed development will result in the removal of these features.

Extent

Approximately 0.19 hectares of ephemeral wetland associated with PCT 3975 would be cleared as a result of the proposal.

The drainage line which exists immediately north of the development site is not proposed to be directly impacted by the project. Indirect impacts to this waterway will be mitigated through measures detailed within the project's CEMP.

Duration

Permanent.

Consequences

Detailed in Table 28.

6.3.5 Vehicle strikes

Nature

The greatest vehicle risks are expected to be associated with personnel driving around the subject site. There will be an increase in daily movements associated with construction personnel attending site, with the number of construction personnel expected to peak at 450 persons at any one time. Once operational, an average of 106 staff and 15 visitors are expected to be within the site during business hours.

However, given that the site is already used for industrial purposes and includes existing warehouses, it is likely that traffic levels are already significant in the area due to regular deliveries and movement of vehicles in and out of the bus depot located within the south-western corner of the development site, and the two larger warehouses located across the western portion of the development site. As the proposed project is aligned with the site's current industrial land use, the development is not expected to result in a dramatic increase in vehicle movement or speed.

The proposed development's Traffic Management Plan (TMP) will assist with reducing the risk of vehicle collision with native fauna. The TMP will also detail any restrictions necessary to keep construction traffic confined to defined roads and tracks where necessary. The internal road posted speed limit of 15 km/hr at all times, will significantly reduce the risk of vehicle strike within the subject site during construction and site operation.

Extent

There will be an increase in daily movements associated with construction personnel attending site, with the number of construction personnel expected to peak at 450 persons at any one time. However, this is unlikely to be a significant increase in traffic given the site's current land use.

Duration

Construction and operation.

Consequences

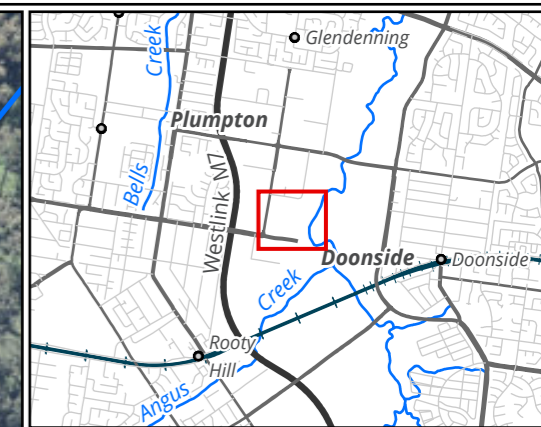
Threatened fauna included in the current assessment that may be at risk of vehicle strike include wetland birds, frogs and microbats that are assumed to occur within the subject land. Consequences to these species are expected to be very low, due to their highly mobile nature, and the proposed site speed limit of 15 km/h. The very low level of collisions to these species does not represent a significant level of impact to these species.

6.4 Impacts considered uncertain

There are no impacts considered uncertain for the current assessment.

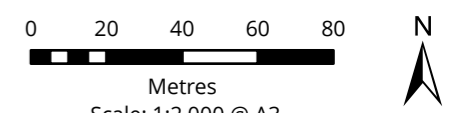
6.5 Impacts to Groundwater Dependent Ecosystems (GDE)

Assessment of the potential for the subject land to support groundwater dependant ecosystems (GDEs) was undertaken using the Australian Government's Bureau of Meteorology Groundwater Dependant Ecosystems Atlas (BOM 2019). The subject land is not mapped as supporting GDEs associated with an aquifer in Appendix 8 of the Risk Assessment Guidelines for Groundwater Dependent Ecosystems (DPI 2012). The subject land is not mapped as having Groundwater Vulnerability under the Blacktown LEP (2015).



- Legend**
- Subject land
 - Development site
 - Development footprint
 - Water tank and Warehouse x 3
 - Wetland
 - ➔ Habitat connectivity

Figure 16 Prescribed impacts



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



Matter: , Date: 10 February 2025,
 Last edited by: hliswoyo
 Location: P:\40700s\40798\Mapping\40798_Glendenning_Rd_BDAR.aprx
 Layout: 40798_F16_PrescribedImpact

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap August 2024

7 Mitigation and management of impacts

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

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

Identification of measures for mitigating impacts related to:

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

Table 29 provides a summary of the mitigation measures that should be employed for managing project impacts to biodiversity.

7.1 Adaptive management strategy

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

Table 29 Measures to mitigate and manage impacts

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
<p>Displacement of resident fauna</p>	<p>It is unlikely that any fauna species are residing within the development site, with native vegetation likely only be used as foraging habitat. The removal of vegetation/habitat will be managed under a CEMP which will mitigate risk of impact to environmental controls during project construction.</p>	<p>No direct impact to resident fauna during vegetation removal.</p>	<p>Prior to habitat removal</p>	<p>Construction contractor</p>
	<p>Landscape plantings will consist of native species consistent with the surrounding vegetation, as per the adopted planting strategy (Geospace 2024). Canopy trees cleared from the subject land will be replaced at 1:1 ratio with new plantings within the south-western boundary of the subject site. Four threatened flora species, native to the Cumberland Plain, will be planted as per the project’s adopted planting strategy.</p>	<p>Allow for the replacement of foraging habitat for species that may use the subject land for foraging, such as threatened microbats.</p>	<p>Planning stages</p>	<p>Proponent</p>
	<p>Any human-made structures to be removed should be inspected prior to removal, by a qualified ecologist, to confirm absence of resident fauna (e.g., roosting microbats). If bats are detected, demolition of structures must be postponed until bats are relocated (preferably through use of passive roost exclusions).</p>	<p>No direct impact to resident fauna during removal of human-made structures.</p>	<p>Prior to removal of human-made structures.</p>	<p>Qualified ecologist and construction contractor.</p>
	<p>Pre-clearance surveys for Cumberland Plain Land Snail should be undertaken in areas of native vegetation, prior to clearance. If snails are detected, these should be relocated under a Cumberland Plain Land Snail Translocation Plan.</p>	<p>No direct impact to resident fauna during vegetation removal.</p>	<p>Prior to habitat removal</p>	<p>Construction contractor</p>
<p>Protection of biodiversity during construction</p>	<p>A CEMP should be implemented that would include the following sub-plans or protocols:</p> <ul style="list-style-type: none"> • Vegetation management plan (VMP) that includes retention of native vegetation within landscaping. • Vegetation clearance protocol. 	<p>Mitigate risk of impact to environmental controls during project construction.</p>	<p>Ongoing/throughout earthworks.</p>	<p>Construction contractor.</p>

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	<ul style="list-style-type: none"> Fauna injury protocol. Weed Management Plan. 			
	<p>Identification sheets should be provided to all construction workers on site for Green and Golden Bell Frog. Frog-proof fencing should be installed prior to the commencement of works.</p>	<p>No direct impact to resident frogs during removal of on-site wetland.</p>	<p>Ongoing/throughout earthworks.</p>	<p>Qualified ecologist and construction contractor.</p>
<p>Indirect impacts on native vegetation and habitat</p>	<p>Appropriate stormwater and erosion controls will be implemented on site to avoid impacts to nearby waterways.</p>	<p>No further degradation to retained vegetation and habitats.</p>	<p>Ongoing/throughout earthworks</p>	<p>Construction contractor</p>
	<p>Where appropriate, native vegetation cleared from the subject land should be mulched for re-use on the site, to stabilise bare ground.</p>	<p>No further degradation to retained vegetation and habitats.</p>	<p>Ongoing/ throughout construction</p>	<p>Construction contractor</p>
	<p>Works areas should be wet down to reduce dust generation during construction.</p>	<p>No further degradation to retained vegetation and habitats.</p>	<p>Ongoing/throughout construction</p>	<p>Construction contractor</p>
	<p>Installation of appropriate exclusion fencing around trees and vegetation to be retained to clearly delineate the clearing limits in the subject land:</p> <ul style="list-style-type: none"> The radius of the tree protection zone (TPZ) is calculated for each tree by multiplying its diameter at breast height by 12, in accordance with the Standards Australia Committee (2009). A TPZ should not be less than 2 m, or greater than 15 m, except where crown protection is required (Council of Australian Standards 2009) This would include appropriate signage such as 'No Go Zone' or 'Environmental Protection Area'. Identify the location of any 'No Go Zones' in site inductions and a CEMP. Where the use of exclusion fencing is not appropriate, other methods of tree protection must be employed in accordance with <i>AS4970-2009 Protection of Trees on</i> 	<p>No further degradation to retained vegetation and habitats.</p>	<p>Before and throughout construction.</p>	<p>Construction contractor.</p>

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	<i>Development Sites</i> (Council of Australian Standards 2009) and the project's Arboricultural Impact Assessment (Capability Green Co. 2024).			
	All material stockpiles, vehicle parking and machinery storage will be located within cleared areas or areas proposed for clearing, and not in areas of native vegetation that are to be retained.	No further degradation to retained vegetation and habitats.	Ongoing/Throughout construction.	Construction contractor.
	Implement hygiene measures to prevent the spread of weeds and pathogens into the site, or from the site into the surrounding locality.	No further spread of weeds or pathogens as a result of construction works.	Ongoing/Throughout construction.	Construction contractor.
	Reduction of impacts resulting from external lighting is recommended, and can be adapted from Part 4 (good lighting design principles) of the <i>Dark Sky Planning Guideline</i> (DPE 2016), including: <ul style="list-style-type: none"> • Installing light fitting shields with an opaque cover, mounted horizontally across the top of the lighting module. These shielding attachments allow only the downward projection of light. • Direct lights downwards and avoid shining directly onto the public amenities, which have the potential to reflect light skywards. • Utilise low beam angles that are close to vertical where possible to minimise light glare. 	No indirect impact to fauna in retained vegetation and habitats.	Ongoing.	Construction contractor.
Mitigating prescribed biodiversity impacts	Construction works should be restricted to daylight hours.	Reduce impacts to nocturnal species.	Ongoing/throughout construction	Construction contractor
	Implementation and signage of reduced speed limits on access roads associated with the project.	Mitigate risk to common disturbance-tolerant mobile fauna species.	Ongoing/throughout construction	Construction contractor
	Implementation of temporary stormwater controls during construction to ensure that discharges to the drainage channels are consistent with existing conditions.	Mitigate risk of impact to waterways during project construction.	Prior to construction works commencing	Construction contractor

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	Sediment and erosion control measures should be implemented (e.g., silt fences, sediment traps). These should conform to relevant guidelines, should be maintained throughout the construction period and should be carefully removed following the completion of works.	Mitigate risk of impact to waterways during project construction.	Prior to construction works commencing	Construction contractor
	'Frog-friendly' and 'wetland friendly' herbicides such as Roundup Bioactive or Weedmaster DUO would be used for the control of noxious weeds.	Mitigate risk of impact to waterways and resident fauna during project construction.	Ongoing/throughout earthworks	Construction contractor
<i>Adaptive management strategies proposed to monitor and respond to impacts on biodiversity values that are uncertain</i>	Implementation of an appropriate CEMP during works.	Mitigate risk of impact to environmental controls during project construction.	Ongoing/throughout earthworks	Construction contractor

8 Impact summary

8.1 TECs and threatened species

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

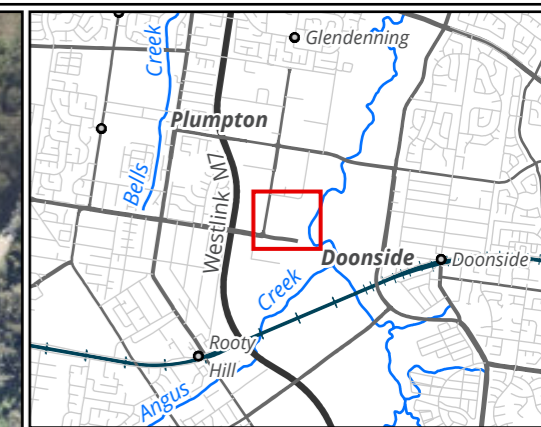
- Addressing all criteria for each TEC listed as at risk of an SAI present on the subject land.
- Addressing all criteria for each threatened species at risk of an SAI present on the subject land.
- Documenting assumptions made and/or limitations to information.
- Documenting all sources of data, information, references used or consulted.
- Clearly justifying why any criteria could not be addressed.
- Identification of impacts requiring offset.
- Identification of impacts not requiring offset.
- Identification of areas not requiring offset.

8.2 Serious and irreversible impacts

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

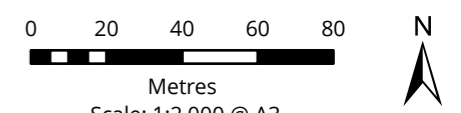
- (a) Principle 1: It will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline.*
- (b) Principle 2: It will further reduce the population size of the species or ecological community that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

Cumberland Plain Woodland CEEC proposed to be impacted by the project, is considered a SAI entity under Principles 1 and 4. Swift Parrot is also considered an SAI entity under principle 1, and is proposed to be impacted by the project through the clearance of mapped Important Habitat for the species. As these two entities are considered to be at risk of a potential SAI, detailed SAI assessments for the entities are provided in Appendix 6. Figure 17 shows the location and extent of TECs and threatened species at risk of an SAI within the subject land.



- Legend**
- Subject land
 - Development site
 - Development footprint
- SAIL Entities**
- Swift Parrot
 - Cumberland Plain Woodland TEC

Figure 17 Serious and irreversible impacts (SAIL)



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



Matter: , Date: 10 February 2025,
 Last edited by: hliswoyo
 Location: P:\40700s\40798\Mapping\40798_Glendenning_Rd_BDAR.aprx
 Layout: 40798_F17_SAIL

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap August 2024

8.3 Identification of impacts requiring offset

8.3.1 Impacts to native vegetation (ecosystem credits)

As outlined in Section 9.2.1 of the BAM, the assessor must determine an offset for all impacts of proposals on PCTs that are associated with a vegetation zone that has a vegetation integrity score of:

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

On this basis, offsets are required for vegetation zones 3320_Planted, 3975_Low, and 4023_Low, as all three have a vegetation integrity score greater than 20.

The offset requirement for the proposal was calculated using the BAM Calculator. Table 30 provides a summary of the ecosystem credit offsets required for impacts from proposed development at the subject land. Figure 18 shows the location of impacts requiring offset, impacts not requiring offset and areas not requiring assessment.

Table 30 Offsets required (ecosystem credits)

Vegetation zone	Area (ha)	Impact	VI score	Offset required	TEC	HBTs	Credit requirement
3320_Planted	0.06	Clearance	31.3	Yes	Yes	No	1
3975_Low	0.19	Clearance	60.9	Yes	No	No	7
4023_Low	0.54	Clearance	40.7	Yes	Yes	No	11

8.3.2 Impacts to threatened species and their habitat

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

The offset requirement for the current proposal was calculated using the BAM Calculator. Table 31 provides a summary of the species credit offsets required for impacts from proposed development at the subject land, and the full biodiversity offset credit report is attached in Section 10 of this BDAR.

Table 31 Offsets required (species credits)

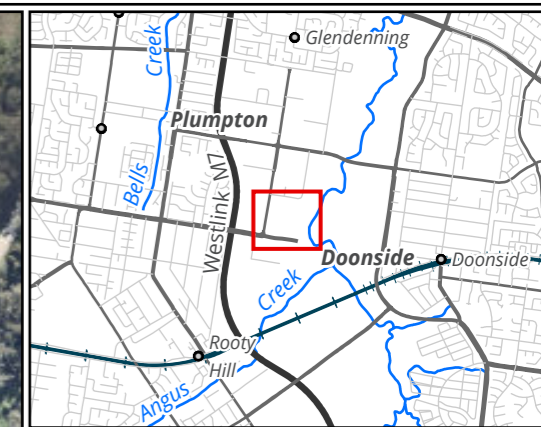
Vegetation zone	Species	Habitat condition (vegetation integrity score) loss	Area (ha)	Biodiversity risk weighting	Credit requirement
4023_Low	Downy Wattle	40.7	0.54	2.0	11
4023_Low	Swift Parrot	40.7	0.04	3.0	1

Species polygons for the above two species credit species impacted by the project are illustrated in Figure 18 below.

8.4 Identification of impacts not requiring offset

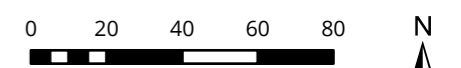
Following assessment, the following impacts do not require offsetting in accordance with BAM:

- Removal of 3.41 ha of exotic vegetation.
- Removal of 0.22 ha of planted natives, not associated with a PCT.



- Legend**
- Subject land
 - Development site
 - Development footprint
- Offsets**
- Impacts requiring offset
 - Impacts not requiring offset
- Threatened Ecological Communities**
- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest (CEEC, EPBC Act)
 - Cumberland Plain Woodlands in the Sydney Basin Bioregion (CEEC, BC Act)
 - Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (EEC, BC Act)
- Vegetation zones - Biosis**
- 3320_Low
 - 3320_Moderate
 - 3320_Planted
 - 3975_Low
 - 4023_Low
 - Planted natives
 - Exotic vegetation

Figure 18 Impacts requiring offsets, not requiring offset



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



Matter: 40798, Date: 10 February 2025,
 Prepared for TL, Prepared by HL, Last edited by: hiswoyo
 Location: P:\40700s\40798\Mapping\40798_Glendenning_Rd_BDAR.aprx
 Layout: 40798_F18_Offsets

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap August 2024

9 Assessment against biodiversity legislation

9.1 Environment Protection and Biodiversity Conservation Act 1999

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

An assessment of the impacts of the proposed development on MNES, against heads of consideration outlined in Commonwealth of Australia (2013) was prepared to determine whether referral of the proposed development to the Commonwealth Minister for the Environment is required. MNES relevant to the proposed development are summarised in Table 32.

Table 32 Assessment of the proposed development against the EPBC Act

Matter of NES	Project specifics	Potential for significant impact
Threatened species	<p>One threatened flora and one threatened fauna species listed under the EPBC Act were recorded or assumed to be present within the subject land. Significant Impact Criteria (SIC) assessments have been prepared for two threatened species:</p> <ul style="list-style-type: none"> Downy Wattle, recorded within the subject land. Swift Parrot, assumed present within the subject land based on important habitat mapping. 	<p>Significant Impact Criteria (SIC) assessments have been prepared for these two species in Appendix 7. These SICs found no significant impact likely to occur to these species.</p>
Threatened ecological communities	<p>No TECs listed under the EPBC Act are proposed to be impacted by the current proposal.</p>	<p>A significant impact is unlikely to result from the project.</p>
Migratory species	<p>Migratory species are considered unlikely to occur within the subject land given its location within an industrial setting and lack of suitable habitat features.</p> <p>Migratory species may occasionally stopover on the development site; however, this would likely be enroute to the Nurragingy Reserve to the east of the site.</p>	<p>A significant impact is unlikely to result from the project.</p>
National Heritage Places	<p>There are no National Heritage Places within the subject land.</p>	<p>A significant impact is unlikely to result from the project.</p>
Wetlands of international importance (Ramsar sites)	<p>There are no wetlands of international importance within or in close proximity to the subject land.</p>	<p>The project will not result in impacts to any Ramsar sites.</p>

9.2 **Environmental Planning and Assessment Act 1979/Environmental Planning and Assessment Regulation 2021**

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

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

9.3 **State Environmental Planning Policies**

9.3.1 **State Environmental Planning Policy (Biodiversity and Conservation) 2021**

Chapter 2: Vegetation in non-rural areas

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

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

Chapter 3: Koala Habitat Protection 2020

This chapter applies to land zoned RU1, RU2 or RU3, except within the Greater Sydney and Central Coast areas. As the subject land occurs on land zoned E4 General Industrial under the Blacktown LEP, this chapter does not apply.

Chapter 4: Koala Habitat Protection 2021

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

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

9.3.2 **Coastal Management Act 2016 and State Environmental Planning Policy (Resilience and Hazards) 2021**

Chapter 2: Coastal Management

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

- SEPP No. 14 Coastal Wetlands.

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

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

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

9.4 Other Environmental Planning Instruments

9.4.1 Blacktown LEP

The subject land is zoned General Industrial (E4) under the Blacktown LEP. The relevant objectives of the E4 zoning are:

- To provide a range of industrial, warehouse, logistics and related land uses.
- To ensure the efficient and viable use of land for industrial uses.
- To minimise any adverse effect of industry on other land uses.
- To encourage employment opportunities.
- To enable limited non-industrial land uses that provide facilities and services to meet the needs of businesses and workers.
- To minimise adverse impacts on the natural environment.

The proposed activities within the subject land are not inconsistent with the existing land use of the development site and are considered as permitted with consent on E4 zoned land under the Blacktown LEP. The proposed project is considered to be in line with the objectives of the LEP.

9.4.2 Blacktown DCP

The Blacktown DCP has been prepared in accordance with Division 6 of the EP&A Act and with Part 3 of the Environmental Planning and Assessment Regulation 2000. Under s79(c) of the Act, the consent authority is required to take into consideration the relevant provisions of the DCP in determining applications for development in the Blacktown LGA.

Part E of the DCP pertains to site specific controls for development in Industrial Areas. Whilst none of these controls relate specifically to ecological aspects, the proposed works should follow these controls to ensure compliance with the DCP.

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

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

9.6 Biodiversity Conservation Act 2016

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

Threatened species and communities listed under the BC Act relevant to the subject land are provided in Section 4 and Appendix 4. A summary of impacts to threatened species, populations and communities present or assumed present within the subject land is provided in Section 4.2.3.

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

9.7 Biosecurity Act 2015

The *Biosecurity Act 2015* (Biosecurity Act) provides for the identification, classification and control of priority weeds with the purpose of determining if a biosecurity risk is likely to occur. A biosecurity risk is defined as the risk of a biosecurity impact occurring, which for weeds includes the introduction, presence, spread or increase of a pest into or within NSW or any part of the State. A pest plant has the potential to; harm or reduce biodiversity or out-compete other organisms for resources, including food, water, nutrients, habitat and sunlight.

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

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

Eight priority weeds for the Greater Sydney LLS Region have been recorded in the subject land and are listed in Table 33, along with their associated Duty. Mitigation measures included Section 7, specifically the development of a Weed Management Plan as part of a CEMP, will assist with ensuring the appropriate treatment and disposal of priority weed material.

Table 33 Priority weeds within the subject land

Scientific name	Common name	Relevant biosecurity duty
<i>Anredera cordifolia</i>	Madeira Vine	General Biosecurity Duty
<i>Asparagus aethiopicus</i>	Asparagus Fern	General Biosecurity Duty
<i>Asparagus asparagoides</i>	Bridal Creeper	General Biosecurity Duty
<i>Cestrum parqui</i>	Green Cestrum	Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land.

Scientific name	Common name	Relevant biosecurity duty
		A person should not buy, sell, move, carry or release the plant into the environment.
<i>Cortaderia selloana</i>	Pampas Grass	Regional Recommended Measure Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment.
<i>Olea europaea subsp. cuspidata</i>	African Olive	General Biosecurity Duty
<i>Opuntia stricta</i>	Common Prickly Pear	General Biosecurity Duty
<i>Senecio madagascariensis</i>	Fireweed	General Biosecurity Duty

9.8 Water Management Act 2000

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

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

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

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

9.9 Fisheries Management Act 1994

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

No predicted habitat for threatened aquatic species is mapped on the DPI spatial data portal within the subject land. No records of threatened aquatic species have been recorded within 10 kilometres of the subject land on the BioNet Atlas of NSW, however, two species were predicted by the Protected Matters Search Tool (PMST).

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

10 Biodiversity credit report

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

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00049832/BAAS22005/24/00049847	2 Glendenning Road BDAR	05/08/2025
Assessor Name	Report Created	BAM Data version *
	31/10/2025	Current classification (live - default) (82)
Assessor Number	BAM Case Status	Date Finalised
BAAS17051	Finalised	31/10/2025
Assessment Revision	BOS entry trigger	Assessment Type
8		Major Projects

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

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

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

Coastal Valleys Riparian Forest												
3	4023_Low	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	40.7	40.7	0.54	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		11
										Subtotal	11	
Cumberland Shale Plains Woodland												
1	3320_Plan ted	Cumberland Plain Woodland in the Sydney Basin Bioregion	31.3	31.3	0.06	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	1
										Subtotal	1	
Southern Lower Floodplain Freshwater Wetland												
2	3975_Low	Not a TEC	60.9	60.9	0.19	PCT Cleared - 93%	High Sensitivity to Gain			2.50		7
										Subtotal	7	
										Total	19	

Species credits for threatened species

BAM Credit Summary Report

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAI	Species credits
<i>Acacia pubescens / Downy Wattle (Flora)</i>									
4023_Low	40.7	40.7	0.54	Rate of decline	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	11
								Subtotal	11
<i>Lathamus discolor / Swift Parrot (Fauna)</i>									
4023_Low	40.7	40.7	0.04	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1
								Subtotal	1



BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00049832/BAAS22005/24/00049847	2 Glendenning Road BDAR	05/08/2025
Assessor Name	Assessor Number	BAM Data version *
	BAAS17051	Current classification (live - default) (82)
Proponent Names	Report Created	BAM Case Status
	31/10/2025	Finalised
Assessment Revision	BOS entry trigger	Assessment Type
8		Major Projects
Date Finalised		
31/10/2025		

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

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered Ecological Community	3320-Cumberland Shale Plains Woodland
Species		
Lathamus discolor / Swift Parrot		

BAM Biodiversity Credit Report (Like for like)

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3320-Cumberland Shale Plains Woodland	Cumberland Plain Woodland in the Sydney Basin Bioregion	0.1	0	1	1
3975-Southern Lower Floodplain Freshwater Wetland	Not a TEC	0.2	0	7	7
4023-Coastal Valleys Riparian Forest	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	0.5	0	11	11

BAM Biodiversity Credit Report (Like for like)

3320-Cumberland Shale Plains Woodland	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Cumberland Plain Woodland in the Sydney Basin Bioregion This includes PCT's: 3319, 3320	-	3320_Planted	No	1	Cumberland, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
3975-Southern Lower Floodplain Freshwater Wetland	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Coastal Freshwater Lagoons This includes PCT's: 3964, 3975	Coastal Freshwater Lagoons >=90%	3975_Low	No	7	Cumberland, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
4023-Coastal Valleys Riparian Forest	Like-for-like credit retirement options					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

BAM Biodiversity Credit Report (Like for like)

	Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions This includes PCT's: 1731, 3962, 3963, 3985, 3987, 3993, 4016, 4023, 4026, 4027, 4028, 4030, 4035, 4038, 4040, 4048, 4049, 4050, 4056	-		4023_Low	No	11	Cumberland, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Acacia pubescens / Downy Wattle	4023_Low	0.5	11.00
Lathamus discolor / Swift Parrot	4023_Low	0.0	1.00

Credit Retirement Options

Like-for-like credit retirement options

Species	Spp	IBRA subregion
Acacia pubescens / Downy Wattle	Acacia pubescens / Downy Wattle	Any in NSW



BAM Biodiversity Credit Report (Like for like)

Lathamus discolor / Swift Parrot	Spp	IBRA subregion
	Lathamus discolor / Swift Parrot	Any in NSW

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Appendices

Appendix 1 Survey methods

Appendix 1.1 Nomenclature

The flora taxonomy (classification) used in this report follows the most recent Flora of NSW (Harden 1992, Harden 1993, Harden 2000, Harden 2002). All doubtful species names were verified with the online Australian Plant Name Index (Australian National Botanic Gardens & Australian National Herbarium 2007). Flora species, including threatened species and introduced flora species, are referred to by both their common and then scientific names when first mentioned. Subsequent references to flora species cite the common names only, unless there is no common name, for which scientific name will be used. Common names, where available, have been included in threatened species tables and the complete flora list in 0.

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

Appendix 1.2 Permits and licences

The flora and fauna assessment was conducted under the terms of Biosis' Scientific Licence issued by NSW DCCEEW (SL100758, expiry date 30 June 2026). The BAM Assessment and quality review of the BDAR was carried out by Accredited Assessors Callan Wharfe (BAAS18138) and Mitchell Palmer (BAAS17051).

Appendix 1.3 Limitations

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

Field surveys were conducted in Winter, Spring and Summer, which allows suitable variability of conditions to determine the presence of most threatened species within the subject land. Considering the small-scale size of the subject land and that areas of native vegetation are present in urbanised areas with easy access, surveys were suitable to determine the presence of most threatened species.

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

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

Appendix 2 Flora

Appendix 2.1 BAM plot field data

Table A 1: BAM plot floristics

Family	Scientific name	Common name	40798.B01		40798.B02		40798.B03		40798.B04		40798.B05		40798.B06		40798.B07	
			Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.
Native species																
Acanthaceae	Brunoniella australis	Blue Trumpet							0.1	5	0.1	10				
Asphodelaceae	Dianella revoluta	Blueberry Lily							0.1	2						
Asphodelaceae	Dianella caerulea var. caerulea	-													0.5	10
Asphodelaceae	Dianella caerulea var. producta	-	1	30							0.1	10				
Asteraceae	Sigesbeckia orientalis subsp. orientalis	Indian Weed							0.1	5						
Casuarinaceae	Casuarina glauca	Swamp Oak			20	50										
Convolvulaceae	Dichondra repens	Kidney Weed			0.1	5			0.2	40						
Cyperaceae	Cyperus polystachyos	-					1	100								
Cyperaceae	Cyperus spp.	-									0.1	50				
Cyperaceae	Eleocharis gracilis	-					10	500								
Fabaceae (Faboideae)	Indigofera australis	Australian Indigo							3	10						
Fabaceae (Faboideae)	Hardenbergia violacea	False Sarsaparilla			0.1	2			0.1	2						
Fabaceae (Faboideae)	Grona varians	-							0.2	50						
Fabaceae (Faboideae)	Glycine microphylla	Small-leaf Glycine									0.1	10				
Fabaceae (Faboideae)	Glycine tabacina	Variable Glycine			0.1	5			0.1	5	0.1	5				

Family	Scientific name	Common name	40798.B01		40798.B02		40798.B03		40798.B04		40798.B05		40798.B06		40798.B07	
			Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.
Native species																
Fabaceae (Mimosoideae)	Acacia decurrens	Black Wattle			8	20			3	20						
Fabaceae (Mimosoideae)	Acacia fimbriata	Fringed Wattle													5	1
Fabaceae (Mimosoideae)	Acacia parramattensis	Parramatta Wattle									5	10				
Juncaceae	Juncus usitatus	-			0.1	5	25	500								
Lomandraceae	Lomandra longifolia	Spiny-headed Mat-rush													0.1	1
Lythraceae	Lythrum hyssopifolia	Hyssop Loosestrife					0.5	200								
Myrtaceae	Melaleuca bracteata	Black Tea-tree													20	3
Myrtaceae	Syzygium australe	Brush Cherry	2	20												
Myrtaceae	Callistemon citrinus	Crimson Bottlebrush	3	30											5	50
Myrtaceae	Eucalyptus tereticornis	Forest Red Gum			0.1	1			20	8						
Myrtaceae	Eucalyptus moluccana	Grey Box							10	5	5	3			10	2
Myrtaceae	Acmena smithii	Lilly Pilly	5	5											0.5	2
Myrtaceae	Eucalyptus tereticornis subsp. tereticornis	-					0.1	1			30	6			5	1
Myrtaceae	Angophora floribunda	Rough-barked Apple													20	5
Myrtaceae	Corymbia maculata	Spotted Gum	30	8												
Pittosporaceae	Bursaria spinosa	Native Blackthorn							10	20						
Pittosporaceae	Bursaria spinosa subsp. spinosa	Native Blackthorn									1	10				

Family	Scientific name	Common name	40798.B01		40798.B02		40798.B03		40798.B04		40798.B05		40798.B06		40798.B07	
			Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.
Native species																
Plantaginaceae	<i>Plantago gaudichaudii</i>	Narrow Plantain							0.1	3						
Poaceae	<i>Eragrostis brownii</i>	Brown's Lovegrass			0.1	3										
Poaceae	<i>Cynodon dactylon</i>	Common Couch	0.1	10	20	800	20	1000			5	300	15	500		
Poaceae	<i>Phragmites australis</i>	Common Reed			10	200										
Poaceae	<i>Oplismenus aemulus</i>	-							0.1	5						
Poaceae	<i>Oplismenus imbecillis</i>	-									0.1	20				
Poaceae	<i>Rytidosperma</i> spp.	-							0.1	2						
Poaceae	<i>Bothriochloa macra</i>	Red Grass											0.2	20		
Poaceae	<i>Microlaena stipoides</i>	Weeping Grass							35	2000			0.2	50		
Poaceae	<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Grass									10	500				
Proteaceae	<i>Grevillea</i> spp.	-													1	1
Rosaceae	<i>Rubus parvifolius</i>	Native Raspberry									0.1	1				
Rubiaceae	<i>Galium aparine</i>	Goosegrass							0.1	5	0.1	1				
Sapindaceae	<i>Cupaniopsis anacardioides</i>	Tuckeroo			0.1	5			0.1	1					0.5	20
Scrophulariaceae	<i>Eremophila debilis</i>	Amulla							0.2	5						
Typhaceae	<i>Typha orientalis</i>	Broad-leaved Cumbungi					10	300								
Violaceae	<i>Viola hederacea</i>	Ivy-leaved Violet									0.1	20				

Family	Scientific name	Common name	40798.B01		40798.B02		40798.B03		40798.B04		40798.B05		40798.B06		40798.B07	
			Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.
Introduced species																
Apocynaceae	Araujia sericifera	Moth Vine							0.2	30	0.1	5			0.5	10
Asparagaceae	Asparagus aethiopicus	Asparagus Fern							0.1	1	0.1	1				
Asparagaceae	Asparagus asparagoides	Bridal Creeper	0.1	3	0.1	3			0.2	20	0.1	5				
Asteraceae	Aster subulatus	Wild Aster					0.5	200								
Asteraceae	Bidens pilosa	Cobbler's Pegs							0.1	80	0.5	100			0.1	10
Brassicaceae	Brassica fruticulosa	Twiggy Turnip							0.1	3	1	200				
Poaceae	Cenchrus clandestinus	Kikuyu Grass									0.1	10	25	2000		
Poaceae	Chloris gayana	Rhodes Grass			10	300	20	500	0.5	30	50	1000	20	1000	0.1	1
Asteraceae	Cirsium vulgare	Spear Thistle			0.1	1					0.1	1				
Asteraceae	Conyza bonariensis	Flaxleaf Fleabane			0.1	2										
Asteraceae	Conyza canadensis var. canadensis	Canadian Fleabane						0.1	5							
Poaceae	Cortaderia selloana	Pampas Grass			1	10										
Apiaceae	Cyclospermum leptophyllum	Slender Celery			0.1	20										
Verbenaceae	Duranta erecta	Sky Flower													2	10
Poaceae	Ehrharta erecta	Panic Veldtgrass	0.1	3					50	3000	10	500				
Poaceae	Eragrostis curvula	African Lovegrass			30	200			5	100	30	500	10	200		
Asteraceae	Gamochoeta coarctata	-					0.1	30								
Asteraceae	Gamochoeta spp.	-			0.2	100							0.1	20		
Asteraceae	Hypochaeris glabra	Smooth Catsear					0.1	10					0.1	10	0.1	10
Verbenaceae	Lantana camara	Lantana	0.1	1	0.2	2										
Oleaceae	Ligustrum sinense	Small-leaved Privet			0.1	3			0.2	20	0.1	1				

Family	Scientific name	Common name	40798.B01		40798.B02		40798.B03		40798.B04		40798.B05		40798.B06		40798.B07	
			Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.
Introduced species																
Fabaceae (Faboideae)	Lotus angustissimus	Slender Birds-foot Trefoil			0.1		0.1	20					0.5	500		
Primulaceae	Lysimachia arvensis	Scarlet Pimpernel			0.1	2										
Fabaceae (Faboideae)	Medicago polymorpha	Burr Medic											25	2000		
Nandinaceae	Nandina domestica	Japanese Sacred Bamboo	1	20												
Oleaceae	Olea europaea subsp. cuspidata	African Olive							0.1	2						
Poaceae	Paspalum dilatatum	Paspalum			0.5	50										
Passifloraceae	Passiflora caerulea	Blue Passionflower							0.2	10						
Arecaceae	Phoenix dactylifera	Date Palm	0.1	3											0.1	3
Malaceae	Photinia glabra	Japanese Photinia													2	10
Plantaginaceae	Plantago lanceolata	Lamb's Tongues			0.1	20			0.2	20			0.1	20	0.1	1
Malaceae	Rhamnus indica	Indian Hawthorn	1	20												
Polygonaceae	Rumex crispus	Curled Dock			0.1	2										
Asteraceae	Senecio madagascariensis	Fireweed			0.1	3	0.1	10					0.1	5		
Asteraceae	Senecio pterophorus	-			0.2	5										
Poaceae	Setaria parviflora	-							1	80						
Malvaceae	Sida rhombifolia	Paddy's Lucerne			0.2	20			0.2	30	0.1	20				
Solanaceae	Solanum nigrum	Black-berry Nightshade	0.1	2							0.1	5			0.1	10
Solanaceae	Solanum sisymbriifolium	-									0.1	1				
Asteraceae	Sonchus oleraceus	Common Sowthistle			0.1	2			0.1	5	0.1	10			0.1	1

Family	Scientific name	Common name	40798.B01		40798.B02		40798.B03		40798.B04		40798.B05		40798.B06		40798.B07	
			Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.	Cvr-%	Abund.
Introduced species																
Verbenaceae	Verbena bonariensis	Purpletop			0.1	10	0.1	40			0.1	10				
Adoxaceae	Viburnum spp.	-													2	10
Fabaceae (Faboideae)	Vicia sativa	Common vetch			0.1	3			0.1	4	0.1	5				
Fabaceae (Faboideae)	Vicia sativa subsp. sativa	Common Vetch					0.1	5								

Table A 2: BAM plot summary

Plot ID	PCT	Area (Ha)	Patch size	Condition	Zone	Easting	Northing	Bearing	Comp. Tree	Comp. Shrub	Comp. Grass	Comp. Forbs	Comp. Ferns	Comp. Other	Struc. Tree	Struc. Shrub	Struc. Grass	Struc. Forbs	Stuc. Ferns	Stuc. Other
40798.B01	-	0.26	>100 ha	Planted natives	56	300995	6262537	169	2	2	1	1	0	0	35.0	5.0	0.1	1.0	0.0	0.0
40798.B02	4023	0.93	>100 ha	Low	56	301232	6262309	35	4	0	4	1	0	2	28.2	0.0	30.2	0.1	0.0	0.2
40798.B03	3975	0.19	<5 ha	Low	56	301185	6262363	171	1	0	5	1	0	0	0.1	0.0	66.0	0.5	0.0	0.0
40798.B04	3320	-	>100 ha	Moderate	56	301209	6262242	260	4	3	3	5	0	3	33.1	13.2	35.2	0.6	0.0	0.4
40798.B05	3320	0.01	>100 ha	Low	56	301106	6262265	359	3	2	4	3	0	2	40.0	1.1	15.2	0.3	0.0	0.2
40798.B06	-	3.81	>100 ha	Exotic	56	301198	6262456	10	0	0	3	0	0	0	0.0	0.0	15.4	0.0	0.0	0.0
40798.B07	3320	0.06	>100 ha	Planted	56	300967	6262423	175	5	4	1	1	0	0	36.0	31.0	0.1	0.5	0.0	0.0

Plot ID	PCT	Area (Ha)	Patch size	Condition	Zone	Easting	Northing	Bearing	Funn. Large Trees	Fun. Hollow Trees	Fun. Litter Cover	Fun Len. Fallen Logs	Fun. Tree Stem 5 to 9	Fun. Tree Stem 10 to 19	Fun. Tree Stem 20 to 29	Fun. Tree Stem 30 to 49	Fun. Tree Stem 50 to 79	Fun. Tree Regen	Fun. High Threat Exotic
40798.B01	-	0.26	>100 ha	Planted natives	56	300995	6262537	169	0	0	60	0	0	0	0	8	0	0	0.3
40798.B02	4023	0.93	>100 ha	Low	56	301232	6262309	35	1	0	64	0	1	1	1	1	0	1	42.0
40798.B03	3975	0.19	<5 ha	Low	56	301185	6262363	171	0	0	8.6	0	0	0	0	0	0	0	20.1
40798.B04	3320	-	>100 ha	Moderate	56	301209	6262242	260	1	2	31	17	1	1	1	6	1	1	56.3
40798.B05	3320	0.01	>100 ha	Low	56	301106	6262265	359	1	0	29	15	1	1	1	2	1	1	91.0
40798.B06	-	3.81	>100 ha	Exotic	56	301198	6262456	10	0	0	1.4	0	0	0	0	0	0	0	55.1
40798.B07	3320	0.06	>100 ha	Planted	56	300967	6262423	175	0	0	54	0	0	0	1	2	0	1	0.7

Appendix 2.2 BAM plot data sheets

BAM Plot Data Sheet				Site Sheet no:1 of 2			
		Survey Name	Veg Zone ID	Recorders			
Date	15/09/2024	Glendenning BDAR	Other	RG, TOH			
Zone 56	Datum GDA94	Plot ID	40798.B01	Plot dimensions	100x10	Orientation of middle	169
Easting 300995	Northing 6262537	IBRA region	Sydney Basin	Photo #			
Plant Community Type					EEC: None	Confidence M	

BAM Attribute (400m2 plot)		Sum values
Count of Native Richness	Trees	2
	Shrubs	2
	Grasses etc.	1
	Forbs	1
	Ferns	0
	Other	0
Sum of Cover of native vascular plants by growth form group	Trees	35
	Shrubs	5
	Grasses etc.	0.1
	Forbs	1
	Ferns	0
	Other	0
High Threat Weed cover		0.3

BAM Attribute (1000m2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	8
20 - 29cm	0
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	80	50	60	40	70
Average of the 5 subplots	60				

Notes

Physiography + site features that may help in determining PCT and Management Zone

Landform Pattern		Slope	Flat mount	Soil Surface Texture	Sandy clay loam
Soil Colour	Light brown to brown	Site Drainage	Free	Distance to nearest water	

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

400 m2 plot: Sheet
2 of 2

Date	Survey Name	Plot ID	Recorders
15/09/2024	Glenninn g BDAR	40798.B01	RG, TOH

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
TG	Acmena smithii	N	5	5	Mid Storey
	Asparagus asparagoides	HTE	0.1	3	Ground
SG	Callistemon citrinus	N	3	30	Mid Storey
TG	Corymbia maculata	N	30	8	Canopy
GG	Cynodon dactylon	N	0.1	10	Ground
FG	Dianella caerulea var. producta	N	1	30	Ground
	Ehrharta erecta	HTE	0.1	3	Ground
	Lantana camara	HTE	0.1	1	Mid Storey
	Nandina domestica	E	1	20	Mid Storey
	Phoenix dactylifera	E	0.1	3	Mid Storey
	Rhaphiolepis indica	E	1	20	Mid Storey
	Solanum nigrum	E	0.1	2	Ground
SG	Syzygium australe	N	2	20	Mid Storey

BAM Plot Data Sheet				Site Sheet no:1 of 2	
		Survey Name	Veg Zone ID	Recorders	
Date	16/09/2024	40797.B02	Low	rg toh	
Zone 56	Datum GDA94	Plot ID 40798.B02	Plot dimensions	50x20	Orientation of middle 35
Easting 301232	Northing 6262309	IBRA region Sydney Basin	Photo #		
Plant Community Type	4023			EEC: None	Confidence H

BAM Attribute (400m2 plot)		Sum values
Count of Native Richness	Trees	4
	Shrubs	0
	Grasses etc.	4
	Forbs	1
	Ferns	0
	Other	2
Sum of Cover of native vascular plants by growth form group	Trees	28.2
	Shrubs	0
	Grasses etc.	30.2
	Forbs	0.1
	Ferns	0
	Other	0.2
High Threat Weed cover	42	

BAM Attribute (1000m2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	1
20 - 29cm	1
10 - 19 cm	1
5 - 9 cm	1
< 5 cm	1
Length of logs (m)	0
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	80	70	30	90	50
Average of the 5 subplots	64				

Notes

Physiography + site features that may help in determining PCT and Management Zone

Landform Pattern		Slope	flat	Soil Surface Texture	clayey loam
Soil Colour	light orange brown	Site Drainage	flat and on a drainage line	Distance to nearest water	150 m to easterb creek

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	2	O	casuarina regeneration
Cultivation (inc. pasture)	0		
Soil erosion	2	NR	bare soil patches, steep erosion scars
Firewood/CWD removal	0		
Grazing (identify native/livestock)	0		
Fire damage	0		
Storm damage	0		
Weediness	2	R	
Other			

Date	Survey Name	Plot ID	Recorders
16/09/2024	40797.B02	40798.B02	rg toh

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
TG	Acacia decurrens	N	8	20	
	Asparagus asparagoides	HTE	0.1	3	
TG	Casuarina glauca	N	20	50	
	Chloris gayana	HTE	10	300	
	Cirsium vulgare	E	0.1	1	
	Conyza bonariensis	E	0.1	2	
	Cortaderia selloana	HTE	1	10	
TG	Cupaniopsis anacardioides	N	0.1	5	
	Cyclosporum leptophyllum	E	0.1	20	
GG	Cynodon dactylon	N	20	800	
FG	Dichondra repens	N	0.1	5	
GG	Eragrostis brownii	N	0.1	3	
	Eragrostis curvula	HTE	30	200	
TG	Eucalyptus tereticornis	N	0.1	1	
	Gamochaeta spp.	E	0.2	100	
OG	Glycine tabacina	N	0.1	5	
OG	Hardenbergia violacea	N	0.1	2	
GG	Juncus usitatus	N	0.1	5	
	Lantana camara	HTE	0.2	2	
	Ligustrum sinense	HTE	0.1	3	
	Lotus angustissimus	E	0.1		
	Lysimachia arvensis	E	0.1	2	
	Paspalum dilatatum	HTE	0.5	50	
GG	Phragmites australis	N	10	200	
	Plantago lanceolata	E	0.1	20	
	Rumex crispus	E	0.1	2	
	Senecio madagascariensis	HTE	0.1	3	
	Senecio pterophorus	E	0.2	5	
	Sida rhombifolia	E	0.2	20	
	Sonchus oleraceus	E	0.1	2	
	Verbena bonariensis	E	0.1	10	
	Vicia sativa	E	0.1	3	

BAM Plot Data Sheet				Site Sheet no:1 of 2		
		Survey Name	Veg Zone ID	Recorders		
Date	16/09/2024	Glendenning BDAR	Low	RG, TOH		
Zone 56	Datum GDA94	Plot ID 40798.B03	Plot dimensions	50x20	Orientation of middle	171
Easting 301185	Northing 6262363	IBRA region Sydney Basin	Photo #			
Plant Community Type	3975			EEC: None	Confidence H	

BAM Attribute (400m2 plot)		Sum values
Count of Native Richness	Trees	1
	Shrubs	0
	Grasses etc.	5
	Forbs	1
	Ferns	0
	Other	0
Sum of Cover of native vascular plants by growth form group	Trees	0.1
	Shrubs	0
	Grasses etc.	66
	Forbs	0.5
	Ferns	0
	Other	0
High Threat Weed cover	20.1	

BAM Attribute (1000m2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	0
20 - 29cm	0
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	10	20	10	2	1
Average of the 5 subplots	8.6				

Notes

Physiography + site features that may help in determining PCT and Management Zone

Landform Pattern		Slope	Flat	Soil Surface Texture	Clay
Soil Colour	Light brown to yellow	Site Drainage	Poor	Distance to nearest water	

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

400 m2 plot: Sheet
2 of 2

		Survey Name	Plot ID	Recorders
Date	16/09/2024	Glenninnig BDAR	40798.B03	RG, TOH

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	<i>Aster subulatus</i>	E	0.5	200	Ground
	<i>Chloris gayana</i>	HTE	20	500	Ground
	<i>Conyza canadensis</i> var.	E	0.1	5	Ground
GG	<i>Cynodon dactylon</i>	N	20	1000	Ground
GG	<i>Cyperus polystachyos</i>	N	1	100	Ground
GG	<i>Eleocharis gracilis</i>	N	10	500	Ground
TG	<i>Eucalyptus tereticornis</i> subsp.	N	0.1	1	Canopy
	<i>Gamochaeta coarctata</i>	E	0.1	30	Ground
	<i>Hypochaeris glabra</i>	E	0.1	10	Ground
GG	<i>Juncus usitatus</i>	N	25	500	Ground
	<i>Lotus angustissimus</i>	E	0.1	20	Ground
FG	<i>Lythrum hyssopifolia</i>	N	0.5	200	Ground
	<i>Senecio madagascariensis</i>	HTE	0.1	10	Ground
GG	<i>Typha orientalis</i>	N	10	300	Ground
	<i>Verbena bonariensis</i>	E	0.1	40	Ground
	<i>Vicia sativa</i> subsp. <i>sativa</i>	E	0.1	5	Ground

BAM Plot Data Sheet				Site Sheet no:1 of 2	
		Survey Name	Veg Zone ID	Recorders	
Date	16/09/2024	40798.B04	Moderate	rg	
Zone 56	Datum GDA94	Plot ID 40798.B04	Plot dimensions	50x20	Orientation of middle 260
Easting 301209	Northing 6262242	IBRA region Sydney Basin	Photo #		
Plant Community Type	3320			EEC: None	Confidence H

BAM Attribute (400m2 plot)		Sum values
Count of Native Richness	Trees	4
	Shrubs	3
	Grasses etc.	3
	Forbs	5
	Ferns	0
	Other	3
Sum of Cover of native vascular plants by growth form group	Trees	33.1
	Shrubs	13.2
	Grasses etc.	35.2
	Forbs	0.6
	Ferns	0
	Other	0.4
High Threat Weed cover		56.3

BAM Attribute (1000m2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	1
30 - 49 cm	6
20 - 29cm	1
10 - 19 cm	1
5 - 9 cm	1
< 5 cm	1
Length of logs (m)	17
No. trees with hollows	2

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	20	20	40	25	50
Average of the 5 subplots	31				

Notes

Physiography + site features that may help in determining PCT and Management Zone

Landform Pattern		Slope	north east sloping 5 degrees	Soil Surface Texture	dry loam
Soil Colour	light brown	Site Drainage	north east draining	Distance to nearest water	200m

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	2	O	
Cultivation (inc. pasture)	0		
Soil erosion	0		
Firewood/CWD removal	0		
Grazing (identify native/livestock)	0		
Fire damage	0		
Storm damage	0		
Weediness	2	R	
Other			

Date	Survey Name	Plot ID	Recorders
16/09/2024	40798.B04	40798.B04	rg

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
TG	<i>Acacia decurrens</i>	N	3	20	
	<i>Araujia sericifera</i>	HTE	0.2	30	
	<i>Asparagus aethiopicus</i>	HTE	0.1	1	
	<i>Asparagus asparagoides</i>	HTE	0.2	20	
	<i>Bidens pilosa</i>	HTE	0.1	80	
	<i>Brassica fruticulosa</i>	E	0.1	3	
FG	<i>Brunoniella australis</i>	N	0.1	5	
SG	<i>Bursaria spinosa</i>	N	10	20	
	<i>Chloris gayana</i>	HTE	0.5	30	
TG	<i>Cupaniopsis anacardioides</i>	N	0.1	1	
FG	<i>Dianella revoluta</i>	N	0.1	2	
FG	<i>Dichondra repens</i>	N	0.2	40	
	<i>Ehrharta erecta</i>	HTE	50	3000	
	<i>Eragrostis curvula</i>	HTE	5	100	
SG	<i>Eremophila debilis</i>	N	0.2	5	
TG	<i>Eucalyptus moluccana</i>	N	10	5	
TG	<i>Eucalyptus tereticornis</i>	N	20	8	
	<i>Galium aparine</i>	E	0.1	5	
OG	<i>Glycine tabacina</i>	N	0.1	5	
OG	<i>Grona varians</i>	N	0.2	50	
OG	<i>Hardenbergia violacea</i>	N	0.1	2	
SG	<i>Indigofera australis</i>	N	3	10	
	<i>Ligustrum sinense</i>	HTE	0.2	20	
GG	<i>Microlaena stipoides</i>	N	35	2000	
	<i>Olea europaea</i> subsp. <i>cuspidata</i>	E	0.1	2	
GG	<i>Oplismenus aemulus</i>	N	0.1	5	
	<i>Passiflora caerulea</i>	E	0.2	10	
FG	<i>Plantago gaudichaudii</i>	N	0.1	3	
	<i>Plantago lanceolata</i>	E	0.2	20	
GG	<i>Rytidosperma</i> spp.	N	0.1	2	
	<i>Setaria parviflora</i>	E	1	80	
	<i>Sida rhombifolia</i>	E	0.2	30	
FG	<i>Sigesbeckia orientalis</i> subsp.	N	0.1	5	
	<i>Sonchus oleraceus</i>	E	0.1	5	
	<i>Vicia sativa</i>	E	0.1	4	

BAM Plot Data Sheet				Site Sheet no:1 of 2			
		Survey Name	Glendenning BDAR	Veg Zone ID	Low	Recorders	RG, TOH
Date	16/09/2024	Plot ID	40798.B05	Plot dimensions	50x20	Orientation of middle	359
Zone 56	Datum GDA94	IBRA region	Sydney Basin	Photo #			
Easting 301106	Northing 6262265						
Plant Community Type						EEC: None	Confidence H

BAM Attribute (400m2 plot)		Sum values
Count of Native Richness	Trees	3
	Shrubs	2
	Grasses etc.	4
	Forbs	3
	Ferns	0
	Other	2
Sum of Cover of native vascular plants by growth form group	Trees	40
	Shrubs	1.1
	Grasses etc.	15.2
	Forbs	0.3
	Ferns	0
	Other	0.2
High Threat Weed cover		91

BAM Attribute (1000m2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	1
30 - 49 cm	2
20 - 29cm	1
10 - 19 cm	1
5 - 9 cm	1
< 5 cm	1
Length of logs (m)	15
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	20	50	40	20	15
Average of the 5 subplots	29				

Notes

Physiography + site features that may help in determining PCT and Management Zone

Landform Pattern		Slope	Flat	Soil Surface Texture	Sandy clay loam
Soil Colour	Light brown to brown	Site Drainage	Free	Distance to nearest water	

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

400 m2 plot:Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	16/09/2024	Glendennin g BDAR	40798.B05	RG, TOH

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
TG	Acacia parramattensis	N	5	10	Mid Storey
	Araujia sericifera	HTE	0.1	5	Ground
	Asparagus aethiopicus	HTE	0.1	1	Ground
	Asparagus asparagoides	HTE	0.1	5	Ground
	Bidens pilosa	HTE	0.5	100	Ground
	Brassica fruticulosa	E	1	200	Ground
FG	Brunoniella australis	N	0.1	10	Ground
SG	Bursaria spinosa subsp. spinosa	N	1	10	Mid Storey
	Cenchrus clandestinus	HTE	0.1	10	Ground
	Chloris gayana	HTE	50	1000	Ground
	Cirsium vulgare	E	0.1	1	Ground
GG	Cynodon dactylon	N	5	300	Ground
GG	Cyperus spp.	N	0.1	50	Ground
FG	Dianella caerulea var. producta	N	0.1	10	Ground
	Ehrharta erecta	HTE	10	500	Ground
	Eragrostis curvula	HTE	30	500	Ground
TG	Eucalyptus moluccana	N	5	3	Canopy
TG	Eucalyptus tereticornis subsp.	N	30	6	Canopy
	Galium aparine	N	0.1	1	Ground
OG	Glycine microphylla	N	0.1	10	Ground
OG	Glycine tabacina	N	0.1	5	Ground
	Ligustrum sinense	HTE	0.1	1	Mid Storey
GG	Microlaena stipoides var.	N	10	500	Ground
GG	Oplismenus imbecillis	N	0.1	20	Ground
SG	Rubus parvifolius	N	0.1	1	Ground
	Sida rhombifolia	E	0.1	20	Ground
	Solanum nigrum	E	0.1	5	Ground
	Solanum sisymbriifolium	E	0.1	1	Ground
	Sonchus oleraceus	E	0.1	10	Ground
	Verbena bonariensis	E	0.1	10	Ground
	Vicia sativa	E	0.1	5	Ground
FG	Viola hederacea	N	0.1	20	Ground

BAM Plot Data Sheet				Site Sheet no:1 of 2	
		Survey Name		Veg Zone ID	
					Recorders
Date	16/09/2024	Glendenning BDAR		Other	TOH, RG
Zone 56	Datum GDA94	Plot ID	40798.B06	Plot dimensions	50x20
		Orientation of middle			10
Easting 301198	Northing 6262456	IBRA region	Sydney Basin	Photo #	
Plant Community Type					EEC: None Confidence H

BAM Attribute (400m2 plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	3
	Forbs	0
	Ferns	0
	Other	0
Sum of Cover of native vascular plants by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	15.4
	Forbs	0
	Ferns	0
	Other	0
High Threat Weed cover		55.1

BAM Attribute (1000m2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	0
20 - 29cm	0
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	0
Length of logs (m)	0
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	1	2	1	1	2
Average of the 5 subplots	1.4				

Notes

Physiography + site features that may help in determining PCT and Management Zone

Landform Pattern		Slope	Flat	Soil Surface Texture	Clay
Soil Colour	Light brown to yellow	Site Drainage	Moderate to free	Distance to nearest water	200.

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

400 m2 plot:Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	16/09/2024	Glennin g BDAR	40798.B06	TOH, RG

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
GG	Bothriochloa macra	N	0.2	20	
	Cenchrus clandestinus	HTE	25	2000	
	Chloris gayana	HTE	20	1000	
GG	Cynodon dactylon	N	15	500	
	Eragrostis curvula	HTE	10	200	
	Gamochoeta spp.	E	0.1	20	
	Hypochoeris glabra	E	0.1	10	
	Lotus angustissimus	E	0.5	500	
	Medicago polymorpha	E	25	2000	
GG	Microlaena stipoides	N	0.2	50	
	Plantago lanceolata	E	0.1	20	
	Senecio madagascariensis	HTE	0.1	5	

BAM Plot Data Sheet				Site Sheet no:1 of 2			
		Survey Name	Veg Zone ID	Recorders			
Date	16/09/2024	Glendenning BDAR	Other	RG, TOH			
Zone 56	Datum GDA94	Plot ID	40798.B07	Plot dimensions	100x10	Orientation of middle	175
Easting 300967	Northing 6262423	IBRA region	Sydney Basin	Photo #			
Plant Community Type					EEC: None	Confidence H	

BAM Attribute (400m2 plot)		Sum values
Count of Native Richness	Trees	5
	Shrubs	4
	Grasses etc.	1
	Forbs	1
	Ferns	0
	Other	0
Sum of Cover of native vascular plants by growth form group	Trees	36
	Shrubs	31
	Grasses etc.	0.1
	Forbs	0.5
	Ferns	0
	Other	0
High Threat Weed cover		0.7

BAM Attribute (1000m2 plot)	
DBH	# Tree Stems Count
80+ cm	0
50 - 79 cm	0
30 - 49 cm	2
20 - 29cm	1
10 - 19 cm	0
5 - 9 cm	0
< 5 cm	1
Length of logs (m)	0
No. trees with hollows	0

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	60	70	50	30	60
Average of the 5 subplots	54				

Notes

Physiography + site features that may help in determining PCT and Management Zone

Landform Pattern		Slope	Flat	Soil Surface Texture	Sandy clay loam
Soil Colour	Browb	Site Drainage	Free	Distance to nearest water	

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

400 m2 plot:Sheet 2 of 2		Survey Name	Plot ID	Recorders
Date	16/09/2024	Glennin g BDAR	40798.B07	RG, TOH

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
SG	Acacia fimbriata	N	5	1	Canopy
TG	Acmena smithii	N	0.5	2	Mid Storey
TG	Angophora floribunda	N	20	5	Canopy
	Araujia sericifera	HTE	0.5	10	Ground
	Bidens pilosa	HTE	0.1	10	Ground
SG	Callistemon citrinus	N	5	50	Mid Storey
	Chloris gayana	HTE	0.1	1	Ground
TG	Cupaniopsis anacardioides	N	0.5	20	Mid Storey
FG	Dianella caerulea var. caerulea	N	0.5	10	Ground
	Duranta erecta	E	2	10	Mid Storey
TG	Eucalyptus moluccana	N	10	2	Canopy
TG	Eucalyptus tereticornis subsp.	N	5	1	Canopy
SG	Grevillea spp.	N	1	1	Mid Storey
	Hypochaeris glabra	E	0.1	10	Ground
GG	Lomandra longifolia	N	0.1	1	Ground
SG	Melaleuca bracteata	N	20	3	Mid Storey
	Phoenix dactylifera	E	0.1	3	Mid Storey
	Photinia glabra	E	2	10	Mid Storey
	Plantago lanceolata	E	0.1	1	Ground
	Solanum nigrum	E	0.1	10	Ground
	Sonchus oleraceus	E	0.1	1	Ground
	Viburnum spp.	E	2	10	Mid Storey

Appendix 3 Fauna

Table A 3 Fauna species recorded within the development site during field investigations (Biosis 2024)

Scientific Name	Common Name	EPBC Act status	NSW status
Birds			
<i>Corvus coronoides</i>	Australian Raven		
<i>Platycercus eximius</i>	Eastern Rosella		
<i>Meliphaga lewinii</i>	Lewin's Honeyeater		
<i>Grallina cyanoleuca</i>	Magpie-lark		
<i>Manorina melanocephala</i>	Noisy Miner		
<i>Strepera graculina</i>	Pied Currawong		
<i>Acanthiza lineata</i>	Striated Thornbill		
<i>Malurus cyaneus</i>	Superb Fairy-wren		
<i>Malurus lamberti</i>	Variiegated Fairy-wren		
<i>Haliastur sphenurus</i>	Whistling Kite*		
<i>Rhipidura leucophrys</i>	Willie Wagtail		
Mammals			
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat*		
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Vulnerable
Reptiles			
<i>Intellagama lesueurii lesueurii</i>	Eastern Water Dragon		
<i>Pseudechis porphyriacus</i>	Red-bellied Black Snake		
Frogs			
<i>Limnodynastes peronii</i>	Brown-striped Frog		
<i>Crinia signifera</i>	Common Eastern Froglet		
<i>Litoria peronii</i>	Peron's Tree Frog		
<i>Litoria quiritatus</i>	Screaming Tree Frog		
Gastropods			
<i>Bradybaena similaris</i>	Asian Trampsnail		
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail*		Endangered
<i>Limax maximus</i>	Giant Garden Slug		

* Observed outside of development footprint

Appendix 4 BAM Candidate species assessment

Appendix 4.1 Threatened flora species assessment

Table A 4 Threatened flora species assessment

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Acacia bynoeana</i> Bynoe's Wattle	Vulnerable	Endangered	No	Semi prostrate shrub growing in central eastern NSW spanning from the Hunter District, west to the Blue Mountains and south to the Southern Highlands. Grows in a variety of communities including; Southern Tableland Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands and Sydney Coastal Heaths. Prefers open, slightly	Low	No	No survey required.	No	This species is not a BAM candidate species, and no records occur within 10 km from the subject land. This species prefers heath or dry sclerophyll forest on sandy soils, which is absent from the subject land.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				disturbed sites on sandy soils.					
Downy Wattle <i>Acacia pubescens</i>	Vulnerable	Vulnerable	Yes	A spreading shrub primarily confined to the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers at Barden Ridge, Oakdale and Mountain Lagoon. Grows in Cooks/River Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland, usually within roadside and bushland remnants. Grows on shale, sandstone, alluvium and gravelly soils, often including ironstone.	Recorded in the subject land	Yes	Year-round	Yes	Recorded. Downy Wattle has been identified in the subject land.
Allocasuarina glareicola	Endangered	Endangered	No	Small, depauperate shrub restricted to a	Low	No	No survey required.	No	This species is not a BAM candidate

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				few populations in the Richmond district with an outlier population at Voyager Point in Liverpool. Grows in Castlereagh Woodlands, Cumberland Dry Sclerophyll Forest, Sydney Hinterland Dry Sclerophyll Forest, Sydney Sand Flats Dry Sclerophyll Forests. Grows in lateritic soil.					species. Limited records (one) occur within 10 km of the subject land. The subject land occurs in a highly degraded state, and habitat features for this species are not present within the subject land.
<i>Asterolasia elegans</i>	Endangered	Endangered	No	Tall, thin shrub found growing north of Sydney in the Baulkham Hills, Hawkesbury and Hornsby districts. Could also occur in the Goulburn area. Grows in wet sclerophyll forest on moist hillsides in Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland	Low	No	No survey required.	No	This species is not a BAM candidate species, and no records occur within 10 km from the subject land. The subject land occurs in a highly degraded state, and habitat features for this species are not present within the subject land. This species prefers sheltered forests on

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Dry Sclerophyll Forests and North Coast Wet Sclerophyll Forests. Grows on Hawkesbury sandstone.					mid- to lower slopes and valleys
Thick Lip Spider Orchid <i>Caladenia tessellata</i>	Vulnerable	Endangered	No	Small orchid recorded from the Wyong, Ulladulla and Braidwood regions with the Kiama and Queanbeyan populations believed to be extinct. Found in a wide variety of communities including Central Gorge Dry Sclerophyll Forests, Cumberland Dry Sclerophyll Forests, Coastal Floodplain Woodlands and Subalpine Woodlands. Grows on clay loam or sandy soils.	Low	No	No survey required.	No	This species is not a BAM candidate species, and no records occur within 10 km from the subject land. The subject land occurs in a highly degraded state, and habitat features for this species are not present within the subject land. This species is generally restricted to areas on the south coast of NSW.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Dwarf Kerrawang <i>Commersonia prostrata</i>	Endangered	Endangered	Yes	Ground hugging shrub with populations sparsely distributed in the Southern Highlands, Southern Tablelands and the North Coast. Grows in gullies, along drainage lines and in disturbed areas in a variety of communities including Coastal Freshwater Wetlands of the Sydney Basin Bioregion, New England Dry Sclerophyll Forests, Temperate Montane Grasslands and Subalpine Grasslands. Grows in sand or peat soils.	Low	No	No survey required.	No	No records occur within 10 km from the subject land. The subject land occurs in a highly degraded state, and habitat features for this species are not present within the subject land. This species is generally restricted Southern Highlands and Southern Tablelands
Cryptostylis hunteriana Leafless Tongue Orchid	Vulnerable	Vulnerable	No	Orchid with a distribution spanning from Gibraltar Range National Park southwards to the	Low	No	No survey required.	No	This species is not a BAM candidate species. No records occur within 10 km of the subject land. The subject land occurs in a

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				coastal area near Orbost in Victoria. Grows in a variety of communities including Sydney Coastal Dry Sclerophyll Forests, Coastal Heath Swamps, New England Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows in sandy soils.					highly degraded state, and habitat features for this species are not present within the subject land.
<i>Cynanchum elegans</i> White-flowered Wax Plant	Endangered	Endangered	No	Climbing vine restricted to eastern NSW from Brunswick Heads to Gerroa in the Illawarra region. Grows in rainforest gully scrub and scree slope on the edge of dry rainforests in a variety of communities including Coastal Floodplain Wetlands, Maritime	Low	No	No survey required.	No	This species is not a BAM candidate species. No records of the species occur within 10 km from the subject land. Potential habitat for the White-flowered Wax Plant of dry rainforests does not occur.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Grasslands, Coastal Valley Grassy Woodlands and Northern Hinterland Wet Sclerophyll Forests.					
<i>Darwinia biflora</i>	Vulnerable	Vulnerable	No	Erect shrub distributed in the Ku-ring-gai, Hornsby, Baulkham Hills and Ryde local government areas. Grows on edges of weathered shale capped ridges in the vicinity of an intergrade with Hawkesbury sandstone in Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows in shale-sandstone transitional soils.	Low	No	No survey required.	No	This species is not a BAM candidate species. No records of the species occur within 10 km from the subject land. This species prefers edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone. This habitat is absent from the subject land. Populations for this species generally occur further north in Ku-ring-gai, Hornsby, Baulkham Hills and Ryde local government areas.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Deyeuxia appressa</i>	Endangered	Endangered	Yes	Erect, perennial grass, endemic to NSW. Restricted to two records, one in 1930 at Herne Bay south of Bankstown and the other in 1941 from Killara near Hornsby. Grows on wet ground in Sydney Coastal Dry Sclerophyll Forests and Eastern Riverine Forests.	Low	No	No survey required.	No	This species is highly restricted in NSW, known only from two pre-1942 records in the Sydney area. No known records occur within 10 km of the subject land. The subject land is highly degraded and is unlikely to provide habitat for the species.
<i>Dillwynia tenuifolia</i>	Not Listed	Endangered Population	Yes	Low, spreading shrub restricted to the Cumberland Plain in Western Sydney. Grows in scrubby or heathy areas within a variety of communities including Castlereagh Ironbark Forest, Shale Gravel Transition Forest, Castlereagh Scribbly	Low	Yes	Aug-Oct	Yes	Surveyed (not present) – This species is a known 'disturbance' coloniser and may occur in disturbed areas within the subject land. Comprehensive surveys for the flora species was undertaken in January 2025. This species was not detected during targeted flora surveys.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Gum Woodland and Sydney Hinterland Dry Sclerophyll Forests. Grows on tertiary alluvium, laterised clays and in shale-sandstone transitions. An endangered population of this species occurs at Kemps Creek, in the Greater Sydney Area.					
<i>Eucalyptus benthamii</i> Camden White Gum	Vulnerable	Critically Endangered	Yes	The Camden White Gum is a large tree species which grows on deep alluvial sandy soils. This eucalypt is known from two major subpopulations; one in the Kedumba Valley of the Blue Mountains National Park, and the other in Bents Basin State Recreation Area.	Low	No	No survey required.	No	This is a highly conspicuous species and is unlikely to remain undetected if present in the subject land. A small number of records within 10 km of the subject land. Species generally occurs on the alluvial flats of the Nepean River and its tributaries, of which is not present.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Eucalyptus glaucina</i> Slaty Red Gum	Vulnerable	Vulnerable	Yes	Medium sized tree, confined to the north coast of NSW at Casino as well as Taree to Broke, west of Maitland. Grows in a variety of communities including Hunter - Macleay Dry Sclerophyll Forests, Coastal Floodplain Wetlands, Northern Hinterland Wet Sclerophyll Forests and Coastal Valley Grassy Woodlands. Grows on deep, moderately fertile, well-watered soils.	Low	No	No survey required.	No	This is a highly conspicuous species and is unlikely to remain undetected if present in the subject land. No records within 10 km of the subject land. Species generally occurs in separate districts along the eastern seaboard of NSW, from near Casino, to Taree, south to Broke, and recently discovered on the eastern side of the Blue Mountains National Park near Warragamba Dam
<i>Eucalyptus nicholii</i> Narrow-leaved Black Peppermint	Vulnerable	Vulnerable	No	Medium sized tree, sparsely distributed from Nundle through to the north of Tenterfield, also in urban tree plantings. Grows on slopes and ridges in a variety of communities	Low	No	No survey required.	No	This is a highly conspicuous species and is unlikely to remain undetected if present in the subject land. A small number of records within 10 km of the subject land. Species generally occurs in the New

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				including New England Dry Sclerophyll Forests, Western Slopes Dry Sclerophyll Forests, New England Grassy Woodlands and Tableland Clay Grassy Woodlands. Grows on shallow, infertile soils on shale substrates.					England Tablelands from Nundle to north of Tenterfield, being most common in central portions of its range
<i>Eucalyptus sp. Cattai</i>	Critically Endangered	Critically Endangered	No	Small tree or mallee distributed between Colo Heights and Castle Hill in north-western Sydney. Grows as an emergent tree on flats and ridgetops in Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows on sandstone substrates in laterised clays and	Low	No	No survey required.	No	This is a highly conspicuous species and is unlikely to remain undetected if present in the subject land. No records within 10 km of the subject land. Habitat for the species is considered absent from the subject land.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				occasionally on sandy soils.					
<i>Genoplesium baueri</i> Bauer's Midge Orchid	Endangered	Endangered	No	Terrestrial orchid with 13 populations totalling 200 plants distributed between Ulladulla and Port Stephens. Grows on moss gardens in a variety of communities including Sydney Coastal Dry sclerophyll Forests, Sydney Coastal Heaths, Sydney Montane Heaths, Southern Lowland Wet Sclerophyll Forests and Sydney Hinterland Dry Sclerophyll Forests. Grows on sandstone substrates	Low	No	No survey required.	No	This species is not a BAM candidate species. No records occur within 10 km of the subject land. This species grows in dry sclerophyll forest and moss gardens over sandstone. The subject land occurs in a highly degraded state, and habitat features for this species are not present within the subject land.
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	Not Listed	Vulnerable	Yes	Spreading to erect medium sized shrub endemic to Western Sydney with a distribution	Low	Yes	Year-round	Yes	Surveyed (not present) – This species is a known 'disturbance' coloniser and may occur in

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Juniper-leaved Grevillea				spanning from Blacktown, Erskine Park, Londonderry and Windsor and outlying populations at Kemps Creek and Pitt Town. Grows at elevations <50 m in Cumberland Plain Woodland, Castlereagh Ironbark Forest, Castlereagh Scribbly Gum Woodland, Shale/Gravel Transition Forest, Sydney Sand Flats Dry Sclerophyll Forests and Coastal Valley Grassy Woodlands. Grows in sandy to clay loam soils and red pseudolateritic gravels derived from Wianamatta Shale and Tertiary Alluvium.					disturbed areas within the subject land. Comprehensive surveys for the flora species were undertaken in January 2025. This species was not detected during targeted flora surveys
<i>Grevillea parviflora</i>	Vulnerable	Vulnerable	No	Low spreading to erect shrub	Low	No	No survey required.	No	Not a BAM candidate species. A small

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
subsp. <i>parviflora</i> Small-flower Grevillea				sporadically distributed throughout the Sydney Basin, most notably in the Picton, Appin and Bargo regions, in the Cessnock - Kurri Kurri area and isolated populations from Putty to Wyong and Lake Macquarie. Grows in Shale Sandstone Transition Forest, Kurri Sand Swamp Woodland, Coymbia maculata - Angophora costata Open Forest in the Dooralong Area, Sydney Sandstone Ridgetop Woodland at Wedderburn and Cooks River/Castlereagh Ironbark Forest at Kemps Creek. Grows in sandy or light clay soils including tertiary alluviums					number of records (two) occur within 10 km from the subject land. This species grows in sandy or light clay soils usually over thin shales, often with lateritic ironstone gravels and nodules. The subject land occurs in a highly degraded state, and habitat features for this species are not present within the subject land.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				over thin shales and lateritic ironstone gravels.					
<i>Gyrostemon thesioides</i>	Not Listed	Endangered	Yes	Multistemmed shrub only recorded from three sites to the west of Sydney, near the Colo, Georges and Nepean Rivers. Grows on hillsides and riverbanks in a variety of communities including Central Gorge Dry Sclerophyll Forests, Cumberland Dry Sclerophyll Forests, Coastal Floodplain Wetlands, Western Slopes Grassy Woodlands and North Coast Wet Sclerophyll Forests. Grows on fine sandy soils	Low	No	No survey required.	No	This species is particularly found near Lake Burratorang in the Blue Mountains National Park, and near Long Point in Western Sydney. Its natural habitat includes hillsides, slopes, terraces and riverbanks within 180 metres of watercourse. No known records occur within 10 km of the subject land, and habitat to support the species is absent from the subject land.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Haloragis exalata</i> subsp. <i>exalata</i> Square Raspwort	Vulnerable	Vulnerable	No	Small to medium sized shrub found growing in four widely scattered locations in eastern NSW including the central coast, south coast and north western slopes. Grows in damp, protected and shaded areas in riparian zones in a variety of communities including South East Dry Sclerophyll Forests, Coastal Floodplain Wetlands, Montane Bogs and Fens and Northern Warm Temperate Rainforests.	Low	No	No survey required.	No	This species is particularly found in 4 widely scattered localities in eastern NSW. It's distribution is disjunct in the Central Coast, South Coast and North Western Slopes botanical subdivisions of NSW. Square Raspwort appears to require protected and shaded damp situations in riparian habitats. No known records occur within 10 km of the subject land, and habitat to support the species is absent from the subject land.
<i>Hibbertia puberula</i>	Not Listed	Endangered	Yes	Shrublet with a distribution extending from Wollemi National Park south to Morton National Park and the south	Low	No	No survey required.	No	This species is not a BAM candidate species. No records of the species occur within 10 km from the subject land. It favours low heath on sandy

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				coast near Nowra. Grows in a variety of communities including Southern Tableland Dry Sclerophyll Forests, Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Heath Swamps, Coastal Valley Grassy Woodlands and Sydney Coastal Heaths. Grows on sandy soils, occasionally on clay soils.					soils or rarely in clay, with or without rocks underneath. Habitat within the subject land is heavily degraded, and is not considered to provide habitat for this species.
<i>Kunzea rupestris</i>	Vulnerable	Vulnerable	No	Clonal shrub restricted to 20 populations growing throughout the Maroota - Sackville - Glenorie area with one outlier at Kuring-gai Chase National Park. Grows in shallow depressions on rock	Low	No	No survey required.	No	Not a BAM candidate species. No records occur within 10 km from the subject land. This species has a restricted distribution, with most locations in the Maroota - Sackville - Glenorie area and one outlier in Kuring-gai Chase National

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				platforms and outcrops in Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows on sandstone substrates.					Park, all within the Central Coast botanical subdivision of NSW. Currently known to exist in 20 populations, 6 of which are reserved.
<i>Lasiopetalum joyceae</i>	Vulnerable	Vulnerable	No	Erect, medium sized shrub restricted to 34 sites within the Hornsby Plateau from Berrilee to Duffys Forest. Grows on lateritic or shale influenced ridgetops in Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows on sandstone substrates.	Low	No	No survey required.	No	Not a BAM candidate species. No records occur within 10 km from the subject land. This species has a restricted range occurring on lateritic to shaley ridgetops on the Hornsby Plateau south of the Hawkesbury River.
<i>Leucopogon exolasius</i>	Vulnerable	Vulnerable	No	Erect shrub confined to the upper	Low	No	No survey required.	No	Not a BAM candidate species. Woronora

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Woronora Beard-heath				Georges River area and Heathcote National Park. Grows in a variety of communities including Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Sydney Montane Dry Sclerophyll Forests, Eastern Riverine Forests, and Sydney Coastal Heaths. Grows on sandstone substrates.					Beard-heath is found along the upper Georges River area and in Heathcote National Park. The plant occurs in woodland on sandstone. Habitat within the subject land is heavily degraded and is not considered to provide suitable habitat for the species.
<i>Macadamia integrifolia</i> Macadamia Nut	Vulnerable	Not Listed	No	Medium sized tree found growing from Mount Bauple, near Gympie to Currumbin Valley in the Gold Coast hinterland in south-east Queensland. Occurs in the Northern Rivers region of NSW in remnant rainforest,	Low	No	No survey required.	No	Not known to occur naturally in the wild in NSW. Any nearby records are associated with landscape plantings of amenity value only.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				mixed notophyll forest and rainforest margins.					
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> - endangered population	-	E2	Yes	A twining climber to 4m high that's grows in vine thickets and open shale woodland. Recent records occur in Prospect, Bankstown, Smithfield, Cabramatta Creek and St Marys within the Sydney area.	Low	Yes	Nov-Feb	Yes	Surveyed (not recorded) – -This species is a known 'disturbance' coloniser and may occur in disturbed areas within the subject land. Comprehensive surveys for the flora species were undertaken in January 2025. This species was not detected during targeted flora surveys
<i>Maundia triglochinosides</i>	Not Listed	Vulnerable	Yes	Perennial sedge restricted to coastal NSW from Wyong extending northwards to southern Queensland. Grows in shallow freshwater channels, lagoons, creeks, dams or swamps in	Low	No	No survey required.	No	No records within 10 km of the subject land. Restricted to coastal NSW and extending into southern Queensland. The current southern limit is Wyong; former sites around Sydney are now extinct. Habitat constraints

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				a variety of communities including Coastal Floodplain Wetlands, Coastal Swamp Forests, Coastal Freshwater Lagoons, Coastal Heath Swamps and Coastal Valley Grassy Woodlands. Grows in heavy clay, low nutrient soils.					listed in the BAM-C are not present for this species.
Melaleuca deanei Deane's Paperbark	Vulnerable	Vulnerable	No	Medium sized shrub found growing in two distinct populations in the Ku-ring-gai/Berowra and Holsworthy/Wedder burn areas along with a few outliers at Springwood and in the Wollemi National Park, Yalwal and the Central Coast regions. Grows in ridgetop woodland in a variety of	Low	No	No survey required.	No	Not a BAM candidate species. No records occur within 10 km of the subject land. Deane's Paperbark occurs in two distinct areas, in the Ku-ring-gai/Berowra and Holsworthy/Wedderburn areas respectively. The subject land is considered to be outside the general range for this species, and habitat preferences (The species occurs mostly

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				communities including Sydney Coastal Dry Sclerophyll Forests, South East Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths. Grows on sandstone substrates in alluvial soils.					in ridgetop woodland) are considered absent from the subject land.
<i>Micromyrtus blakelyi</i>	Vulnerable	Vulnerable	No	Low spreading shrub restricted to the Hawkesbury River with a distribution which extends from the north of Maroota down to Cowan in the south. Grows in cracks and depressions of sandstone rock platforms in Sydney Coastal Dry Sclerophyll Forests,	Low	No	No survey required.	No	This species is not a BAM candidate species. No records occur within 10 km of the subject land. This species is restricted to areas near the Hawkesbury River, north of Sydney. Distribution extends from north of Maroota in the north, to Cowan in the south. All known populations occur within the Baulkham

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Sydney Hinterland Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows on sandstone substrates in shallow, sandy soils.					Hills and Hornsby local government areas. Habitat to support the species is absent from the subject land.
<i>Micromyrtus minutiflora</i>	Vulnerable	Endangered	Yes	Slender, spreading shrub restricted to the western edge of the Cumberland Plain between Richmond and Penrith. Grows in Cumberland Dry Sclerophyll Forests and Sydney Sand Flats Dry Sclerophyll Forests including Castlereagh Scribbly Gum Woodlands, Castlereagh Ironbark Forests, and Shale/Gravel Transition Forests. Grows in tertiary alluvium and consolidated river sediments.	Low	No	No survey required.	No	This species is restricted to the general area between Richmond and Penrith, western Sydney. He species typically grows in Castlereagh Scribbly Gum Woodland, Ironbark Forest, Shale/Gravel Transition Forest, open forest on tertiary alluvium and consolidated river sediments. No known records occur within 10 km of the subject land, and habitat to support the species is absent from the subject land.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Persicaria elatior</i> Tall Knotweed	Vulnerable	Vulnerable	Yes	Erect herb found growing in south-eastern NSW at Mount Dromedary, Moruya State Forest near Turlinjah, Upper Avon River catchment north of Robertson, Bermagui and Picton Lakes. Also grows in northern NSW around Raymond Terrace near Newcastle and Cherry Tree and Gibberagee State Forests in the Grafton area. Grows in damp places usually on the margins of waterbodies and in swamp forests in a variety of communities including Coastal Floodplain Wetlands, Coastal Swamp Forests, Eastern Riverine Forests,	Low	No	No survey required.	No	This species normally grows in damp places, especially beside streams and lakes. One ephemeral wetland does occur within the subject land, however this is significantly degraded and dominated by exotic weeds and grasses. No records of the species occur within 10 km. Habitat for the species is considered absent from the subject land.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Coastal Freshwater Lagoons and Coastal Heath Swamps.					
<i>Persoonia hirsuta</i> Hairy Geebung	Endangered	Endangered	No	Spreading, hairy shrub with a scattered distribution throughout Sydney from Singleton to the north, the east coast of Bargo to the south and the Blue Mountains to the west. Grows at elevations between 350 - 600 metres in a variety of communities including Southern Tableland Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Western Slopes Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths and	Low	No	No survey required.	No	Not a BAM candidate species. A limited number of records (one) occur within 10 km of the subject land. The Hairy Geebung is 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. Habitat within the subject land is heavily degraded, dominated by weeds and exotic grasses. The subject land is not considered to provide habitat for the species.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Southern Escarpment Wet Sclerophyll Forests. Grows in sandy soils on sandstone substrates.					
<i>Persoonia nutans</i> Nodding Geebung	Endangered	Endangered	Yes	Erect or spreading shrub with a disjunct distribution restricted to the Cumberland Plain between Richmond in the north and Macquarie Fields in the south with core distribution occurring in the Penrith and to a lesser extent, Hawkesbury regions. Grows in Cumberland Dry Sclerophyll Forests including Agnes Banks Woodland, Castlereagh Scribbly Gum Woodland, Cooks River/Castlereagh Ironbark Forest and	Low	Yes	Year-round	Yes	Surveyed (not recorded) – This species is a known 'disturbance' coloniser and may occur in disturbed areas within the subject land. Comprehensive surveys for the flora species were undertaken in January 2025. This species was not detected during targeted flora surveys..

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Shale-Sandstone Transition Forest as well as Sydney Sand Flats Dry Sclerophyll Forests and Coastal Valley Grassy Woodlands. Grows in sandy soils derived from aeolian or alluvial sediments as well as in tertiary alluviums to the south of its range.					
<i>Pimelea curviflora</i> var. <i>curviflora</i>	Vulnerable	Vulnerable	Yes	Small to medium sized shrub restricted to the coastal areas of Sydney between northern Sydney and Maroota with an outlying population at Croom Reserve near Albion Park in the Illawarra region. Grows on ridgetops and upper slopes amongst grasses and sedges in a variety of communities	Low	No	No survey required.	No	A limited number of records (3) occur within 10 km from the subject land. This species occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. This habitat is absent from the subject land

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				including Cumberland Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths and Northern Hinterland Wet Sclerophyll Forests. Can be inconspicuous amongst grasses and sedges although easier to find in October to May when flowering. Grows on sandstone substrates in shale/lateritic soils and shale/sandstone transition soils.					
<i>Pimelea spicata</i> Spiked Rice-flower	Endangered	Endangered	Yes	Small erect or spreading shrub with populations occurring in two disjunct areas, one occurring on the	Low	No	No survey required.	No	This species is known to occur on well-structured clay soils derived from Wianamatta Shale, typically in ecological

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				<p>Cumberland Plain from Marayong and Prospect Reservoir south to Narellan and Douglas Park, and the other occurring in the Illawarra from Landsdowne to Shellharbour and north Kiama. Grows in Maritime Grasslands and Coastal Valley Grassy Woodlands including Cumberland Plain Woodlands and Moist Shale Woodlands within the Cumberland Basin and in Coast Banksia Open Woodland Coastal Grasslands in the Illawarra region. Grows on well structured clay soils.</p>					<p>communities such as Cumberland Plain Shale Woodlands or Shale-Gravel Transition Forest. While the species has been recorded in degraded areas, it relies on specific soil and ecological conditions for persistence. The species is susceptible to competition from invasive grasses like Kikuyu and requires periods without mowing or frequent disturbance for establishment. The subject land was subject to complete clearance and introduced fill in the early 2000s, which removed critical habitat features required by the species. Currently, the site is dominated by exotic grasses and weeds, offering no</p>

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									suitable habitat for the specie
<i>Pomaderris brunnea</i> Brown Pomaderris	Vulnerable	Endangered	Yes	Medium sized shrub with a distribution limited to the area around the Colo, Nepean and Hawkesbury Rivers including the Bargo area and near Camden. Grows on floodplains and creeklines in a variety of communities including Sydney Hinterland Dry Sclerophyll Forests, Central Gorge Dry Sclerophyll Forests, Coastal Floodplain Wetlands, Coastal Valley Grasslands and North Coast Wet Sclerophyll Forests. Grows in clay and alluvial soils.	Low	No	No survey required.	No	Brown Pomaderris is found in a very limited area around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area and near Camden. Brown Pomaderris grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines. Habitat within the subject land is heavily degraded, and does not provide habitat for the species. No <i>Pomaderris</i> spp. were identified within the subject land.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Pomaderris prunifolia</i> - endangered population	Not Listed	Endangered Population	Yes	Small shrub restricted to the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas including Rydalmere, Rookwood Cemetery and The Crest at Bankstown. Found growing on rocky slopes adjacent to creek lines, road reserves and small gullies in Cumberland Dry Sclerophyll Forests including Cooks River/Castlereagh Ironbark Forest and Northern Hinterland Dry Sclerophyll Forests. Grows in shale soils on sandstone substrates.	Low	No	No survey required.	No	The subject land does not occur within the region containing the endangered population for the species. Known from only three sites within the listed local government areas, at Rydalmere, within Rookwood Cemetery and at The Crest of Bankstown.
<i>Pterostylis gibbosa</i>	Endangered	Endangered	No	Deciduous terrestrial orchid with a disjunct	Low	No	No survey required.	No	Not a BAM candidate species. This species has a restricted

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Illawarra Greenhood				<p>distribution from the Milbrodale in the Hunter Region, Albion Park and Yallah in the Illawarra Region and Nowra in the Shoalhaven Region. Found growing amongst grasses on flat or gently sloping land with poor drainage in woodland dominated by Forest Red Gum Eucalyptus tereticornis, Woollybutt E. longifolia, and White Feather Honey-myrtle Melaleuca decora. In Nowra, the orchid can be found growing in association with Spotted Gum Corymbia maculata, Forest Red Gum and Grey Ironbark E. paniculata. In the Hunter Region, the</p>					<p>distribution and is generally found further south in the Illawarra region. All known populations grow in open forest or woodland, on flat or gently sloping land with poor drainage. Habitat features required for the species are considered absent from the subject land.</p>

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				orchid is associated with Narrow-leaved Ironbark E. crebra, Forest Red Gum and Black Cypress Pine Callitris endlicheri. Grows in red brown loam soils.					
<i>Pterostylis saxicola</i> Sydney Plains Greenhood	Endangered	Endangered	Yes	Deciduous terrestrial orchid restricted to a few small populations located in Western Sydney between Freemans Reach in the north and Picton in the south including Georges River National Park. Found growing near streams in depression on sandstone rock shelves above cliff lines faces, moist, sheltered ridges and creek banks on mossy rocks in Temperate Montane Grasslands,	Low	No	No survey required.	No	The Sydney Plains Greenhood is currently known to occur at only five locations in western Sydney, none of which are in proximity to the subject land. No records occur within 10 km of the subject land. Given the significantly degraded state of the habitat within the subject land, it is highly unlikely that the species would be present under these conditions. The lack of suitable, intact habitat and the extent of disturbance further reduce the potential

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Northern Warm Temperate Rainforests, Southern Warm Temperate Rainforests and Southern Tableland Wet Sclerophyll Forests. Grows in small pockets of shallow shale or shale/sandstone transition soils over sandstone substrates.					for this species to occur on-site.
<i>Pultenaea parviflora</i>	Vulnerable	Endangered	Yes	Small erect, branching shrub endemic to the Cumberland Plain from Windsor to Penrith east to Dean Park with outlying populations at Kemps Creek and Wilberforce. Found growing in Cumberland Dry Sclerophyll Forests including Castlereagh	Low	Yes	Sept-Nov	Yes	Surveyed (not present) – This species is a known 'disturbance' coloniser and may occur in disturbed areas within the subject land. Comprehensive surveys for the flora species were undertaken in January 2025. This species was not detected during targeted flora surveys

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Ironbark Forest, Shale Gravel Transition Forest and Castlereagh Scribbly Gum Woodland, Sydney Coastal Dry Sclerophyll Forests, Sydney Sand Flats Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands and Southern Lowland Wet Sclerophyll Forests. Grows in soils derived from Wianamatta shale, laterite or alluvium.					
<i>Pultenaea pedunculata</i> Matted Bush-pea	Not Listed	Endangered	Yes	Small prostrate, mat forming shrub restricted to three disjunct populations, in Villawood, Prestons and north-west of Appin in the Cumberland Plains in Sydney, the coast between Tathra and Bermagui and the	Low	Yes	Sept-Nov	Yes	Surveyed (not present) – This species is a known 'disturbance' coloniser and may occur in disturbed areas within the subject land. Comprehensive surveys for the flora species were undertaken in January

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Windellama area south of Goulburn. Found growing in a variety of habitats including intact woodland, creeklines, broad valleys, headlands, rock crevices, disturbed sites such as road batters and coastal cliffs in a variety of communities including Central Gorge Dry Sclerophyll Forests, South Coast Sands Dry Sclerophyll Forests, Cumberland Dry Sclerophyll Forests, Temperate Montane Grasslands, Coastal Valley Grassy Woodlands and Southern Tableland Wet Sclerophyll Forests. Grows in a variety of soils including sandy clay					2025. This species was not detected during targeted flora surveys

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				soils, loam soils, transitional soils with ironstone nodule inclusions and soils derived from Wianamatta shale, laterite or alluvium.					
<i>Rhizanthella slateri</i> Eastern Australian Underground Orchid	Endangered	Vulnerable	No	Terrestrial orchid with a distribution spanning from south-east NSW to south-east Queensland. Recorded in ten populations in NSW including near Bulahdelah, the Watagan Mountains, the Blue Mountains, Wisemans Ferry Area, Agnes Banks and near Nowra. A cryptic species which grows beneath the soil surface with flowers being the only part of the plant to occur aboveground in	Low	No	No survey required.	No	Not a BAM candidate species. Whilst the Eastern Underground Orchid grows in Eucalyptus forest, no informative assessment of the likely preferred habitat for the species is available, and no particular vegetation type is associated with the species. However, the subject land has undergone extensive disturbance and occurs in a highly degraded state. No records of the species occur within 10k of the subject land, and habitat present is

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Sydney Sand Flats Dry Sclerophyll Forests, Eastern Riverine Forests, Northern Warm Temperate Rainforests, North Coast Wet Sclerophyll Forests, Northern Hinterland Wet Sclerophyll Forests and Southern Lowland Wet Sclerophyll Forests. Grows in deep loam soils.					unlikely to be suitable for the species.
<i>Rhodamnia rubescens</i> Scrub Turpentine	Critically Endangered	Critically Endangered	No	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	Low	No	No survey required.	No	Not a BAM candidate species. No records occur within 10 km of the subject land. The species typically occurs in coastal districts north from Batemans Bay in New South Wales. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									sedimentary soils. Habitat requirements suitable for this species are considered absent from the subject land.
<i>Senna acclinis</i> Rainforest Cassia	Not listed	Endangered	Yes	Grows on the margins of subtropical, littoral and dry rainforests. Occurs in coastal districts and adjacent tablelands of NSW from the Illawarra in NSW to Queensland.	Low	No	No survey required	No	Habitat is not present within the subject land or is considered degraded (marked as such in BAM-C).
<i>Wahlenbergia multicaulis</i> - endangered population	Not listed	Endangered population	Yes	In Western Sydney most sites are closely aligned with the Villawood Soil Series, which is a poorly drained, yellow podsolic extensively permeated with fine, concretionary ironstone (laterite). However, the sites in Hornsby LGA are on the 'Hawkesbury'	Low	No	No survey required	No	Habitat is considered degraded (marked as such in BAM-C).

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				<p>soil landscape. Found in disturbed sites and grows in a variety of habitats including forest, woodland, scrub, grassland and the edges of watercourses and wetlands. Typically occurs in damp, disturbed sites (with natural or human disturbance of various forms), typically amongst other herbs rather than in the open.</p> <p>There are 13 known sites, two of which are in northern Sydney (Thornleigh and Mt Ku-Ring-Gai) with the remainder in western Sydney (Rookwood, Chullora, Bass Hill, Bankstown, Georges Hall, Campsie, South Granville and Greenacre). There</p>					

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				are likely to be more sites than those listed here.					

Appendix 4.2 Threatened fauna species assessment

Table A 5 Threatened fauna species assessment

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Birds									
<i>Anthochaera phrygia</i> Regent Honeyeater	Critically Endangered	Critically Endangered	Yes	Regent Honeyeaters are semi-nomadic, occurring in temperate eucalypt woodlands and open forests. Most records are from box-ironbark eucalypt forest associations and wet lowland coastal forests. Nectar and fruit from mistletoes are also eaten. This species usually nest in tall	Low	No	No survey required.	No	The species has been excluded as a candidate as the subject land does not occur within areas mapped as 'Important Habitat' for the species.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				mature eucalypts and She-oaks.					
<i>Botaurus poiciloptilus</i> Australasian Bittern	Endangered	Endangered	No	The Australasian Bittern is distributed across south-eastern Australia. Often found in terrestrial and estuarine wetlands, generally where there is permanent water with tall, dense vegetation including <i>Typha</i> spp. and <i>Eleocharis</i> spp.. Typically this bird forages at night on frogs, fish and invertebrates, and remains inconspicuous during the day. The breeding season extends from October to January with nests being built amongst dense vegetation on a flattened platform of reeds.	Low	No	No survey required.	No	Habitat constraints such as the presence of freshwater and estuarine wetlands, in areas of permanent water and dense vegetation, are absent from the subject land. No records of the species exist within 10 km of the subject land.
<i>Burhinus grallarius</i>	Not listed	Endangered	Yes	The Bush Stone-curlew is found throughout Australia except for the	Low	No	No survey required	No	This species depends on vegetation with an open understorey

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Bush Stone-curlew				central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Occurs in lightly timbered open forest and woodland, or partly cleared farmland with remnants of woodland, with a ground cover of short sparse grass and few or no shrubs where fallen branches and leaf litter are present.					and suitable fallen debris for cover and foraging (such as dead timber and logs). There is a minimal quantity of fallen debris present in the subject land due to prior disturbance. Excluded as a candidate based on habitat constraints in the BAM-C (lack of standing/fallen dead timber).
<i>Calidris ferruginea</i> Curlew Sandpiper	Critically Endangered	Critically Endangered	Yes	Inhabits sheltered intertidal mudflats. Also non-tidal swamps, lagoons and lakes near the coast. Infrequently recorded inland.	Low	No	No survey required.	No	The species has been excluded as a candidate as the subject land does not occur within areas mapped as 'Important Habitat' for the species.
<i>Callocephalon fimbriatum</i>	Endangered	Endangered	Yes	In summer, occupies tall montane forests and	Low	No	No survey required.	No	Old growth forests and woodland

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Gang-gang Cockatoo				woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in subalpine Snow Gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.					habitats preferred by the species are not present in the subject land. There are no suitable breeding hollows located within the study area. While the species may forage on Swamp Oak within the subject land on occasion, foraging resources directly east of the subject land are significantly more abundant and higher-quality. Excluded as a candidate based on habitat constraints in the BAM-C (lack of suitable breeding hollows).
<i>Calyptorhynchus lathami lathami</i> South-Eastern Glossy Black-Cockatoo	Vulnerable	Vulnerable	Yes	Inhabits forest with low nutrients, characteristically with key Allocasuarina species. Tends to prefer drier forest types. Often confined to remnant	Low	No	No survey required.	No	Suitable breeding hollows remain absent from the subject land. While the species may forage on Swamp Oak within the

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				patches in hills and gullies. Breed in hollows stumps or limbs, either living or dead.					subject land on occasion, foraging resources directly east of the subject land are significantly more abundant and higher-quality. Excluded as a candidate based on habitat constraints in the BAM-C (lack of suitable breeding hollows).
<i>Cercartetus nanus</i> Eastern Pygmy-possum	Not listed	Vulnerable	Yes	Patchily distributed from the coast to the Great Dividing Range, and as far as Pillaga, Dubbo, Parkes and Wagga Wagga on the western slopes. Inhabits rainforest through to sclerophyll forest and tree heath. Banksias and myrtaceous shrubs and trees are a favoured food source. Soft fruits are eaten when flowers are unavailable and it also feeds on insects. Will	Low	No	No survey required	No	Habitat in the form of woodland with hollow-bearing trees is not present within the subject land. The site has been heavily degraded and therefore the subject land is unlikely to provide suitable foraging or breeding habitat. Excluded as a candidate based on habitat degradation as marked in the BAM-C.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				often nest in tree hollows, but can also construct its own nest. Because of its small size it is able to utilise a range of hollow sizes including very small hollows. Individuals will use a number of different hollows and an individual has been recorded using up to 9 nest sites within a 0.5 ha area over a 5 month period.					
<i>Climacteris picumnus victoriae</i> Brown Treecreeper (eastern subspecies)	Vulnerable	Vulnerable	No	Lives in eucalypt woodlands, especially areas of relatively flat open woodland typically lacking a dense shrub layer, with short grass or bare ground and with fallen logs or dead trees present.	Low	No	No survey required.	No	The subject land does not support eucalypt woodlands with a high abundance of fallen logs and dead trees; the preferred habitat for the species. The species has only been recorded on four occasions within 10 km of the subject land.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	Not Listed	Vulnerable	Yes	A migratory species that is generally sedentary in Australia, although immature individuals and some adults are dispersive. Found in terrestrial and coastal wetlands; favouring deep freshwater swamps, lakes and reservoirs; shallow coastal lagoons and saltmarshes. It hunts over open terrestrial habitats. Feeds on birds, reptiles, fish, mammals, crustaceans and carrion. Roosts and makes nest in trees.	Low	No	No survey required.	No	Suitable breeding habitat for this species in the form of tall, mature trees within sight of large waterbodies are not present in the subject land. No raptor nests were identified within the subject land during field investigations in September. Excluded as a candidate based on habitat constraints in the BAM-C (lack of suitable stick nests).
<i>Hieraetus morphnoides</i> Little Eagle	Not listed	Vulnerable	Yes	The Little Eagle is most abundant in lightly timbered areas with open areas nearby providing an abundance of prey species. It has often been recorded foraging in grasslands, crops, treeless dune fields, and recently logged areas. The Little	Low	No	No survey required	No	This species nests in tall living trees within a remnant patch of open eucalypt forest, which is present as habitat in the subject land, however no nests or evidence of breeding was observed during the field investigations.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Eagle nests in tall living trees within farmland, woodland and forests.					Excluded as a candidate based on habitat constraints in the BAM-C (lack of breeding habitat).
<i>Hirundapus caudacutus</i> White-throated Needle-tail	Vulnerable	Vulnerable	Yes	An aerial species found in feeding concentrations over cities, hilltops and timbered ranges. This species roosts in trees in forests and woodlands and feeds on insects. The White-throated Needle-tail breeds in forests and sparse hills in Asia.	Low	No	No survey required.	No	The species has been recorded roosting in trees in forests and woodlands, though little is known about the species. The species does not breed in Australia and nearby sightings are likely vagrants.
<i>Lathamus discolor</i> Swift Parrot	Critically Endangered	Endangered	Yes	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in	Low	Yes	No survey required.	No	Areas mapped as 'Important Habitat' for the species are located within the subject land. The species has been recorded at moderate numbers, with 66 records of the species existing within 10 km of the subject land, with a number of

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				NSW. Favoured feed trees include winter flowering species such as Swamp Mahogany Eucalyptus robusta, Spotted Gum Corymbia maculata, Red Bloodwood C. gummifera, Mugga Ironbark E. sideroxylon, and White Box E. albens. Commonly used lerp infested trees include Grey Box E. microcarpa, Grey Box E. moluccana and Blackbutt E. pilularis. This species is migratory, breeding in Tasmania and also nomadic, moving about in response to changing food availability.					records occurring within Nurragingy Reserve. It is likely that the species forages within the subject land on occasion during migration to the mainland.
<i>Limosa limosa</i> Black-tailed Godwit	Endangered	Vulnerable	Yes	The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer,	Low	No	No survey required.	No	The species has been excluded as a candidate as the subject land does not occur within areas mapped as

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				<p>arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. The species has been recorded within the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state.</p>					'Important Habitat' for the species.
<i>Lophoictinia isura</i>	Not listed	Vulnerable	Yes	Typically inhabits coastal forested and wooded lands of	Low	No	No survey required	No	Breeding habitat for this species includes large eucalypts in

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Square-tailed Kite				tropical and temperate Australia. In NSW it is often associated with ridge and gully forests dominated by Eucalyptus longifolia, Corymbia maculata, E. elata, or E. smithii. Individuals appear to occupy large hunting ranges of more than 100 km ² . They require large living trees for breeding, particularly near water with surrounding woodland /forest close by for foraging habitat. Nest sites are generally located along or near watercourses, in a tree fork or on large horizontal limbs.					preferred vegetation types located along or near watercourses. No nests or evidence of breeding were observed during the field investigations. Excluded as a candidate based on habitat constraints in the BAM-C (lack of breeding habitat).
<i>Ninox connivens</i> Barking Owl	Not listed	Vulnerable	Yes	Generally found in open forests, woodlands, swamp woodlands, farmlands and dense scrub. Can also be found in the foothills and timber along	Low	No	No survey required.	No	Potential breeding habitat in the form of hollow-bearing trees is not present in the subject land. Excluded as a candidate based on

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				watercourses in otherwise open country. Territories are typically 2000 ha in NSW habitats. Hunts small arboreal mammals or birds and terrestrial mammals when tree hollows are absent.					habitat constraints in the BAM-C (lack of suitable hollows for breeding).
<i>Ninox strenua</i> Powerful Owl	Not listed	Vulnerable	Yes	rainforests. It may inhabit both un-logged and lightly logged forests as well as undisturbed forests where it usually roosts on the limbs of dense trees in gully areas. Large mature trees with hollows at least 0.5 m deep are required for nesting. Tree hollows are particularly important for the Powerful Owl because a large proportion of the diet is made up of hollow-dependent arboreal marsupials. Nest trees for this species are usually	Low	No	No survey required.	No	Potential breeding habitat in the form of hollow-bearing trees is not present in the subject land. Excluded as a candidate based on habitat constraints in the BAM-C (lack of suitable hollows for breeding).

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				emergent with a diameter at breast height of at least 100 cm. It has a large home range of between 450 and 1450 ha.					
<i>Pandion cristatus</i> Eastern Osprey, Australian Osprey	Not Listed	Vulnerable	Yes	Found in coastal waters, inlets, estuaries and offshore islands. Occasionally found 100 km inland along larger rivers. It is water-dependent, hunting for fish in clear, open water. The Osprey occurs in terrestrial wetlands, coastal lands and offshore islands. It is a predominantly coastal species, generally using marine cliffs as nesting and roosting sites. Nests can also be made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	Low	No	No survey required.	No	Breeding habitat for this species consists of dead trees or artificial structures that are located within 100 m of a floodplain, with a preference for coastline, therefore, the habitat is absent in the subject land. No nests or evidence of breeding were found during field investigations in September. Excluded as a candidate based on habitat constraints in the BAM-C (lack of suitable stick nests).
<i>Rostratula australis</i>	Endangered	Endangered	No	Usually found in shallow inland wetlands	Low	No	No survey required.	No	Preferred habitat for the species including

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Australian Painted Snipe				including farm dams, lakes, rice crops, swamps and waterlogged grassland. They prefer freshwater wetlands, but have been recorded in brackish waters. Forages on mud-flats and in shallow water. Feeds on worms, molluscs, insects and some plant-matter.					permanent swamps, farm dams, rice crops or waterlogged grasslands, do not exist within the subject land. Only 6 records of the species exist within 10 km of the subject land.
<i>Stagonopleura guttata</i> Diamond Firetail	Vulnerable	Vulnerable	No	The Diamond Firetail is widely distributed, found in a range of habitat types including open eucalypt forest, mallee and acacia scrubs. Often occur in vegetation along watercourses. Feeds exclusively on the ground on ripe grass and herb seeds, green leaves and insects.	Low	No	No survey required.	No	Suitable habitat for the species in the form of open Eucalypt woodlands are largely excluded from the subject land. Groundcover within the subject land does not provide suitable forging habitat for the species. The species has not been recorded within 10 km of the subject land.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Tyto novaehollandiae</i> Masked Owl	Not listed	Vulnerable	Yes	The Masked Owl is found in range of wooded habitats that provide tall or dense mature trees with hollows suitable for nesting and roosting. It is mostly seen in open forests and woodlands adjacent to cleared lands. Prey includes hollow-dependent arboreal marsupials and terrestrial mammals.	Low	No	No survey required	No	This species breeds in moist eucalypt forests and woodlands, and the species relies on medium sized hollows with close proximity to open habitat. Potential breeding habitat in the form of hollow-bearing trees is not present in the subject land. Excluded as a candidate based on habitat constraints in the BAM-C (lack of suitable hollows for breeding).
Mammals									
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	Endangered	Endangered	Yes	Occurs from the Queensland border to Ulladulla, with largest numbers from the sandstone escarpment country in the Sydney Basin and Hunter Valley. Primarily found in dry sclerophyll forests and	Low	Yes	Nov-Jan	Low	Surveyed (not present) – Due to the subject land's proximity to the extensive corridor comprising Nurragingy Reserve and the riparian corridor of Eastern

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				woodlands, but also found in rainforest fringes and subalpine woodlands. Forages on small, flying insects below the forest canopy. Roosts in colonies of between three and 80 in caves, Fairy Martin nests and mines, and beneath rock overhangs, but usually less than 10 individuals. Likely that it hibernates during the cooler months. The only known existing maternity roost is in a sandstone cave near Coonabarabran.					Creek, appropriate roosting habitat for the species within 2 km of the subject land cannot be ruled out. The species is likely to be foraging within the subject land, around the edge of the existing canopy. Comprehensive surveys for this fauna species were undertaken in December 2024 and January 2025. This species was not detected during targeted fauna surveys.
<i>Dasyurus maculatus</i> Spotted-tailed Quoll	Endangered	Vulnerable	No	Occurs along the east coast of Australia and the Great Dividing Range. Uses a range of habitats including sclerophyll forests and woodlands, coastal heathlands and rainforests. Occasional	Low	No	No survey required.	No	The species is unlikely to exist within the subject land due to the absence of appropriate den sites, and lack of hollow-bearing trees which would provided habitat for prey

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				<p>sightings have been made in open country, grazing lands, rocky outcrops and other treeless areas. Habitat requirements include suitable den sites, including hollow logs, rock crevices and caves, an abundance of food and an area of intact vegetation in which to forage. Seventy per cent of the diet is medium-sized mammals, and also feeds on invertebrates, reptiles and birds. Individuals require large areas of relatively intact vegetation through which to forage. The home range of a female is between 180 and 1000 ha, while males have larger home ranges of between 2000 and 5000 ha. Breeding occurs from May to August.</p>					<p>individuals. The species has been recorded in low occurrences (7 records) within 10 km of the subject land.</p>

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Miniopterus australis</i> Little Bent-winged Bat	Not Listed	Vulnerable	Yes	Occurs from Northern Queensland to the Hawkesbury River near Sydney. Roost sites encompass a range of structures including caves, tunnels and stormwater drains. Young are raised by the females in large maternity colonies in caves in summer. Shows a preference for well timbered areas including rainforest, wet and dry sclerophyll forests, Melaleuca swamps and coastal forests. The Little Bentwing bat forages for small insects (such as moths, wasps and ants) beneath the canopy of densely vegetated habitats.	Low	Yes	Dec-Feb	Low	Surveyed (not present) – This species has been assumed present within the current assessment due to the presence of suitable foraging resources within the subject land, as well as possible breeding and roosting habitat that exists as culverts, buildings and water tanks within the subject land or the adjacent drainage easement. The species has been recorded on 18 occasions within 10 km of the subject land. Comprehensive surveys for this fauna species were undertaken in December 2024 and January 2025. This species was not detected during

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									targeted fauna surveys.
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat	Not Listed	Vulnerable	Yes	Occurs from Victoria to Queensland, on both sides of the Great Dividing Range. Forms large maternity roosts (up to 100,000 individuals) in caves and mines in spring and summer. Individuals may fly several hundred kilometres to their wintering sites, where they roost in caves, culverts, buildings, and bridges. They occur in a broad range of habitats including rainforest, wet and dry sclerophyll forest, paperbark forest and open grasslands. Has a fast, direct flight and forages for flying insects (particularly moths) above the tree canopy and along waterways.	Low	Yes	Dec-Feb	Low	Surveyed (not present) – This species has been assumed present within the current assessment due to the presence of suitable foraging resources within the subject land, as well as possible breeding and roosting habitat that exists as culverts, buildings and water tanks within the subject land or the adjacent drainage easement. The species has been recorded on 112 occasions within 10 km of the subject land. Comprehensive surveys for this fauna species were undertaken in December 2024 and January 2025. This

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									species was not detected during targeted fauna surveys.
<i>Myotis macropus</i> Southern Myotis	Not Listed	Vulnerable	Yes	Scattered, mainly coastal distribution extending to South Australia along the Murray River. Roosts in caves, mines or tunnels, under bridges, in buildings, tree hollows, and even in dense foliage. Colonies occur close to water bodies, ranging from rainforest streams to large lakes and reservoirs. They catch aquatic insects and small fish with their large hind claws, and also catch flying insects.	Low	Yes	Oct-Mar	Low	Surveyed (not present) – While no suitable roosting hollows exist within the subject land, on-site buildings have the potential to provide roosting habitat for the species. An ephemeral wetland within the subject land may provide occasional foraging habitat for the species following significant rain events. The species is likely to be traversing and foraging throughout the subject land on occasion due to the site's proximity to the Eastern Creek. Comprehensive

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									surveys for this fauna species were undertaken in December 2024 and January 2025. This species was not detected during targeted fauna surveys.
<i>Petaurus norfolcensis</i> Squirrel Glider	Not Listed	Vulnerable	Yes	Generally occurs in dry sclerophyll forests and woodlands but is absent from dense coastal ranges in the southern part of its range. Requires abundant hollow-bearing trees and a mix of eucalypts, banksias and acacias. Within a suitable vegetation community at least one species should flower heavily in winter and one species of eucalypt should be smooth barked.	Low	No	No survey required.	No	This species prefers Blackbutt-Bloodwood forest with a heath understorey and an Acacia midstorey, which is absent from the subject land. The species requires hollow-abundant vegetation for refuge or breeding sites, while no hollows or stags were identified within the subject land. This species has only been recorded on two occasions within 10 km of the subject land.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Phascolarctos cinereus</i> Koala	Endangered	Endangered	Yes	In NSW the Koala mainly occurs on the central and north coasts with some populations in the western region. Koalas feed almost exclusively on eucalypt foliage, and their preferences vary regionally. Primary feed trees include <i>Eucalyptus robusta</i> , <i>E. tereticornis</i> , <i>E. punctata</i> , <i>E. haemastoma</i> and <i>E. signata</i> . They are solitary with varying home ranges.	Low	Yes	Year-round	Low	Surveyed (not present) – Few koala feed trees exist within the development footprint, which comprises mostly of Swamp Oak. However, the subject land's close proximity to a significant vegetation corridor within Nurragingy Reserve indicates a possibility for the species to be traversing or foraging within the eastern portion of the subject land on occasion. Presence of the species has been discounted from Planted Natives and planted 3320 within the eastern portion of the subject land, due to the lack of suitable mature habitat trees, and the presence of tall, spiked security

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									fencing around the perimeters of the site's three current warehouses. The species has been recorded at very high occurrences within 10 km of the subject land, with 833 records existing within this area, and the most recent sighting occurring in 2024. Comprehensive surveys for this fauna species were undertaken in January 2025. This species was not detected during targeted fauna surveys.
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox	Vulnerable	Vulnerable	Yes	Occurs along the NSW coast, extending further inland in the north. This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands,	Low	No	No survey required.	No	No breeding camps were identified within the subject land during site investigations in September 2024, and no breeding camps have been previously

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				melaleuca swamps and banksia woodlands. Roosts in large colonies, commonly in dense riparian vegetation.					recorded within the subject land. The species may forage within the subject land on occasion.
Amphibians									
<i>Heleioporus australiacus</i> Giant Burrowing Frog	Vulnerable	Vulnerable	No	Prefers hanging swamps on sandstone shelves adjacent to perennial non-flooding creeks. Can also occur within shale outcrops within sandstone formations. Known from wet and dry forests and montane woodland in the southern part range. Individuals can be found around sandy creek banks or foraging along ridge-tops during or directly after heavy rain. Males often call from burrows located in sandy banks next to water. Spends the majority of its time in non-breeding habitat	Low	No	No survey required.	No	The subject land does not provide suitable habitat for the species in the form of ephemeral streams with permanent pools. Clay soils within the subject land are not considered preferred substrate for the species. Only one record of the species exists within 10 km of the subject land, which was recorded in 1997.

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				20-250m from breeding sites.					
<i>Litoria aurea</i> Green and Golden Bell Frog	Vulnerable	Endangered	Yes	Most existing locations for the species occur as small, coastal, or near coastal populations, with records occurring between south of Grafton and northern VIC. The species is found in marshes, dams and stream sides, particularly those containing bullrushes or spikerushes. Preferred habitat contains water bodies that are unshaded, are free of predatory fish, have a grassy area nearby and have diurnal sheltering sites nearby such as vegetation or rocks, although the species has also been recorded from highly disturbed areas including disused industrial sites, brick pits, landfill areas and cleared land. Breeding	Low	Yes	Nov - Mar	Low	Surveyed (not present) – An ephemeral wetland depression within the subject land may provide suitable habitat for the species, as well as the drainage easement located to the north of the development site. The species has been recorded on 29 occasions within 10km of the subject land, with the closest record occurring 454 m from the subject land. The species is known to occur in degraded environments, such as that within the subject land. Comprehensive surveys for this fauna species were

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				usually occurs in summer. Tadpoles, which take approximately 10-12 weeks to develop, feed on algae and other vegetative matter. Adults eat insects as well as other frogs, including juveniles of their own species.					undertaken in January 2025. This species was not detected during targeted fauna surveys
Gastropods									
<i>Meridolum corneovirens</i> Cumberland Plain Land Snail	Not Listed	Endangered	Yes	Most likely restricted to Cumberland Plain, Castlereagh Woodlands and boundaries between River-flat Forest and Cumberland Plain Woodland. It is normally found beneath logs, debris and amongst accumulated leaf and bark particularly at the base of trees. May also use soil cracks for refuge.	Moderate	Yes	Year-round	Low	Surveyed (present outside of the development footprint) – Habitat for this species includes Cumberland Plain Woodland, Shale Gravel Transition Forests, Castlereagh Swamp Woodlands and River-flat Eucalypt Forest. This species is associated with PCT 3320 within the development site, however, planted PCT

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									<p>3320 within the development footprint does not provide suitable habitat for the species. One record of the species exists directly adjacent to the eastern lot boundary of the development site. Targeted surveys for this species were conducted in January 2025. Surveys identified two shells from the species within vegetation within the development site, but outside of the development footprint. Sufficient survey effort was employed to discount the species' presence from vegetation within the development footprint, which presents as lower-</p>

Species	Status		BAM predicted Species Credit Species	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									quality vegetation than the patch of PCT 3320 at the southern boundary of the development site, in which the species was identified.

Appendix 5 Threatened species ID confirmation



**BOTANIC
GARDENS
OF SYDNEY**

National Herbarium of New South Wales

Rosie GRAY
BIOSIS
30 Wentworth St
Port Kembla, NSW 2505

BIS Enquiry No: 22801
Botanical.Is@botanicgardens.nsw.gov.au
Ph. No: (02) 4631 5135
Date: 11th December 2024

Dear Rosie,

Re: Plant identification – *Acacia* specimen from Glendenning, NSW 2761

Thank you for your enquiry of 9th Oct 2024. We are happy to provide the following information:

Your specimen has been confirmed as *Acacia pubescens* – conf. A.E. Orme, 10th Dec 2024.

We have retained your specimen for the herbarium collection.

Thank you for submitting your specimen.

Yours sincerely,

Andrew Orme
Identification Senior Technical Officer
Botanical Identification Service



visit NSW Flora Online at plantnet.rbgsyd.nsw.gov.au
to help you identify the plants of New South Wales



The Botanical Identification Service email address is Botanical.Is@botanicgardens.nsw.gov.au
Locked Bag 6002, Mount Annan, NSW 2567 • Telephone (02) 4631 5135 or (02) 4631 5136

Appendix 6 SAI assessments

Appendix 6.1 Cumberland Plain Woodland TEC

Cumberland Plain Woodland in the Sydney Basin Bioregion (PCT 3320) is listed under the NSW BC Act as a CEEC. The community is also listed in the BioNet TBDC as an entity at risk of SAI based on the following principles (DPIE 2019):

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

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

Table A 6 Assessment of SAI for Cumberland Plain Woodland TEC

Information required (BAM section 9.1.1)	Response
<p>1. Impacts to the CEEC and the action and measures taken to avoid the direct and indirect impact on the CEEC at risk of an SAI.</p>	<p>The project will impact of approximately 0.06 ha of PCT 3320 that meets the BC Act listing requirements for the Cumberland Plain Woodland CEEC. Areas of impact to the CEEC are limited to areas in a planted condition state (VI score of 31.3). These areas occur as planted gardens with a mosaic of species that are associated with the Cumberland Plain Woodland. Additional higher-quality patches of the CEEC exist within the development site which are not proposed to be directly impacted under the project, including 0.27 ha of moderate condition vegetation (VI score of 55.6) and 0.42 ha of low condition vegetation (VI score of 40.2). While these areas will not be directly impacted by the proposed works, they may be subject to indirect impacts as a result of sediment run-off, weed exposure, etc. Appropriate sediment and weed control protocols will be implemented during the construction of the project.</p> <p>Measures undertaken by the proponent to avoid and minimise impacts to the CEEC (PCT 3320) are provided in Section 5 of this BDAR. Specifically, substantial efforts have been made to ensure that impacts to Cumberland Plain Woodland have been avoided and minimised throughout the design phase of the project. The project has been designed to avoid direct impacts in the southern portion of the site where larger areas of remnant Cumberland Plain Woodland occur. This has involved significant design considerations, effectively reducing the available land within the project area for development and the capacity of the project. By siting the data centres as proposed, approximately 2.2 hectares within the southern portion of the development site is located outside of the development footprint, representing 21% of the total development site area. As a result, 0.69 hectares of low and moderate condition EPBC-listed Cumberland Plain Woodland CEEC, representing approximately 37% of the total native vegetation within the development site is proposed to be retained.</p> <p>A total of 0.25 hectares of land within the south-western corner of site will also be revegetated following demolition of existing infrastructure, to allow for a 1:1 ratio replacement of all trees proposed to be removed from the subject land. The land is proposed to be landscaped utilising locally native species characteristic of PCTs</p>

Information required (BAM section 9.1.1)	Response
	<p>identified within the subject land, including species characteristic of the Cumberland Plain Woodland CEEC, allowing for a net increase in patch size of the CEEC.</p>
<p>2a. Evidence of reduction in geographic distribution, as the current total geographic extent of the TEC in NSW and the estimated reduction in geographic extent of the TEC since 1970 (not including impacts of the project). TBDC or other sources. (SAII Principle 1)</p>	<p>Species and ecological communities that have undergone large reductions or are likely to undergo large reductions in the future are considered to be at greater risk of extinction than those that have undergone or are likely to undergo smaller reductions (NSW TSSC 2018).</p> <p>To be considered under this principle, the ecological community should have been observed, estimated, inferred, or reasonably suspected to have undergone, or be proposed to undergo, a very large reduction in distribution, being a $\geq 80\%$ reduction where the reduction is over a 50-year period (i.e. since 1970), either in the past, future, or any part of the past, present and future (DPIE 2019).</p> <p>Prior to European settlement, Cumberland Plain Woodland was extensive across the Western Sydney area, and is estimated to have covered approximately 125,446 ha (DEC 2005, NPWS 2004). Whilst formerly extensive, the community now mostly occurs as small patches within the Cumberland IBRA subregion, with some occurrences extending into neighbouring subregions. It is known to occur within the following LGAs: Auburn, Bankstown, Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hawkesbury, Holroyd, Liverpool, Parramatta, Penrith and Wollondilly (Commonwealth of Australia 2010).</p> <p>Whilst there is no guidance as to the proportion of geographic distribution reduction that has occurred over the last 50 years (i.e. since 1970), PCT 3320, one of two associated PCTs for the CEEC and the PCT subject to this assessment, has a percent cleared estimate of 93.03%. Other sources, including <i>Remnant vegetation of the western Cumberland subregion, 2013 Update VIS_ID 4207</i> (DPE 2015), and <i>The Native Vegetation of the Sydney Metropolitan Area</i> (OEH 2016) and <i>Native Vegetation of Southeast NSW: A Revised Classification and Map for the Coast and Eastern Tablelands</i> (Tozer et al. 2010), estimate the current extent of Cumberland Plain Woodland within NSW is approximately 22,774 ha. This is a total reduction of approximately 82 % of the geographic distribution.</p>
<p>2b. Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes. (SAII Principle 2)</p>	<p>Reduction in ecological function relates to the IUCN principle of “very small population size” which for ecological communities means communities have very high levels of either environmental degradation or disruption of biotic processes, and interactions have an increased risk of failure to sustain their characteristic native species assemblages (Bland et al. 2016).</p> <p>Ecological communities that are considered to have a very large degree of environmental degradation or disruption of biotic processes or interactions are those with:</p> <ul style="list-style-type: none"> • $\geq 90\%$ extent and severity where the disruption or impacts are measured since 1970. • $\geq 80\%$ extent and severity where the disruption or impacts are over a 50-year period, either in the past, future, or any part of the past, present and future (as per (Bland et al. 2016). (DPIE 2019). <p>i. change in community structure, ii. change in species composition and iii. disruption of ecological processes</p> <p>The initial reduction in Cumberland Plain Woodland was due to tree-felling for timber and clearing for crops and pastures. This decline has accelerated since World War II, where there was a marked acceleration in urban and industrial development in the region, which continues to present day. Now, almost all of the</p>

Information required (BAM section 9.1.1)	Response
	<p>remaining areas of the community are either regrowth forest or degraded woodland impacted by past clearing activities (OEH 2019).</p> <p>The final determination for Cumberland Plain Woodland notes that changes in community structure contribute to a very large reduction in the overall ecological functioning of Cumberland Plain Woodland (OEH 2019). Large trees that were once common prior to European settlement now occur very sparsely within the remaining patches of woodland or remain as isolated individuals within paddocks or urban areas. Loss of these large trees has contributed to the decline and extinctions in native bird and mammal species, once common throughout the Cumberland Plain, and the associated ecological processes they once supported. Other structural changes include the removal of fallen woody debris and standing dead trees, and the removal of woody understorey plants. (OEH 2019). Changes in species composition over time have occurred as a result of clearing vegetation for agricultural process and the selective retention of trees. The proportion of native and characteristic understorey grasses, forbs, shrubs, etc., now present within the CEEC as a whole has been reduced by this process, which has been further exacerbated by the invasion of understorey weed species.</p> <p>iv. invasion and establishment of exotic species, v. degradation of habitat, and vi. fragmentation of habitat.</p> <p>Invasion of remnant woodland by exotic species poses a major threat to Cumberland Plain Woodland, with very large numbers of weed species invading many different areas of the community. These species degrade the community through smothering of indigenous plants, reducing both reproduction and survival, and by inhibiting the emergence and establishment of new seedlings (OEH 2019). These exotic weed species are now rapidly changing the structure and composition of Cumberland Plain Woodland remnants and pose a major problem for management (Benson & Howell 2002).</p> <p>Fragmentation has also resulted in a very large reduction in the ecological function of Cumberland Plain Woodland, with the remaining areas of the community being severely fragmented. The final determination for the community states that more than half of the remaining tree cover mapped by Tozer (2003) occurs in patches of less than 80 ha, with half of all mapped patches being smaller than 3 ha (OEH 2019). Whilst there is no guidance as to the proportion of this degradation has occurred in the last 50 years (i.e. since 1970), the fact that the EEC is noted in the SAIL guidance document (DPIE 2019) as being subject to Principle 2, infers that it has occurred in recent times.</p>
<p>2c. Evidence of restricted geographic distribution, based on the TEC's geographic range in NSW. (SAIL Principle 3)</p>	<p>The geographic distribution of ecological communities is defined by the area of occupancy, (sensu Bland et al. 2016). Ecological communities with a very limited geographic distribution have an area of occupancy of less than or equal to two 10 x 10 km grid cells (200 km²) or an extent of occurrence of ≤1,000 km², (sensu Bland et al. 2016), and one of the following:</p> <ul style="list-style-type: none"> • An observed or inferred continuing decline in: <ul style="list-style-type: none"> – A measure of spatial extent appropriate to the ecological community. – A measure of environmental quality appropriate to characteristic biota of the ecological community. – A measure of disruption to biotic interactions appropriate to the characteristic biota of the ecological community. • Observed or inferred threatening processes that are likely to cause continuing declines in geographic distribution, environmental quality or biotic interactions within the next 20 years.

Information required (BAM section 9.1.1)	Response
	<ul style="list-style-type: none"> An ecological community that exists at one location (DPIE 2019). <p>i. extent of occurrence, ii. area of occurrence and iii. Number of threat-define locations</p> <p>According to the final determination for the CEEC, Cumberland Plain Woodland is estimated to occur within an extent of occurrence of 2,810 km² and an area of occupancy of just under 2,100 km² based on 2 x 2 km grid cells (OEH 2019).</p> <p>There is no specific threat defined locations listed in the TBDC for the community. However, whilst the community is represented within conservation reserves, much of the remaining area occurs on private land or public easements, putting it at risk from small-scale clearing associated with housing, industrial development and transport infrastructure. Given the low area of occupancy and the fact that land-clearing is likely to remain a threatening process contributing to the decline of this community over the next twenty years, the CEEC can be considered a highly geographically restricted community. However, it does not satisfy the requirements under Principle 3 because area of occupancy and extent of occurrence are still greater than the threshold limits set.</p> <p>Based on the available information the CEEC does not currently meet the thresholds for consideration under SAI Principle 3.</p>
<p>2d. Evidence that the TEC is unlikely to respond to management. (SAII Principle 4)</p>	<p>This principle encompasses two components, firstly whether there are any particular traits of the community which limits its' response to management, and secondly whether there are any key threatening processes affecting the community which cannot be effectively managed (DPIE 2019).</p> <p>Conservation management of the community in areas subjected to historical clearing and agricultural grazing has resulted in some measurable recovery, provided the soil has not been disturbed by earthworks, cultivation, fertiliser application or other means of nutrient or moisture enrichment (OEH 2019). Conversely in areas that have been exposed to these soil disturbances, restoration has been proven to be problematic, with one abandoned pasture planting site showing no evidence of convergence in species composition with nearby remnant woodland stands over a 10 year period (OEH 2019).</p> <p>However, several management measures are detailed within the TBDC for this community. These include:</p> <ul style="list-style-type: none"> Community and land-holder liaison/ awareness and/or education. Habitat management: Fire. Habitat management: Ongoing EIA - Advice to consent and planning authorities. Habitat management: Promote regeneration by avoiding mowing or prolonged or heavy grazing. Habitat management: Protect habitat by controlling run-off entering the site if it would change water, nutrient or sediment levels or cause erosion. Habitat management: Weed Control. Habitat Rehabilitation/Restoration and/or Regeneration. <p>Generally those entities which are listed as unlikely to respond to management (and thus are irreplaceable) tend to include species where the ability to control key threats is negligible and known reproductive characteristics that severely limit their ability to increase the existing population (DPIE 2019). Ecological communities as a whole do not typically align well with these criteria. The response to management practices of Cumberland Plain Woodland has been demonstrated to be based on site specific conditions and therefore it does not meet SAI Principle 4.</p>

Information required (BAM section 9.1.1)	Response
<p>3. Where the TBDC indicates data is 'unknown' or 'data deficient' for a TEC, the assessor must record this in the BDAR or BCAR.</p>	<p>The TBDC does not state that data is 'unknown' or 'data deficient' for this community.</p>
<p>4a. The impact on the geographic extent of the TEC, by estimating the total area of the TEC to be impacted by the project.</p>	<p>As discussed above, the current extent of Cumberland Plain Woodland within NSW is approximately 22,774 ha. The CEEC is known to occur as small patches within the Cumberland IBRA subregion, with some occurrences extending into neighbouring subregions. It is known to occur within the following LGAs: Auburn, Bankstown, Baulkham Hills, Blacktown, Camden, Campbelltown, Fairfield, Hawkesbury, Holroyd, Liverpool, Parramatta, Penrith and Wollondilly (OEH 2019, Commonwealth of Australia 2010).</p> <p>Direct impacts</p> <p>The project will result in the direct removal of approximately 0.06 ha of the CEEC in a planted condition state (VI score of 31.3) In total, this constitutes <0.001% of the current geographic extent (22, 774 ha) of the community.</p> <p>Patches to be impacted are limited to vegetation present in landscaped gardens which contain a mosaic of species that can be reasonably assigned to PCT 3320. These areas lacked structural features typically present for the CEEC and were devoid of a lower stratum.</p> <p>Indirect impacts</p> <p>Indirect impacts to Cumberland Plain Woodland associated with factors such as increased edge effects, fragmentation, altered fire regimes, and transport of weeds and pathogens are not expected to be substantial or significant, largely due to the already degraded and edge effected nature of the TEC within the development site.</p>
<p>4b. The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes of the TEC.</p>	<p>i. estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500m of the development footprint or equivalent area for other types of projects.</p> <p>Cumberland Plain Woodland present in the wider landscape surrounding the project area primarily occurs in a fragmented state due to urbanisation. However, the subject land is connected to intact native vegetation associated with Nurragingy Reserve and the riparian corridor of Eastern Creek. These adjacent areas contain remnant vegetation associated with the Cumberland Plain CEEC. GIS was used to determine the range and average size of mapped (DPE 2023b) occurrences of Cumberland Plain Woodland within a 500 m buffer of the development footprint. The results of which are provided below both for those patches intersected by the development footprint (i.e., subject to vegetation removal) and those patches not intersected by the development footprint (i.e. not directly impact by the project).</p> <p>Mapped areas within 500m not directly impacted:</p> <p>Size range: <0.001ha to 13.12 ha Average size: 1.05 ha Total no. mapped polygons: 24</p> <p>Mapped areas within 500m directly impacted:</p> <p>Size range: <0.001ha to 0.89 ha Average size: 0.31 ha Total no. mapped polygons: 3</p>

Information required (BAM section 9.1.1)	Response
	<p>ii. describing the impacts on connectivity and fragmentation of the remaining areas of TEC measured by: distance between isolated areas of the TEC, presented as the average distance if the remnant is retained AND the average distance if the remnant is removed as proposed, and estimated maximum dispersal distance for native flora species characteristic of the TEC, and other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development.</p> <p>GIS was used to undertake a nearest neighbour analysis of mapped occurrences of Cumberland Plain Woodland prior to and post vegetation disturbance to determine the distance between impacted areas of the CEEC before and after the proposed vegetating removal. The average distance between mapped occurrences of Cumberland Plain Woodland within a 500 m buffer of the development footprint, include:</p> <ul style="list-style-type: none"> • 18.98 m before development • 18.75 m after development. <p>Based on the above there will be an average increase of 0.23 m separation between retained patches of Cumberland Plain Woodland within 500 m of the development footprint.</p> <p>Native flora species characteristic of the TEC includes a range trees, shrubs, grasses, forbs and other groundcover species, the majority of which are dispersed via wind or animal vectors, with some species primary method of dispersal likely to be via non-flying insects such as ants. The increase in average separation distance by 0.23 m for mapped Cumberland Plain Woodland within 500 m of the development footprint is not expected to result in a significant or substantial impediment to the dispersal of native species between retained patches, in an already highly fragmented landscape. Furthermore, the project will not result in the creation of barrier to movement and revegetation work will help promote connectivity.</p> <p>It is noted in EPBC Act conservation advice documents that allowances can be made for “breaks” of up to 30 metres between areas of MNES habitat, and that such breaks, which may be the result of watercourses, tracks, paths, roads, etc., do not significantly alter the overall functionality of the ecological community, or habitat. As such, breaks in connectivity caused by the project are not considered to be substantial in nature.</p> <p>iii. describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone(s) (section 4.3). The assessor must also include the relevant composition, structure and function condition scores for each vegetation zone.</p> <p>Within the development footprint, the CEEC occurs in a planted condition state. The proposed works will result in the removal of 0.06 ha of the CEEC, occurring as planted gardens with a mosaic of species that are associated with the Cumberland Plain Woodland. The composition, structure and function scores, in addition to the VI score, is listed below:</p> <ul style="list-style-type: none"> • Composition condition score: 22.1 • Structure condition score: 43 • Function condition score: 32.2 • VI score: 31.3 <p>Conversely, higher condition patches of the CEEC within the development site are proposed to be retained, existing in low and moderate conditions. The</p>

Information required (BAM section 9.1.1)	Response
	<p>composition, structure and function scores for the patches to be retained, in addition to the VI scores, are listed below:</p> <p>Low condition</p> <ul style="list-style-type: none"> • Composition condition score: 26.8 • Structure condition score: 41.3 • Function condition score: 59 • VI score: 40.2 <p>Moderate condition</p> <ul style="list-style-type: none"> • Composition condition score: 38.8 • Structure condition score: 72.2 • Function condition score: 61.4 • VI score: 55.6

Appendix 6.2 Swift Parrot

Swift Parrot is listed under the BC Act as Endangered. The species is listed in the BioNet Threatened Biodiversity Data Collection as an entity subject to Serious and Irreversible Impact (SAIL) in NSW

The species is considered an entity at risk of SAIL based on the following principles (DPIE 2019):

- **Principle 1:** The impact will cause a further decline of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline.

The potential for a SAIL will be determined by the consent authority, guided by the additional assessment provided below, undertaken in accordance with section 9 of the BAM (DPIE 2020a).

Table A 7 Assessment of SAIL for Swift Parrot

Information required (BAM section 9.1.2)	Response
<p>1. The action and measures taken to avoid the direct and indirect impact on the species at risk of an SAIL.</p>	<p>Actions and measures undertaken by the proponent to avoid and minimise impacts to fauna habitat, which includes habitat for the Swift Parrot, are provided in section 5 of this BDAR.</p> <p>Impacts to Swift Parrot Important Habitat is expected within the north-eastern corner of the development site, as displayed in (Figure 17). Vegetation impacts occur on the edge of a patch of low condition regenerating PCT 4023 associated with the drainage easement located directly north of the development site, which consists primarily of Swamp Oak.</p> <p>Impacts to Swift Parrot habitat within the study will occur due to the implementation of drainage infrastructure within the corner of the development site, to allow wastewater to be discharged within the site’s lot boundary, but in proximity to the drainage easement, and the powerline easement to the east of the site. The drainage infrastructure, situated in the north-eastern corner of the subject land, has undergone extensive review and refinement to minimise impacts on the identified Swift Parrot Important Habitat. This process included optimising the placement of culverts, fencing, cut and fill areas, and the wastewater discharge points to</p>

Information required (BAM section 9.1.2)	Response
	<p>minimise vegetation disturbance during construction to maximise the retention of canopy trees, specifically those within PCT 4023. This infrastructure has also been designed to avoid key feed tree species for Swift Parrot, in order to avoid impacts to foraging resources as much as practicable. According to the project's Arboricultural report ((Capability Green Co. 2024)), the species identified within the mapped Swift Parrot Important Habitat area include Cabbage Gum, Swamp Oak, and Black Wattle, which are not listed as preferred foraging species for the Swift Parrot in the 'National Recovery Plan for the Swift Parrot (<i>Lathamus discolor</i>)' (DCCEEW 2024). Details regarding how the proponent has attempted to avoid and minimise ecological impacts during the detailed design stage are further explained in section 5 of this BDAR.</p> <p>The project has also been designed to avoid impacts to a 0.64-ha patch of mapped Swift Parrot habitat within the southern portion of the development site, which comprises higher-quality vegetation and foraging resources for the species. The Swift Parrot is highly mobile and capable of traversing the development site to access this alternative, higher-quality habitat, as well as the contiguous >100 hectare patch of mapped habitat associated with Nurragingy Reserve and Eastern Creek, located immediately east of the development site.</p> <p>Indirect impacts will also be minimised through appropriate safeguards and management measures such as exclusion fencing and implementation of a CEMP detailing best practice environmental protection measures. In addition, the proposed works will involve the development of existing areas of hardstand or prior vegetation clearance within the subject land where possible, to avoid encroachment on previously unimpacted, high-quality natural habitats.</p>
<p>2a. Evidence of rapid decline. (SAII Principle 1)</p>	<p>i. Decline in population of the species in NSW in the past 10 years or three generations (whichever is longer) or;</p> <p>ii. Decline in population of the species in NSW in the past 10 years or three generations (whichever is longer) as indicated by: an index of abundance appropriate to the species; decline in geographic distribution and/or habitat quality; exploitation; effect of introduced species, hybridisation, pathogens, pollutants, competitors or parasites.</p> <p>Species and ecological communities that have undergone large reductions or are likely to undergo large reductions in the future are considered to be at greater risk of extinction than those that have undergone or are likely to undergo smaller reductions (NSW TSSC 2018).</p> <p>To be considered under this principle, the species should have an observed, estimated, inferred, suspected or proposed population decline of ≥80% in 10 years or three generations (whichever is longer) (DPIE 2019). Swift Parrot breed in Tasmania and overwinters in mainland Australia (Saunders et al. 2010). Breeding occurs between September and April in Tasmania in a range of forest types. Once breeding is complete, they disperse from breeding areas, across Tasmania, and to mainland Australia. Most birds spend the winter in Victoria and New South Wales, but they are also known to extend as far north as Brisbane, although this is unusual (Higgins 1999). They disperse across broad landscapes, foraging on nectar, pollen and lerps in a variety of eucalypt species (Saunders et al. 2010). On the mainland Swift Parrot mostly occurs on the inland slopes but occasionally occur on the</p>

Information required (BAM section 9.1.2)	Response
	<p>coast. They return to Tasmania in August and September, with the largest number of ‘returning’ records from September (Higgins 1999).</p> <p>Swift Parrots occur as a single population that is estimated to be approximately 1,000 pairs which is most likely continuing to decline. Key factors contributing to their decline reported in the National Recovery Plan (Saunders et al. 2010) include:</p> <ul style="list-style-type: none"> • Loss and alternation of habitat from forestry activities (firewood harvesting, residential clearing, agricultural and industrial developments). • Attrition of old growth trees within agricultural landscapes. • Suppression of forest regeneration and fire. • Climate change. • Food and nest competition. • Flight collision hazards. • Psittacine beak and feather disease. • Illegal capture and trade. <p>Priority habitats are those which are used for nesting (Tasmania only), by large proportions of the swift parrot population, repeatedly between seasons (high site fidelity) or for prolonged periods of time (site persistence) (Saunders et al. 2010). Habitat critical to the survival of the Swift Parrot is likely to constitute areas with high site fidelity and site persistence as well as those areas in which breeding occurs (Tasmania only). In New South Wales, significant habitat decline has been observed, particularly in key foraging areas. Approximately 70 % of box-ironbark habitat, the principal wintering habitat of the Swift Parrot on the mainland, has been cleared (DCCEEW 2024). Additionally, white box-yellow gum-Blakely's red gum woodland, another important habitat in New South Wales, has been reduced to less than 4 percent of its pre-European extent on the south-western slopes and southern tablelands. This substantial habitat loss highlights the importance of remaining habitats in supporting the species during their migration and foraging periods."</p> <p>Based on the available information it is not possible to state the scale of decline in the last 10 years. While the current population size is uncertain, recent research has shown it is likely undergoing dramatic declines due to predation by Sugar Gliders.</p>
<p>2b. Extent of small population size. (SAII Principle 2)</p>	<p>i. an estimate of the species’ current population size in NSW.</p> <p>ii. an estimate of the decline in the species’ population size in NSW in three years or one generation (whichever is longer).</p> <p>iii. where such data is available, an estimate of the number of mature individuals in each subpopulation, or the percentage of mature individuals in each subpopulation, or whether the species is likely to undergo extreme fluctuations.</p> <p>Species with small population sizes are highly vulnerable to any event which impacts and further reduces their population size due to the time-lag between developmental impacts and the realisation of ecological benefits from improvements in habitat condition at stewardship offset sites (DPIE 2019).</p> <p>To be considered under this principle a species must have a very small population size which would lead it to be considered critically endangered</p>

Information required (BAM section 9.1.2)	Response
	<p>under the <i>IUCN Red List Categories and Criteria</i> (IUCN 2012). Specifically, the species has a known population size that is either:</p> <ul style="list-style-type: none"> • Fewer than 50 mature individuals independent of whether there are any threats. • Fewer than 250 mature individuals and the species has an observed, estimated or proposed continuing decline: <ul style="list-style-type: none"> ○ Of at least 25% in three years or one generation (whichever is longer), or ○ Where the number of mature individuals in each subpopulation is <50, or ○ The percentage of mature individuals in one subpopulation is 90–100%, or ○ The population is subject to extreme fluctuations in the number of individuals. <p>‘Population’ means the total number of mature individuals in New South Wales, ‘Subpopulations’ are geographically or otherwise distinct groups in the total population (DPIE 2019, IUCN Standards and Petitions Committee 2019). The species is not currently listed as critically endangered under the NSW BC Act.</p> <p>Genetic analysis confirms that Swift Parrots form a single, genetically mixed (panmictic), breeding population. In 2010, the Action Plan for Australian Birds suggested there were approximately 2,000 mature individuals in the wild but has declined since and was estimated to be 750 (range 300 to 1,000) mature individuals in 2020. While the current population size is uncertain, recent research has shown it is likely undergoing dramatic declines due to predation by Sugar Gliders. Based on the available information, Swift Parrot does not currently meet the thresholds for consideration under SAI Principle 2.</p>
<p>2c. Evidence of limited geographic range for the threatened species. (SAI Principle 3)</p>	<p>The geographic range of a species is measured by its area of occupancy, which represents the area of suitable habitat currently occupied by the taxon (IUCN Standards and Petitions Committee 2019). Species that are known to have a very limited geographic distribution are generally known to:</p> <ul style="list-style-type: none"> • Have an area of occupancy of $\leq 10 \text{ km}^2$. • Have an extent of occurrence of $\leq 100 \text{ km}^2$. • Have at least two of the following three conditions: <ul style="list-style-type: none"> – Are severely fragmented or only known from one location. – Continuing decline. – Extreme fluctuations. • Inhabit less than or equal to three locations in NSW (DPIE 2019). <p>i. extent of occurrence.</p> <p>Swift Parrots spend the winter on mainland Australia. During the non-breeding season the population frequents eucalypt woodlands and forests in South Australia, Victoria, New South Wales, Australian Capital Territory and Queensland. This extent of occurrence is significantly larger than the threshold detailed above.</p>

Information required (BAM section 9.1.2)	Response
	<p>ii. area of occupancy.</p> <p>Similarly, the area of occupancy is also large with the occurrence of Swift Parrot, being mostly contiguous across its known extent within South Australia, Victoria, New South Wales, Australian Capital Territory and Queensland, as evidenced by Bionet records for the species. This area is significantly larger than the threshold detailed above.</p> <p>iii. number of threat-defined locations (geographically or ecologically distinct areas in which a single threatening event may rapidly affect all species occurrences).</p> <p>The main threats in Tasmania to the survival of the Swift Parrot are the predation of nestlings and incubating females by the introduced Sugar Glider, ongoing loss or degradation of breeding and foraging habitat through a range of processes including, forestry operations, land clearing and wildfire. The main threats on the Australian mainland include habitat loss from land clearing for agriculture and urban development, and to a lesser extent forest harvesting. Other identified threats include competition for foraging and nesting resources, mortality from collisions with human-made objects and impacts from climate change. The above areas would represent the largest threat-defined locations for the species.</p> <p>iv. whether the species' population is likely to undergo extreme fluctuations.</p> <p>As mentioned, the primary result of Swift Parrot decline is due to predation from Sugar Gliders. Sugar Gliders are an introduced species to Tasmania and their impacts on Swift Parrots compound and add to other known threats including habitat loss and degradation (DCCEEW 2024). Most cases of glider predation result in the death of the adult female, and always involved the death of either eggs or nestlings. While the current population size is uncertain, recent research has shown it is likely undergoing dramatic declines as a result of Sugar Gliders.</p>
<p>2d. evidence that the species is unlikely to respond to management. (SAII Principle 4)</p>	<p>This principle encompasses two components, firstly whether there are any particular traits of the species which limits its' response to management, and secondly whether there are any key threatening processes affecting the species which cannot be effectively managed.</p> <p>Furthermore, in select areas where essential habitat components cannot be readily re-created, such impacts can be deemed irreplaceable (DPIE 2019).</p> <p>i. known reproductive characteristics severely limit the ability to increase the existing population on, or occupy new habitat (e.g. species is clonal) on, a biodiversity stewardship site.</p> <p>The species breeds on the east and south-east coast of Tasmania during summer and migrates to mainland Australia in autumn. The migratory nature of the species means that they require a large network of resources both during and between annual cycles. Actions that directly and/or indirectly affect the species or their habitats could compromise recovery. While foraging, Swift Parrots preferentially forage in large, mature trees. In some cases, the presence of large mature trees which provide large quantities of feeding resources cannot be guaranteed to be present on stewardship sites. As such it is important that impacts to such features are avoided as part of development design, particularly where these features occur within known foraging habitat for the species.</p>

Information required (BAM section 9.1.2)	Response
	<p>ii. the species is reliant on abiotic habitats which cannot be restored or replaced (e.g. karst systems) on a biodiversity stewardship site.</p> <p>Swift Parrots nest in any eucalypt forests and woodlands which contain tree hollows, provided that flowering trees are nearby. There is no evidence that suggests Swift Parrots prefer any particular tree species for nesting, instead, the traits of tree cavities are the main factor that predicts whether a tree is used as a nest. The presence of hollows is the primary abiotic habitat that these species depend upon. However, these can generally be restored or replaced on a biodiversity stewardship site.</p> <p>iii. life history traits and/or ecology is known but the ability to control key threatening processes at a biodiversity stewardship site is currently negligible (e.g. frogs severely impacted by chytrid fungus).</p> <p>The primary threat to the species is loss or degradation of breeding habitat and foraging habitat as a result of animals and human activity. Where suitable foraging habitats occur within a biodiversity stewardship site, effective management of such features can be readily achieved.</p>
<p>3. Where the TBDC indicates data is 'unknown' or 'data deficient' for a species, the assessor must record this in the BDAR or BCAR.</p>	<p>The TBDC does not state that data is 'unknown' or 'data deficient' for this species.</p>
<p>4a. The impact on the species' population.</p>	<p>i. an estimate of the number of individuals (mature and immature) present in the subpopulation on the subject land (the site may intersect or encompass the subpopulation) and as a percentage of the total NSW population.</p> <p>ii. an estimate of the number of individuals (mature and immature) to be impacted by the project and as a percentage of the total NSW population.</p> <p>iii. if the species' unit of measure is area, provide data on the number of individuals on the site, and the estimated number that will be impacted, along with the area of habitat to be impacted by the project.</p> <p>A total of 0.15 ha of Important Habitat occurs within the subject land, of which, 0.04 ha will be cleared. A total of 0.52 ha of Important Habitat exists across the broader development site. While this area has been mapped as Important Habitat due to the presence of potential foraging resources for the species, field-validated data collected by Biosis during initial field investigations in July 2024 and during the collection of BAM plots in September 2024, indicates that no key feed trees for the Swift Parrot are proposed to be impacted by the project. This is further verified by data reported within the project's Arboricultural report (Capability Green Co. 2024). As such, areas of mapped Important Habitat proposed to be impacted by the project are considered sub-optimal foraging habitat for the species. Over 100 ha of Important Habitat for the Swift Parrot exists within a large patch existing to the east of the subject land, encompassing Nurragingy Reserve and the riparian corridor of Eastern Creek. The area of Important Habitat to be cleared within the development footprint represents 9% of that which exists within the entire development site.</p> <p>Diurnal bird surveys conducted during initial field assessments on 18 July 2024 did not detect any Swift Parrot activity. The species has been</p>

Information required (BAM section 9.1.2)	Response
	<p>previously recorded on 66 occasions within 10 km of the subject land since 1991 and has the potential to be an occasional visitor to the development site during autumn and winter. Swift Parrot has been observed on 18 occasions within the Nurragingy Reserve, located to the east of the site, between 1999 and 2021, in numbers of between 1 and 60 individuals on each of these occasions. The subject land does not constitute breeding habitat given breeding only occurs in Tasmania.</p> <p>The project does not occur within any of the listed Swift Parrot biodiversity area, as indicated in the Draft Swift Parrot Recovery Plan (DCCEEW 2024)</p>
<p>4b. The impact on the species' geographic range.</p>	<p>i. the area of the species' geographic range to be impacted by the project in hectares, and a percentage of the total AOO, or EOO within NSW.</p> <p>The impacts to available habitat for Swift Parrot as a result of the proposed works include the following:</p> <ul style="list-style-type: none"> • Removal of approximately 0.04 ha of native vegetation that occurs within areas mapped as important habitat for the species. • Disturbance of approximately 0.11 ha of vegetation from indirect impacts in the form of increased traffic, noise, vibration and light during the project construction. <p>Traffic, noise and vibration impacts will cease once construction is completed, and light spill impacts associated with site operation are proposed to be mitigated via the methods detailed in Section 5 of this BDAR. The area to be impacted is likely to represent <0.001 % of the extent of occurrence for the species (as per extent listed in the draft recovery plan for the species), along the east coast of Australia.</p> <p>ii. the impact on the subpopulation as either: all individuals will be impacted (subpopulation eliminated); OR impact will affect some individuals and habitat; OR impact will affect some habitat, but no individuals of the species will be directly impacted.</p> <p>The proposed impacts are likely to affect areas of important habitat for the species. However, these impacts occur along the edges of adjacently mapped important habitat within protected reserves. These adjacent areas will remain post works. No direct impacts to individuals of the species are likely to occur as a result of the project.</p> <p>iii. to determine if the persisting subpopulation that is fragmented will remain viable, estimate (based on published and unpublished sources such as scientific publications, technical reports, databases or documented field observations) the habitat area required to support the remaining population, and habitat available within dispersal distance, and distance over which genetic exchange can occur (e.g. seed dispersal) and pollination distance for the species.</p> <p>The northern and southern borders of the development site is connected to a large patch of native vegetation which comprises of Nurragingy Reserve and the riparian corridor of Eastern Creek. It is expected that these areas would be the primary means of movement for local fauna. Small clumps of scattered trees also persist in paddocks throughout the subject land, and highly mobile fauna such as Swift Parrot would likely use these connectivity linkages for foraging.</p> <p>These areas along the northern and southern boundaries of the development site represent prime foraging habitat for the species which</p>

Information required (BAM section 9.1.2)	Response
	<p>typically forage in large, mature trees that provide more reliable foraging resources than younger trees.</p> <p>By comparison, the development footprint exists mostly across regenerating and edge effected patches due to previous land clearance, adjacent to these larger higher-quality patches of Swift Parrot habitat. The removal of 0.04 hectares of native vegetation from patches adjacent to other areas of intact, contiguous woodland is considered unlikely to impact the viability of the species within the locality, particularly given that no key feed trees for the species were identified within the development footprint</p> <p>iv. to determine changes in threats affecting remaining subpopulations and habitat if the proposed impact proceeds, estimate changes in environmental factors including changes to fire regimes (frequency, severity); hydrology, pollutants; species interactions (increased competition and effects on pollinators or dispersal); fragmentation, increased edge effects, likelihood of disturbance; and disease, pathogens and parasites. Where these factors have been considered elsewhere in relation to the target species, the assessor may refer to the relevant sections of the BDAR or BCAR.</p> <p>Changes to fire regimes</p> <p>The project occurs in an existing industrial area, with industrial activities already undertaken within the subject land. As such, future land use is unlikely to see an increased risk of fire. The proposed design includes comprehensive fire mitigation systems, including the construction of 15 water tanks, a Fire Pump Room, and roadways of a minimum 6 m width to allow for entry of emergency service vehicles into the site, if required. Upon completion of works, the project is unlikely to result in changes to frequency or intensity of fire regimes within the locality.</p> <p>Hydrology</p> <p>No changes to hydrology which would impact Swift Parrot habitat are likely to occur.</p> <p>Pollutants</p> <p>The project does not involve the use of any pesticides, nor is it likely to substantially increase the levels of pesticides within the environment.</p> <p>Species interactions</p> <p>The impact area and surrounds likely already support several pest animal species and it is highly likely that feral foxes, rats and rabbits are already present within the area. The nature of works is unlikely to result in an increase in feral animal activity in the area or alter the existing disturbances to roosting sites that may already be exhibited.</p> <p>Fragmentation</p> <p>Swift Parrot is a highly mobile species capable of dispersing across breaks in habitats. While it is assumed that connected vegetation is preferred by the species for movement, the existence of many records of the species within urbanised areas suggests that the species does not rely on specialised dispersal or movement habitat. Thus, the loss of native vegetation for the proposed works is unlikely to impact the movement ecology of the local population. As such population fragmentation will not occur as a result of the project.</p>

Information required (BAM section 9.1.2)	Response
	<p>Increased edge effects</p> <p>The project may result in new edge effects in areas of previously disturbed or cleared native vegetation. Edge effects such as increased light spill and weed invasion currently exist within low condition vegetation within the subject land. Given the project will result in the removal of vegetation and increased lighting effects, it has the potential to exacerbate or ‘push back’ existing edge effects into the riparian areas along the drainage easement to the north of the development site and the Eastern Creek. Whilst transport of weeds is possible during construction, these will be mitigated through the application of appropriate weed control measures to be detailed within the CEMP. These edge effects are also unlikely to significantly impact the species, given the availability of foraging resources within the locality.</p> <p>Likelihood of disturbance</p> <p>Disturbance will occur in the form of direct impacts to native vegetation. Additional indirect impacts during construction (i.e. light, noise and vibration) have the potential to disturb any foraging individuals that may be present. These indirect impacts will be mitigated through the implementation of a CEMP, and methods detailed in Section 7 of this BDAR</p> <p>Disease, pathogens and parasites</p> <p>The project is unlikely to result in the introduction of a disease (e.g., Psittacine Beak and Feather Disease also known as Psittacine Circoviral Disease) that could cause the Swift Parrot population to decline. Psittacine beak and feather disease is transmitted orally or in faeces and feathers and is thought to remain alive in tree hollows or other nest sites for several years outside of the primary host (DCCEEW 2021). Equipment used for the project is unlikely to come into contact with the pathogen in a manner that would lead to the concentration or spread of the disease above what is present in the locality naturally. Implementation of vehicle hygiene measures before entering and leaving the site will further reduce the risk of transmission. If equipment has recently come into contact with commercial or recreational captive bird facilities or operated in areas with noted high densities of wild bird populations or breeding sites equipment should be thoroughly cleaned in line with biosecurity guidelines to prevent spread of the pathogen.</p>

Appendix 7 Significant Impact Criteria assessments

Appendix 7.1 Downy Wattle *Acacia pubescens* – Vulnerable, EPBC Act

Downy Wattle is listed as Vulnerable under the Commonwealth EPBC Act. It is a spreading shrub, with vibrant yellow flowers and conspicuously hairy branchlets that can grow up to 5 metres tall when fully matured. The species is concentrated around the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon. It usually occurs on alluviums, shales and at the intergrade between shales and sandstones in open woodland and forest, in a variety of plant communities, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland. Flowering occurs between August and October and pods mature in October to December. Downy Wattle is known to have low seedling recruitment due to its ability to reproduce vegetatively (NPWS 2003). In 2003, 116 subpopulations of Downy Wattle were detected, individuals within 300 metres of each other were identified as one population (dispersal is known to occur over this distance for *Acacia* spp.) (Threatened Species Scientific Committee 2016). Therefore, a population is defined as those individuals within 300 metres of each other.

Downy wattle habitat includes dry sclerophyll forest, woodland or scrub-woodland on clay or gravelly soils of the Wianamatta Shale, often in *Melaleuca* scrub. This species is also often found in disturbed areas including roadsides and railside bushland vegetation. It can tolerate moderate levels of disturbance due to its ability to reproduce clonally through vegetative suckering (NPWS 2003).

Occurrence in the subject land

Eight individuals (or 'clumps') of Downy Wattle were recorded within the subject land during field investigations, including three adults and five juveniles. A sample was sent to the Mount Annan Botanic gardens for formal identification. All three adults were in seed during the time of assessment. However, as Downy Wattle is a colonial species, these 'clumps' may be a singular individual (Threatened Species Scientific Committee 2016). Genetic analysis would be required to determine if these 'clumps' are one or more individuals (NPWS 2003).

These plants were recorded near the patch of Cumberland Plain Woodland (0.54 hectares) in the southern section of the subject land, adjacent to a regenerating scattered patch of PCT 4023 *Coastal Valleys Swamp Oak Riparian Forest*. Targeted surveys within the subject land did not detect any other Downy Wattle individuals indicating that the records highlighted above are the only plants within the subject land.

Downy Wattle has several records within 10 kilometres of the subject land, however none within 300 metres of the individuals recorded within the subject land, indicating that these plants form a single sub-population. There are over 500 records within 10 kilometres of the subject land, with the most recent record being recorded in 2018 and the closest record being single individual approximately 675 metres south of the subject land in a patch of roadside vegetation.

Key to the assessment of threatened species listed as Vulnerable under the EPBC Act is determining whether the population of a Vulnerable species in question constitutes an important population. An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- Key source populations either for breeding or dispersal

- Populations that are necessary for maintaining genetic diversity, and/or
- Populations that are near the limit of the species range.

A ‘population of a species’ is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:

- A geographically distinct regional population, or collection of local populations, or
- A population, or collection of local populations, that occurs within a particular region.

The population of Downy Wattle subject to this assessment is likely to be a sub-population of the wider population in the Blacktown LGA named Prospect Reservoir (in the northwest corner of the catchment) of approximately 290 individuals. This prospect reservoir population is considered to be important due to its large size which would be important for breeding, dispersal and genetic diversity. Furthermore, since the individuals within the subject land were in full seed during the time of detection and due to there being evidence of juveniles growing nearby, these plants may be important for breeding purposes within the species.

The proposal will remove this sub-population (all 8 individuals) of Downy Wattle. However, the individuals are proposed to be translocated to the south-western portion of the study site, which will be landscaped for regeneration of species native to the local area, including those consistent with Cumberland Plain Woodland. An assessment of whether the proposed works is likely to lead to a significant impact on Downy Wattle is provided below.

Table A 8 SIC assessment for Downy Wattle

SIC assessment for vulnerable species
<p>Lead to the long-term decrease in the size of an important population of a species.</p>
<p>Eight individuals and 0.54 ha of habitat for Downy Wattle was recorded within the subject land during field surveys. Targeted surveys did not detect any other individuals within the subject land. The individuals present within the subject land are considered to form a sub-population of a wider important population located at Prospect Reservoir. The proposed works will remove the sub-population from the subject land consisting of approximately 2.7% of the important population. However, due to the positioning of this sub-population on the outskirts of the wider population and the low percentage of the population proposed to be removed, the removal of this sub-population is unlikely to lead to a long-term decrease in the size of the important population.</p> <p>In addition to the direct impacts mentioned above, some areas of potential habitat will be indirectly impacted by the current proposal, including potential ground/soil disturbance (impacts to seedbank), dust settlement and accidental introduction/spread of competitive weeds. However, impacts are considered small and localised in nature. Further to this, numerous mitigation measures will be implemented during the course of works to mitigate any accidental impacts.</p>
<p>Reduce the area of occupancy of an important population.</p>
<p>The removal of the sub-population (up to 8 individuals) will reduce the area of occupancy for the important population of the species. However, this impact is not expected to compromise the viability of the overall population within the Blacktown LGA. The remaining sub-populations are well-distributed and will continue to maintain the species' presence across the landscape. Additionally, the works will not significantly reduce the overall area of occupancy, as suitable habitat remains available in other parts of the local area. Furthermore, the sub-population that is proposed to be removed is an outlier and exists isolated, on the outskirts of the Prospect Reservoir population. As a result, the removal of this sub-population is considered manageable within the broader context of maintaining the species' long-term persistence in the</p>

SIC assessment for vulnerable species

region.

Additionally, potential habitat for the species will be indirectly impacted by the current proposal, including potential ground/soil disturbance (impacts to seedbank), dust settlement and accidental introduction/spread of competitive weeds. However, impacts are considered small and localised in nature. Numerous mitigation measures will be implemented during the course of works to mitigate any accidental impacts.

Fragment an existing important population into two or more populations.

Downy Wattle was recorded within the subject land during field surveys. Eight individuals and 0.54 ha of habitat occurs within the subject land. Targeted surveys did not detect any other individuals within the subject land. The individuals present are considered to form a sub-population of an important population within the wider locality. The proposed works will remove the entire sub-population from the subject land. Due to the isolated nature and positioning on the outskirts of the important population the removal of these outlier individuals is unlikely to lead to the fragmentation of this important population into two or more populations.

Adversely affect habitat critical to the survival of a species.

Critical habitat has not yet been declared for Downy Wattle.

Disrupt the breeding cycle of an important population.

Downy Wattle was recorded within the subject land during field surveys. Eight individuals and 0.54 ha of habitat occurs within the subject land. Targeted surveys did not detect any other individuals within the subject land. The individuals present within the subject land are considered to form a sub-population of an important population of the species. The proposed works will remove the sub-population from the subject land. However, due to the positioning of this sub-population on the outskirts of the entire important population and the isolated nature of these plants, the removal of this sub-population is unlikely to significantly disrupt the breeding cycle of the wider population.

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

The proposal will remove 8 individuals comprising a sub-population of the wider population located at Prospect Reservoir. This impact is estimated to constitute approximately 2.7% of the total local population size. Additionally, 0.54 ha of habitat for the species will be indirectly impacted by the current proposal, including potential ground/soil disturbance (impacts to seedbank), dust settlement and accidental introduction/spread of competitive weeds. However, impacts are considered small and localised in nature. Further to this, numerous mitigation measures will be implemented during the course of works to mitigate any accidental impacts. Therefore, clearing of this sub-population is considered small scale, and is not considered likely to cause Downy Wattle to decline, considering a large amount of habitat and a large proportion of the wider population will remain intact.

Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.

The proposed works will be safeguarded by mitigation measures listed in Section 5 of this report. These mitigation measures include those for managing invasive and exotic species and therefore the proposed works are unlikely to exacerbate the current level of invasive species threat operating within the subject land. Furthermore, Downy Wattle is known to be able to exist in areas that are subject to high disturbance levels, such as those within the subject land.

SIC assessment for vulnerable species

Introduce disease that may cause the species to decline.

The proposal will not result in the introduction of a disease that is harmful to Downy Wattle.

Interfere substantially with the recovery of the species.

The NSW National Parks and Wildlife Service prepared a recovery plan for Downy Wattle which has been in effect under the EPBC Act since October 2003. This recovery plan identifies several actions for the recovery of the species which includes:

- Identify sites that are a high priority to protect.
- Carry out negotiations with public authorities to increase protection of sites.
- Liaise with private landholders to increase protection of sites.
- Negotiate with public authorities to implement threat and habitat management programs on public lands.
- Undertake studies into the genetic variability of the species.
- Investigate the cause of disease in the species.
- Research other aspects of the species' biology, ecology and distribution.
- Encourage community involvement.
- Provide advice and assistance to private landholders.

Downy Wattle was recorded within the subject land during field surveys. Eight individuals and 0.54 hectares of habitat (Cumberland Plain Woodland) occurs within the subject land. The proposed works will remove all individuals within this sub-population from the subject land. Due to the isolated nature of this sub-population and the low number of individuals proposed to be removed, the proposal is unlikely to interfere substantially with any of the recovery actions for Downy Wattle.

Conclusion.

Based on the assessment above, it is concluded that Downy Wattle is unlikely to be significantly impacted by the proposed works. This conclusion was made on the basis that the proposed works:

- Is unlikely to lead to the long-term decrease in the size of an important population, reduce the areas of occupancy or fragment an existing population – the individuals within the subject land form an isolated sub-population and therefore their removal will minimally decrease the size and reduce the areas of occupancy of the important population. However, due to the isolated nature of this sub-population and low count of individuals the removal of these plants is unlikely to lead to a long term decrease in the size of the population. Additionally, due to the isolated nature and positioning on the outskirts of the important population the removal of these individuals is unlikely to fragment an existing population.
- Is unlikely to disrupt the breeding cycle of an important population – the individuals within the subject land form an isolated sub-population and therefore their removal is unlikely to disrupt the breeding cycle of the rest of the important population.
- Is unlikely to modify the species habitat or introduce invasive species/diseases – Mitigation measures are to be implemented to mitigate any potential weed incursion/disease spread.
- Is unlikely to interfere with the recovery of the species.

Considering the above, a referral is not required.

Appendix 7.2 Swift Parrot *Lathamus discolor* – Critically Endangered, EPBC Act

Swift Parrot is listed as Critically Endangered under the EPBC Act. It breeds in Tasmania during spring and summer, migrating in the autumn and winter months (March to October) to south-eastern Australia from Victoria and eastern parts of South Australia up to south-east Queensland. In NSW it occurs mostly on the coast and southwest slopes (NSW DCCEEW 2024c).

Swift Parrots spend the winter on mainland Australia, where the population frequents eucalypt woodlands and forests. They preferentially forage in large, mature trees that provide more reliable foraging resources than younger trees (NSW DCCEEW 2024c). Whilst on the mainland they are typically found in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Their favoured trees include winter flowering species such as Yellow Gum *Eucalyptus leucoxylon*, Red Ironbark *Eucalyptus tricarpa*, Mugga Ironbark *Eucalyptus sideroxylon*, Inland Grey Box *Eucalyptus microcarpa*, White Box *Eucalyptus albens*, Yellow Box *Eucalyptus melliodora*, Swamp Mahogany *Eucalyptus robusta*, Forest Red Gum *Eucalyptus tereticornis*, Blackbutt *Eucalyptus pilularis*, and Spotted Gum *Corymbia maculata* (DCCEEW 2024). Commonly used lerp infested trees include Inland Grey Box *Eucalyptus microcarpa*, Grey Box *Eucalyptus moluccana* and Blackbutt *Eucalyptus pilularis*. Individuals are known to return to some foraging sites on a cyclic basis depending on food availability (NSW DCCEEW 2024c).

Breeding records for Swift Parrots are largely restricted to the south and east coast of Tasmania including Bruny and Maria Islands with some sporadic breeding occurring in the north of the state. The distribution of nesting Swift Parrots each breeding season is determined largely by the distribution and intensity of Blue Gum *Eucalyptus globulus* and Black Gum *Eucalyptus ovata* flowering.

Threatening processes impacting Swift Parrot include habitat loss and fragmentation from forest harvesting, residential/industrial development, agricultural clearing, senescence and dieback. Other threats include reduced food availability during drought conditions, competition from introduced bees and large, aggressive honeyeaters for food resources, predation, and exclusion from forest and woodland habitat by over abundant Noisy Miners (NSW DCCEEW 2024c).

A national recovery plan has been created for this species. The *National recovery plan for the Swift Parrot – Lathamus discolor* (DCCEEW 2024) outlines the vision, objectives, and strategies to increase the swift population in size to such an extent that the species no longer qualifies for threatened listing under any of the EPBC act listing criteria.

Occurrence in the subject land

There are 66 known records of the species within 10 kilometres of the subject land (DPIE 2021b). The closest record is approximately 175 metres from the subject land and the most recent observation occurring in 2023. While the subject land does not constitute breeding habitat, given breeding only occurs in Tasmania, there is potential for the subject land to be used occasionally by this species for foraging and roosting, and an assessment of whether the proposed works is likely to lead to a significant impact for Swift Parrot is provided below.

No targeted surveys were undertaken for the Swift Parrot within the subject land, however, important habitat mapping occurs on the eastern, and southern borders of the subject land (NSW DCCEEW 2025d). In total, 1.02 hectares of native vegetation is to be impacted by the proposed works, which includes 0.04 hectares of mapped important habitat for the Swift Parrot in the north-east corner of the development site. This mapped area consists of low condition PCT 4023, dominated by Swamp Oak.

Table A 9 SIC assessment for Swift Parrot Lathamus discolor

SIC assessment for critically endangered or endangered species
Lead to a long-term decrease in the size of a population.
The total amount of vegetation to be removed from the subject land includes 1.02 ha of low-quality native vegetation, including a small extent (0.04 ha) of PCT 4023 mapped as important habitat for the Swift Parrot. As Swift Parrots breed in

SIC assessment for critically endangered or endangered species

Tasmania and migrate to the mainland only during Autumn and Winter, vegetation with the subject land would only be utilised by the species for foraging while overwintering (DCCEEW 2024).

The mapped important habitat which occurs within the subject land, is located at the very most edge of a contiguous, much larger patch of mapped important habitat mapped for the Swift Parrot that extends to the east, south and north of the subject land. This patch is largely associated with Nurragingy Reserve and the riparian corridor of the Eastern Creek and includes habitat more suitable for the species than that which is proposed to be impacted under the project.

Within the subject land, mapped important habitat would provide low-quality foraging habitat, consisting predominantly of Swamp Oak, which is not a preferred foraging resource of the Swift Parrot (DCCEEW 2024). According to the project's Arboricultural report (Capability Green Co. 2024), no trees proposed to be cleared from this area of the subject land are considered to be key foraging species for Swift Parrot. While some key foraging species are located within the subject land, such as Forest Red Gum and Grey Box, these occur in limited quantities within the subject land and are predominantly located within urban planted gardens within the western portion of the subject land, adjacent to large warehouses and the road verge. Due to the low quality of vegetation within the subject land, low quantity of feed tree species present, and the abundance of higher quality vegetation directly adjacent to the subject land, it is unlikely that the proposed works would result in the long-term decrease in the size of a population.

Reduce the area of occupancy of the species.

The Swift Parrot is a migratory species that occurs over a large range from Tasmania to south-east Queensland. The proposal will impact up to 0.04 ha of mapped important habitat for the species, occurring at the fringe of a larger, higher-quality patch of vegetation which is also mapped as important habitat for the Swift Parrot. The species is known to occur within the locality, with 66 occurrences recorded within 10 km of the subject land (NSW DCCEEW 2025e), including several records within the Nurragingy Reserve, adjacent to the development site. However, no records of the species exist within the subject land.

It is likely that the species would traverse through the subject land on occasion, due to the presence of records of the species within vegetation contiguous with the subject land. However, vegetation within the development footprint does not provide highly suitable habitat for the species, and thus if present within the development site, Swift Parrots are more likely to be utilising remnant PCT 3320 within the southern portion of the site, which is not proposed to be cleared. Proposed revegetation works within the southern portion of the development site are likely to increase available foraging resources for the species within the development site, rather than reduce the area of occupancy.

Based on the full extent of direct and indirect impacts caused by the project, this area is likely to represent <0.001 % of the extent of occurrence for the species (as per extent listed in the draft recovery plan for the species), along the east coast of Australia, and thus is unlikely to see a significant impact on the species' area of occupancy.

Fragment an existing population into two or more populations.

Genetic analysis confirms that Swift Parrots form a single, genetically mixed (panmictic), breeding population. In 2020, this population was estimated to consist of 750 (range 300 to 1,000) mature individuals in the wild.

Swift Parrot is a highly mobile species capable of dispersing across breaks in habitats. The existence of many records of the species within urbanised areas suggests that the species does not rely on specialised dispersal or movement habitat. Thus, the loss of native vegetation for the proposed works is unlikely to impact the movement ecology of the local population, ultimately meaning the population will not be fragmented.

Further, as the species breeds in Tasmania and returns to mainland Australia only to overwinter within flowering woodlands and forests, breeding will not be impacted by the proposed project.

Adversely affect habitat critical to the survival of a species.

The project is unlikely to adversely affect critical habitat essential for the survival of the Swift Parrot. While the species may utilise vegetation within the development site for occasional foraging during its overwintering period, this area represents only a small part of a much larger, contiguous patch of important habitat. This contiguous patch extends to the east,

SIC assessment for critically endangered or endangered species

south, and north of the subject land. These surrounding areas offer much more suitable habitat for the species than the vegetation proposed to be impacted by the project, especially considering that vegetation mapped as important habitat within the development footprint does not include any key foraging tree species for Swift Parrot. As Swift Parrot breeds in Tasmania, any vegetation within the subject land holds little significance to the breeding ecology of the species. Within the *Swift Parrot Draft Recovery Plan* (DCCEEW 2024), nine Key Biodiversity Areas (KBAs) within NSW have been identified as critical sites for Swift Parrot conservation. These include; Brisbane Water, Capertee Valley, Hastings-Macleay, Hunter Valley, Lake Macquarie, Richmond Woodlands, South-west Slopes of NSW, Tuggerah and Ulladulla to Merimbula. The subject land is not located within any of these listed KBAs. The Draft Recovery Plan also states that habitat critical to the survival of the species, other than breeding and foraging habitat within Tasmania, includes all preferred foraging species within known and likely foraging habitat on the mainland. As the development footprint, particularly that which is mapped as Swift Parrot important habitat, includes very limited quantities of preferred foraging species for Swift Parrot, and is not located with an identified KBA, the project is unlikely to affect habitat critical to the survival of the species.

Disrupt the breeding cycle of a population.

This species breeds in Tasmania and therefore there is no breeding habitat within the subject land.

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

The project will impact on approximately 0.04 ha of mapped important habitat for the Swift Parrot and a total of 1.02 ha of native vegetation across the subject land. While *Eucalyptus sp.* and *Corymbia sp.* trees within the subject land may be infested with lerp (sap-sucking insects), which are a food source for this species, the vegetation to be impacted exists at the edge of a larger patch of higher quality habitat, which is likely to contain these foraging resources in high abundance. It is likely that if the species uses the subject land for foraging, it also utilises adjacent retained vegetation. While proposed vegetation impacts may temporarily reduce the abundance of low-quality foraging habitat for Swift Parrot, revegetation works are likely to increase the overall abundance of suitable foraging habitat within the development site and is unlikely to significantly impact available higher-quality resources across the locality. Considering the extent of works, and the mitigation measures to be implemented, the project is unlikely to impact the species to the extent that it would cause a decline in the population.

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 that the locality already supports several invasive and pest animal species, and it is highly likely that such species as feral foxes, rats and rabbits are already present within the area, the project is unlikely to exacerbate the current level of invasive species threat operating within the subject land to the point that they become harmful to the Swift Parrot.

Introduce disease that may cause the species to decline.

The proposed action is unlikely to introduce a disease that causes the Swift Parrot to decline.

Interfere with the recovery of the species.

The National Recovery Plan for Swift Parrot (DCCEEW 2024) outlines four recovery actions:

- Identify the extent and quality of habitat.
- Manage and protect Swift Parrot habitat at the landscape scale.
- Monitor and manage the impact of collisions, competition and disease.
- Monitor population and habitat.

The subject land contains potential foraging habitat for this species, of which 0.04 ha is being removed that is mapped as important habitat for the Swift Parrot in the north-east of the subject land. However, additional higher quality vegetation adjacent to the subject land, which is also mapped as an important habitat for the Swift Parrot, is not proposed to be impacted by the project. It is therefore unlikely that potential impacts to this vegetation will interfere with the recovery of

SIC assessment for critically endangered or endangered species

Swift Parrot.

Conclusion.

Based on the assessment, it is concluded the project is unlikely to lead to a significant impact to Swift Parrot, as:

- Small numbers of individuals may occasionally forage within the vegetation within the subject land, however, there are higher-quality resources located adjacent to the subject land.
- The removal of 0.04 ha of mapped as important habitat for the Swift Parrot and a total of 1.02 ha of native vegetation from the subject land is not likely to constitute a significant impact to an important population, considering the lack of feed trees for the species present.
- No breeding habitat will be impacted.
- Mitigation measures will be implemented to minimise risk of indirect impacts.

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

