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Streamlined Biodiversity Development Assessment Report

25 Bushlands Ave, Gordon 2072

Report prepared by Narla Environmental Pty Ltd

for Australian Nursing Home Foundation Ltd

May 2023



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Glossary

Acronym/ Term	Definition
Accredited Biodiversity Assessor	Individuals accredited by the Department of Planning and Environment (DPE) to apply the Biodiversity Assessment Method.
BAM	The NSW Biodiversity Assessment Method
BAMC	The NSW Biodiversity Assessment Method Calculator
BC Act	New South Wales Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
Biodiversity credit report	The report produced by the Credit Calculator that sets out the number and class of biodiversity credits required to offset the remaining adverse impacts on biodiversity values at a development site, or on land to be biodiversity certified.
Biodiversity Offsets	Management actions that are undertaken to achieve a gain in biodiversity values on areas of land in order to compensate for losses to biodiversity from the impacts of development.
Biodiversity values	The composition, structure and function of ecosystems, including threatened species, populations and ecological communities, and their habitats.
BOS	NSW Biodiversity Offset Scheme
DA	Development Application
DPE	NSW Department of Planning and Environment (formerly DPIE)
DPIE	NSW Department of Planning, Industry and Environment (now DPE)
Ecosystem credit	The class of biodiversity credit that relates to a vegetation type and the threatened species that are reliably predicted by that vegetation type (as a habitat surrogate).
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ha	Hectares
HTE	High Threat Exotic
IPA	Inner Protection Area
km	Kilometres
LGA	Local Government Area
Locality	A 1500m buffer area surrounding the Subject Land
m	metres
Native Vegetation	Means any of the following types of plants native to New South Wales: (a) trees (including any sapling or shrub), (b) understorey plants, (c) groundcover (being any type of herbaceous vegetation), (d) plants occurring in a wetland.
NSW	The State of New South Wales
OEH	Office of Environment and Heritage (now DPE)
PCT	NSW Plant Community Type
Proposal	The development, activity or action proposed.
SAIL	Serious and Irreversible Impacts
SAIL entity	Species and ecological communities that are likely to be the subject of serious and irreversible impacts (SAILs)
SBDAR	Streamlined Biodiversity Development Assessment Report
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy

Acronym/ Term	Definition
Species credit	The class of biodiversity credit that relate to threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the Threatened Biodiversity Data Collection.
Subject Land	The works associated with the proposed modification
Subject Property	25 Bushlands Ave, Gordon 2072 (Lot 1/-/DP1257011)
Threatened species, populations and ecological communities	Species, populations and ecological communities specified in Schedules 1 and 2 of the BC Act 2016.
TPZ	Tree Protection Zone: A specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development
VIS Plot	Vegetation Integrity Survey Plot

Executive Summary

Narla was engaged by Midson Group on behalf of the Australian Nursing Home Foundation ('the proponent') to prepare this Streamlined Biodiversity Development Assessment Report (SBDAR) to accompany a Development Application (DA) Modification (MOD0020/23) at 25 Bushlands Ave, Gordon 2072 (Lot 1/-/DP1257011; hereafter referred to as the 'Subject Property'). The associated DA (DA0418/15) for a Residential Age Care Facility was approved in 2018 following Land and Environment Court proceedings.

The proposed modification is required as select trees surrounding the approved development have since either died or are near death. One of the trees, an almost dead *Eucalyptus pilularis*, poses a safety risk to residents due to the increase in limbs being dropped. All areas associated with the proposed development are hereafter referred to as the Subject Land.

An SBDAR is required as the proposed works will result in impacts to native vegetation mapped on the Biodiversity Value Map (DPE 2023a). This report will assess the biodiversity impacts of the proposed development in accordance with the requirements of the Biodiversity Conservation Act 2016, Biodiversity Conservation Regulation 2017 and Biodiversity Assessment Method (BAM; DPIE 2020a). This report will be prepared as a site-based 'Streamlined assessment module – small area development that requires consent' as it does not exceed the area clearing threshold for small area developments as outlined in the BAM.

The proposed development is expected to impact on areas of exotic landscaped vegetation as well as select vegetation representative of one (1) native Plant Community Type (PCT):

- PCT 3262: Sydney Turpentine Ironbark Forest.

The following ecosystem credits are required to be offset in order to mitigate the impacts upon biodiversity as a result of the proposed development:

- One (1) ecosystem credit for PCT 3262.

The PCT 3262 within the Subject Land conforms to the BC Act listed, Critically Endangered Ecological Community (CEEC), Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion (STIF). This community is listed as an 'SAIL entity' within the BioNet Threatened Biodiversity Data Collection (DPE 2023c). Due to the potential sensitivity of this ecological community to any impact, a determination of whether or not the proposed impacts are serious and irreversible has been undertaken in accordance with Section 9.1 of the BAM (DPIE 2020a) 'Additional impact assessment provisions for ecological communities'.

The site assessment revealed that the Subject Land did not provide suitable habitat for any threatened species listed as an 'SAIL' and therefore no species credits were required to be offset as part of the proposed modification.

To minimise potential impacts of the proposal on local biodiversity values, a series of mitigation and management measures have been identified, which are to be implemented. This includes the requirement for offset tree plantings representative of STIF to ensure a net gain across the Subject Property, as well as an ecologist to be present for the removal of the vegetation.

1. Introduction

1.1 Overview

Narla was engaged by Midson Group on behalf of the Australian Nursing Home Foundation ('the proponent') to prepare this Streamlined Biodiversity Development Assessment Report (SBDAR) to accompany a Development Application (DA) Modification (MOD0020/23) at 25 Bushlands Ave, Gordon 2072 (Lot 1/-/DP1257011; hereafter referred to as the 'Subject Property'; **Figure 1**). The associated DA (DA0418/15) for a Residential Age Care Facility was approved on 2018 following Land and Environment Court proceedings.

This SBDAR is required as the proposed works impact native vegetation mapped on the Biodiversity Value map (DPE 2023a; **Figure 2**). This SBDAR will assess the biodiversity impacts of the proposed development in accordance with the requirements of the Biodiversity Conservation Act 2016, Biodiversity Conservation Regulation 2017 and the BAM (DPIE 2020a).

Narla have produced this report in order to assess any potential impacts associated with the DA Modification and recommend appropriate measures to mitigate any potential ecological impacts in line with the requirements of the Consent Authority. The assessment has been completed in accordance with Appendix L of the BAM (DPIE 2020a).

1.2 Assessment Method Applied

This SBDAR will be prepared as a site-based 'Streamlined assessment module – small area development that requires consent' as it does not exceed the area clearing threshold for small area developments as outlined in the BAM (DPIE 2020a; **Table 1**). The minimum lot size associated with the property is 930m². Therefore, since the impact area is <1ha, a Streamlined SBDAR has been prepared.

Table 1. Area limits for application of small area development threshold. Dark border indicates clearing threshold relevant to this report.

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

1.3 The Proposed Modification

The proposed modification involves the removal of additional vegetation owing to their declining health (**Appendix A**). All areas associated with proposed modification are hereafter referred to as the Subject Land (**Figure 1**).

The Subject Land covers an area of approximately 0.06ha, and is consists of the following trees for removal (Footprint Green 2023):

- One (1) dying *Eucalyptus pilularis*;
- One (1) dead *Acer palmatum*;
- One (1) dying *Angophora costata*; and
- Six (6) *Photinia* sp. (five of which are considered to be dead).

1.4 Site Location and Description

The Subject Property is situated in the suburb of Gordon in the Ku-ring-gai Local Government Area (LGA; **Figure 3**) and is also located within the boundaries of the Metropolitan Local Aboriginal Land Council (Metropolitan LALC). The Subject Property has frontage to Bushlands Avenue to the south and is surrounded by residential dwellings to the north, east and west.



Figure 1. The components of the Subject Land, within the Subject Property.



Figure 2. Biodiversity Values mapped within the Subject Land.

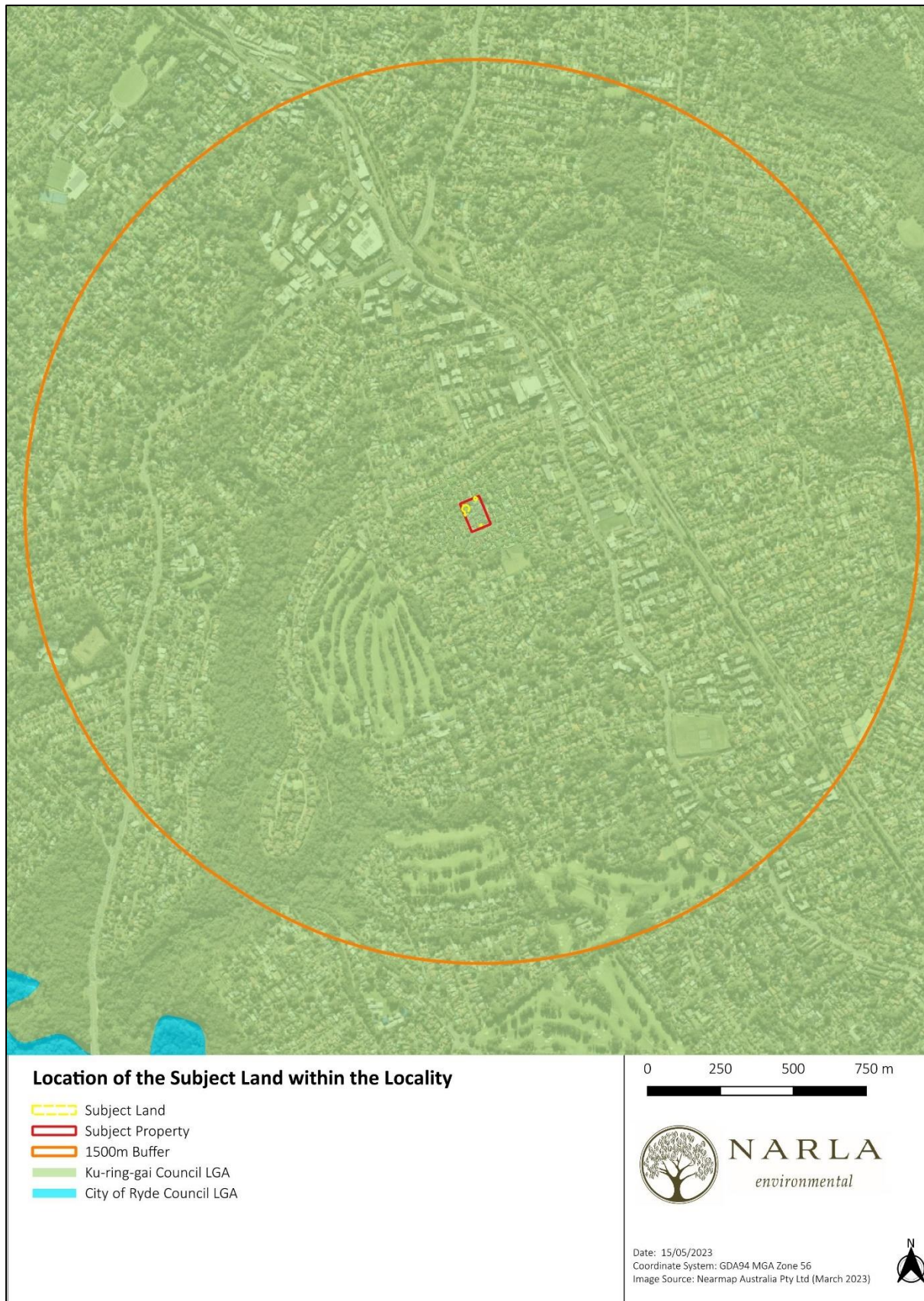


Figure 3. The location of the Subject Land within the locality.

1.5 Sources of Information Used

A thorough literature review was undertaken to gain an insight into the ecology and applicable legislation within the locality and the Ku-ring-gai LGA, including:

- Relevant State and Commonwealth Databases & Datasets:
 - NSW BioNet. The website of the Atlas of NSW Wildlife (DPE 2023b)
 - NSW BioNet. Threatened Biodiversity Data Collection (DPE 2023c)
 - NSW BioNet. Vegetation Classification System (DPE 2023d)
 - NSW Government Spatial Services: Six Maps Clip & Ship (NSW Government Spatial Services 2023)
- Vegetation and Soil Mapping:
 - NSW State Vegetation Type Map (DPE 2022)
 - Soil Landscapes of the Sydney 1:100 000 Sheet (Chapman et al, 2009)
- NSW State Guidelines:
 - Biodiversity Development Assessment Method (DPIE 2020a)
 - Guidance to assist a decision-maker to determine a serious and irreversible impact (DPIE 2019a)
 - Biodiversity Assessment Method Calculator Version 1.4.0.00 (DPE 2023e)
 - Biodiversity Offsets and Agreement Management System (BOAMS)
 - Surveying threatened plants and their habitats – NSW survey guide for the Biodiversity Assessment Method (DPIE 2020b)
 - Threatened Species Survey and Assessment: Guidelines for developments and activities. Working Draft (DEC 2004)
- Council Documents:
 - Ku-ring-gai Local Environmental Plan (LEP) 2015;
 - Ku-ring-gai Development Control Plan (DCP) 2021.

Preparation of this SBDAR also involved the review of the following accompanying project documents:

- Aborigicultural Monitoring: 25-27 Bushlands Ave Gordon (Footprint Green 2023);
- Flora and Fauna Assessment: 25. 25A and 27 Bushlands Ave Gordon (Travers bushfire and ecology 2015); and
- Vegetation Management Plan: 25. 25A and 27 Bushlands Ave Gordon (Travers bushfire and ecology 2018).

These sources were used to gain an understanding of the natural environment and ecology of the Subject Land and its surrounds. Searches using NSW Wildlife Atlas (BioNet) were conducted to identify current threatened flora and fauna records within and surrounding the Subject Land. These data were used to assist in establishing the presence or likelihood of any biodiversity values as occurring on, or adjacent to, the Subject Land, and helped inform our Ecologist on what to look for during the site assessment.

1.6 Aim and Approach

This report has been prepared in accordance with the BAM (DPIE 2020a) and aims to:

- Describe the biodiversity values present within the Subject Land, including the extent of native vegetation, vegetation integrity and the presence of Threatened Ecological Communities (TECs);
- Determine the habitat suitability within the Subject Land for candidate threatened species;

- Prepare an impact assessment in regard to potential impacts of the proposed development on biodiversity values, including potential prescribed impacts and SALLs within the Subject Land;
- Discuss and recommend efforts to avoid and minimise impacts on biodiversity values; and
- Calculate the biodiversity credits (i.e., ecosystem credits and species credits) that measure potential impacts of the development on biodiversity values. This calculation will inform the decision maker as to the number and class of offset credits required to be purchased and retired as a result of the proposed development.

2. Landscape

2.1 IBRA bioregion and subregion

The Subject Land occurs within the 'Cumberland' Interim Biogeographic Regionalisation for Australia 7 (IBRA7) Subregion, which is part of the 'Sydney Basin' IBRA7 Bioregion (**Figure 4**).

2.2 Mitchell Landscapes

Mitchell (2002) groups ecosystems into meso-ecosystems representing larger natural entities based on topography and geology. The naming of ecosystems and meso-ecosystems was standardised so that each name provided location information and a meaningful descriptive landscape term.

The Subject Land occurs within the 'Port Jacks Basin' Mitchell Landscape Ecosystem (**Figure 5**). This landscape is characterised by deep elongated harbour with steep cliffed margins on horizontal Triassic quartz sandstone. Small pocket beaches and more extensive Quaternary estuary fill of muddy sand at the head of most tributary streams. General elevation 0 to 80m, local relief 10 to 50m. Sandstone slopes and cliffs have patches of uniform or gradational sandy soil on narrow benches and within joint crevices that support forest and woodland of Sydney Peppermint (*Eucalyptus piperita*), Smooth-barked Apple (*Angophora costata*), Red Bloodwood (*Corymbia gummifera*) and Blackbutt (*Eucalyptus pilularis*). Sheltered gullies contain some Turpentine (*Syncarpia glomulifera*), Coachwood (*Ceratopetalum apetalum*) and Water Gum (*Tristaniopsis laurina*). Estuarine sands were originally dominated by saltmarsh but have been taken over by Grey Mangrove (*Avicennia marina*) in the past century.

2.3 Topography, Geology and Soils

The Subject Land is located on a mostly flat landscape with elevation ranging between 103m to 101m above sea level (asl; Google 2023). The Subject Land is mapped as occurring on the 'Lucas Heights Soil Landscape according to the Soil Landscapes of Sydney 1:100,000 sheet (Chapman et al, 2009). This soil landscape is characterised by gently undulating crests and ridges on plateau surfaces of the Mittagong formation (alternating bands of shale and fine-grained sandstones).

The Subject Land did not contain any areas of geological significance, such as karsts, caves, cliffs or crevices nor are any believed to occur within the broader locality (1500m buffer) owing to the generally flat landscape. The Subject Land and locality however are mapped as containing Class 5, Acid Sulfate Soils according to the Ku-ring-gai Council LEP (**Figure 6**).

2.4 Hydrology

No mapped or unmapped watercourses or their associated riparian buffers were located within the Subject Land or the broader Subject Property. Several mapped watercourses occur within the 1500m buffer surrounding the Subject Land, ranging from 1st to 3rd order streams (**Figure 7**).

2.5 State Environmental Planning Policy (Resilience and Hazards) 2021 – Chapter 2: Coastal Management

The Subject Land does not contain any areas identified as 'Coastal Wetlands' or 'Littoral Rainforest' as per Chapter 2 of the State Environmental Planning Policy (Resilience and Hazards) 2021, nor do any mapped areas occur within the greater locality (1500m buffer).

2.6 Native Vegetation Cover and Connectivity

Native vegetation cover and connectivity have been assessed in accordance with Sections 3.2 and 3.1.3 of the BAM (DPIE 2020a). The native vegetation cover will be used to assess the habitat suitability of the Subject Land for threatened species. Areas of connectivity will determine the extent of habitat that may facilitate the movement of threatened species across their range. A 1500m buffer around the boundary of the Subject Land was calculated to determine the extent of native vegetation and habitat connectivity. Native vegetation cover was sporadic cover approximately 266ha within the 1500m buffer circle (total area = 746ha) equating to approximately 36% cover and was therefore assigned to the >30%-70% class.

Whilst heavily altered, connectivity was evident between the Subject Land and the broader locality through remnant canopy trees present across the landscape. Areas of connectivity that may facilitate the movement of threatened species were also evident within the broader extents of the 1500m buffer surrounding the Subject Land (**Figure 8**).

2.7 Areas of Outstanding Biodiversity Value

No Areas of Outstanding Biodiversity Value occur on the Subject Land or surrounding area.

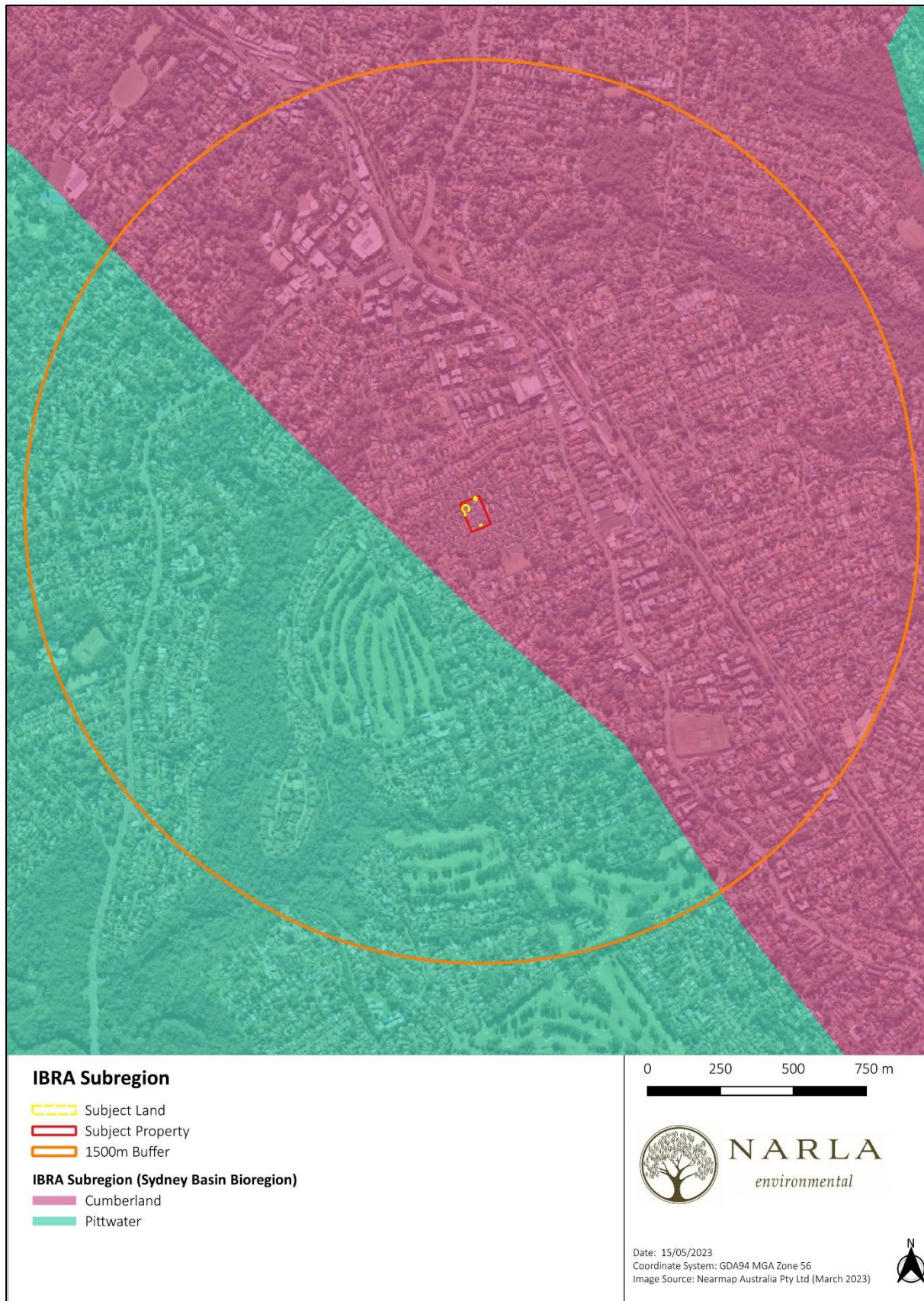


Figure 4. IBRA Bioregion and Subregion of the Subject Property and Subject Land, and within a 1500m buffer.

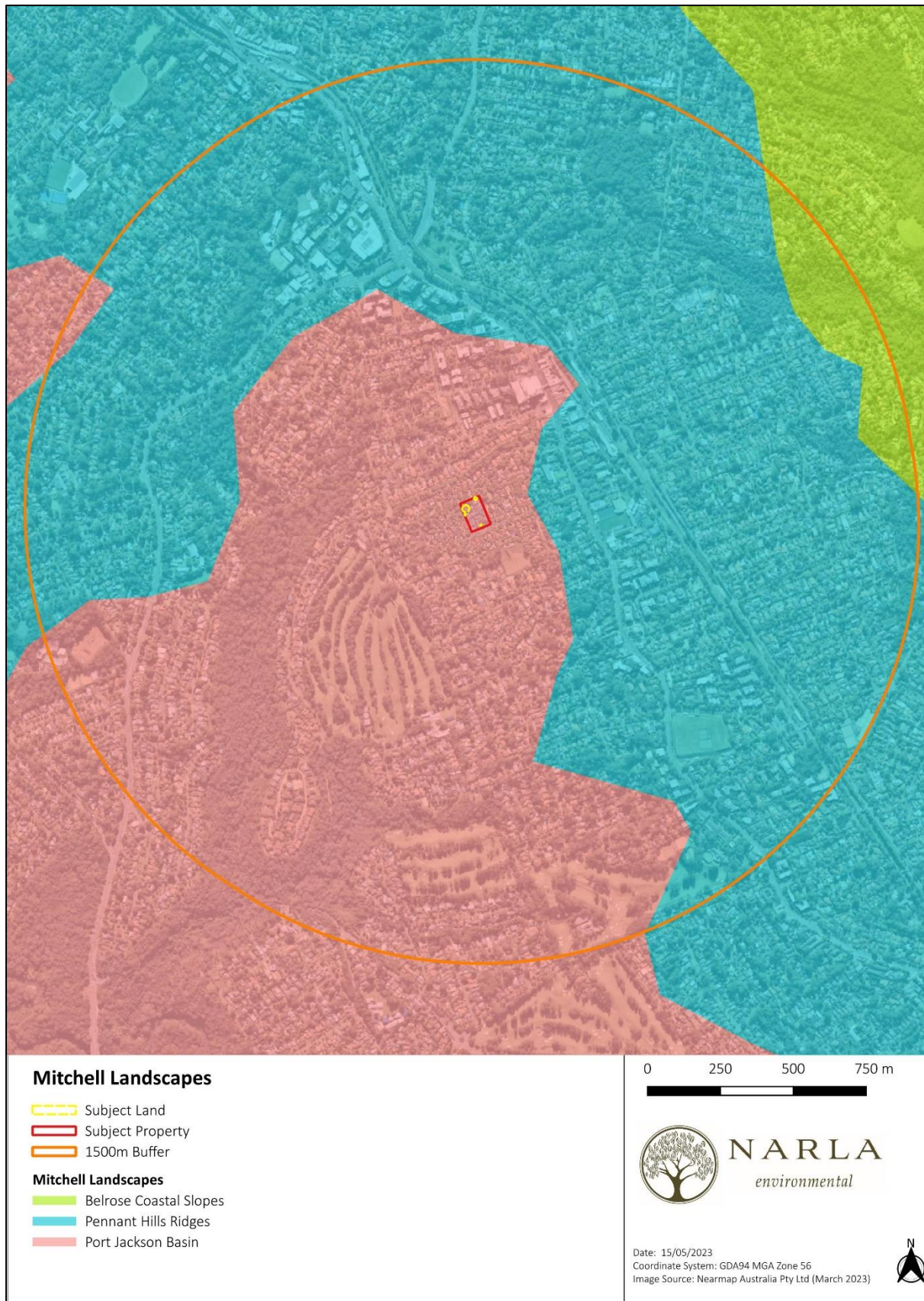


Figure 5. Mitchell Landscapes of the Subject Property and Subject Land, and within a 1500m buffer.

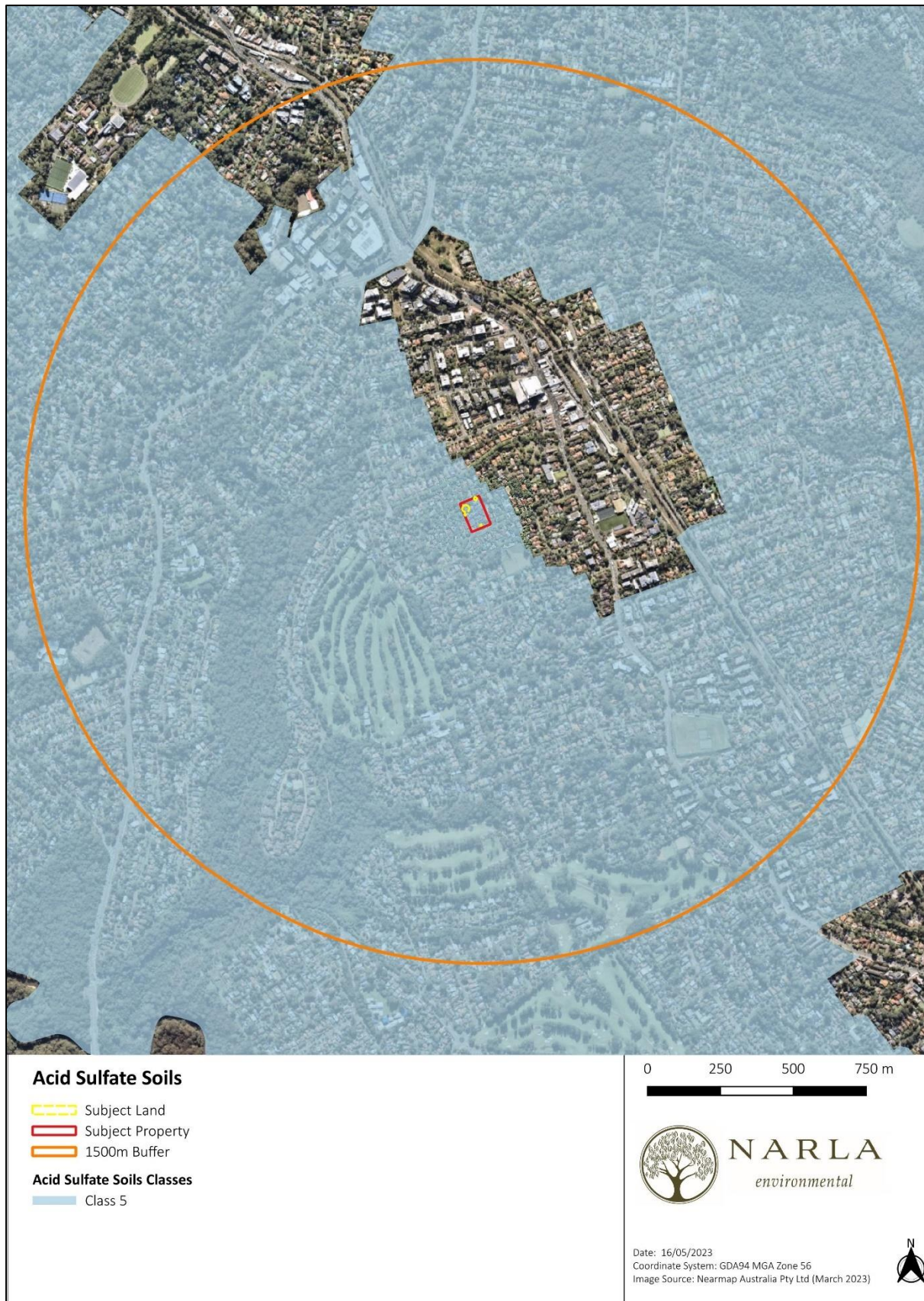


Figure 6. Acid Sulfate Soils within a 1500m buffer.



Figure 7. Rivers and streams (with associated riparian buffers) occurring within the 1500m buffer.



Figure 8. The extent of native vegetation and habitat connectivity occurring within the 1500m buffer.

3. Native Vegetation

3.1 Plant Community Types (PCTs) Identified within the Subject Land

3.1.1 Historically Mapped Vegetation

The Subject Land is mapped by the NSW State Vegetation Type Map (DPE 2022) as containing the following vegetation communities (**Figure 9**):

- Not-native Vegetation; and
- PCT 3262: Sydney Turpentine Ironbark Forest.

3.1.2 Plant Community Type Selection Process

Field surveys conducted by experienced Narla ecologist Chris Moore confirmed that one (1) native vegetation community occurred within the Subject Land in addition to areas of Urban Exotic Landscaped Vegetation.

Plant Community Type selection for this vegetation community was undertaken using information and databases provided in the BioNet Vegetation Classification System (DPE 2023d). The following selection criteria were used in the PCT Filter Tool to develop the PCT shortlist:

- IBRA Bioregion: Sydney Basin
- IBRA Subregion: Cumberland
- Dominant Species: *Eucalyptus pilularis*, *Syncarpia glomulifera* and *Angophora costata*

This process delivered a selection of four (4) PCTs that occur within the Cumberland IBRA Subregion (and Sydney Basin Bioregion) that contained all the observed dominant species. The geographical distribution, geology and landscape position of each shortlisted PCT was then compared against the location, geology and landscape of the Subject Land, resulting in just two (2) candidate PCTs (**Table 2**). The steps taken to justify the presence/absence of the candidate PCTs within the Subject Land are detailed in **Table 3**.

Table 2. Output from the PCT Filter Tool (DPE 2023d) and subsequent shortlisting of candidate PCTs. Green shading indicates the PCTs from the output that occur within the distribution and landscape position of the Subject Land.

Plant Community Type (PCT)	Subject Land within known distribution/landscape position?	No. of Matches	<i>Eucalyptus pilularis</i>	<i>Syncarpia glomulifera</i>	<i>Angophora costata</i>
PCT 3136: Blue Gum High Forest	Yes. This PCT occurs on a range of shale or shale-influenced substrates in areas receiving between 900 and 1300 millimetres of mean annual rainfall. This includes elevated gullies, ridgelines, crests and slopes underlain by Wianamatta shales as well as small gully heads where downslope movement of shale soil lies above sandstone bedrock. The Subject Land occurs on shale soils.	3	✓	✓	✓
PCT 3176: Sydney Enriched Sandstone Moist Forest	No. This PCT is known to occur in enriched sandstone gullies of the Sydney coastal sandstone plateau. The Subject Land does not occur in a sandstone gully.	3	✓	✓	✓
PCT 3259: Sydney Coastal Shale-Sandstone Forest	No. This PCT is known to occur on clay-influence sandstone crests in the greater Sydney metropolitan area. The Subject Land does not occur on a sandstone crest.	3	✓	✓	✓
PCT 3262: Sydney Turpentine Ironbark Forest.	Yes. This PCT occurs on shale or sheltered sandstone-shale soils mainly in the northern suburbs of Sydney and lower Blue Mountains. The Subject Land is located on shale soils in the northern suburbs of Sydney.	3	✓	✓	✓

Table 3. PCT Selection Criteria. Green indicates the selected PCT.

Candidate PCT	PCT Description (DPE 2023d)	Justification
PCT 3136: Blue Gum High Forest	<p>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 <i>Eucalyptus saligna</i>, commonly with <i>Eucalyptus pilularis</i> and occasionally <i>Syncarpia glomulifera</i>. The mid-stratum is layered, with a sparse cover of small trees that very frequently includes <i>Pittosporum undulatum</i> and occasionally <i>Elaeocarpus reticulatus</i>. There is often also at least one of a suite of tall Acacia species of which <i>Acacia parramattensis</i> is most frequent and the others are rarely occurring. The lower shrub layer also includes very frequently <i>Pittosporum undulatum</i>, commonly with <i>Breynia oblongifolia</i>, <i>Polyscias sambucifolia</i> and <i>Pittosporum revolutum</i>, occasionally with <i>Leucopogon juniperinus</i> and <i>Clerodendrum tomentosum</i>. 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 <i>Microlaena stipoides</i>, <i>Entolasia marginata</i>, <i>Oplismenus aemulus</i>, <i>Pseuderanthemum variabile</i> and <i>Pandorea pandorana</i>, commonly with <i>Dichondra repens</i>, <i>Tylophora barbata</i> and <i>Adiantum aethiopicum</i>, occasionally with <i>Calochlaena dubia</i>. 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.</p>	<p>Narla have NOT assigned this PCT to the vegetation within the Subject Land. This PCT is typically associated with a high cover of <i>Eucalyptus saligna</i>. No <i>Eucalyptus saligna</i> were identified within or surrounding the Subject Land and as such, this PCT was not deemed the best fit.</p>

Candidate PCT	PCT Description (DPE 2023d)	Justification
PCT 3262: Sydney Turpentine Ironbark Forest.	<p>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 <i>Syncarpia glomulifera</i> 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 <i>Eucalyptus pilularis</i>, <i>Angophora costata</i> and <i>Eucalyptus punctata</i>, rarely with one of several species from the ironbark, stringybark or mahogany eucalypt groups of which <i>Eucalyptus paniculata</i>, <i>Eucalyptus globoidea</i> and <i>Eucalyptus resinifera</i> are the most frequent of each group. The mid-stratum is layered, with a sparse cover of small trees that includes eucalypts, occasionally <i>Acacia parramattensis</i> and <i>Allocasuarina torulosa</i>, rarely with <i>Allocasuarina littoralis</i>. The lower shrub layer very frequently includes <i>Pittosporum undulatum</i> and <i>Leucopogon juniperinus</i>, commonly with <i>Breynia oblongifolia</i>, <i>Polyscias sambucifolia</i>, <i>Ozothamnus diosmifolius</i> and <i>Notelaea longifolia</i>. The ground layer includes a diverse cover of grasses that very frequently includes <i>Microlaena stipoides</i> and <i>Entolasia stricta</i>, commonly with <i>Imperata cylindrica</i>, <i>Entolasia marginata</i> and <i>Themeda triandra</i>. Small forbs including <i>Lobelia purpurascens</i> are also very frequent, together with <i>Lomandra longifolia</i>. 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.</p>	<p>Narla have assigned this PCT to the vegetation within the Subject Land as it fits with the landscape profile and geology, and comprised the dominant diagnostic species. Furthermore, this PCT accounts for the dominance of <i>Syncarpia glomulifera</i> surrounding the Subject Land and has also been historically mapped within the Subject Land.</p>



Figure 9. Historically mapped vegetation within and surrounding the Subject Land.

3.1.3 Final PCT and Vegetation Zone Selection

Field surveys conducted by Narla confirmed that one (1) PCT was identified within the Subject Land, along with Urban Landscaped Vegetation:

- PCT 3262: Sydney Turpentine Ironbark Forest

This PCT was then assigned to one (1) native vegetation zone within the Subject Land:

- Zone 1: PCT 3262 – Low Condition (Dying Trees).

The Urban Landscaped Vegetation was also assigned to the following vegetation zone within the Subject Land:

- Zone 2: Urban Landscaped Vegetation.

These vegetation zones are detailed in **Table 4**, **Table 5** and displayed in **Figure 10**.

Table 4. PCT 3262 identified within the Subject Land.

PCT 3262: Sydney Turpentine Ironbark Forest	
Vegetation class	Northern Hinterland Wet Sclerophyll Forests
Total area with Subject Land (approximate)	0.054ha
Condition Class	Low Condition (Dying Trees)
Field survey effort	A site assessment was conducted on the 12 th of May 2023. One (1) 50 x 20m VIS plot was established.
Description of vegetation	The vegetation within this zone comprised of a large <i>Eucalyptus pilularis</i> and a moderate sized <i>Angophora costata</i> . The health of both trees was found to be in serious decline (Plate 1). The understory of this zone was largely devoid of vegetation with the exception of minor occurrences of common native and exotic species.
Structure of vegetation	Native canopy cover was low totalling 10% with native shrub cover being largely absent accounting for just 2% cover. Native groundcovers were similarly low, with grasses at 0.7%, Forbs at 0.3%, ferns at 0% and Other at 2%. HTEs were also present at low quantities accounting for 2.4% cover. Leaf litter was moderate, averaging 52% across the zone with 2m of fallen logs recorded. The VIS plot contained a moderate diversity of tree stem sizes, with tree stems recorded in four (4) DBH classes including two (2) large tree2 (>50DBH) with two (2) hollows recorded and regenerating stems present.
Associated TEC (BC Act 2016)	This vegetation conforms to the BC Act listed CEEC, Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion (see Section 3.2.1).
Associated TEC (EPBC Act 1999)	This vegetation did not meet the condition thresholds for listing under the EPBC Act (see Section 3.2.2).
Scientific Reference from VIS (DPE 2023d)	Connolly, D., Binns, D., Turner, K., Hager, T., Lyons, M., Magarey, E. (in prep.) A revised classification of Plant Community Types for eastern New South Wales. NSW DPIE, Parramatta

Table 5. Urban Landscaped Vegetation identified within the Subject Land

Urban Landscaped Vegetation	
Total area within the Subject Land (approximate)	0.003ha
Field Survey Effort	A site assessment was conducted on the 12 th of May 2023. No BAM plots were established.
Description of vegetation within the Subject Land	The vegetation within this zone consisted of a dead <i>Acer palmatum</i> and a small group of dead and dying <i>Photinia</i> sp. (Plate 2).
Justification of vegetation assignment	The vegetation within this zone comprised planted exotic species. The vegetation within the does not conform to a locally occurring PCT and was therefore classified as 'Urban Landscaped Vegetation.
Associated TEC	None.



Plate 1. Representative photo of Vegetation Zone 1: PCT 3262 – Low Condition (Dying Trees) within the Subject Land.



Plate 2. Representative photo of Vegetation Zone 2: Urban Landscaped Vegetation within the Subject Land.



Figure 10. Narla field validated vegetation mapping and location of VIS plot.

3.2 Threatened Ecological Communities

3.2.1 Biodiversity Conservation Act 2016

Vegetation Zone 1 meets the BC Act listing for the BC Act listed Critically Endangered Sydney Turpentine Ironbark Forest in the Sydney Basin (**Figure 10**) as it contains species indicative of the community and occurs within the associated geology and landscape position in close proximity to other patches of Sydney Turpentine Ironbark Forest CEEC (STIF). Native species listed within the final determination (NSW Scientific Committee 2019) that occur within and surrounding this zone include *Syncarpia glomulifera* (Turpentine), *Angophora costata* (Sydney Red Gum), and *Eucalyptus pilularis* (Blackbutt).

3.2.2 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The native vegetation within Zone 1 within the Subject Land does not conform to the EPBC Act 1999 listed CEEC Turpentine-Ironbark Forest in the Sydney Basin Bioregion as the approved conservation advice (DoE 2014) states that patches where the native midstorey/understorey or native canopy trees are absent are excluded from the nationally listed ecological community. As the vegetation within Vegetation Zone 1 consists of an existing canopy layer above a manicured and altered midstorey/understorey common of an urban garden landscape it is excluded from protection under the EPBC Act.

3.3 Assessing Patch Size

A patch is defined by the BAM (DPIE 2020a) as an area of native vegetation that occurs on the Subject Land and includes native vegetation that has a gap of less than 100m from the next area of native vegetation (or $\leq 30\text{m}$ for non-woody ecosystems). A patch may extend onto adjoining land.

For each vegetation zone, the assessor must determine the patch size in hectares and assign it to one of the following classes:

- $<5\text{ha}$
- $5\text{--}<25\text{ha}$
- $25\text{--}<100\text{ha}$
- $\geq 100\text{ha}$.

The patch size class is used to assess habitat suitability on the Subject Land for threatened species. The assessor may assign more than one patch size class to the vegetation zone if both of the following apply:

- A vegetation zone comprises two or more discontinuous areas of native vegetation, and
- The areas of discontinuous native vegetation have more than one patch size class.

As areas outside of the Subject Property were not assessed as part of the scope of this assessment, the vegetation zones identified within the Subject Land were separated into the following category to allow for aerial mapping of patch size within the broader area (**Table 6; Figure 11**)

- Woody Ecosystems:
 - PCT 3262 – (Vegetation Zone 1).

Table 6. Patch size classes that each PCT and associated vegetation zone fall into.

Plant Community Type	Vegetation Zone	Patch Size Class
PCT 3262	Zone 1	$>100\text{ha}$



Figure 11. Patch size for the native vegetation zone identified within the Subject Land.

3.4 Vegetation Integrity Survey (VIS) Plots

One (1) BAM VIS Plot was established within and surrounding the Subject Land (**Figure 10**). Owing to the large number of ecotones identified within the Subject Land, the plot location was chosen to ensure the most accurate data was collected to depict the condition of the vegetation present within the Subject Land.

Plot data gathered for each attribute used to assess the function of the Subject Land vegetation is detailed in **Appendix B**. Vegetation Integrity (VI) Scores represented by existing vegetation within each vegetation zone is detailed in **Table 7**.

3.4.1 Determining future vegetation integrity scores

Most projects will result in complete clearing of vegetation and threatened species habitat within the operational footprint. In this scenario, the assessor must assess the proposed future value of each of the VI attributes as zero in the BAMC. However, in circumstances where partial clearing of vegetation is proposed and remaining vegetation will be maintained, the assessor may determine that the future value of the relevant VI attributes are greater than zero (DPIE 2020a).

The Subject Land will experience complete clearing to facilitate the proposed development. Therefore, all future conditions scores must be considered as zero. Consequently, the vegetation within the Subject Land has been assigned to the following management zones (**Figure 12**):

- Management Zone 1: PCT 3262– Low Condition (Dying Trees) – Complete Removal.

The attributes influencing future vegetation scores within each of these management zones are detailed in **Table 8**. Owing to the exotic nature of the vegetation within Vegetation Zone 2, it not been assigned to a management zone and will not require further assessment.



Figure 12. Management Zones within the Subject Land.

Table 7. Vegetation integrity scores for each identified zone.

Vegetation Zone	Management Zone	Area (ha)	Survey Effort	Composition Condition Score	Structure Condition Score	Function Condition Score	VI Score	Future VI Score	Change in VI Score	Total VI Loss	Hollow bearing trees
PCT 3262: Sydney Turpentine Ironbark Forest											
Zone 1: PCT 3262– Low Condition (Dying Trees)	1 – Complete Removal	0.054	1 x 1000m ² (20m x 50m) VIS Plot	17.1	2.8	78.8	15.6	0	-15.6	-15.6	Present

Table 8. Management Zones within the Subject Land, and relevant vegetation attributes (composition, structure and function) affecting future VI scores.

Vegetation Zone	Management Zone	Changes in Current Vegetation Attributes	Vegetation Attributes Not Changed	Future Vegetation Scores and Justification
Zone 1: PCT 3262– Low Condition (Dying Trees)	1 – Complete Removal	All vegetation strata and function to be removed within this zone.	NA	<ul style="list-style-type: none"> All vegetation within the development footprint is required for removal to allow for the proposed development; and Future composition, structure and function score is 0.

4. Threatened Species

4.1 Candidate Ecosystem Credit Species

Ecosystem credit species associated with the Subject Land are listed below in **Table 9**. No species predicted by the BAM calculator as potential ecosystem credits were excluded from the assessment due to habitat constraints.

Table 9. Candidate ecosystem credits predicted to occur within the Subject Land.

Scientific Name	BC Act Status	Excluded from Assessment	Reason for Exclusion from Assessment
<i>Anthochaera phrygia</i> Regent Honeyeater (Foraging)	Critically Endangered	No	-
<i>Artamus cyanopterus cyanopterus</i> Dusky Woodswallow	Vulnerable	No	-
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo (Foraging)	Vulnerable	No	-
<i>Calyptorhynchus lathami</i> Glossy Black-Cockatoo (Foraging)	Vulnerable	No	-
<i>Chthonicola sagittata</i> Speckled Warbler	Vulnerable	No	-
<i>Climacteris picumnus victoriae</i> Brown Treecreeper (eastern subspecies)	Vulnerable	No	-
<i>Daphoenositta chrysoptera</i> Varied Sittella	Vulnerable	No	-
<i>Dasyurus maculatus</i> Spotted-tailed Quoll	Vulnerable	No	-
<i>Ephippiorhynchus asiaticus</i> Black-necked Stork	Endangered	No	-
<i>Falsistrellus tasmaniensis</i> Eastern False Pipistrelle	Vulnerable	No	-
<i>Glossopsitta pusilla</i> Little Lorikeet	Vulnerable	No	-
<i>Grantiella picta</i> Painted Honeyeater	Vulnerable	No	-
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle (Foraging)	Vulnerable	No	-
<i>Hieraaetus morphnoides</i> Little Eagle (Foraging)	Vulnerable	No	-
<i>Hirundapus caudacutus</i> White-throated Needletail	Endangered (EPBC Act Only)	No	-
<i>Hoplocephalus bungaroides</i> Broad-headed Snake (Foraging)	Endangered	No	-
<i>Ixobrychus flavicollis</i> Black Bittern	Vulnerable	No	-

Scientific Name	BC Act Status	Excluded from Assessment	Reason for Exclusion from Assessment
<i>Lathamus discolor</i> Swift Parrot (Foraging)	Endangered	No	-
<i>Lophoictinia isura</i> Square-tailed Kite (Foraging)	Vulnerable	No	-
<i>Melanodryas cucullata cucullata</i> Hooded Robin (south-eastern form)	Vulnerable	No	-
<i>Melithreptus gularis gularis</i> Black-chinned Honeyeater (eastern subspecies)	Vulnerable	No	-
<i>Micronomus norfolkensis</i> Eastern Coastal Free-tailed Bat	Vulnerable	No	-
<i>Miniopterus australis</i> Little Bent-winged Bat (Foraging)	Vulnerable	No	-
<i>Miniopterus orianae oceanensis</i> Large Bent-winged bat (Foraging)	Vulnerable	No	-
<i>Ninox connivens</i> Barking Owl (Foraging)	Vulnerable	No	-
<i>Ninox strenua</i> Powerful Owl (Foraging)	Vulnerable	No	-
<i>Pandion cristatus</i> Eastern Osprey (Foraging)	Vulnerable	No	-
<i>Petroica phoenicea</i> Flame Robin	Vulnerable	No	-
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox (Foraging)	Vulnerable	No	-
<i>Saccolaimus flaviventris</i> Yellow-bellied Sheath-tail-bat	Vulnerable	No	-
<i>Scoteanax rueppellii</i> Greater Broad-nosed Bat	Vulnerable	No	-
<i>Stagonopleura guttata</i> Diamond Firetail	Vulnerable	No	-
<i>Tyto novaehollandiae</i> Masked Owl (Foraging)	Vulnerable	No	-
<i>Varanus rosenbergi</i> Rosenberg's Goanna	Vulnerable	No	-

4.2 Candidate Species Credit Species Summary

This section provides a summary of the candidate species credit fauna and flora species for the Subject Land derived from BAMC (DPE 2023e). A summary of the targeted survey effort applied to each species is provided along with the results of the survey effort, specifically whether or not the species credit needs to be offset through retiring of Biodiversity Offset Credits (**Table 10; Table 11**).

Table 10. Candidate Fauna Credit Species predicted to occur within the Subject Land.

Scientific Name	Included in Assessment?	Targeted Survey conducted?	Present within Subject Land?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
<i>Anthochaera phrygia</i> Regent Honeyeater (Breeding)	No, the Subject Land is not included on the map of important areas for Regent Honeyeater.	NA	NA	Very High – 3	No
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	No. The SAI threshold for this species is potential breeding habitat and presence of breeding individuals. Potential breeding habitat is identified as land within 100m of rocky areas containing caves, overhangs, crevices, cliffs, escarpments, old mines, tunnels, culverts, or derelict concrete buildings. As no rocky areas containing caves, overhangs, crevices, cliffs, escarpments, old mines, tunnels, culverts, or derelict concrete buildings were present within 100m of the Subject Land, the SAI threshold is not met for this species and therefore does not require assessment under the streamlined assessment method.	No	N/A	Very High – 3	No
<i>Hoplocephalus bungaroides</i> Broad-headed Snake (Breeding)	No. This species has a geographic limitation restricting it to the south west margins of the Cumberland Sub-region as well as being associated with rocky areas including escarpments, outcrops and pogodas. The Subject Land is not located along the south west margins of the sub-region and no rocky areas were located within the Subject Land. Therefore, this species has been excluded from assessment.	No	N/A	Very High – 3	No
<i>Lathamus discolour</i> Swift Parrot (Breeding)	No, the Subject Land is not included on the map of important areas for Swift Parrots.	No	N/A	Very High – 3	No

Scientific Name	Included in Assessment?	Targeted Survey conducted?	Present within Subject Land?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
<i>Miniopterus australis</i> Little Bent-winged Bat (Breeding)	No. The SAI threshold for this species is potential breeding habitat and the presence of breeding individuals. This species is known to breed in caves, tunnels, mines and culverts. No such habitat was present within the Subject Land, as such habitat constraints are not present within the Subject Land, this species was excluded from the assessment.	NA	NA	Very High – 3	No
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat (Breeding)	No. The SAI threshold for this species is potential breeding habitat and presence of breeding individuals. This species is known to breed in caves, tunnels, mines and culverts. No such habitat was present within the Subject Land, as such habitat constraints are not present within the Subject Land, this species was excluded from the assessment.	NA	NA	Very High – 3	No

Table 11. Candidate Flora Credit Species predicted to occur within the Subject Land.

Scientific Name	Included in Assessment?	Targeted Survey conducted?	Present within Subject Land?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
<i>Darwinia peduncularis</i>	No. This species is known to be associated with rocky areas or within 50m of rocky areas. No such habitat is present within or surrounding the Subject Land, therefore this species has been excluded from the assessment.	NA	NA	Very High - 3	No
<i>Haloragodendron lucasii</i>	No. This species is known to be associated with seepage zones or within 100m of such habitat. No such habitat is present within or surrounding the Subject Land, therefore this species has been excluded from the assessment.	NA	NA	Very High - 3	No
<i>Hibbertia spanantha</i> Julian's Hibbertia	No. This species is endemic to NSW where it is restricted to three (3) known locations in the northern Sydney suburbs of Turramurra, North Ryde and Cheltenham (NSW Scientific Committee 2015). As the Subject Land does not occur in any of these three locations it is considered highly unlikely that this species would occur within the	NA	NA	Very High - 3	No

Scientific Name	Included in Assessment?	Targeted Survey conducted?	Present within Subject Land?	Biodiversity Risk Weighting	Biodiversity Offset Credits Required?
	landscaped gardens of the Subject Land and has therefore been excluded from the assessment.				
<i>Rhizanthella slateri</i> Eastern Australian Underground Orchid	No. This species is only known from 10 populations, with the nearest known population in the Wiseman's Ferry area, approximately 58km away (NSW Scientific Committee 2003). Therefore, owing to the distance between the Subject Land and the nearest known population, this species was excluded from the assessment as it was considered unlikely to occur within the Subject Land.	NA	NA	Very High - 3	No
<i>Rhodamnia rubescens</i> Scrub Turpentine	Yes. Found in littoral, warm temperate and subtropical rainforest, and wet sclerophyll forest usually on volcanic and sedimentary soils. As the Subject Land contains a wet sclerophyll forest, this species was included within the assessment.	Yes	No	Very High – 3	No

4.3 Species Credit Surveys

A targeted survey was undertaken for all SAIL species credit species and their habitats considered likely to occur within the Subject Land. These surveys were implemented in accordance with Section 5.3 of the BAM and all relevant DPE threatened species survey guidelines.

The targeted survey was undertaken on the 12th of May 2023. Weather conditions taken from the nearest weather station (Terrey Hills no. 066059) in the lead up and during the field survey are outlined in **Table 12**. There was limited rain and low to moderate temperatures leading up to the site assessment. These conditions are likely to not have been conducive to the emergence of annual herbs, fungi and flowering species.

Table 12. Weather conditions taken from the nearest weather stations (Station number 066059) in the lead up and during the field survey (BOM 2023). Survey date is in bold.

Timing/activities	Date	Day	Temperature		Rainfall (mm)
			Min	Max	
Lead up to the survey	05/05/2023	Friday	9.4	20.6	0
	06/05/2023	Saturday	9.0	20.3	0
	07/05/2023	Sunday	8.7	14.6	0
	08/05/2023	Monday	5.8	15.3	7.2
	09/05/2023	Tuesday	9.6	18.0	0
	10/05/2023	Wednesday	9.9	18.6	0
	11/05/2023	Thursday	9.2	19.6	0
Site Assessment & Targeted Survey	12/05/2023	Friday	10.4	22.7	0.2

4.3.1 Fauna Species Credit Survey

A total of six (6) SAIL threatened fauna species were identified within the BAMC (DPE 2023e) as having the potential to occur within the Subject Land. Following the site assessment, none of the species were identified as having the potential to occur within the Subject Land due to the following (BAM Section 5.2.2, DPIE 2020b):

- The assessor determines that microhabitats required by a species are absent from the Subject Land (or specific vegetation zone) [(Section 5.2.3(2ai) of the BAM (DPIE 2020a)].

4.3.2 Flora Species Credit Survey

A total of five (5) SAIL threatened flora species were identified within the BAMC (DPE 2023e) as having the potential to occur within the Subject Land. During the site assessment, just one (1) species (*Rhodamnia rubescens*) was identified as having the potential to occur within the Subject Land due to suitable habitat.

A targeted survey was undertaken for this potentially occurring SAIL species in accordance with the 'Surveying threatened plants and their habitats – NSW survey guide for the Biodiversity Assessment Method' (DPIE 2020b; **Figure 13**). These species were not detected within the Subject Land.

Table 13. Species credit flora and fungi species requiring targeted surveys. Targeted surveys were conducted within endorsed survey periods.

Candidate Flora and Fungi Species	Survey Period (BAMC)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Rhodamnia rubescens</i> Scrub Turpentine					✓							
Key	✓ = Surveyed						= DPE Endorsed Survey Period					

4.4 Species Polygons

4.4.1 Confirmed Present

No SAI species were confirmed to be present within the Subject Land.

4.4.2 Assumed Present

No SAI species were assumed to be present within the Subject Land.



Figure 13. Targeted survey effort for SAIL species credit species within the Subject Land.

5. Prescribed Impacts

Certain projects may have impacts on biodiversity values in addition to, or instead of, impacts from clearing vegetation and/or loss of habitat. For many of these impacts, the biodiversity values may be difficult to quantify, replace or offset, making avoiding and minimising impacts critical. Prescribed biodiversity impacts require an assessment of the impacts of the subdivision on the habitat of threatened species or ecological communities. This is discussed in **Table 14**.

Table 14. Prescribed and uncertain impacts associated with the proposed development.

Will there be impacts on any of the following?	Yes/No	If Yes, Address all of the assessment questions from section 6 of the BAM
Habitat of threatened entities including: <ul style="list-style-type: none"> karst, caves, crevices, cliffs, rocks and other geological features of significance, or human-made structures, or non-native vegetation 	No	There are no karsts, caves, crevices, cliffs and other features of geological significance on or near the Subject Land. No human-made structures occur within the Subject Land. Non-native vegetation was present within the Subject Land in the form of common environmental weeds. No threatened species predicted to occur within the Subject Land are believed to be reliant on this exotic vegetation.
On areas connecting threatened species habitat, such as movement corridors	No	It is unlikely the proposed development will interrupt connectivity for any threatened species, as areas of habitat connectivity will continue to exist in vegetated areas surrounding the Subject Land.
That affect water quality, water bodies and hydrological processes that sustain threatened entities (including from subsidence or upsidence from underground mining)	No	No threatened species were identified within the Subject Land that are sustained by water bodies and hydrological processes. It is also not expected that the removal of vegetation within the Subject Land will impact upon any groundwater processes within the surrounding landscape.
On threatened and protected animals from turbine strikes from a wind farm	No	No wind farms are associated with the proposed development.
On threatened species or fauna that are part of a TEC from vehicle strikes.	No	Due to the highly urbanised nature of the Subject Land and locality it is highly unlikely that vehicle strikes will be an issue with the proposed development, especially considering the slow speeds required to manoeuvre the site.

6. Avoid, Minimisation and Mitigation of Impacts

6.1 Impact Mitigation and Minimisation Measures

This section details the measures to be implemented before, during and post construction to avoid and minimise the impacts of the project (Table 15).

Table 15. Table of measures to be implemented before, during and after construction to avoid and minimise the impacts of the project.

Action	Outcome	Timing	Responsibility
Project Location and Design	The proposed modification is required owing to the declining nature of the vegetation within the Subject Land. The original development had been deliberately designed to retain these native trees, however due to their declining health they now pose a safety risk to residents. These trees will be replaced under an approved Vegetation Management Plan (VMP; Travers bushfire and ecology 2015) for the Subject Property which will see an overall biodiversity gain on the property.	Pre-construction phase	Proponent
Assigning a Project Ecologist for Vegetation Clearing	Prior to construction, the applicant should commission the services of a qualified and experienced Ecologist Consultant (minimum 3 years' experience) with a minimum tertiary degree in Science, Conservation, Biology, Ecology, Natural Resource Management, Environmental Science or Environmental Management. The Ecologist must be licensed with a current Department of Primary Industries Animal Research Authority permit and New South Wales Scientific License issued under the BC Act. The Ecologist will be commissioned to: <ul style="list-style-type: none"> Undertake an extensive pre-clearing survey, delineating habitat-bearing trees and shrubs to be retained/removed; and Supervise the clearance of trees and shrubs that contain habitat (e.g hollows or nests) in order to capture, treat and/or relocate any displaced fauna. 	Prior to and during vegetation clearance works	Proponent Project Ecologist
Replacement Planting	The <i>Eucalyptus pilularis</i> and <i>Angophora costata</i> are to be replaced at a 2:1 ratio with mature aged, locally sourced, nursery stock with species representative of the Sydney Turpentine Ironbark Forest Ecological community	Post-construction phase	Proponent Landscape Contractor

Action	Outcome	Timing	Responsibility
Nestbox and Hollow Relocation	All nestboxes and augmented hollows that are currently located within the <i>Eucalyptus pilularis</i> proposed for removal are to be relocated to another suitable tree within the Subject Property. One (1) additional small hollow was also located within this tree, which should also be replaced at a 1:1 ratio with a nestbox of the same size within a tree elsewhere in the Subject Property.	Construction phase	Proponent Construction Contractor
Erection of temporary fencing	Temporary fencing should be erected around retained native vegetation that may incur indirect impacts on biodiversity values due to the construction works.	Construction phase	Proponent Construction Contractor
Storage and Stockpiling (Soil and Materials)	Allocate all storage, stockpile and laydown sites within the Subject Land away from any native vegetation that is planned to be retained. Avoid importing any soil from outside the site as this can introduce weeds and pathogens to the site in order to avoid the potential of incurring indirect impacts on biodiversity values.	Construction phase	Construction Contractors

7. Assessment of Impacts

7.1 Direct Impacts

7.1.1 Full Clearing

The proposed works will result in impacts the following vegetation:

- 0.054ha of PCT 3626, which conforms to the CEEC Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion; and
- 0.003ha of Urban Landscaped Vegetation.

7.1.2 Partial Clearing

No partial clearing will occur as a result of the proposed works.

7.1.3 Prescribed Impacts

No prescribed impacts are anticipated as a result of the proposed works.

7.2 Indirect Impacts

Indirect impacts occur when the proposal or activities relating to the construction or operation of the proposal affect native vegetation, threatened ecological communities and threatened species habitat beyond the Subject Land. Impacts may also result from changes to land-use patterns, such as an increase in vehicular access and human activity on native vegetation, threatened ecological communities and threatened species habitat. The indirect impacts of this proposed development are outlined in **Table 16**.

Table 16. Indirect impacts associated with the proposed development.

Indirect Impact	Nature, Extent and Duration	TEC's/PCTs and/or Threatened Species and Their Habitat Likely to be Impacted	Consequences of the Impacts for the Bioregional Persistence of the Threatened Species, Threatened Ecological Communities and Their Habitats.
(a) inadvertent impacts on adjacent habitat or vegetation	Vegetation and habitat directly adjacent to the Subject Land has the potential to experience ongoing indirect impacts as a result of the proposed works; although given the historical use of the Subject Land this is expected to be minimal. The disturbance caused during construction may increase weed infestations within adjacent vegetation, which in turn may decrease its habitat value., however, as the vegetation adjacent to the Subject Land is already highly altered due to the urbanised landscape, and a VMP is already approved to rehabilitate this area, this potential impact is not considered to be significant.	One (1) TEC occurs adjacent to the Subject Land – Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion. There is also the low potential that threatened species occur in areas adjacent the Subject Land that may be inadvertently impacted by the proposed development.	While changes to vegetation condition may have a localised impact to threatened species, threatened ecological communities and their habitats, this is not expected to impact on their bioregional persistence.
(b) reduced viability of adjacent habitat due to edge effects	The proposed works within the Subject Land may lead to an increase in weed infiltration into adjacent habitat due to enhanced edge effects. However, as the vegetation adjacent to the Subject Land is already highly altered due to the urbanised landscape, and a VMP is already	One (1) TEC occurs adjacent to the Subject Land – Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion. There is also the low potential that threatened species occur in areas adjacent the Subject	While edge effects may have a localised impact to TECs and threatened species, this is not expected to impact on their bioregional persistence, considering the areas of habitat connectivity within the locality.

Indirect Impact	Nature, Extent and Duration	TEC's/PCTs and/or Threatened Species and Their Habitat Likely to be Impacted	Consequences of the Impacts for the Bioregional Persistence of the Threatened Species, Threatened Ecological Communities and Their Habitats.
	approved to rehabilitate this area, this potential impact is not considered to be significant.	Land that may be impacted by edge effects leading to a reduced viability in habitat.	
(c) reduced viability of adjacent habitat due to noise, dust or light spill	<p>An increase in noise is to be expected during works. As the Subject Land is located in a suburban area, this is unlikely to impact on any species roosting adjacent to the site during the day as such noises are common within the locality. It is not expected that construction would occur throughout the night, and as such would not impact on nocturnal species that may utilise adjacent habitat, or diurnal species that roost in adjacent habitat.</p> <p>The construction may increase dust in adjacent habitat. Dust can impact on a plant's ability to photosynthesise and may increase plant mortality in the adjacent vegetation. It is however not expected that this would have such an impact to decrease the viability of adjacent habitat.</p> <p>No increase in light is expected as a result of the proposed works.</p>	<p>One (1) TEC occurs adjacent to the Subject Land – Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion. There is also the low potential that threatened species use habitat adjacent to the Subject Land. Threatened species may be impacted by an increase in noise and dust spill into adjacent habitats.</p>	<p>While works may have a temporary and localised impact to the TEC and threatened species, this is not expected to impact on their bioregional persistence, considering the areas of habitat connectivity allowing their movement away from impacted areas</p>

Indirect Impact	Nature, Extent and Duration	TEC's/PCTs and/or Threatened Species and Their Habitat Likely to be Impacted	Consequences of the Impacts for the Bioregional Persistence of the Threatened Species, Threatened Ecological Communities and Their Habitats.
(d) transport of weeds and pathogens from the site to adjacent vegetation	As previously discussed, the proposed works may lead to an increase in weed infiltration into adjacent habitat due to enhanced edge effects. However, as the vegetation adjacent to the Subject Land is already highly altered due to the urbanised landscape, and a VMP is already approved to rehabilitate this area, this potential impact is not considered to be significant.	One (1) TEC occurs adjacent to the Subject Land – Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion. There is also the low potential that threatened species occur in areas adjacent the Subject Land that may be impacted by weed and pathogen transportation leading to a reduced viability in habitat.	While weeds and pathogens may have a localised impact to TECs and threatened species, this is not expected to impact on their bioregional persistence considering the areas of habitat connectivity within the surrounding areas.
(e) increased risk of starvation, exposure and loss of shade or shelter	It is highly unlikely that any threatened fauna would be exposed to increased risks from starvation, exposure, and loss of shade and shelter as a result of the proposed works. No habitat is to be removed beyond the Subject Land and owing to the highly urbanised nature of the Subject Property and locality it is considered unlikely any threatened species would be placed at risk of starvation or exposure should surrounding habitat decrease in quality as a result of the proposed works.	N/A	N/A
(f) loss of breeding habitats	An increase in noise is to be expected during works. As such, there is potential for disturbance to breeding habitats directly adjacent to the Subject Land. However, as the vegetation adjacent to the Subject Land is already	There is potential that threatened fauna species use habitat adjacent to the Subject Land for breeding. Such species may be impacted by an increase in noise into adjacent	This impact is expected to be localised and will not have an overall impact on the bioregional persistence of threatened species.

Indirect Impact	Nature, Extent and Duration	TEC's/PCTs and/or Threatened Species and Their Habitat Likely to be Impacted	Consequences of the Impacts for the Bioregional Persistence of the Threatened Species, Threatened Ecological Communities and Their Habitats.
	highly altered due to the urbanised landscape, this potential impact is not considered to be significant.	habitats, which may in turn impact on their breeding habitat.	
(g) trampling of threatened flora species	No threatened flora species were identified within or surrounding the Subject Land. The lack of proximal records shows no threatened flora located within or adjacent to the Subject Land. Therefore, it is not expected that trampling of threatened species will be associated with this project.	N/A	N/A
(h) inhibition of nitrogen fixation and increased soil salinity	It is unlikely that the inhibition of nitrogen fixation will affect vegetation adjacent to the Subject Land. Increased soil salinity may result due to clearing of vegetation leading to the rising of the water table. However, clearing will be limited to the Subject Land and as such is not expected to affect vegetation directly adjacent to the Subject Land.	N/A	N/A
(i) fertiliser drift	This issue is not likely to affect the vegetation within or surrounding the Subject Land.	N/A	N/A
(j) rubbish dumping	There is the possibility that rubbish dumping (including littering) in adjacent vegetation slightly increases during works. The dumping/littering of food resources may provide a food source for fauna. However, this may also	There is potential that threatened fauna species use habitat adjacent to the Subject Land. Such species may be impacted by the dumping of rubbish, particularly food resources. This may	This impact is expected to be localised and will not have an overall impact on the bioregional persistence of the PCTs or threatened species.

Indirect Impact	Nature, Extent and Duration	TEC's/PCTs and/or Threatened Species and Their Habitat Likely to be Impacted	Consequences of the Impacts for the Bioregional Persistence of the Threatened Species, Threatened Ecological Communities and Their Habitats.
	encourage invasive species into such habitats. This impact can be mitigated by the appropriate disposal of rubbish.	result in both positive (food source) and negative impacts (increase in predators) to such species.	
(k) wood collection	It is unlikely that the proposed development will increase wood collection in the vegetation surrounding the Subject Land.	N/A	N/A
(l) bush rock removal and disturbance	No bush rock was observed adjacent to the Subject Land.	N/A	N/A
(m) increase in predatory species populations	There is potential that predatory species, such as cats, already inhabit areas within and surrounding the Subject Land. There is the possibility that other indirect impacts, such as an increase in rubbish dumping, may encourage predatory species into the area.	There is potential that threatened fauna species use habitat adjacent to the Subject Land. Such species may be impacted by an increase in predatory species populations.	An increase in predatory species adjacent to the Subject Land may have widespread ramifications for any locally occurring threatened species. However, owing to the urbanised nature of the Subject Land and broader locality this risk is considered minimal.
(n) increase in pest animal populations	There is potential that pest animal populations already inhabit areas within and surrounding the Subject Land. There is the possibility that other indirect impacts, such as an increase in rubbish dumping, may encourage an increase in pest animal populations.	There is potential that threatened fauna species use habitat adjacent to the Subject Land. Such species may be impacted by an increase in pest animal populations.	An increase in pest species adjacent to the Subject Land may have widespread ramifications for any locally occurring threatened species. However, owing to the urbanised nature of the Subject

Indirect Impact	Nature, Extent and Duration	TEC's/PCTs and/or Threatened Species and Their Habitat Likely to be Impacted	Consequences of the Impacts for the Bioregional Persistence of the Threatened Species, Threatened Ecological Communities and Their Habitats.
			Land and broader locality this risk is considered minimal.
(o) increased risk of fire	The Subject Land is not mapped as occurring within bushfire prone land. It is not expected that the proposed works will significantly alter the bushfire risk of vegetation surrounding the Subject Land	N/A	N/A
(p) disturbance to specialist breeding and foraging habitat, e.g., beach nesting for shorebirds.	No specialist breeding and/or foraging habitat was identified adjacent to the Subject Land.	N/A	N/A

8. Thresholds for Assessing and Offsetting

8.1 Impacts on Native Vegetation

The following native vegetation within the Subject Land is proposed to be impacted as a result of the proposed development:

- 0.054ha of PCT 3262: Sydney Turpentine Ironbark Forest

The purchase and retirement of Biodiversity Offset Credits will be required for the following native vegetation within the Subject Land (**Figure 14**):

- 0.054ha within Vegetation Zone 1: Low Condition (Dying Trees), representative of PCT 3262

No offsets are required for the impacts associated with Vegetation Zone 2 owing its exotic nature.

8.2 Impacts on Threatened Species

No threatened species will require the purchase and retirement of Biodiversity Offset Credits.



Figure 14. Impacts on native vegetation and offset requirements.

8.3 Serious and Irreversible Impacts (SAIL's)

One (1) threatened ecological community within the Subject Land has been identified as an entity at risk of an SAIL in the Threatened Biodiversity Data Collection (DPE 2023c):

- Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion (STIF).

8.3.1 Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion

Due to the sensitivity of this TEC to any impact, a determination of whether or not the proposed impacts are serious and irreversible is to be undertaken in accordance with Section 9.1 of the BAM (DPIE 2020a) is required. This is outlined in **Table 17**.

Table 17. Additional impact assessment provisions for ecological communities that are associated with a serious and irreversible impact.

Serious and Irreversible Impact (SAIL) Impact assessment provisions for ecological communities: Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion	
BC Act Status: Critically Endangered	
a) the action and measures taken to avoid the direct and indirect impact on the potential entity for a SAIL	The proposed works will impact approximately 0.054ha of STIF. The proposed works are limited to trees that have significantly declined in health and now pose a health risk to local residents. A VMP is approved for the Subject Property, which will minimise the risk of indirect impacts to surrounding areas of this community as well as see the trees requiring removal replaced.
b) the area (ha) and condition of the threatened ecological community (TEC) to be impacted directly and indirectly by the proposed development. The condition of the TEC is to be represented by the vegetation integrity score for each vegetation zone	<p>The proposed works will impact on approximately 0.054ha of vegetation from Zone 1: Low Condition (Dying Trees) that conformed to this TEC.</p> <p>Vegetation Zone 1 comprised of a <i>Eucalyptus pilularis</i> and <i>Angophora costata</i>, both who were recorded in significantly poor health. The zone was in low condition, with a VI Score of 15.6</p> <p>There is the potential for the proposed works to have an indirect impact on STIF not being removed within and surrounding the Subject Land. However, the approved VMP for the property will ensure these risk are minimised.</p>
c) the extent and overall condition of the potential TEC within an area of 1,000ha, and then 10,000ha, surrounding the proposed development footprint	<p>Mapping from the NSW State Vegetation Type Map (DPE 2022) indicates the presence of approximately 130.65ha of STIF within an area of 1,000ha surrounding the Subject Land, and 429.88ha of STIF within an area of 10,000ha surrounding the Subject Land.</p> <p>The STIF within these areas largely comprises fragmented patches of varying sizes. The conditions of these patches cannot be determined without ground truthing, although are expected to be partially degraded due to their positioning within a residential landscape.</p>

Serious and Irreversible Impact (SII)
Impact assessment provisions for ecological communities:
Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion

BC Act Status: Critically Endangered

<p>d) an estimate of the extant area and overall condition of the potential TEC remaining in the IBRA subregion before and after the impact of the proposed development has been taken into consideration</p>	<p>The NSW State Vegetation Type Map (DPE 2022) indicates approximately 1,410ha of STIF occurs within the Cumberland IBRA Subregion. This comprises fragmented patches of varying sizes. The conditions of these patches cannot be determined without ground truthing.</p> <p>Overall, the impact of the proposed works will result in the removal of 0.054ha of STIF from the Cumberland subregion accounting for approximately 0.004% of the extant area of STIF in the Cumberland IBRA Subregion. This will result in approximately 1409.946ha of STIF remaining within the Cumberland IBRA Subregion after the proposed works.</p>	
<p>e) an estimate of the area of the candidate TEC that is in the reserve system within the IBRA region and the IBRA subregion</p>	<p>Approximately 280ha of STIF is distributed across 15 reserves under the management of the NSW National Parks and Wildlife Service (NSW Threatened Species Scientific Committee 2019)</p>	
<p>f) the development, clearing or biodiversity certification proposal's impact on:</p>	<p>i) abiotic factors critical to the long-term survival of the potential TEC; for example, how much the impact will lead to a reduction of groundwater levels or the substantial alteration of surface water patterns</p>	<p>The proposed works has the minimal potential to alter the natural hydrology occurring within and surrounding the Subject Land due to vegetation removal works. This may alter water runoff levels and increase nutrients into adjacent areas of STIF, causing an increase in weed infestations. However, owing to the highly urbanised nature of the vegetation adjacent to the Subject Land this is not expected to a significant impact.</p>
	<p>ii) characteristic and functionally important species through impacts such as, but not limited to, inappropriate fire/flooding regimes, removal of understorey species or harvesting of plants</p>	<p>The areas of STIF within the Subject Land are of a low quality with a native canopy above a highly altered and landscaped ground layer. Fire and flood regimes have been largely altered due to the residential developments that have occurred in the area. Therefore, it is not expected that the proposed works will impact any characteristic and functionally important species outside of the Subject Land.</p>
	<p>iii) the quality and integrity of an occurrence of the potential TEC through threats and indirect impacts including, but not limited to, assisting invasive flora and fauna species to become established or causing regular mobilisation of fertilisers,</p>	<p>The proposed works may enhance weed infiltration into adjacent habitat by an increase in edge effects. However, owing to the highly urbanised nature of the vegetation adjacent to the Subject Land this is not expected to a significant impact. It is therefore not expected that the quality and integrity of adjacent STIF will be</p>

Serious and Irreversible Impact (SII) Impact assessment provisions for ecological communities: Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion		
BC Act Status: Critically Endangered		
	herbicides or other chemicals or pollutants which may harm or inhibit growth of species in the potential TEC	significantly reduced by the proposed development.
g) direct or indirect fragmentation and isolation of an important area of the potential TEC	The STIF within the Subject Land and surrounds occurs within a 'Priority Management Area' as defined under the Saving our Species Program (DPIE 2021b). However as the trees proposed for removal are considered terminal and likely to die (Footprint Green 2023) and are located on the edge of a patch the proposed works are not expected to directly or indirectly fragment this important area.	
h) the measures proposed to contribute to the recovery of the potential TEC in the IBRA subregion.	<p>The Saving our Species Program (DPIE 2019) has identified various measures proposed to manage key threats to conserve this ecological community, including:</p> <ul style="list-style-type: none"> ▪ Consult with land managers/owners in particular churches, schools, hospitals and Councils with good condition TEC remnants about participating in conservation agreements (preferably long-term in perpetuity) to protect the TEC ▪ Identify and map green corridors with the aim of restoring TEC connectivity. Replant corridors and buffer areas with native, appropriate TEC species. Seeds and tube stock for replanting should be collected from Council nurseries, herbarium or other regulated nurseries with known genetics to prevent disease introduction and inbreeding potential. ▪ Conduct bush regeneration and replanting programs in proposed buffer zones and green/wildlife corridors for TEC remnants. ▪ Conduct research on the required intensity and frequency of fire to maintain viable functional TEC remnants through ecological burn trials. Fires should be undertaken spatially and with varying intensities across mosaic patches (regimes appropriate for Wet Sclerophyll Forest are required). Update best practice fire management guidelines and planning documents, including threatened species, populations and communities hazard reduction list for Rural Fire Service (RFS). Current NSW threatened ecological communities RFS hazard reduction list is too frequent for the TEC. ▪ Provide training workshops for volunteer firefighters and managers in relevant Local Government Areas to demonstrate the importance of ecological burning (i.e. mosaic burns, differing intensities etc.) and required regimes for the TEC. ▪ Conduct targeted and fine-scale, sensitive weed control as well as revegetation as required. Consideration should be given to water and erosion sensitive weed control. Weed control to be conducted in mosaic patches and selective weed control depending on habitat resilience. 	

Serious and Irreversible Impact (SII)
Impact assessment provisions for ecological communities:
Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion

BC Act Status: Critically Endangered

- Undertake best available pest control (multiple controls- warren ripping, bait laying, warren-fumigation, coordinated release of disease- are often best at a landscape/regional level) for rabbits.
- Provide advice to Councils on using water sensitive designs, as well as suitable sedimentation and erosion controls adjacent to the TEC.
- Provide rural residents with information about the use of fertilisers and the use of low phosphorus chemicals.
- Liaise with utility companies to provide advice on preventing sewage/storm water overflow into creek lines that flow into the TEC and to restrict vegetation clearance in relation to the maintenance of the utility asset. Encourage utility companies to identify TEC remnant sites and place on an actively managed list that maintenance staff are made aware of.
- Ensure creek line stabilisation through bush regeneration and suitable replanting (associated TEC species) to reduce bank erosion.
- Minimise the effect of hydrological impacts from adjacent developments by mitigating runoff into the TEC as well as impacts associated with drawdown to the water table. Potential solutions may include the installation of tanked water basement capture, and slow release back into the water table at development sites.
- Manage the TEC appropriately and sensitively, with minimal disturbance when attempting to reduce fire risk to life and property. Investigate options for improving fire-proof construction standards as an alternative to clearing vegetation within the TEC.
- Liaise with the Rural Fire Service and other land managers about minimising clearing in the TEC by highlighting the community's importance e.g. use existing tracks/fire trials as fire breaks, prevent clearing for additional fire breaks in the TEC. Update fire mapping and fire planning documentation to reduce the frequency of fire in TEC remnants, based on outcomes of ecological burn trials.
- Provide information to land manager contractors, councils and land owners about to 'how' to apply restricted clearing in TEC vegetation and reduce the risk of fire e.g. only clearing sporadic shrubs and grasses (with a certain distance in-between to prevent the spread of fire) in the lower vegetation layers instead of complete removal.
- Ensure that any bush regenerators and contractors working within the TEC are appropriately trained and hold appropriate licences.
- Train and supervise entry level bush regenerators. Maintain a minimum level of training at certificate IV in conservation and land management.
- Conduct bush regeneration in staged mosaic patches to maintain potential habitat areas during works. Develop and continue to update best practice guidelines for appropriate weed control and bush regeneration techniques in TEC remnants. Liaise with Australian

Serious and Irreversible Impact (SII)
Impact assessment provisions for ecological communities:
Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion

BC Act Status: Critically Endangered

- Association Bush Regenerators and other relevant bush regenerator associations to keep up to date with new weed control techniques.
- Develop and include information kits (relevant to each local area and local occurrence of the TEC) to be provided as a part of welcome kits for new residences to each Local Government Area where the TEC occurs.
 - Install compliance and interpretation signage at priority areas of the TEC where disturbance is occurring.
 - Install fencing as required in high disturbance areas, utilising bollards and/or natural barriers such as native plantings, rocks, logs etc. Close informal and illegal trails with natural barriers.
 - Implement multi-agency coordinated pest management control programs e.g. 1080 fox baiting or predator trapping.
 - Provide residents with information about keeping domestic pets contained and on a leash.
 - Augment habitat with logs, nesting boxes and artificial habitat.
 - Mapping of key habitat features in national parks and Council reserves to ensure protection.
 - Consult with land managers about the retention and protection of habitat features in Council reserves and other important TEC remnants. Identify and protect important and key habitat features on private lands. Implement habitat protection strategies when conducting ecological and hazard reduction burning.

A number of impact mitigation measures are to be implemented by the proponent before, during and after construction to avoid and minimise the impacts of the proposed development on STIF (see **Table 15**).

9. Biodiversity Offset Credit Requirements

The preferred approach to offset the residual impacts of the proposal is to purchase and retire the appropriate species credits from registered Biodiversity Stewardship Sites that comply with the trading rules of the NSW BOS in accordance with the 'like for like' report generated by the BAM calculator. If such credits are unavailable, credits would be sourced in accordance with the 'variation report' generated by the BAMC.

A payment to the Biodiversity Conservation Trust (BCT) would be considered as a contingency option if a suitable number and type of biodiversity credits cannot be secured.

9.1 Offset Requirement for Ecosystem Credits

One (1) ecosystem credit is required to offset the biodiversity impacts of the proposed development (**Table 18**):

Table 18. Offset requirements for Ecosystem Credits within the Subject Land.

PCT	BC Act Status	Zone	Total Area (ha)	Ecosystem Credits Required
PCT 3262: Sydney Turpentine Ironbark Forest	Critically Endangered Ecological Community	Zone 1: Low Condition (Dying Trees)	0.054	1
Total Ecosystem Credits				1

9.2 Offset Requirement for Species Credits

No candidate species credit species will require offsetting through the retiring of biodiversity offset species credits under the BOS as a result of the proposed development.

10. Other Relevant Legislation and Planning Policies

10.1 State Environmental Planning Policy (Biodiversity and Conservation) 2021 – Chapter 4: Koala Habitat Protection 2021

Chapter 4 – Koala Habitat Protection 2021 applies to local government areas that are listed in Schedule 2 ‘Local government areas’ of the SEPP. Whilst the Ku-Ring-Gai LGA is listed in Schedule 2 of the SEPP, the Subject Property is less than 1ha in size therefore, does not apply to the proposed modification.

10.2 State Environmental Planning Policy (Resilience and Hazards) 2021 – Chapter 2: Coastal Management

This chapter of the SEPP applies to land within the coastal zone. The coastal zone means the area of land comprised of the following coastal management areas:

- the coastal wetlands and littoral rainforests area;
- the coastal vulnerability area;
- the coastal environment area; or
- the coastal use area.

As the Subject Land does not occur within any of these listed areas, this chapter of the SEPP does not apply.

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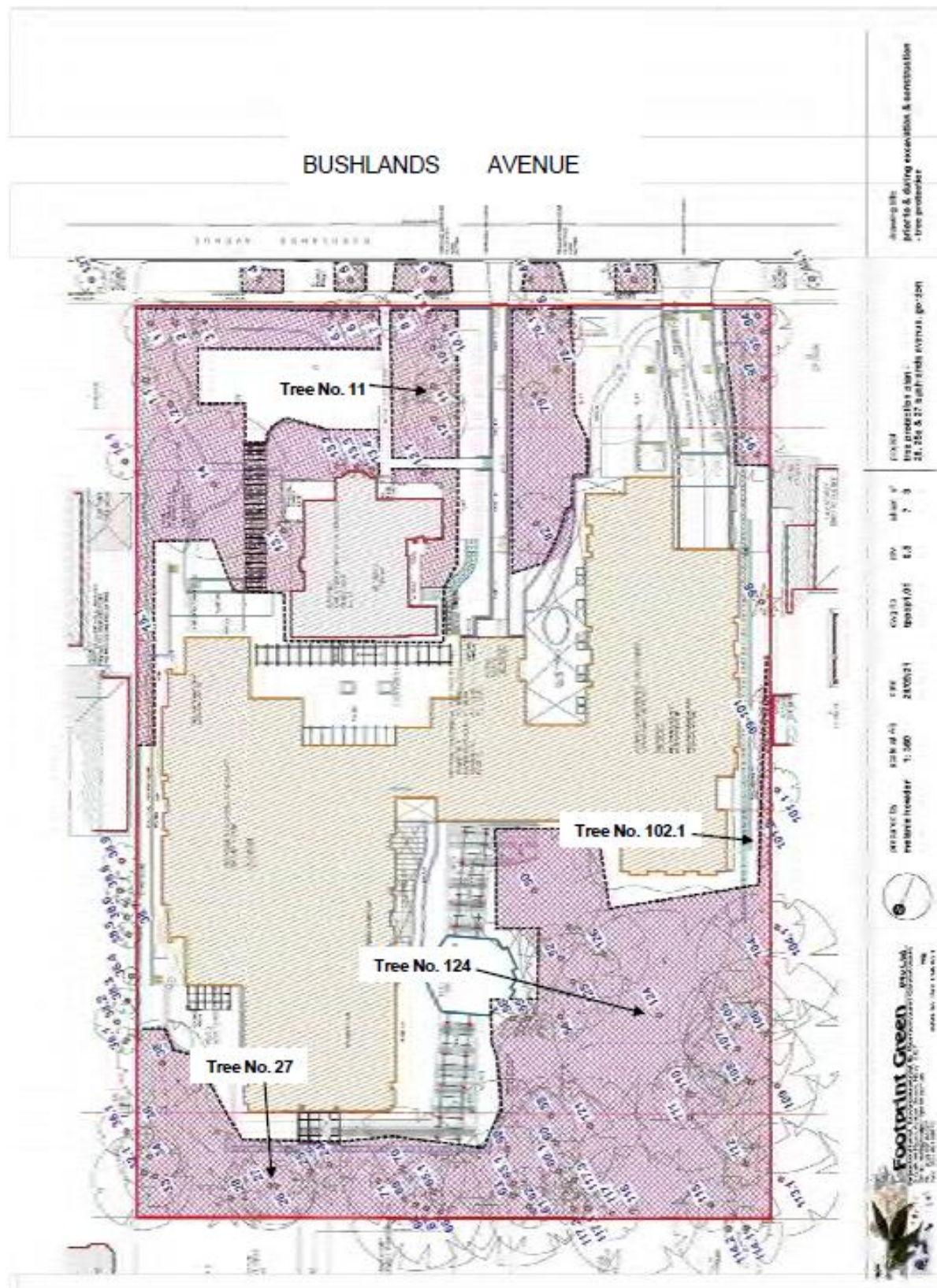
12. Appendices

Appendix A. Extract from Tree Protection Plan (Footprint Green 2021) showing the locations of the subject trees.

Appendix B. BAM Site - Field Survey Forma (copied directly from Electronic Data Sheet).

Appendix C. BAMC Generated Biodiversity Credit Report.

Appendix A. Extract from Tree Protection Plan (Footprint Green 2021) showing the locations of the subject trees.



Appendix B. BAM Site - Field Survey Form (copied directly from Electronic Data Sheet).

BAM Site – Field Survey Form					
Date:	12.05.2024	Plot ID:	plot 1	Photo #:	0
Zone:	56 H	Plot Dimensions:	50x20	Easting:	328612.03
Datum:	GDA94	Middle bearing from 0m:	49	Northing:	6263031.38
PCT:	Vegetation Zone 1: PCT 3626 - Low Condition (Dying Trees)				

Growth Form	Scientific Name	Cover	Abundance
Tree (TG)	<i>Eucalyptus pilularis</i>	2	1
Exotic	<i>Alstroemeria aurea</i>	1	30
HTE	<i>Phoenix canariensis</i>	1	1
Exotic	<i>Viburnum odoratissimum</i>	0.2	5
Exotic	<i>Acanthus mollis</i>	0.1	4
HTE	<i>Tradescantia fluminensis</i>	1	10
#N/A	<i>Murraya paniculata</i>	1	2
Shrub (SG)	<i>Syzygium australe</i>	2	6
Tree (TG)	<i>Syncarpia glomulifera</i>	5	3
Tree (TG)	<i>Grevillea robusta</i>	3	1
#N/A	<i>Monstera deliciosa</i>	1	3
HTE	<i>Cestrum parqui</i>	0.1	4
Grass & grasslike (GG)	<i>Lomandra spp.</i>	0.2	5
Exotic	<i>Camellia japonica</i>	0.3	4
Exotic	<i>Metrosideros excelsa</i>	0.2	8
Exotic	<i>Celtis sinensis</i>	4	2
Other (OG)	<i>Archontophoenix cunninghamiana</i>	2	5
Forb (FG)	<i>Dichondra repens</i>	0.1	100
Grass & grasslike (GG)	<i>Cyperus gracilis</i>	0.2	100
Exotic	<i>Conyza spp.</i>	0.1	5
Exotic	<i>Anagallis arvensis</i>	0.1	10
HTE	<i>Cyperus eragrostis</i>	0.1	4
Grass & grasslike (GG)	<i>Oplismenus aemulus</i>	0.1	10
Exotic	<i>Gamochaeta spp.</i>	0.1	20
Exotic	<i>Stachys arvensis</i>	0.1	10
HTE	<i>Ehrharta erecta</i>	0.1	10
Exotic	<i>oxalis corniculata</i>	0.1	30
Exotic	<i>Sida rhombifolia</i>	0.1	5
Exotic	<i>Strelitzia nicolai</i>	0.1	3
Exotic	<i>Solanum lycopersicum</i>	0.1	4
Exotic	<i>Soliva sessilis</i>	0.1	3
Exotic	<i>Solanum nigrum</i>	0.1	10

Exotic	<i>Modiola caroliniana</i>	0.1	4
Exotic	<i>Passiflora edulis</i>	0.1	1
Forb (FG)	<i>Dianella caerulea</i>	0.1	3
Forb (FG)	<i>Geranium homeanum</i>	0.1	10
Exotic	<i>Sonchus asper</i>	0.1	2
Exotic	<i>Cirsium vulgare</i>	0.1	1
Exotic	<i>Cordyline australis</i>	0.3	3
Exotic	<i>Tarenaya hassleriana</i>	0.1	1
HTE	<i>Senna pendula</i>	0.1	1
Grass & grasslike (GG)	<i>Lomandra longifolia</i>	0.2	6

DBH	# Tree Stems Count	# Hollow Bearing Trees
80+cm	2	2
50-79cm	0	0
30-49cm	present	0
20-29cm	present	0
10-19cm	present	0
5-9cm	absent	0
<5cm	present	0

Length of Logs (m)	2
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BAM Attribute (1x1m)	Litter Cover (%)
1 (5m)	80
2 (15m)	50
3 (25m)	30
4 (35m)	40
5 (45m)	60
Average	52

Growth Form	Composition Data (Count of Native Cover)	Structure Data (Sum of Cover)
Tree	3	10
Shrub	1	2
Grass	4	0.7
Forb	3	0.3
Fern	0	0
Other	1	2
High Threat Exotics	6	2.4



BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00040476/BAAS21009/23/00040477	25 Bushlands Ave Gordon	14/04/2023
Assessor Name	Assessor Number	BAM Data version *
Christopher Moore	BAAS21009	58
Proponent Names	Report Created	BAM Case Status
	26/05/2023	Finalised
Assessment Revision	Assessment Type	Date Finalised
0	Part 4 Developments (Small Area)	26/05/2023
BOS entry trigger	* 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.	
BOS Threshold: Biodiversity Values Map		

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

Assessment Id	Proposal Name	Page 1 of 4
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BAM Biodiversity Credit Report (Like for like)

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

No Changes

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

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

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BAM Biodiversity Credit Report (Like for like)

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	Yes	1	Cumberland, Burragorang, Pittwater, Sydney Cataract, Wollemi and Yengo. 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

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BAM Biodiversity Credit Report (Like for like)

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Proposal Name

25 Bushlands Ave Gordon

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