Biodiversity Development Assessment Report

21, 23, and 25 McIntosh Street
and
55 Werona Avenue

Gordon
Ku-ring-gai LGA

For: Werona Residence DM Pty Ltd

REF: KMC 25-1299

27th April 2026

KEYSTONE
ECOLOGICAL

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Date	Version	Detail
21.05.2025	1.0	For issue.
27.04.2026	1.1	Update to incorporate final design and address Council comments.

Author:
Elizabeth Ashby

CERTIFICATION
I certify that this BDAR has been prepared on the basis of the requirements of (and information provided under) the current Biodiversity Assessment Method (2020).  Assessor Number BAAS17045 27th April 2026

This document may be cited as:

Ashby, E. (2026) Biodiversity Development Assessment Report, McIntosh Street and Werona Avenue, Gordon, Ku-ring-gai Local Government Area. Unpublished report, Keystone Ecological.

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Cover photograph: Recent aerial photograph showing the development site (red)

Source: Nearmap photomap, dated 20th January 2025.

DEFINITIONS

Some terms require definition for the Biodiversity Development Assessment Report and largely include those as per the *Biodiversity Conservation (BC) Act 2016* and Biodiversity Assessment Method (2020) for matters listed under NSW legislation.

BAM: The Biodiversity Assessment Method (2020).

Critically endangered ecological community (CEEC): an ecological community specified as critically endangered in Schedule 2 of the *BC Act 2016* and/or listed under Part 13, Division 1, Subdivision A of the *EPBC Act 1999*.

Development: has the same meaning as development at section 4, or an activity in Part 5, or development as defined in section 115T of the *NSW Environmental Planning and Assessment Act 1979* (*EPA Act 1979*).

Development footprint: the area of land that is directly impacted on by a proposed development, including access roads, and areas used to store construction materials.

Development site: an area of land that is subject to a proposed development that is under the *EPA Act 1979*. It is also taken to include the clearing footprint, except where the reference is to a small area development or major project development.

DIWA: Directory of Important Wetlands.

Endangered ecological community (EEC): an ecological community specified as endangered in Schedule 2 of the *BC Act 2016*, or listed under the *EPBC Act 1999*.

Habitat: an area or areas occupied, or periodically or occasionally occupied, by a species or ecological community, including any biotic or abiotic component.

Habitat component: the component of habitat that is used by a threatened species for breeding, foraging, or shelter.

High threat exotic plant cover: plant cover composed of vascular plants not native to Australia that if not controlled will invade and outcompete native plant species. Also referred to as high threat weeds or high threat exotic vegetation. Plants considered to be high threat weeds are listed on the high threat weeds list published in the BAM-C.

Hollow-bearing tree: a living or dead tree that has at least one hollow. A tree is considered to contain a hollow if: (a) the entrance can be seen; (b) the minimum entrance width is at least 5cm; (c) the hollow appears to have depth (i.e. you cannot see solid wood beyond the entrance); (d) the hollow is at least 1m above the ground. Trees must be examined from all angles.

IBRA region: a bioregion identified under the Interim Biogeographic Regionalisation for Australia (IBRA) system, which divides Australia into bioregions on the basis of their dominant landscape-scale attributes.

IBRA subregion: a subregion of a bioregion identified under the IBRA system.

Major project: State Significant Development and State Significant Infrastructure.

Native ground cover: all native vegetation below 1 metre in height, including all such species native to NSW (i.e. not confined to species indigenous to the area).

Native ground cover (grasses): native ground cover composed specifically of native grasses.

Native ground cover (other): native ground cover composed specifically of non-woody native vegetation (vascular plants only) less than 1 m in height that is not a grass (e.g. herbs, ferns).

Native ground cover (shrubs): native ground cover composed specifically of native woody vegetation less than 1 m in height.

Native mid-storey cover: all vegetation between the over-storey stratum and a height of 1m (typically tall shrubs, under-storey trees and tree regeneration) and including all species native to NSW (i.e. native species not local to the area can contribute to mid-storey structure).

Native over-storey cover: the tallest woody stratum present (including emergent) above 1m and including all species native to NSW (i.e. native species not local to the area can contribute to over-storey structure). In a woodland community the over-storey stratum is the tree layer, and in a shrubland community the over-storey stratum is the tallest shrub layer. Some vegetation types (e.g. grasslands) may not have an over-storey stratum.

Native vegetation: species endemic to NSW as defined in Section 1.6 of the *BC Act 2016* and Section 60B of the *LLS Act 2013*.

Number of trees with hollows: a count of the number of living and dead trees that are hollow bearing.

Prescribed impact: means the prescribed impacts identified in clause 6.1 of the BC Regulation. Prescribed impacts can be direct or indirect impacts.

Subject lot(s): The lot(s) within proposed works as identified by the Lot number and Deposited Plan (DP) number.

CONTENTS

1 INTRODUCTION

Keystone Ecological has been contracted by Werona Residence DM Pty Limited to assess the likely impacts of a proposed development upon state-listed flora and fauna, and their habitats at the following four lots in Gordon in the Ku-ring-gai Local Government Area (LGA):

- Lot A DP 339345, 21 McIntosh Street
- Lot 5 DP 651557, 23 McIntosh Street
- Lot 1 DP 167505, 25 McIntosh Street
- Lot 11 DP 1078667, 55 Werona Avenue

The development site is currently zoned R2 Low Density Residential, and the subject lots occupy a total area of approximately 0.78 hectares. Each of the lots is developed with long established dwellings and formal gardens, including tennis courts and pools (see Figure 1). The proposal is to develop three separate Residential flat buildings with in-fill affordable housing and is illustrated in Figure 2.

The proposal comprises:

- Demolition of existing improvements;
- Partial clearing of the site;
- Construction of 3 Residential flat buildings comprising a total of 163 units with each building comprising 8 levels (including affordable rental housing) and two basement parking levels; and
- Landscaping of common spaces.

As a State Significant Development Application, the Biodiversity Offsets Scheme (BOS) is automatically triggered, and requires submission of a Biodiversity Development Assessment Report (BDAR) in accordance with the *Biodiversity Conservation (BC) Act 2016.* A BDAR waiver has not been sought for this project as it is anticipated that it will result in a small impact to native vegetation, including within an area mapped as having Biodiversity Values.

The areas of BV mapped on site are shown in Figure 3 in relation to the proposed layout. The BOS is triggered by the impact to native vegetation of works within the incidence of the BV layer at the rear of number 21 McIntosh Street.

Figure 1: *Recent aerial imagery of the proposed development site (red outline, house numbers shown in yellow). Nearmap photomap, 3rd April 2025.*

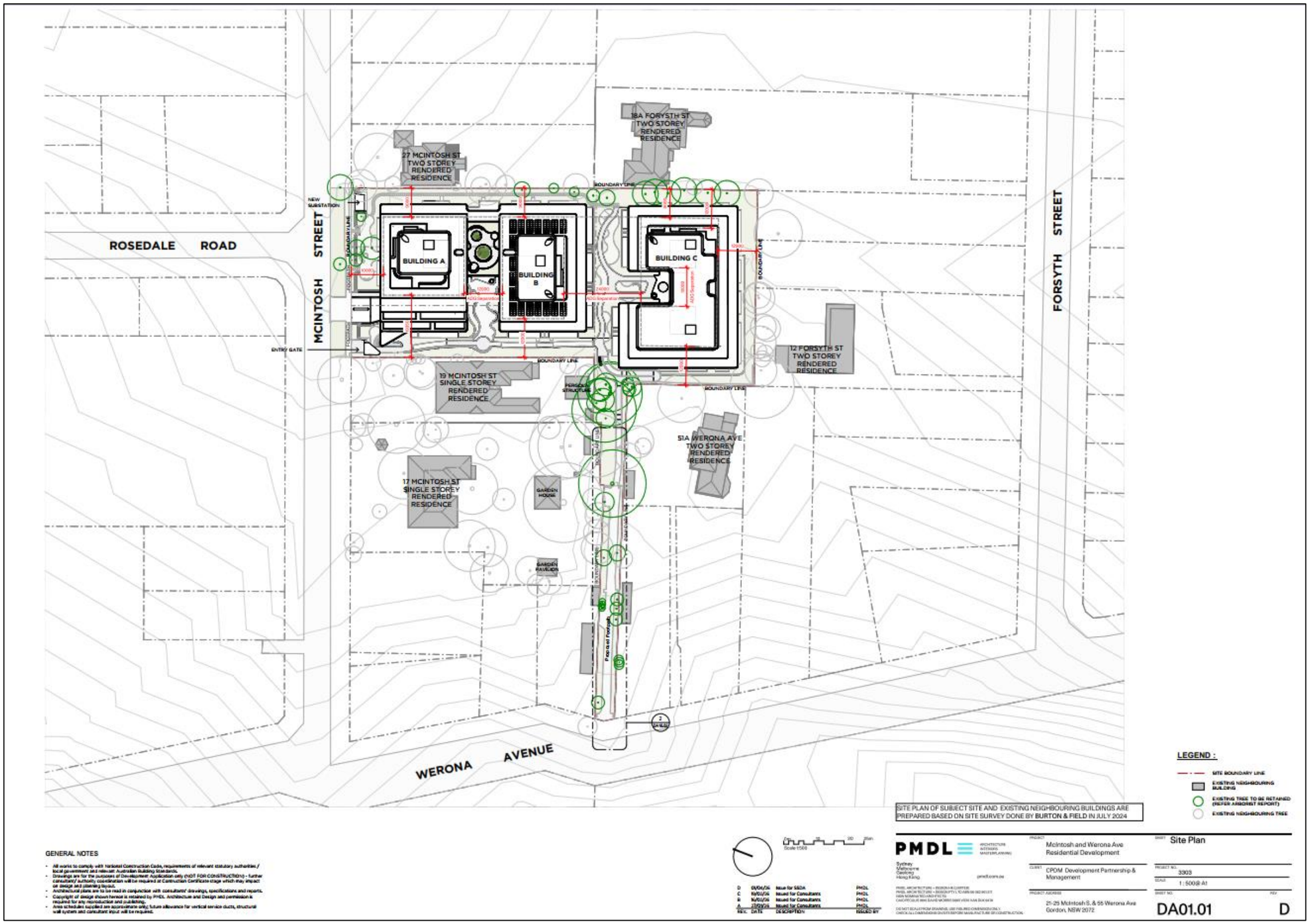


Figure 2: *Site plan showing the extent of the footprint and retained trees. Source plan: PMDL, Revision D, dated 1st April 2026.*

The following external sources of information were relied upon for this BDAR, satisfying section 1.4.1 of the BAM 2020:

- BioNet Vegetation Classification (formerly known as the NSW Vegetation Information System Classification Database).
- BioNet Threatened Biodiversity Data Collection (TBDC, formerly known as the Threatened Species Profile Database).
- BioNet Atlas (formerly known as the NSW Wildlife Atlas).
- Directory of Important Wetlands in Australia.
- BioNet NSW (Mitchell) Landscapes – Version 3.1.
- NSW Interim Biogeographic Regions of Australia (IBRA region and subregion) – Ver 7.
- Biodiversity Assessment Method (2020). Biodiversity Assessment Method, Environment, Energy and Science, Department of Planning Industry and Environment, October 2020, Sydney NSW.
- NearMaps aerial imagery tool (http://maps.au.nearmap.com/).
- NSW Government SIXMaps Aerial Imagery Tool (https://maps.six.nsw.gov.au/).
- SEED (2024) Sharing and enabling environmental data online portal. NSW Government, Sydney
  https://geo.seed.nsw.gov.au/vertigisstudio/web/?app=cabd04d595ec43c1aaf4298e80e83ec2

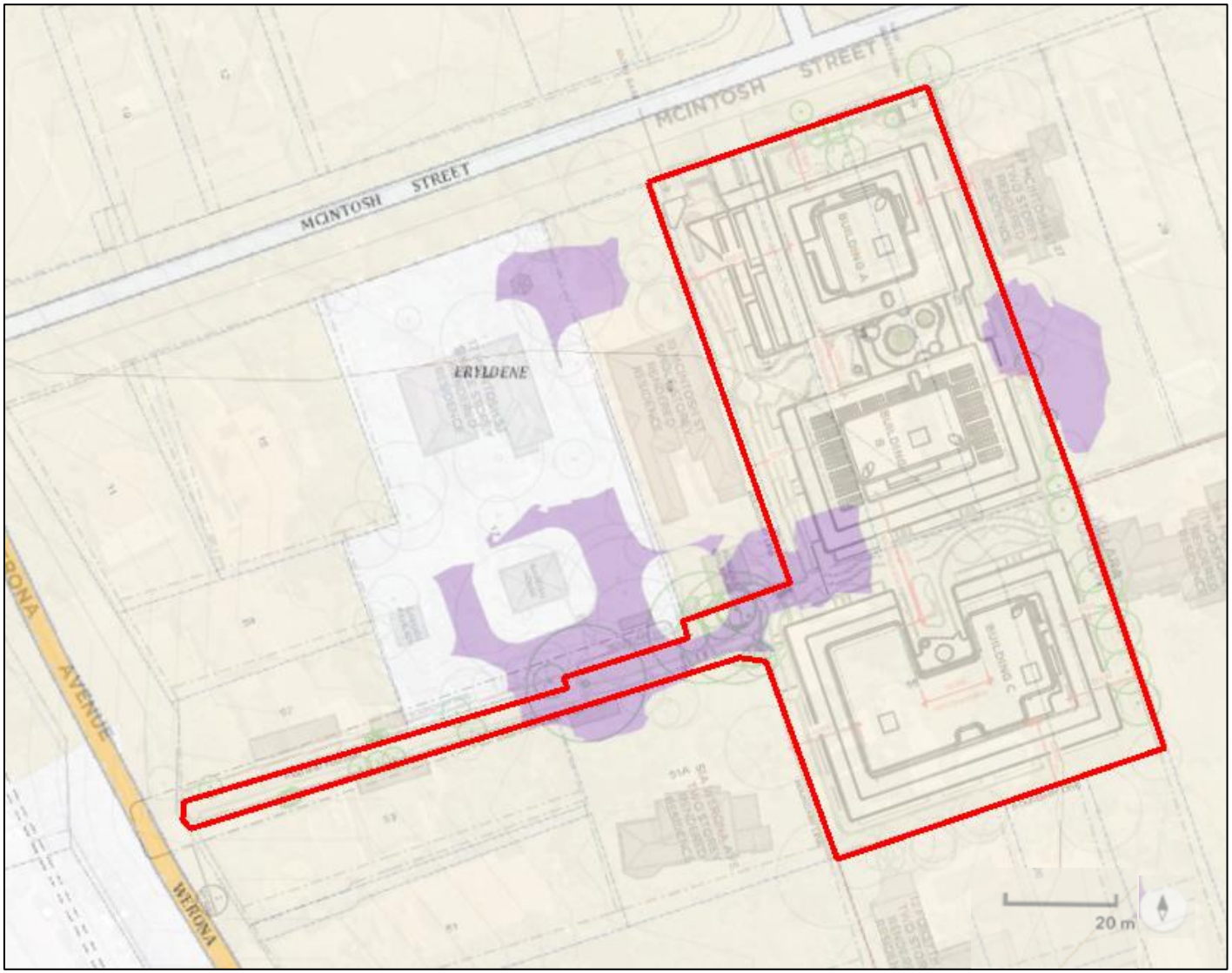


Figure 3: *Areas of Biodiversity Value (purple) mapped on and near the development site (red) and in relation to the proposed layout. BVMAT last accessed 14th April 2026.*

2 LANDSCAPE AND SITE CONTEXT

Relevant landscape features are mapped in Figure 4.

The development site is located within the **Cumberland subregion** in the **Sydney Basin IBRA bioregion**.

The Sydney Basin IBRA Bioregion[1] occupies over 3.6 million hectares and extends from just north of Batemans Bay to Nelson Bay on the central coast, and almost as far west as Mudgee. It includes a significant proportion of the catchments of the Hawkesbury-Nepean, Hunter and Shoalhaven river systems, all of the smaller catchments of Lake Macquarie, Lake Illawarra, Hacking, Georges and Parramatta Rivers, and smaller portions of the headwaters of the Clyde and Macquarie rivers.

The Cumberland IBRA subregion[2] contains low rolling hills and wide valleys in areas of rain shadows below the Blue Mountains on Triassic Wianamatta shales and sandstones. It has intrusions by small volcanic vents that are partly covered by tertiary river gravels and sands, with quaternary alluvial soils occurring along the main streams.

Soils are typically red and yellow with brown clays on volcanics. At least three terrace levels are evident in gravel splays with volcanics occurring from low hills in shale landscapes. Swamps and lagoons occur in floodplain areas of the Nepean River.

Vegetation is typically divided by soil influences. *Eucalyptus moluccana* Grey Box, *Eucalyptus tereticornis* Forest Red Gum, *Eucalyptus crebra* Narrow-leaved Ironbark woodland with some *Corymbia maculata* Spotted Gum occurs on rolling shale hills. *Eucalyptus sclerophylla* Hard-leaved Scribbly Gum, *Angophora floribunda* Rough-barked Apple and *Banksia serrata* Old Man Banksia occur on alluvial sands and gravels. *Angophora subvelutina* Broad-leaved Apple, *Eucalyptus amplifolia* Cabbage Gum, and *Eucalyptus tereticornis* Forest Red Gum with abundant *Casuarina glauca* Swamp Oak occur on river flats, with tall rushes and *Eucalyptus parramattensis* Parramatta Red Gum in lagoons and swamps.

The centre of the site is approximately at **grid reference** 329775 E 6262025 N (GDA 2020-MGA 56).

The site occurs within the **Pennant Hills Ridges** Mitchell Landscape and the **Glenorie** Soil Landscape.

The Pennant Hills Ridges Mitchell Landscape[3] occurs on rolling to moderately steep hills on horizontal shales and siltstones with an elevation between 10 metres to 90 metres ASL and a local relief of 60 metres ASL. Soils consist of deep red textured soils on narrow hillcrests with red to brown, yellow soils on slopes and becoming harsher in drainage areas.

[1] Sydney Basin Bioregion, at http://www.environment.nsw.gov.au/bioregions/SydneyBasinBioregion.htm
[2] Sydney Basin – subregions, at http://www.environment.nsw.gov.au/bioregions/SydneyBasin-Subregions.htm
[3] Department of Environment and Climate Change NSW (2002) Descriptions for NSW (Mitchell) landscapes, version 2, based on descriptions compiled by Dr. Peter Mitchell.

Native vegetation is generally made up of tall open forest comprising *Eucalyptus saligna* Sydney Blue Gum, *Syncarpia glomulifera* Turpentine, *Eucalyptus pilularis* Blackbutt, *Eucalyptus globoidea* White Stringybark, *Eucalyptus paniculata* Grey Ironbark, *Angophora floribunda* Rough-barked Apple, and *Allocasuarina torulosa* Forest Oak. Rainforest elements - including *Pittosporum undulatum* Sweet Pittosporum, *Glochidion ferdinandi* Cheese Tree, *Ficus coronata* Sandpaper Fig and *Callicoma serratifolia* Black Wattle - occur in the heads of protected moist gullies.

The Glenorie soil landscape is an erosional soil landscape and generally occurs north of the Parramatta River on the Hornsby Plateau[4]. It is underlain by Wianamatta Group shales, and typical topography includes undulating to low rolling hills that support tall open-forest, most of which has been extensively cleared (Chapman and Murphy1989).

The vegetation on this soil landscape is characteristically dominated by *Eucalyptus saligna* Sydney Blue Gum and *Eucalyptus pilularis* Blackbutt, although other species are common such as *Syncarpia glomulifera* Turpentine and *Eucalyptus paniculata* subsp*. paniculata* Grey Ironbark, *Eucalyptus globoidea* White Stringybark and *Angophora floribunda* Rough-barked Apple.

The **extent of native vegetation within the assessment area** is estimated to total 141.66 hectares, representing 18.74% of the total assessment area of 755.82 hectares. This native vegetation has been classified and mapped[5] as comprising eight Plant Community Types (PCTs). The largest patches of vegetation (accounting for 60% of the vegetation within the assessment area) comprise a mixture of PCTs within the the moist and enriched sandstone gullies, whereas the vegetation on the plateau is restricted to only two types: PCT 3262 Sydney Turpentine Ironbark Forest and PCT 3136 Blue Gum High Forest. These occur generally as small and scattered patches.

The **pattern of native vegetation within the assessment area** is uneven, being comprised of a large area of intact riparian bushland at the head of the tributaries of Gordon Creek in Garigal National Park to the north east and similar (but smaller) patches of riparian vegetation riparian vegetation in the headwaters of tributaries of the Lane Cove River in Lane Cove National Park to the south west. Otherwise, native vegetation occurs as small fragmented patches more typical of urban vegetation such as on the development site, and lining the fairways in Killara Golf Course. These patches are principally made up of street trees, trees in parks and reserves, and trees in large backyards that may also include exotic species.

Patch size for the assessment area has been assessed in accordance with BAM 2020 and is estimated to be 0.18 hectares, which is within the <5 hectare class.

Rivers and streams recognised under the *Water Management Act 2010* are those shown as blue lines on 1:25,000 topographic maps. The significance of the streams and the protections they attract are determined by their stream order, according to the Strahler system. In essence, this is defined by the number and types of upper branches.

[4] Original mapping produced by Chapman, G.A., Murphy, C.L., Tille, P.J. and Morse, R.J. (1989) *Soil Landscapes of the Sydney 1:100,000 Sheet* Map, published by Department of Conservation and Land Management. Now available at https://www.environment.nsw.gov.au/eSpade2Webapp

[5] State Vegetation Type Map, **c**urrent release C2.0.M2.1 (November2024), available at https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map

Within the buffer area of the development site there are a number of mapped streams, and their orders have been determined by inspection of the Hydroline Spatial Map associated with the *Water Management Act 2010*. The streams in the assessment area (shown in Figure 4) are restricted to the upper reaches of creeks that drain from the plateau to the north and south. These are distant from the development site, which is situated at the centre of the Hornsby plateau. The closest stream is the mapped head of Rocky Creek, 140 metres to the north of the site.

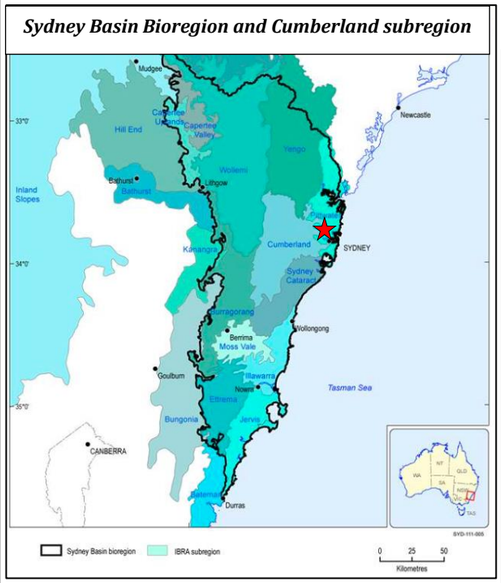
There are no **wetlands** within the buffer area or otherwise nearby recognised under the *State Environmental Planning Policy Coastal Management 2018*.

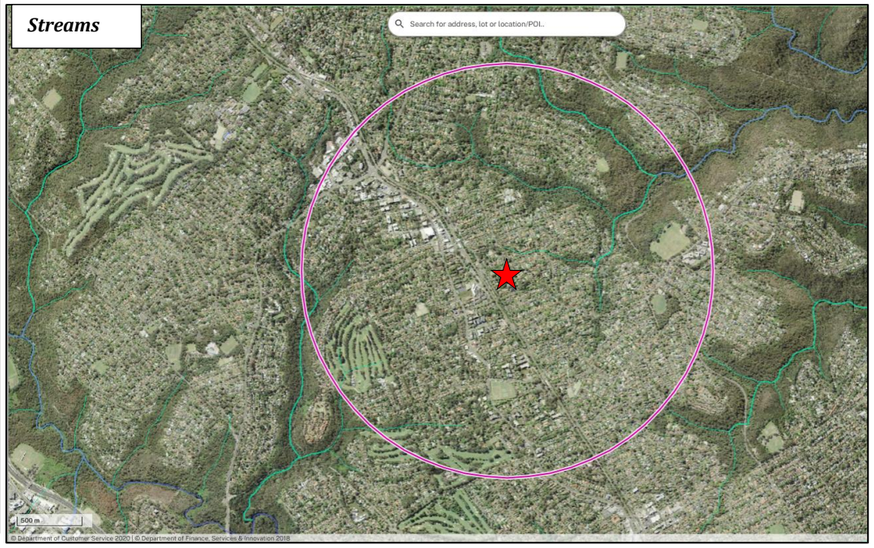
No karsts, caves, crevices, cliffs rocks or other forms of **geological** features occur on site. There are no areas of formally or informally recognised geological significance within the buffer area or on the subject lot.

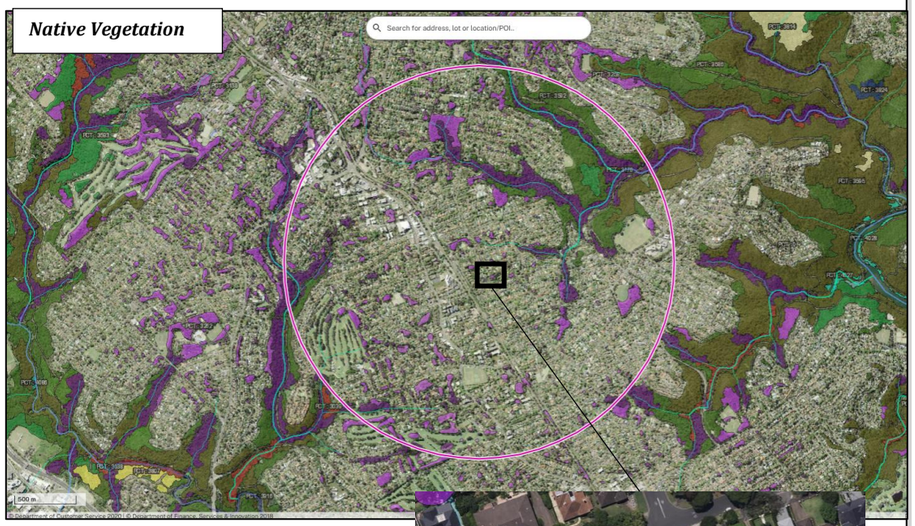
At the time of preparation of this BDAR, declared **Areas of Outstanding Biodiversity Values** (AOBVs) are confined to those already declared as Critical Habitat under the *Threatened Species Conservation Act 1995* (now repealed), being:

- Cabbage Tree Island, critical breeding habitat for Gould's Petrel near Port Stephens;
- Manly Cove, critical breeding habitat for Little Penguins;
- Stotts Island Nature Reserve, critical habitat for Mitchell's Rainforest Snail near Murwillumbah; and
- All known extant areas of the Wollemi Pine and the surrounding habitat in the catchment, occupying some 5,000 hectares within Wollemi National Park.

No areas of AOBV declared under the *Biodiversity Conservation Act 2016* occur within or near the site.







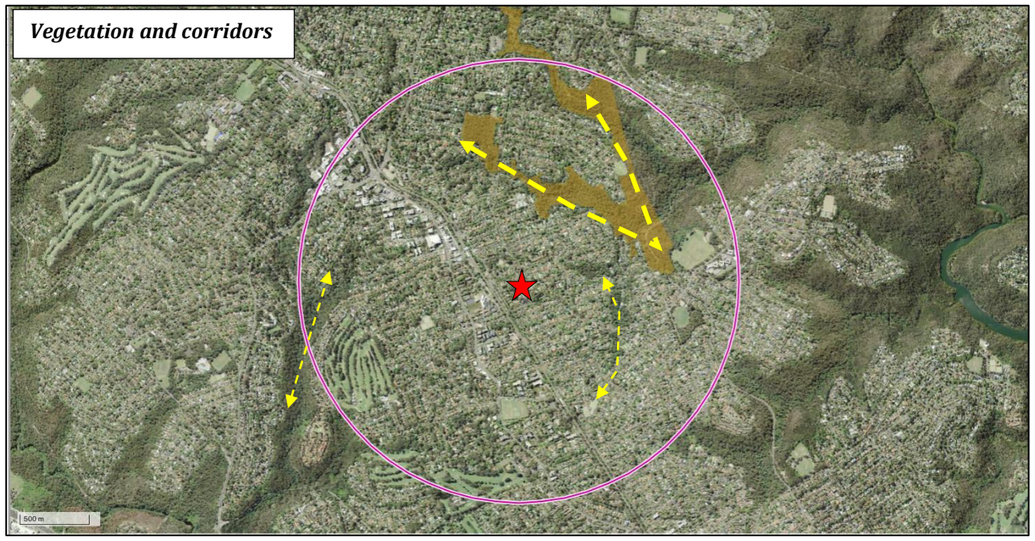


Figure 4: *Landscape features in the 1500 m radius assessment area including bioregion and subregion, streams, mapped PCTs (small scattered fragmented patches of PCT 3136 and 3262 on the plateau), formally recognised corridor and potential movement corridors.*

3 NATIVE VEGETATION

The European history of Gordon area began in the early 1800s with land clearing for timber, which then evolved into farming of the cleared land (fruit trees and market gardens) in the late 1800s. These farms were then eventually cleared in turn to give way to urbanisation in the 1900s. Substantial dwellings and large gardens - including tennis courts (and eventually pools) - were established on the development site in the early 20th century. Natural features of the site and surrounds have therefore been transformed by urbanisation for almost a century.

The development site is made up of long established dwellings and well-maintained landscaped gardens dominated by exotic species. Native vegetation is restricted to a handful of trees (see Figure 5) and two patches of native forbs and grasses in parts of the lawns.

3.1 Data Collection

A number of sources of information were used to aid in the sampling and identification of vegetation on site:

- Recent high quality aerial photography;
- BioNet atlas of NSW Wildlife - for records of common and threatened species; and
- BioNet Vegetation Classification – formerly known as the Vegetation Information System (VIS). This is the standard database for plant community types for NSW, and underpins the analytical tools applied as part of the BAM. The database facilitates vegetation classification by a series of queries of critical features (e.g. structure, location, canopy dominants), and inspection of all related data relevant to each recognised plant community type.
- Sharing and Enabling Environmental Data (SEED) – for vegetation mapping information, flora plot survey records, flora and fauna records and threatened species records.

A BAM plot (Plot 1) was measured for this BDAR on 14th May 2025. Its location is shown in Figure 5 and the data collected are provided in Table 1. It was located such that it captured the maximum number of locally native trees that are considered to be naturally occurring and therefore the best representation of the native vegetation of the site. It was also located to capture the Biodiversity Values polygon and the area mapped as supporting native vegetation.[1]

3.2 Vegetation Type Analysis

In order to determine the Plant Community Types (PCT) represented by the natural vegetation, the filter function available in the BioNet Vegetation Database was used. The factors used for matching were the 14 native species recorded on the development site (see Table 2) that are considered to be naturally-occurring, plus the Bioregion (Sydney Basin) and subregion (Cumberland). This filtering resulted in 1,167 possible PCTs with matches from 1 to 16 factors.

[1] Note that tree 19 (a mature *Eucalyptus paniculata* Grey Ironbark that occurs in the BAM plot) was determined by the project arborist to be a hazard, and was removed in 2026 under licence (C0007223) issued by the NSW Department of Climate Change, Energy, the Environment and Water.

PCTs that did not occur in both the bioregion and subregion were filtered out, leaving 58 PCTs for consideration. Of these 58, the following 4 PCTs had 15 or 16 matches each:

- PCT 3321 Cumberland Shale-Sandstone Ironbark Forest;
- PCT 3592 Sydney Coastal Enriched Sandstone Forest;
- PCT 3136 Blue Gum High Forest (BGHF); and
- PCT 3262 Sydney Turpentine Ironbark Forest (STIF).

PCT 3321 was rejected as it belongs to the Grassy Woodland Formation and occurs at the edge of the Cumberland Plain. PCT 3592 was rejected as it belongs to the Dry Sclerophyll Formation and occurs on sandstone lithology.

The suitability of the remaining PCTs 3136 and 3262 were further explored by interrogation of the full descriptions provided in the Bionet Vegetation Database, as reproduced in Table 3. However, this analysis of additional features supported both PCTs as candidates as they both occur in the same geographic location, landscape position, and share many associated species. Given that the development site is made up of long developed well-maintained gardens, very few naturally-occurring native species persist (other than canopy trees) that might aid in the differentiation of the PCTs.

The species listed in the Scientific Descriptions provided in the BioNet Vegetation Database for each candidate PCT were then compared with those species recorded. This analysis satisfactorily differentiated the PCTs. Of the 14 naturally-occurring locally native species recorded, 10 are listed as Characteristic species of STIF, and of the remaining 4, 3 are listed as occurring within PCT 3262. By comparison, only 6 of the 14 species are Characteristic of BGHF.

This result is also reflective of the modelled vegetation types and extent prior to European occupation – see Figure 6.

The overall condition of PCT 3262 is considered to be poor, with a highly simplified structure comprising only a few remnant trees and a few native forbs and grasses within the context of formal landscaped gardens. The Threatened Ecological Community (TEC) associated with PCT 3236 (STIF) has an equivalent listing under the Commonwealth *Environment Protection* and *Biodiversity Conservation Act 1999.* However, the federally-listed entity requires certain condition and area of occurrence thresholds to be met. The occurrence on site is far too small and modified to constitute this entity.

The extent of PCT 3262 STIF on the development site is shown in Figure 7 and reflects the areas occupied by native STIF trees (principally in the accessway for number 55 Werona Avenue) and native lawns and totals 879 square metres (0.09 hectares).

Only one Vegetation Zone (VZ1) has been defined, comprising PCT 3262. The measured vegetation integrity values for VZ1 are:

- Composition Integrity Score: 10.3

- Structural Integrity Score: 30
- Function Integrity Score: 11.4

These provide an overall Vegetation Integrity (VI) score for PCT 3262 on site of 15.2.

Figure 5: *BAM plot location in relation to Vegetation Zone 1 (STIF/PCT 3262) and the locations and numbers assigned to the native tree species (see arborist report) that are either Characteristic species of STIF per the Final Determination and / or listed as a species that occurs within PCT 3262.*

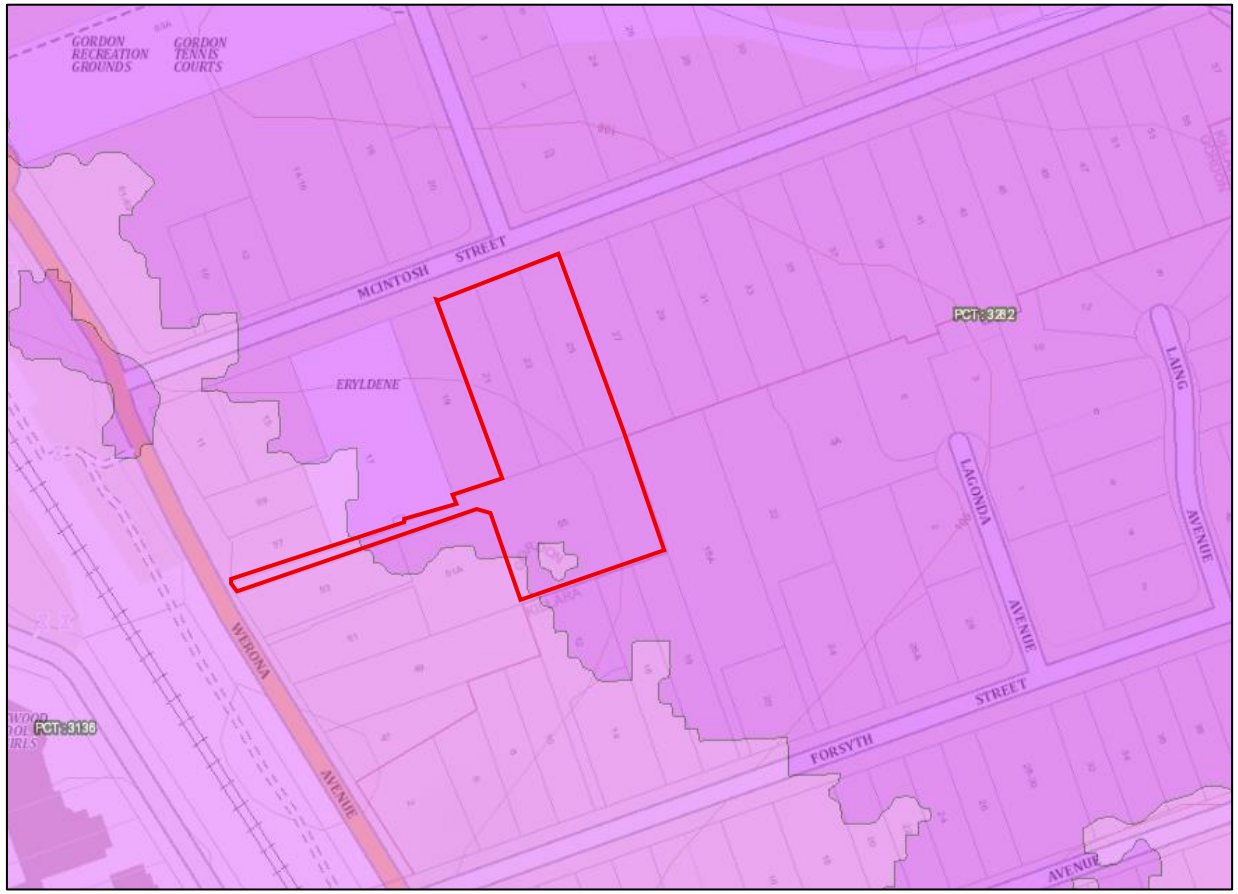


Figure 6: *Modelled vegetation in 1750 shows PCT 3262 Sydney Turpentine Ironbark Forest dominating the development site with PCT 3136 Blue Gum High Forest adjacent. Source: SVTM_NSW_1750_PCT.*

Table 1: *BAM Plot – data.*

Project	21-25 McIntosh St and 55 Werona Ave Gordon				
Date	14-May-25	**Plot ID**	Q1	**Recorder**	Elizabeth Ashby
Zone	56	**Datum**	GDA2020		
Easting	329450	**Northing**	6263139	**Orientation of midline**	70 ^{0}
Dimensions		20x20m, 20x50m			
Veg Zone ID	VZ 1				

Species recorded in 20 x 20 m quadrat				
GF code	**BAM GF Code**	**Species**	**N,E,HTW**	**Cover %**
T	TG	*Brachychiton acerifolius*	N	10
T	TG	*Lophostemon confertus*	N	5
V	GG	*Cyperus gracilis*	N	10
F	FG	*Dichondra repens*	N	0.1
F	FG	*Hydrocotyle sibthorpioides*	N	1
F	FG	*Lobelia purpurascens*	N	0.5
F	FG	*Oxalis exilis*	N	0.5
D	GG	*Oplismenus aemulus*	N	15
		Acer buergerianum	E	10
		Agapanthus praecox	E	10
		Buxus sp.	E	15
		Camellia japonica	E	1
		Gamochaeta purpurea	E	0.1
		Taraxacum officinale	E	0.1
		Jacaranda mimosifolia	E	30
		Cedrus deodora	E	25
		Dolichandra unguis-cati	E,HTW	0.1
		Tradescantia fluminensis	E,HTW	0.1

COMPOSITION	
Form	**No. species**
Trees	2
Shrubs	0
Grasses	2
Forbs	4
Ferns	0
Other	0

STRUCTURE	
Form	**Cover total**
Trees	15
Shrubs	0
Grasses	25
Forbs	2.1
Ferns	0
Other	0
HTW	0.2

FUNCTION			
DBH	**Euc**	**Non Euc**	**Hollows**
80+ cm	**1[A]**		
50-79cm	**4**		
30-49cm	**1**		
20-29cm		2	
10-19cm			
5-9cm			
<5cm			

A: Note that this tree was present in May 2025 but was removed with consent in 2026 due to safety concerns. Calculation of VI was therefore amended to account for the absence of this tree.

Length of logs	0

Natural Regeneration?	No

Litter plots					
	1	**2**	**3**	**4**	**5**
%	0	0	0	0	0
average	0				

***Table 2**: All flora species recorded on the development site. Exotic species denoted by an asterisk.*

Family	*Scientific Name*	Common Name
Acanthaceae	*Pseuderanthemum variabile*	Pastel Flower
Aceraceae	*Acer* sp. (cultivar)*	Japanese Maple
Agapanthaceae	*Agapanthus praecox**	African Lily
Amaryllidaceae	*Clivia miniata**	Bush Lily
Apiaceae	*Hydrocotyle sibthorpioides*	Pennywort
Araceae	*Alocasia brisbanensis*	Cunjevoi
Arecaceae	*Archontophoenix cunninghamiana*	Bangalow Palm
Arecaceae	*Phoenix canariensis**	Canary Island Date Palm
Aspleniaceae	*Asplenium australasicum*	Birds Nest Fern
Asteraceae	*Arrhenechthites mixtus*	Purple Fireweed
Asteraceae	*Gamochaeta purpurea**	Cudweed
Bignoniaceae	*Dolichandra unguis-cati **	Cat's Claw Creeper
Bignoniaceae	*Jacaranda mimosifolia**	Jacaranda
Cannabaceae	*Celtis sinensis**	Japanese Hackberry
Commelinaceae	*Tradescantia fluminensis**	Trad
Convallariaceae	*Ophiopogon japonicus**	Mondo Grass
Convolvulaceae	*Dichondra repens*	Kidney Weed
Cyperaceae	*Cyperus gracilis*	-
Fabaceae	*Wisteria sinensis**	Wisteria
Iridaceae	*Dietes bicolor**	Spanish Iris
Lobeliaceae	*Lobelia purpurascens*	Whiteroot
Lomariopsidaceae	*Nephrolepis cordifolia*	Fish-bone Fern
Myrtaceae	*Eucalyptus paniculata* subsp. *paniculata*	Grey Ironbark
Myrtaceae	*Eucalyptus resinifera* subsp. *resinifera*	Red Mahogany
Myrtaceae	*Lophostemon confertus*	Brush Box
Myrtaceae	*Syzygium australe*	Brush Cherry
Myrtaceae	*Syzygium luehmannii*	Small-leaved Lilly Pilly
Ochnaceae	*Ochna serrulata**	Mickey Mouse Plant
Oleaceae	*Jasminum polyanthum**	Jasmine
Oxalidaceae	*Oxalis exilis*	-
Pinaceae	*Cedrus deodora**	Deodar Cedar
Pittosporaceae	*Pittosporum undulatum*	Sweet Pittosporum
Poaceae	*Cynodon dactylon*	Common Couch
Poaceae	*Ehrharta erecta**	Panic Veldtgrass
Poaceae	*Oplismenus aemulus*	Basket Grass
Poaceae	*Phyllostachys aurea**	Fishpole Bamboo
Polypodiaceae	*Platycerium bifurcatum* subsp. *bifurcatum*	Elkhorn
Rutaceae	*Murraya paniculata**	Orange Jessamine
Solanaceae	*Solanum nigrum**	Black Nightshade
Sterculiaceae	*Brachychiton acerifolius*	Illawarra Flame Tree
Theaceae	*Camellia* sp. *	Camellia
Verbenaceae	*Lantana camara**	Lantana
Violaceae	*Viola hederacea*	Ivy-leaved Violet
Violaceae	*Viola odorata**	Sweet Violet
Vitaceae	*Parthenocissus quinquefolia**	Virginia Creeper

***Table 3**: Candidate PCTs following vegetation analysis. Descriptions sourced from PCT data provided in Bionet Vegetation Classification. The important factors are shown in bold.*

# matches	PCT	TEC	Description
13	3136 Blue Gum High Forest 99% cleared	Equivalent to Blue Gum High Forest in the Sydney Basin Bioregion Critically Endangered Ecological Community (*BC Act 2016*)	A very tall to extremely tall sclerophyll open forest with a mesophyll shrub layer and a grassy and herbaceous ground layer found on clay rich shale soils in the high rainfall districts of Sydney's north shore and surrounding suburbs. The tree canopy very frequently includes a high cover of ***Eucalyptus saligna***, commonly with *Eucalyptus pilularis* and occasionally *Syncarpia glomulifera*. The mid-stratum is layered, with a sparse cover of small trees that very frequently includes *Pittosporum undulatum* and occasionally ***Elaeocarpus reticulatus***. There is often also at least one of a suite of tall Acacia species of which *Acacia parramattensis* is most frequent and the others are rarely occurring. The lower shrub layer also includes very frequently *Pittosporum undulatum*, commonly with *Breynia oblongifolia*, *Polyscias sambucifolia* and *Pittosporum revolutum*, occasionally with *Leucopogon juniperinus* and *Clerodendrum tomentosum*. The ground layer is variable in both composition and cover. It may be ferny, grassy or herbaceous and include a diversity of small mesic climbers depending on topographic situation and disturbance history. Species very frequently include *Microlaena stipoides, Entolasia marginata,* ***Oplismenus aemulus****, Pseuderanthemum variabile* and *Pandorea pandorana*, commonly with *Dichondra repens, Tylophora barbata* and *Adiantum aethiopicum*, occasionally with *Calochlaena dubia*. This PCT occurs on a range of **shale** or shale-influenced substrates including gullies, **ridgelines** and slopes underlain by Wianamatta shales. It also occurs on small gully heads where downslope movement of shale soil lies above sandstone bedrock where outcrops may be present. It is found at **elevations of 30-190 metres ASL**. This community has been extensively cleared across low slope ridgelines between Castle Hill and St Ives, with many remaining examples restricted to steeper slopes including in the suburbs of Ryde, Lane Cove and Willoughby. It grades into tall forests PCT 3262 on thinner shale soils that adjoin, or PCT 3176 downslope in sandstone gullies.
13	3262 Sydney Turpentine Ironbark Forest 95.91% cleared	Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion, Critically Endangered Ecological Community (*BC Act 2016*)	A tall to very tall sclerophyll open forest with mid-stratum of mixed sclerophyll and mesophyll shrubs and a **ground layer of grasses and forbs**, found on **shale** or sheltered shale-sandstone soils mainly in the **northern suburbs of Sydney** and lower Blue Mountains. The tree canopy very frequently includes *Syncarpia glomulifera* either as a canopy dominant or as a smaller tree or both. Other species which are localised and occasionally dominant or co-dominant occasionally include *Eucalyptus pilularis, Angophora costata* and *Eucalyptus punctata,* rarely with one of several species from the **ironbark, stringybark or mahogany eucalypt groups** of which ***Eucalyptus paniculata***, *Eucalyptus globoidea* and ***Eucalyptus resinifera*** are the most frequent of each group. The mid-stratum is layered, with a sparse cover of small trees that includes eucalypts, occasionally *Acacia parramattensis* and *Allocasuarina torulosa*, rarely with *Allocasuarina littoralis*. The lower shrub layer very frequently includes *Pittosporum undulatum* and *Leucopogon juniperinus*, commonly with *Breynia oblongifolia*, *Polyscias sambucifolia, Ozothamnus diosmifolius* and *Notelaea longifolia*. The ground layer includes a diverse cover of grasses that very frequently includes *Microlaena stipoides* and *Entolasia stricta*, commonly with *Imperata cylindrica*, *Entolasia marginata* and *Themeda triandra*. Small forbs including ***Lobelia purpurascens*** are also very frequent, together with *Lomandra longifolia*. This PCT occurs as **small remnants in mosaics of urban land use in the shale-dominated landscapes in higher rainfall zones of the Sydney Metropolitan area**. The northern suburbs between Baulkham Hills and Ku-ring-gai include the highest number of remnants, however small areas remain in Sutherland, Heathcote, Menai, lower Blue Mountains and Oakdale plateau west of Picton. Only a small number of remnants remain on the Wianamatta Shales of the eastern Cumberland Plain between Villawood and Bankstown. This community grades into tall moist shrub forests PCT 3136 in higher rainfall shale-rich soils on the north shore, or into PCT 3620 in sandstone environments. On the margins of the Cumberland Plain it may grade into dry forests PCTs 3321 or 3616 with increased exposure.

Figure 7: *Distribution of patches of Vegetation Zone 1 (green = PCT 3262) on site at the time of assessment, totalling 879 square metres (0.09 hectares).*

4 THREATENED SPECIES

Section 5 of BAM 2020 details the process for determining the habitat suitability for threatened species. For the purposes of assessing impact and offset obligations under the BAM, threatened species are separated into two types, 'ecosystem' and 'species' credit species:

- **Ecosystem credit species** are those 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. The Threatened Biodiversity Data Collection (TBDC) identifies the threatened species assessed for ecosystem credits. A targeted survey is not required to identify or confirm the presence of ecosystem credit species; and
- **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 species are identified in the TBDC. A targeted survey or an expert report is required to confirm the presence of these species on the subject land. Alternatively, for a development, activity, clearing or biodiversity certification proposal only, the proponent may elect to assume the species is present.

Some threatened species may be identified as both ecosystem and species credit species, with different aspects of the habitat and life cycle representing different credit types. Commonly, threatened fauna species may have foraging habitat as an ecosystem credit, while their breeding habitat represents a species credit.

The streamlined assessment method of BAM 2020 only requires incidental survey for threatened species, unless a threatened species is recorded on site during those incidental surveys, or if a candidate species identified in the BAM-C is at risk of being an SAII entity.

4.1 Predicted Species

A list of predicted ecosystem credit species derived from the BAM-C is provided in Table 4. All but 6 of the species identified in the BAM-C were retained for the analysis (see below), as habitat attributes relevant to each are present and therefore could not reasonably be excluded.

The 5 excluded species and the reasons for their exclusion are:

- ***Calyptorhynchus lathami* Glossy Black-Cockatoo.** Foraging habitat for this species is specifically noted as the habitat constraint that contributes to offset ecosystem credits. It is a specialist feeder on the seeds of *Allocasuarina* species and (to a lesser degree) on *Casuarina* species. Neither of these tree species occur on site and therefore this species is excluded.
- ***Ephippiorhynchus asiaticus* Black-necked Stork.** Key habitat for this species includes floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers. Secondary habitat comprise minor floodplains, coastal sandplain wetlands and estuaries. The presence of such habitats on site or within 300 metres of the site are detailed in the BAM-C as habitat constraints that require inclusion of this species for the

calculation of ecosystem offsets. No such habitats occur on or near the site and therefore this species is excluded.

- ***Gallinago hardwickii* Latham's Snipe.** This relies on very specific wetland micro-habitats (permanent and ephemeral wetlands with low, dense vegetation). The BAM-C defines areas with such habitat features and those within 5 kilometres of such habitat features as being relevant for consideration and offsetting. No such habitats occur on or near the site and therefore this species is excluded.
- ***Grantiella picta* Painted Honeyeater.** This species is a specialist feeder on Mistletoe fruit and Mistletoes must be present at a density of greater that five mistletoes per hectare for a site to be considered to be suitable and counted as requiring offset consideration. There are no Mistletoes present on site and therefore this species is excluded.
- ***Haliaeetus leucogaster* White-bellied Sea-Eagle.** Foraging habitat for this species is specifically noted as the feature that contributes to credits. Foraging habitat is defined as occurring in or within 1 kilometre of rivers, lakes, large dams, or other waterbodies. The site is not within 1 kilometre of such critical habitat features, nor does it contain such habitat. and therefore this species is excluded
- ***Ixobrychus flavicollis* Black Bittern.** This species relies on well-vegetated waterbodies for foraging, breeding, and sheltering. The BAM-C defines areas with such habitat features and those within 40 metres of such habitat features as being relevant for consideration and offsetting. However, as the development site and surrounds do not support waterbodies of any kind, this species is excluded.

No additional predicted species were included in the BAM-C.

4.2 Candidate Species

The potential candidate threatened species (species credit species) are detailed in Table 5, and have arisen from them being associated with PCT 3136, the vegetation type identified on the development site. All have been excluded from analysis, with justifications detailed within the table.

No additional candidate species were included in the BAM-C.

Table 4: *Predicted threatened species generated by the BAM-C.*

Species (Habitat element)	Included or excluded from consideration	Geographic Limitations	Habitat Constraints	Sensitivity to gain
Anthochaera phrygia Regent Honeyeater (foraging habitat)	Included	None	None	High
Artamus cyanopterus cyanopterus Dusky Woodswallow	Included	None	None	Moderate
Callocephalon fimbriatum Gang-gang Cockatoo	Included	None	None	Moderate
Calyptorhynchus lathami Glossy Black-Cockatoo	Excluded	None	• Presence of *Allocasuarina* and *Casuarina* species	High
Chthonicola sagittata Speckled Warbler	Included	None	None	High
Climacteris picumnus victoriae Brown Treecreeper (eastern subspecies)	Included	None	None	High
Daphoenositta chrysoptera Varied Sittella	Included	None	None	Moderate
Dasyurus maculatus Spotted-tailed Quoll	Included	None	None	High
Ephippiorhynchus asiaticus Black-necked Stork	Excluded	None	• Swamps • Shallow open freshwater or saline wetlands or shallow edges of deeper wetlands within 300m of these swamps / waterbodies • Shallow lakes, lake margins and estuaries within 300m of these waterbodies	Moderate
Gallinago hardwickii Latham's Snipe	Excluded	None	• Claypans; within 5km • Intertidal zones; within 5 km • Other; within 5km of surface water feature • Demi-permanent / ephemeral wet areas; within 5km • Swamps; within 5km • Waterbodies; within 5km	High
Glossopsitta pusilla Little Lorikeet	Included	None	None	High
Grantiella picta Painted Honeyeater	Excluded	None	• Mistletoes present at a density of greater that five mistletoes per hectare	Moderate
Haliaeetus leucogaster White-bellied Sea-Eagle (foraging habitat)	Excluded	None	• Within 1 km of rivers, lakes, large dams, or other waterbodies	High

Species (Habitat element)	Included or excluded from consideration	Geographic Limitations	Habitat Constraints	Sensitivity to gain
Hieraaetus morphnoides Little Eagle	Included	None	None	
Hirundapus caudacutus White-throated Needletail	Included	None	None	High
Ixobrychus flavicollis Black Bittern	Excluded	None	• Waterbodies • Land within 40m of freshwater and estuarine wetlands, in areas of permanent water and dense vegetation	Moderate
Lathamus discolor Swift Parrot (foraging habitat)	Included	None	None	Moderate
Lophoictinia isura Square-tailed Kite	Included	None	None	Moderate
Melanodryas cucullata cucullata Hooded Robin (south-eastern form)	Included	None	None	Moderate
Micronomus norfolkensis Eastern Coastal Free-tailed Bat	Included	None	None	High
Miniopterus australis Little Bent-winged Bat (foraging habitat)	Included	None	None	High
Miniopterus orianae oceanensis Large Bent-winged Bat (foraging habitat)	Included	None	None	High
Pandion cristatus Eastern Osprey	Included	None	None	
Petroica phoenicea Flame Robin	Included	None	None	Moderate
Pteropus poliocephalus Grey-headed Flying fox (foraging habitat)	Included	None	None	High
Saccolaimus flaviventris Yellow-bellied Sheathtail-bat	Included	None	None	High
Stagonopleura guttata Diamond Firetail	Included	None	None	

Table 5: *Candidate threatened species.*

Species	SAII potential	Sensitivity to gain	Reason for exclusion	Particulars of Habitat Constraints or Known Requirements	Justification
Acacia prominens - endangered population Gosford Wattle	No	Moderate	Geographic limitations	Endangered population defined in Final Determination as occurring in the Hurstville and Kogarah LGAs plus Georges River LGA.	Development site is not within relevant LGAs.
Acacia pubescens Downy Wattle	No	High	Habitat degraded	Occurs on alluviums, shales and at the intergrade between shales and sandstones in n open woodland and forest, in a variety of open woodlands / forests but principally Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland. The soils are characteristically gravely soils, often with ironstone., and concentrated around the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon.	The development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. No habitat for this species occurs on site and given the known habitat features of this species, it may never have provided suitable habitat.
Anthochaera phrygia Regent Honeyeater	Yes	High	Habitat constraints (breeding)	• As per the important habitat map	The development site does not support an area identified as important habitat for this species nor is it within an area where breeding has been recorded.
Burhinus grallarius Bush Stone-curlew	No	High	Habitat constraints	• Fallen / standing dead timber including logs.	The development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. No habitat for this species occurs on site.
Callistemon linearifolius Netted Bottle Brush	No	Moderate	Habitat degraded	Grows in dry sclerophyll forest.	The development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. No habitat for this species occurs on site and given the known habitat features of this species, it may never

Species	SAII potential	Sensitivity to gain	Reason for exclusion	Particulars of Habitat Constraints or Known Requirements	Justification
					have provided suitable habitat.
Callocephalon fimbriatum Gang-gang Cockatoo	No	High	Habitat constraints (breeding)	• Hollow-bearing trees • Eucalypt tree species with hollows at least 3m above the ground and with hollow diameter of 7cm or larger	The development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. No hollow-bearing trees occur on the development site.
Calyptorhynchus lathami lathami South-eastern Glossy Black Cockatoo	No	High	Habitat constraints (breeding)	• Hollow-bearing trees • Living or dead tree with hollows greater than 15cm diameter and higher than 8m above the ground	The development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. No hollow-bearing trees occur on the development site.
Cercartetus nanus Eastern Pygmy-possum	No	High	Habitat degraded	This species occurs in a broad range of vegetation types but relies on the availability of sufficient supplies of nectar and pollen and a relatively predator-free environment. Urban records are restricted to locations adjacent to bushland. They also require suitable shelter sites (such as tree hollows, holes in the ground, possum dreys or thickets of vegetation). occurred where relied on proximity The closest record dates from 2004 and is over 2km away in Stony Creek gully, which is part of a large network of reserved bushland.	This is a candidate species because it has been associated with PCT 3262. However, the development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. Any suitable habitat for this species on or near the development site has been cleared and profoundly changed long ago.
Chalinolobus dwyeri Large-eared Pied Bat	Yes	Very High	Habitat constraints	• Cliffs • Within 2 km of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices • Within 2 km of old mines or tunnels	The development site does not conform with the required habitat constraints.
Darwinia peduncularis	No	High	Habitat constraints	• Rocky areas or within 50m of same	The development site does not conform with the required habitat constraints.
Epacris purpurascens var. *purpurascens*	No	Moderate	Habitat degraded	Found in a range of habitat types, most of which have a strong shale soil	This is a candidate species because it has been associated with PCT 3262.

Species	SAII potential	Sensitivity to gain	Reason for exclusion	Particulars of Habitat Constraints or Known Requirements	Justification
				influence.	However, the development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. Local records are all associated with substantial areas of intact bushland. Any suitable habitat for this species on or near the development site has been cleared and profoundly changed long ago.
Haliaeetus leucogaster White-bellied Sea-Eagle	No	High	Habitat constraints (breeding)	• Living or dead mature trees within suitable vegetation within 1km of rivers, lakes, large dams or creeks, wetlands and coastlines	This species is highly selective in nesting locations and the development site does not conform with the required habitat constraints.
Haloragodendron lucasii	Yes	Very High	Habitat constraints Geographic limitations	• Seepage zone or within 100m of same • Within Hornsby and Ku-ring-gai LGAs	While the development site is within an appropriate LGA, it does not conform with the required habitat constraints.
Hibbertia puberula	No	High	Habitat degraded	It typically occurs in dry sclerophyll woodland communities, low heath on sandy soils or rarely in clay.	This is a candidate species because it has been associated with PCT 3262. However, the development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. No habitat for this species occurs on site and given the known habitat features of this species, it may never have provided suitable habitat.
Hibbertia spanantha Julian's Hibbertia	Yes	High	Habitat degraded	Restricted to six known locations in bushland on shale - sandstone soil transition.	This is a candidate species because it has been associated with PCT 3262. However, the development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. No habitat for this

Species	SAII potential	Sensitivity to gain	Reason for exclusion	Particulars of Habitat Constraints or Known Requirements	Justification
					species occurs on site.
Hieraaetus morphnoides Little Eagle	No	Moderate	Habitat constraints (breeding)	• Nest tree – live (occasionally dead) large old treed within vegetation	The development site does not conform with the required habitat constraints.
Lasiopetalum joyceae	No	Moderate	Habitat degraded	Grows in heath on sandstone on lateritic to shaley ridgetops, restricted to the Hornsby Plateau south of the Hawkesbury River.	This is a candidate species because it has been associated with PCT 3262. However, the development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. No habitat for this species occurs on site and given the known habitat features of this species, it may never have provided suitable habitat.
Lathamus discolor Swift Parrot	Yes	Moderate	Habitat constraints (breeding)	• As per the important habitat map	The development site does not support an area identified as important habitat for this species nor is it within an area where breeding has been recorded as it breeds in Tasmania.
Leucopogon fletcheri subsp. *fletcheri*	No	High	Habitat constraints	• Slopes nearby rocky areas or within 50m of same • Rocky areas, weathered laterite over sandstone on sandstone ridges, outcrops	The development site does not conform with the required habitat constraints.
Litoria aurea Green and Golden Bell Frog	No	High	Habitat constraints	• Semi-permanent / ephemeral wet areas or within 1 km of same • Swamps, within 1km of same • Waterbodies, within 1km of same	The development site does not conform with the required habitat constraints.
Lophoictinia isura Square-tailed Kite	No	Moderate	Habitat constraints (breeding)	• Nest trees	The development site does not conform with the required habitat constraints.
Marsdenia viridiflora subsp. *viridiflora* – endangered population	No	Moderate	Geographic limitations	Endangered population defined in Final Determination as occurring in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	Development site is not within relevant LGAs.
Meridolum corneovirens	No	High	Habitat degraded	Primarily inhabits Cumberland Plain	This is a candidate species because it

Species	SAII potential	Sensitivity to gain	Reason for exclusion	Particulars of Habitat Constraints or Known Requirements	Justification
Cumberland Plain Land Snail				Woodland and requires the presence of at least native bark and leaf litter although it will shelter under rubbish.	has been associated with PCT 3262. There are no records of this species within 10km of the development site. No habitat for this species occurs on site.
Miniopterus australis Little Bent-winged Bat	Yes	Very High	Habitat constraints (breeding)	• Caves • Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding • Bionet records with descriptors "in cave" or "nest-roost", or with numbers of individuals >500 • Records from the scientific literature	The development site does not conform with the required habitat constraints.
Miniopterus orianae oceanensis Large Bent-winged Bat	Yes	Very High	Habitat constraints (breeding)	• Caves • Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding • Bionet records with descriptors "in cave" or "nest-roost", or with numbers of individuals >500	The development site does not conform with the required habitat constraints.
Myotis macropus Southern Myotis	No	High	Habitat constraints	• Waterbodies • Waterbodies with permanent pools / stretches 3m or wider, including rivers, large creeks, billabongs, lagoons, estuaries, dams and other waterbodies, on or within 200m of the site	The development site does not conform with the required habitat constraints.
Ninox connivens Barking Owl	No	High	Habitat constraints	• Hollow-bearing trees, a living or dead tree with a hollow >20cm diameter that occurs >4m above the ground	The development site does not conform with the required habitat constraints.
Ninox strenua Powerful Owl	No	High	Habitat constraints	• Hollow-bearing trees, a living or dead tree with a hollow >20cm diameter that occurs >4m above the ground	The development site does not conform with the required habitat constraints.

Species	SAII potential	Sensitivity to gain	Reason for exclusion	Particulars of Habitat Constraints or Known Requirements	Justification
Pandion cristatus Eastern Osprey	No	Moderate	Habitat constraints (breeding)	• Presence of stick nests in living and dead trees (>15m) or artificial structures within 100m of a floodplain for nesting	The development site does not conform with the required habitat constraints.
Perameles nasuta - endangered population Long-nosed Bandicoot population in inner western Sydney	No	High	Geographic limitation	Endangered population defined in Final Determination as occurring in the Marrickville, Canada Bay, Canterbury, Ashfield, and Leichhardt LGAs.	Development site is not within relevant LGAs.
Petaurus norfolcensis Squirrel Glider	No	High	Habitat degraded	Inhabits mature or old growth woodlands and forest west of the Great Dividing Range forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey. Relies on large old trees with abundant hollows for breeding and sheltering. These trees are also critical for movement and typically need to be closely-connected (i.e. no more than 50 m apart).	This is a candidate species because it has been associated with PCT 3262. However, the development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. No habitat for this species occurs on site.
Phascolarctos cinereus Koala	No	High	Habitat constraints	• Presence of Koala use trees per Threatened Biodiversity Data Collection	The only tree on site known as a Koala use tree is tree 13 *Eucalyptus resinifera,* and it is only a secondary food tree species. However, this tree is isolated from other available habitat by hostile development – houses, fenced yards, backyard pools, and roads. The development site is located within a large block identified as having a low likelihood (0.00-0.25) of containing Koalas. The nearest sighting occurred in Garigal NP at Forestville in 1940. No habitat for this species occurs on site.
Pomaderris prunifolia - endangered population	No	High	Geographic limitation	Endangered population defined in Final Determination as occurring in the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas	Development site is not within relevant LGAs.
Pommerhelix duralensis	No	High	Habitat degraded	This species is a shale-influenced-	This is a candidate species because it

Species	SAII potential	Sensitivity to gain	Reason for exclusion	Particulars of Habitat Constraints or Known Requirements	Justification
Dural Land Snail				habitat specialist, and occurs in low densities along the western and northwest fringes of the Cumberland IBRA subregion on shale-sandstone transitional landscapes. favours sheltering under rocks or inside curled-up bark. It does not burrow nor climb. Migration and dispersal is limited.	has been associated with PCT 3262. The closest record of this species dates from 2025 in shale-sandstone vegetation 7km away near Terrys Ck. No habitat for this species occurs on site.
Pseudophryne australis Red-crowned Toadlet	No	Moderate	Habitat degraded	This species inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. It shelters under rocks and amongst masses of dense vegetation or thick piles of leaf litter.	This is a candidate species because it has been associated with PCT 3262. However, no habitat for this species occurs on site.
Pteropus poliocephalus Grey-headed Flying-fox	No	High	Habitat constraints (breeding)	• Breeding camps	A long-term significant maternity camp of this species occurs in Stony Ck gully over 2 km to the north of the development site. No breeding habitat for this species occurs on site.
Rhizanthella slateri Eastern Australian Underground Orchid	Yes	High	Habitat degraded	This is a highly cryptic species recorded from a number of different vegetation types with a broad distribution from SE Qld to SE NSW. However, as it spends it entire life cycle underground, the absence of soil disturbance is likely to be critical to its survival. Also, it is considered to rely on a highly specialised pollinator.	This is a candidate species because it has been associated with PCT 3262. However, the development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. Such profound and long-term changes undoubtedly wrought on the soil structure has removed any potential habitat that the site may have contained.
Rhodamnia rubescens Scrub Turpentine	Yes	Very High	Habitat degraded	This is species that was once common in moist forest and rainforest but is now Critically Endangered due to its susceptibility to Myrtle Rust, a threat that is classifies as “beyond control”.	This is a candidate species because it has been associated with PCT 3262. However, the development site has been transformed from its natural state to one that supports substantial dwellings and formal landscaped (chiefly exotic) gardens for at least almost a century. No habitat for this species occurs on site.

Species	SAII potential	Sensitivity to gain	Reason for exclusion	Particulars of Habitat Constraints or Known Requirements	Justification
Tyto novaehollandiae Masked Owl	No	High	Habitat constraints	• Hollow-bearing trees, a living or dead tree with a hollow >20cm diameter that occurs >4m above the ground	The development site does not conform with the required habitat constraints.

5 PRESCRIBED IMPACTS

Impacts for which there is not a formal offset procedure are "prescribed impacts" as per Part 6 Division 6.1 of the BCR 2017. Prescribed impacts are detailed in Chapter 6 of the BAM and each discussed below.

Karst, caves, crevices, cliffs, rocks and other geological features of significance. The site does not support any such features.

Human-made structures and non-native vegetation. All of the existing improvements on the development site will be removed along with the formal gardens that includes some exotic vegetation. The dwellings are well maintained and unsuitable for native fauna. The exotic trees to be removed may provide shelter and foraging resources for some common urban fauna species (particularly birds).

Habitat connectivity. This is considered to be a minor consideration, as local connectivity is primarily provided by vegetation that occurs offsite. This is illustrated in Figure 5: vegetation along the head of the gully of Gordon Creek to the north east is loosely connected to Garigal National Park via patches of exotic and native vegetation in neighbouring properties. The major local connections are via riparian habitats leading down to the large reserves of Garigal National Park and Lane Cove National Park, away from the plateau occupied by the development site

Water bodies, water quality and hydrological processes. The development area does not have recognised drainage lines or other features associated with water bodies.

Wind farm developments. This is not a wind farm development, and so any such related indirect impacts are not relevant.

Vehicle strikes. The proposed development occurs in an already urbanised area with established traffic loads. Its proximity to public transport is an important feature of the proposal, and so additional vehicle movements are considered to be minimal. While the development may potentially increase the numbers of vehicle movements, there are no threatened species likely to use the site that would be adversely affected by traffic movements to and from the site.

6 AVOID AND MINIMISE IMPACTS

The *Biodiversity Conservation Act 2016* requires as a legislative imperative that impacts are to be avoided, then minimised by implementation of ameliorative measures, with offsetting only of unavoidable impacts. Prior to the commencement of this Act, this cascade of principles was only good practice and not enforceable.

Chapter 7 of the BAM details a number of ways in which a proposed development can demonstrate avoidance and minimisation of impacts. Relevant to this small areas assessment is the analysis of alternatives, including:

- Modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology;
- Alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location; and
- 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.

The site supports 0.09 hectares of PCT 3262, comprising canopy trees, native lawn areas, and a few scattered small trees and ground covers in formal gardens. The direct impact of the proposed development on this PCT is illustrated in Figure 8 and totals 0.05 hectares. The three buildings are concentrated in the areas already occupied by dwellings, tennis courts, pools, and exotic gardens.

The largest patch of PCT 3262 (433 square metres) occurs along the accessway to number 55 Werona Avenue supporting the largest and most mature trees (principally *Eucalyptus paniculata*). This area is to be almost wholly retained with potential direct impacts to only 27 square metres of canopy that may need to be trimmed. Vehicles are to be prohibited from using this entry, and instead used for foot traffic and bicycles only. This will greatly improve the ground conditions for the tree roots, and in addition the planting palette of the Landscape Plan also reflects this PCT. A small *Brachychiton acerifolius* (tree number 22) will also need to be removed.

The diverse native lawn in number 55 Werona Avenue will be cleared, as will the small Couch lawn in the garden of number 23 McIntosh Street; the proposal will ultimately directly impact 414 square metres of these ground covers. However, this loss will be mitigated by on-site translocation of the diverse forbs and grasses into the pedestrian accessway. This strategy will retain a few hundred square metres of PCT 3262, enrich and improve an area of PCT 3262 that is currently absent of native ground cover, and further mitigate the loss of the central occurrence of PCT 3262 lawn.

These measures and outcomes are considered adequate in satisfying the “avoid and minimise” rule.

Figure 8: *The extent of PCT 3262 (VZ1, 0.09 hectares), and the impact of the footprint is demonstrated in the colour of the VZ1 polygons (red = direct loss of ground cover, trimming of canopy, or entire tree, totalling 0.05 hectares).*

7 ASSESSMENT OF IMPACTS

7.1 Vegetation

Direct impacts comprise the removal of native vegetation:

- 0.05 hectares of PCT 3262, which is associated with a TEC, Sydney Turpentine Ironbark Forest.

This will result in the following reduction in VI score in that area:

- VZ 1 (PCT 3262) current VI of 15.2 will be reduced to zero.

This score requires an offset obligation of one ecosystem credit.

7.2 Threatened Species

The site does not provide habitat for any candidate threatened species. Therefore, no offset obligation is generated for species.

7.3 Indirect Impacts

The following indirect impacts have the potential to occur during or as a result of the proposed works:

- Presence of companion animals.
- Potential establishment of nuisance plant species from landscape areas into the retained areas on site or nearby patches of PCT 3262 STIF.
- Increased nutrients in runoff from development area into the retained PCT 3262 trees, potentially favouring weed species.
- Intensification of stormwater runoff.
- Erosion and mobilisation of soil with stormwater runoff during construction.
- Spread of weeds during civil works.
- Introduction of soil pathogens.

8 MITIGATION AND MANAGEMENT OF IMPACTS

A number of mitigation measures have been identified that will be implemented to minimise impacts of the proposal – see Table 6 for a complete list.

Retain and restore native vegetation. All but one of the locally native trees can be retained and protected and the opportunity for restoration and enrichment of native vegetation is afforded in the areas of deep soil to be the subject of the Landscape Plan. It is recommended that the planting palette rely heavily on species characteristic of the CEEC STIF and PCT 3262. Importantly, a diverse understorey can be restored with all structural layers planted. This will deliver a significant qualitative improvement in the composition of PCT 3262 pre-development.

It is noted that a large and mature *Eucalyptus paniculata* Grey Ironbark (tree 19) was removed with approval due to its dangerous condition. The under licence (C0007223) issued by the NSW Department of Climate Change, Energy, the Environment and Water required a replacement tree of the same species to be planted. This has been addressed in the Landscape Plan.

The translocation of some of the native lawn area is an important mitigation strategy.

Retain, replace, and enhance fauna habitat. The replacement plantings and enrichment plantings will provide long term habitat and boundary plantings will connect with offsite vegetation, thus enhancing local connectivity.

Protect resident fauna. The Project Ecologist will supervise the removal of all trees and potential fauna habitat. A thorough pre-clearing / pre-demolition inspection shall be undertaken prior to clearing. Fauna will be removed from harm's way, relocated into suitable on-site habitat, or placed into veterinarian care if injured.

Erosion/sedimentation. Standard sedimentation and erosion control measures will be installed, and checked regularly.

Exotic weed species. Due to its close horticultural management, few significant weeds occur on site. However, ongoing weed control must be implemented during all phases of the development. Any weeds removed are not to be stockpiled but instead disposed of at a suitable green waste facility. All loads are to be covered during transportation to minimise the risk of spread.

Pathogens and disease. Although no pathogens were in evidence at the time of survey, to avoid the introduction and/or spread of soil borne pathogens and disease, appropriate hygiene procedures as recommended will minimise the risk of any significant impacts as a result of the proposal.

Table 6: *Measures to avoid and minimise impacts.*

Impact	Extent	Timing and Frequency	Mitigation
Direct impact to resident individuals of fauna species residing in habitat in the development footprint.	May occur anywhere across the works area.	During civil works. Once off.	Clearing to be conducted under ecological supervision. Adaptive management strategies to be employed such as pre-clearing surveys, relocation of individuals, care for injured wildlife, and euthanasia of feral species in accordance with appropriate licences and approvals.
Potential impact to fauna species potentially occupying tree hollows and / or other specific habitat features.	No hollows observed, but there is the potential for hollow sections to occur that cannot be observed from the ground.	During civil works. Once off.	Clearing to be conducted under ecological supervision and using a professional bee rescue service in accordance with appropriate licences and approvals.
Potential adverse impacts on native wildlife due to the increased presence of humans, presence of uncontrolled companion animals (particularly Cats). Potential impacts include abandonment or avoidance of previously occupied or otherwise suitable habitat and retreat into other areas. For territorial species, this can further result in antagonistic behaviours with conspecifics.	Potentially relevant to all of the retained vegetation and vegetated landscaped areas on site that provide wildlife habitat.	Any time and infrequent. Ongoing.	Educational material is to be provided to all residents regarding the potential impacts to biodiversity of uncontrolled pets and human activity. Residents to be encouraged to keep Cats indoors or within an enclosure at all times and not allowed to roam.
Landscaping species becoming a nuisance in the nearby bushland.	The extent of potential incursions of propagules depend on the species present.	Any time and infrequent. Ongoing	The Landscape Plan to rely on planting species consistent with those that occur naturally in STIF or those that are not known to have weed potential. Regular sweeps for weeds and low impact controls to be implemented per the Landscape Plan and scheduled maintenance.

Impact	Extent	Timing and Frequency	Mitigation
Landscaped areas induce disruptions to foraging guilds of birds, encouraging a super abundance of aggressive Noisy Miners.	This effect may occur across the whole site.	Daily and ongoing. Ongoing	The Landscape Plan not to rely heavily on species (e.g. Grevilleas) known to favour Noisy Miners.
Increased spill over of noise, activity, scent, and light into the nearby bushland areas.	The STIF patches are currently embedded in an urban matrix and so resident fauna are likely to be habituated to these disturbances. However, additional lights can interfere with foraging activities of fauna (particularly bats).	Daily and ongoing. Duration and timing of these disturbances related to seasons and weather. In perpetuity.	Install external lighting only where necessary for safety. Prohibit external uplights, lights directed into the retained trees, or any bright lighting that spills into nearby bushland.
Introduction of soil-borne pathogens, particularly *Phytophthora cinnamomi*.	All native vegetation is susceptible to disease to some degree.	During works that involve exposure and movement of soil and vehicles. During landscaping, diseased plant material can be introduced.	Standard hygiene controls are to be observed as part of the civil management works plan. All plant material to be introduced to the site must be certified as disease-free.
Increased soil nutrients from changes to runoff that may provide further opportunities for weed infestations.	Likely to have minor impacts given the shale soils and long history of urban use of the site.	Anytime and infrequent. More likely after heavy rainfall events. Ongoing.	Weeds arising from this potential impact to be controlled by actions detailed in the Landscape Plan and as part of ongoing maintenance.
Possible impacts on water quality in remaining native habitats, with pollutants in runoff (herbicides / fertilisers) carried from landscaped areas to nearby habitats.	Likely to have minor impacts on the edges of vegetated landscape zone.	Anytime and infrequent. Ongoing.	A carefully chosen planting palette using native species will require fewer chemical inputs. Therefore, it is important that the planting list in the Landscape Plan is appropriate to serve to mitigate this potential impact at its source.

9 THRESHOLDS

The potential for Serious and Irreversible Impacts (SAIIs) to arise from the proposed development works must be considered in terms of the following four SAII principles:

- Principle 1 – Species or ecological community currently in a rapid rate of decline;
- Principle 2 – Species or ecological communities with very small population size;
- Principle 3 – Species or area of ecological community with very limited geographic distribution; and
- Principle 4 - Species or ecological community that is unlikely to respond to management and is therefore irreplaceable.

BAM 2020 requires additional information to be provided to help guide the decision maker in their determination whether the proposal will result in a Serious and Irreversible Impact (SAII). Within the development site, the only entity that occurs that is classified as at risk of a SAII is STIF, being the TEC associated with PCT 3262.

The information required for this SAII assessment is detailed in Table 7.

Table 7: *Additional impact assessment provisions for threatened ecological communities at risk of an SAII.*

Ecological community: Sydney Turpentine Ironbark Forest (STIF)

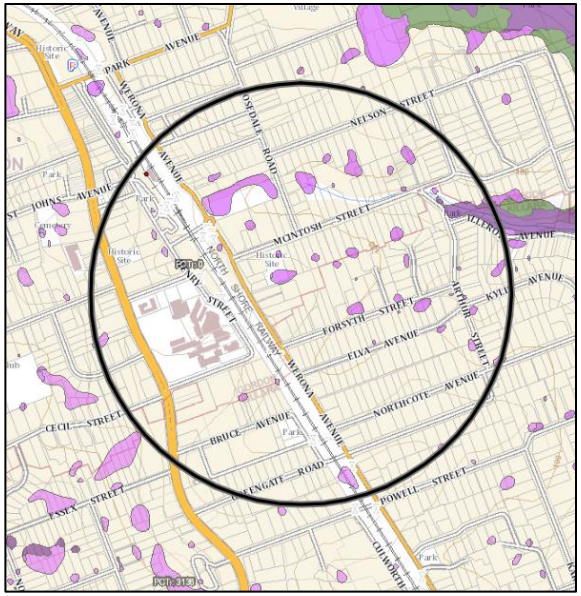
SAII information for STIF

Principle	Current SAII Status	SAII Fields	BAM 2020 summary data prior to any additional assessment impact
Principle 1	Yes	–	≥80% reduction in distribution over a 50-year period
Principle 2	Yes	–	Reduction in ecological function. Community with 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. >95% cleared.
Principle 3	No	AOO, EOO, or Locations?	-
		AOO (km2)	1200
		EOO (km2)	4479
		Locations	unknown
		Total extent (ha)	1038
Principle 4	_	–	–

Applying Section 9.1.1 of the BAM for this scenario

Avoid and minimise (9.1.1(1))			
Refer to BDAR section '6: Avoid and minimise impacts' for actions taken to avoid and minimise impacts to STIF.			
Current Status (9.1.1(2))			
SAII Principle	**SAII risk**	**BAM criteria**	**Current status of Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion**
Principle 1	At risk	(2.a) Reduction in geographic distribution	Clearing of STIF for agricultural development commenced in the inner west of Sydney soon after European settlement and accelerated following the expansion of Sydney's suburbs in the nineteenth and early twentieth centuries (Benson and Howell 1994). Although the pre European extent of STIF is uncertain, there is general agreement among sources that the reduction in extent exceeds 90%. Recent mapping indicates that up to 2940 ha may remain (rather than the 1038 ha quoted above), but it is agreed that less than 10% of its original extent remains, its condition is severely fragmented, and remnants are mostly small isolated pockets. Notwithstanding the potential increase in known area remaining, STIF still meets SAII Principles 1 and 2 due to the significant reduction in geographic distribution and ecological function.

Principle 2	At risk	(2.b) Reduction in ecological function	STIF's remaining area is highly fragmented, highly restricted, and is poorly represented in the formal reserve network. Ongoing threats include continuing attrition through clearing for routine land management practices (e.g. fencing, APZs) due to the majority of remnants being located in close proximity to rural land or urban interfaces. Remnant are subject to ongoing weed invasion exacerbated by the proximity of remnants to areas of rural and urban development and the associated influx of both weed propagules from gardens and nutrients contained in stormwater runoff, dumped garden refuse, and animal droppings.
Principle 3	Not currently at risk	(2.c.i) EOO	EOO is currently estimated at 4479 km² or 447,900 hectares (as per DPIE dataset).
		(2.c.ii) AOO	AOO is currently estimated at 1200 km² or 120,000 hectares (as per DPIE dataset).
		(2.c.iii) Threat-defined locations	Threat-defined locations currently unknown (as per DPIE dataset).
Principle 4	–	–	–
Projected Impacts (9.1.1(3,4,5))			
Impacts from the proposal	**SAII risk**	**BAM criteria**	**Projected impact to Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion**
		(3) Data deficient	The TEC is not data deficient.
Impact on geographic extent and distribution (Principles 1 and 3)	At risk	(4.a.i) In hectares	The geographic extent of the proposal is 0.05 hectares.
		(4.a.ii) As a percentage of geographic extent in NSW	The current geographic extent of STIF in NSW is estimated at 1038 hectares (BioNet Vegetation Classification for PCT 3262) or 2940 hectares (per figures quoted in the 2019 Final Determination). The proposal will therefore reduce the current geographic extent of STIF in NSW by between 0.002% and 0.005%.
Impact on environmental degradation or	At risk	(4.b.i) Estimated size of remaining (but now isolated) areas	An area of 0.06 hectares of STIF will be impacted, which represents 0.00001% of its EOO and 0.00005% of its AOO.

biotic processes (Principle 2)		(4.b.ii) Connectivity and fragmentation of remaining areas	The proposal will retain almost all of the current extent of STIF on site. Importantly this retention is concentrating on the large and mature trees as the canopies provide connectivity for fauna in the urban landscape. The loss of STIF ground covers will be ameliorated by translocation and enrichment. STIF is already highly fragmented in its local occurrence, with 29 small patches within 500 metres of the development site:  These do not represent important areas of habitat and therefore the loss of the small isolated patches on site will not significantly increase fragmentation or isolation. Connectivity across the landscape will be virtually unaltered with no appreciable increase in distance between fragments in the immediate vicinity due to the very small size of the patches on site and the retention of most of the STIF trees.
		(4.b.iii) Vegetation Integrity Score	The TEC's current vegetation integrity score is 15.2 on the subject land. This low VI score is a result of the occurrence of STIF on site being primarily restricted to a few remnant canopy trees and some ground covers within the context of formal well-maintained gardens.
		(4.b.iii) Composition Condition Score	The Composition Condition Score is 10.3 for the subject land's single Vegetation Zone.
		(4.b.iii) Structure Condition Score	The Structure Condition Score is 30 for the subject land's single Vegetation Zone.
		(4.b.iii) Function Condition Score	The Function Condition Score is 11.4 for the subject land's single Vegetation Zone.

10 NO NET LOSS

The proposal will result in the following potential impacts:

- Direct impact to a maximum of 0.05 hectares of PCT 3262.

The proposal has been assessed in accordance with BAM 2020 and it is determined that the offset obligation to achieve no nett loss is:

- 1 ecosystem credit of PCT 3262

The BAM-C credit reports are provided at Appendix 1.

11 LOCAL MATTERS

The ***Ku-ring-gai Local Environmental Plan* (*LEP*) *2015*** applies to the majority of lands located within the Ku-ring-gai LGA, and is applicable to the development site. The *KLEP 2015* is to be read in conjunction with the ***Ku-ring-gai Development Control Plan* (*DCP*) *2022*** to assess planning and development applications. The development site is affected by Greenweb matters Canopy Remnant and Landscape Remnant - see Figure 9.

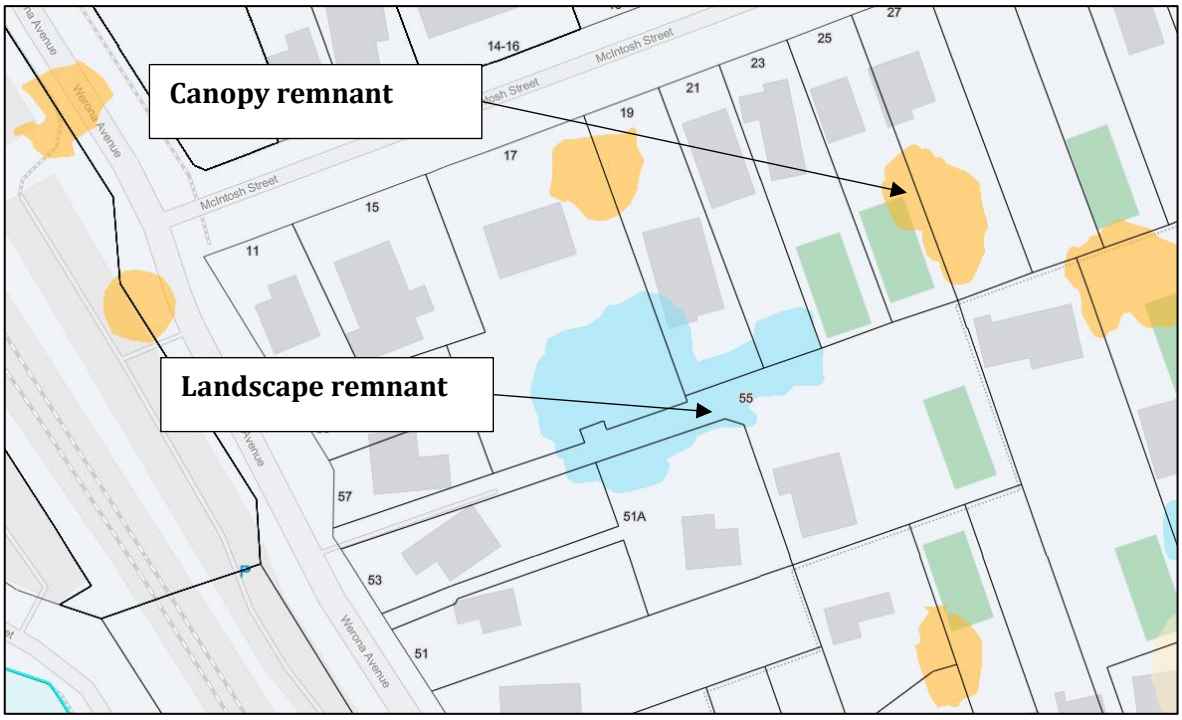


Figure 9: *Greenweb mapping.*

Controls for Biodiversity and Greenweb lands are addressed in Part 18 of the *KDCP 2022*. Controls relating to these mapped areas are detailed in sections 18.4 and 18.6 of *KDCP 2022* and addressed here as the BOS does not deactivate the EPI controls.

Landscape Remnants in KDCP 2022 as those areas that are more fragmented than Support for Core Lands, but nevertheless contain Key Vegetation Communities. STIF is a Key Vegetation Community.

Canopy Remnants are defined in KDCP 2022 as "areas that contain Key Vegetation Communities have little to no understorey and are smaller than those mapped within the other four Greenweb categories included within the Biodiversity Map of KLEP".

The presence of these layers trigger the controls within the *KDCP 2022* at parts 18.1, 18.4, and 18.6

11.1 All Greenweb Categories (Part 18.1)

Part 18.1 of the *KDCP 2022* focuses on the development design and ways to minimise impacts to the environment. Part 18.1 is also focused on achieving the following objectives:

1. To preserve the natural environment of Ku-ring-gai in the social, economic, and environmental interest of the community;
2. To retain, consolidate and improve existing bushland, significant vegetation and habitat for flora and fauna;
3. To support the protection and recovery of critical habitat, regionally significant and threatened ecological communities, species, and populations; and
4. To capture carbon contributing to climate control.

The proposal responds to this control in the location of the footprint primarily within the already developed parts of the site.

11.2 Landscape Remnant (Part 18.4 of the KDCP 2022)

The objectives of Part 18.4 of the *KDCP 2022* are to:

1. To maintain smaller Key Vegetation Communities remnants as 'stepping stones', providing habitat, seedbank and pollination resources (facilitating gene flow) and supporting flora and fauna resilience.
2. To maintain and restore smaller remnants of Key Vegetation Communities across a range of topographies.
3. To protect trees within Key Vegetation Communities that provide food, shelter or nesting resources for native fauna, or that are of exceptional aesthetic value.

Landscape Remnant land is mapped along the accessway to number 55 Werona Avenue. Almost all of the trees will be retained in this area, which is compatible with the objectives.

Control pursuant to Part 18.4	Response of the Proposal
1. Avoid locating development on land identified as Landscape Remnant on the Greenweb map.	The trees comprising the Landscape Remnant will be almost entirely retained and minimally impacted by the proposed footprint.
2. Vegetation retention and rehabilitation on sites that include land identified as Landscape Remnant must be designed to improve connectivity with existing vegetation and habitat.	The current configuration of connectivity to vegetation in adjacent properties will be maintained.

Control pursuant to Part 18.4	Response of the Proposal
3. Planting within land identified as Canopy Remnant is to consist of: i. not less than 50% locally native species; ii. species that reflect the relevant vegetation communities within the area; and iii. a mix of groundcover shrubs and trees and is to exclude monocultures.	This control can be satisfied by appropriate plantings in the Landscape Plan, using an appropriate variety of STIF species.
4. Where the site contains high species diversity or is dominated by weeds within any stratum, preparation of a Vegetation Management Plan by a suitably qualified person may be required.	The land has low diversity and is not dominated by weeds. Therefore a VMP is considered unnecessary and the Landscape Plan can instead serve to maintain and improve the example of STIF on site.

11.3 Canopy Remnant (Part 18.6 of the KDCP 2022)

The objectives of Part 18.6 of the *KDCP 2022* are to:

1. Protect smaller canopy remnant for habitat, species diversity and ecosystem services across a range of topographies;
2. Maintain trees for the services they provide to human well-being; and
3. Improve air quality, prevent soil erosion, assist in improving water quality, carbon sequestration, storm water retention, energy conservation and noise reduction.

Canopy Remnant areas capture small and isolated patches of Key Vegetation Communities and provide habitat for urban, transient or locally mobile species.

The area mapped as Canopy Remnant on site (see Figure 9) is coincident with the tennis court on number 25 McIntosh Street and contains no vegetation. Inspection of past aerial photographs show that this polygon reflected the canopy of a large tree in the neighbouring yard that was removed between February and April 2014. Therefore this control is no longer applicable to the development site.

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APPENDIX 1

BAM-C REPORTS

BAM Credit Summary Report

Proposal Details

Assessment Id
00057585/BAAS17045/25/00057586

Proposal Name
SSDA McIntosh St-Werona Avenue Gordon

BAM data last updated *
09/04/2026

Assessor Name
Elizabeth Ashby

Report Created
28/04/2026

BAM Data version *
Current classification (live - default) (94)

Assessor Number
BAAS17045

BAM Case Status
Finalised

Date Finalised
28/04/2026

Assessment Revision
3

BOS entry trigger

Assessment Type
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 SAII	Ecosystem credits

Sydney Turpentine Ironbark Forest												
1	3262_low	Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion	15.2	15.2	0.05	Population size	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	1
											Subtotal	**1**
											Total	**1**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits

BAM Candidate Species Report

Proposal Details

Assessment Id 00057585/BAAS17045/25/00057586	Proposal Name SSDA McIntosh St-Werona Avenue Gordon	BAM data last updated * 09/04/2026
Assessor Name Elizabeth Ashby	Report Created 28/04/2026	BAM Data version * Current classification (live - default) (94)
Assessor Number BAAS17045	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 3	BOS entry trigger	Date Finalised 28/04/2026

* 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.

List of Species Requiring Survey

Name	Presence	Survey Months

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Barking Owl	Ninox connivens	Habitat constraints
Bush Stone-curlew	Burhinus grallarius	Habitat constraints
Cumberland Plain Land Snail	Meridolum corneovirens	Habitat degraded
Darwinia peduncularis	Darwinia peduncularis	Habitat constraints
Downy Wattle	Acacia pubescens	Habitat degraded
Dural Land Snail	Pommerhelix duralensis	Habitat degraded
Eastern Australian Underground Orchid	Rhizanthella slateri	Habitat degraded
Eastern Osprey	Pandion cristatus	Habitat constraints

Eastern Pygmy-possum	Cercartetus nanus	Habitat degraded
Epacris purpurascens var. purpurascens	Epacris purpurascens var. purpurascens	Habitat degraded
Gang-gang Cockatoo	Callocephalon fimbriatum	Refer to BAR
Gosford Wattle, Hurstville and Kogarah Local Government Areas	Acacia prominens - endangered population	Refer to BAR
Green and Golden Bell Frog	Litoria aurea	Habitat constraints
Grey-headed Flying-fox	Pteropus poliocephalus	Habitat constraints
Haloragodendron lucasii	Haloragodendron lucasii	Habitat constraints Geographic limitations
Hibbertia puberula	Hibbertia puberula	Habitat degraded
Julian's Hibbertia	Hibbertia spanantha	Habitat degraded
Koala	Phascolarctos cinereus	Habitat constraints
Large Bent-winged Bat	Miniopterus orianae oceanensis	Habitat constraints
Large-eared Pied Bat	Chalinolobus dwyeri	Habitat constraints
Lasiopetalum joyceae	Lasiopetalum joyceae	Habitat degraded
Leucopogon fletcheri subsp. fletcheri	Leucopogon fletcheri subsp. fletcheri	Habitat constraints
Little Bent-winged Bat	Miniopterus australis	Habitat constraints
Little Eagle	Hieraaetus morphnoides	Habitat constraints
Long-nosed Bandicoot population in inner western Sydney	Perameles nasuta - endangered population	Refer to BAR
Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	Marsdenia viridiflora subsp. viridiflora - endangered population	Refer to BAR
Masked Owl	Tyto novaehollandiae	Habitat constraints
Netted Bottle Brush	Callistemon linearifolius	Habitat degraded
P. prunifolia in the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas	Pomaderris prunifolia - endangered population	Refer to BAR
Powerful Owl	Ninox strenua	Habitat constraints

Red-crowned Toadlet	Pseudophryne australis	Habitat degraded
Regent Honeyeater	Anthochaera phrygia	Habitat constraints
Scrub Turpentine	Rhodamnia rubescens	Habitat degraded
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	Refer to BAR
Southern Myotis	Myotis macropus	Habitat constraints
Square-tailed Kite	Lophoictinia isura	Habitat constraints
Squirrel Glider	Petaurus norfolcensis	Habitat degraded
Swift Parrot	Lathamus discolor	Habitat constraints
White-bellied Sea-Eagle	Haliaeetus leucogaster	Habitat constraints

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00057585/BAAS17045/25/00057586

Proposal Name
SSDA McIntosh St-Werona Avenue Gordon

BAM data last updated *
09/04/2026

Assessor Name
Elizabeth Ashby

Assessor Number
BAAS17045

BAM Data version *
Current classification (live - default) (94)

Proponent Names

Report Created
28/04/2026

BAM Case Status
Finalised

Assessment Revision
3

BOS entry trigger

Assessment Type
Major Projects

Date Finalised
28/04/2026

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Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion	Critically Endangered Ecological Community	3262-Sydney Turpentine Ironbark Forest

Species
Nil

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Calyptorhynchus lathami lathami / South-eastern Glossy Black-Cockatoo
Ephippiorhynchus asiaticus / Black-necked Stork
Grantiella picta / Painted Honeyeater
Ixobrychus flavicollis / Black Bittern
Haliaeetus leucogaster / White-bellied Sea-Eagle
Gallinago hardwickii / Latham's Snipe

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

BAM Biodiversity Credit Report (Like for like)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3262-Sydney Turpentine Ironbark Forest	Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion	0.1	0	1	1

3262-Sydney Turpentine Ironbark Forest

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion This includes PCT's: 3262	-	3262_low	No	1	Cumberland, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

No Species Credit Data

Credit Retirement Options

Like-for-like credit retirement options

BAM Vegetation Zones Report

Proposal Details

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Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	3262_low	3262-Sydney Turpentine Ironbark Forest	low	0.05	1	

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00057585/BAAS17045/25/00057586	SSDA McIntosh St-Werona Avenue Gordon	09/04/2026
Assessor Name	**Report Created**	**BAM Data version ***
Elizabeth Ashby	28/04/2026	Current classification (live - default) (94)
Assessor Number	**Assessment Type**	**BAM Case Status**
BAAS17045	Major Projects	Finalised
Assessment Revision	**BOS entry trigger**	**Date Finalised**
3		28/04/2026

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Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	3262-Sydney Turpentine Ironbark Forest
Diamond Firetail	Stagonopleura guttata	3262-Sydney Turpentine Ironbark Forest
Dusky Woodswallow	Artamus cyanopterus cyanopterus	3262-Sydney Turpentine Ironbark Forest
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	3262-Sydney Turpentine Ironbark Forest
Eastern Osprey	Pandion cristatus	3262-Sydney Turpentine Ironbark Forest
Flame Robin	Petroica phoenicea	3262-Sydney Turpentine Ironbark Forest
Gang-gang Cockatoo	Callocephalon fimbriatum	3262-Sydney Turpentine Ironbark Forest
Grey-headed Flying-fox	Pteropus poliocephalus	3262-Sydney Turpentine Ironbark Forest
Large Bent-winged Bat	Miniopterus orianae oceanensis	3262-Sydney Turpentine Ironbark Forest

Little Bent-winged Bat	Miniopterus australis	3262-Sydney Turpentine Ironbark Forest
Little Eagle	Hieraaetus morphnoides	3262-Sydney Turpentine Ironbark Forest
Little Lorikeet	Parvipsitta pusilla	3262-Sydney Turpentine Ironbark Forest
Regent Honeyeater	Anthochaera phrygia	3262-Sydney Turpentine Ironbark Forest
South-eastern Hooded Robin	Melanodryas cucullata cucullata	3262-Sydney Turpentine Ironbark Forest
Speckled Warbler	Pyrrholaemus sagittatus	3262-Sydney Turpentine Ironbark Forest
Spotted-tailed Quoll	Dasyurus maculatus	3262-Sydney Turpentine Ironbark Forest
Square-tailed Kite	Lophoictinia isura	3262-Sydney Turpentine Ironbark Forest
Swift Parrot	Lathamus discolor	3262-Sydney Turpentine Ironbark Forest
Varied Sittella	Daphoenositta chrysoptera	3262-Sydney Turpentine Ironbark Forest
White-throated Needletail	Hirundapus caudacutus	3262-Sydney Turpentine Ironbark Forest
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	3262-Sydney Turpentine Ironbark Forest

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Common Name	Scientific Name	Plant Community Type(s)
Black Bittern	Ixobrychus flavicollis	3262-Sydney Turpentine Ironbark Forest
Black-necked Stork	Ephippiorhynchus asiaticus	3262-Sydney Turpentine Ironbark Forest
Latham's Snipe	Gallinago hardwickii	3262-Sydney Turpentine Ironbark Forest
Painted Honeyeater	Grantiella picta	3262-Sydney Turpentine Ironbark Forest
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	3262-Sydney Turpentine Ironbark Forest
White-bellied Sea-Eagle	Haliaeetus leucogaster	3262-Sydney Turpentine Ironbark Forest

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

BAM Predicted Species Report

Common Name	Scientific Name	Justification in the BAM-C
Black Bittern	Ixobrychus flavicollis	Habitat constraints
Black-necked Stork	Ephippiorhynchus asiaticus	Habitat constraints
Latham's Snipe	Gallinago hardwickii	Habitat constraints
Painted Honeyeater	Grantiella picta	Habitat constraints
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	Habitat constraints
White-bellied Sea-Eagle	Haliaeetus leucogaster	Habitat constraints