ECOLOGY | OFFSETS | BUSHFIRE | ARBORICULTURE

Our Ref: **3550**

Date: **12 September2024**

To **Isaac Property Developments Pty Ltd**
C/O Megan Naylor (H&M Architects)

Via Email megann@h-e.com.au

Dear Megan,

Re: Ecological Assessment Report for a Proposed Development at 40 Myoora Road (Lot 180 DP752017), Terrey Hills NSW 2084

As requested, Anderson Environment & Planning (AEP) herewith provide an Ecological Assessment Report (EAR) to detail the impact of the development, comprising a proposed village-like array of buildings providing a multitude of hospitality offerings across the 1.596ha site.

The EAR is specifically intended to identify any impacts on biodiversity as a result of the development. The information contained within this report has been generated from a site inspection and desktop assessment of available information, combined with professional judgement.

Literature Review

Primary information sources reviewed include:

- Aerial Photograph Interpretation (API) of the site and surrounding locality;
- Regional mapping prepared as part of the SVTM (2023);
- NSW Biodiversity Values Map (accessed July 2024) https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap;
- DPE Important Habitat Mapping (2021);
- OEH BioNet Vegetation Classification website (accessed July 2024) https://www.environment.nsw.gov.au/NSWVCA20PRapp; and
- OEH BioNet Threatened Biodiversity Profiles (accessed July 2024) https://www.environment.nsw.gov.au/AtlasApp.

In addition, database searches were carried out, namely:

- Review of flora and fauna records held by the NSW Office of Environment & Heritage (OEH) BioNet Atlas of NSW Wildlife within 1.5km of the site (July 2024) https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet; and
- Protected Matters Search within a 5km radius of the site on Commonwealth Department of Agriculture, Water and Environment (DAWE) (July 2024) https://www.environment.gov.au/epbc/protected-matters-search-tool.

Table 1 below provides a summary of the site characteristics.

Table 1 – Site Summary

Detail	Comments
Client	Isaac Property Developments Pty Ltd C/- Megan Naylor (H&E Architects)
Address	40 Myoora Road, Terrey Hills, NSW 2084 (**Attachment A, Figure 1**)
Proposal	The proposal is for a commercial development comprising three restaurants, with terrace dining and extensive kids play area (**Attachment A, Figure 2**).
LGA	Northern Beaches Council
Zoning	The Subject Site is zoned RU4 - Primary Production Small Lots under the Warringah Local Environmental Plan 2011 (the LEP),
Minimum Lot Size	The minimum lot size is 2ha.
Subject Site	The Subject Site consists of lands within Lot 180 DP752017 and totals approx. 1.596ha.
Site Description and usage	The Subject Site is in a highly disturbed condition with the majority of the site being previously cleared, and utilised for domestic landscaping, small-scale horticulture and livestock rearing. The south-eastern half of the site comprised three built structures: a single storey brick built residential building with concrete tiled roof, small concrete hard standing footpaths and a bitumen driveway. In addition, a small livestock paddock housing goats and foul was also present, as well as a polytunnel and numerous bee hives. The central portion of the site extending towards the north-west comprised recently mown grassland dominated by non-native species. The north-western portion of the site comprised a large area of bare and disturbed ground, utilised for storage of a number of vehicles, machinery and materials as well as a single shipping container.
BOS Clearing Threshold Trigger	The minimum lot size for the Subject Site is 2ha. The area clearing threshold for minimum lots sizes that are less than 40ha but >1ha is 0.5ha. The total area of planted native vegetation proposed for removal is 0.15ha (**Attachment A, Figure 6**). Therefore, the current proposal is below the clearing threshold of 0.5ha.
Biodiversity Values Mapping	The Biodiversity Values Map (BV Map) tool identifies land with high biodiversity value, as defined by the Biodiversity Conservation Act Regulations (BCR). The Biodiversity Offsets Scheme (BOS) applies to all local developments, major projects or the clearing of native vegetation where the State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 applies. Any of these will require entry into the BOS if they occur on land mapped on the Biodiversity Values Map. Exempt and complying development or private native forestry are not subject to the BOS. The BOSET report for the proposed Subject Site does not include “Biodiversity Values” mapped land (**Attachment B**). Therefore, this proposal does not trigger the application of the BOS under this criterion. Considering the Site is under the clearing threshold and does not contain BV mapped land, a Five-Part Test can be undertaken as per Section 7.3 of the *Biodiversity Conservation Act 2016.*

Detail	Comments
State Environmental Planning Policy (Resilience and Hazards) 2021 **(RH SEPP)**	A review of the SEPP (Resilience and Hazards) data set was undertaken, to identify any relevant considerations in relation to Chapter 2 of the RH SEPP. This review did not identify any relevant considerations for the Subject Site, as such this instrument is not discussed in further detail.
Water Management Act 2000 **(WM Act** ***Water Management Regulation 2018*** **(WM Reg)**	No waterfront land occurs within the boundaries of the site. No further consideration will be needed.
Regional Vegetation Mapping (SVTM 2023)	No vegetation communities occurring on State Vegetation Type Map 2023 (STVM 2023) are identified within the boundaries of the site.
Site Vegetation	The Subject Site is disturbed with a high proportion being cleared, as part of previous land use. More intact vegetation is present in the northwestern portion of the site, which contains significant weed infestation. **BAM Plot 1** was located in the central area of the site to ascertain the community type of the grassed area. Only one (1) native species were found in this plot, *Juncus usitatus* (Common Rush). The grassland comprised mainly of *Plantago lanceolata* (Lamb's Tongues), *Trifolium repens* (White Clover), *Cenchrus clandestinus* (Kikuyu Grass) and *Paspalum dilatatum* (Paspalum), therefore the grassed area is classed as exotic. **BAM Plot 2** was located in the northwestern part of the site amongst a small area of canopy. Several native species were found in this plot, however there is a high weed load throughout all strata and vegetation is dominated by *Ligustrum lucidum, Ligustrum sinense, Lantana camara, Lonicera japonica, Ehrharta erecta* and *Tradescantia fluminensis.* The native canopy present within this plot is identified as *Eucalyptus grandis* (Flooded Gum). This species is not associated with any Plant Community Type (PCT) identified within Sydney as it is not a locally occurring species. Additionally, the species is found primarily within tall wet forest or rainforest margins along valley floors north of Newcastle, meaning the species has most likely been previously planted. Therefore, the vegetation within this plot is classed as Planted Native. Similarly, non-naturally occurring native trees have been planted in the south-eastern sections of the property. This area covers 0.15ha of the site. One (1) Rapid Data Point was conducted within the grassland to ground truth the presence of exotic grasses. A full species list is included in **Attachment C**. Site photos can be viewed in **Attachment F**.

Flora and Fauna Assessment

The field surveys for the site were prepared and performed with due recognition of the State Survey Guidelines (DEC 2004; DECC 2009; OEH 2018, DPIE 2020). The size of the site, the type of native vegetation and habitats present, the status of existing and proposed surrounding land use and the level and type of habitat linkages to proximate bushland areas were considered in formulating the methodology employed and described below.

Given that minimal vegetation is to be removed/modified as part of the proposal, the below surveys are considered appropriate to characterise the biodiversity values of the Subject Site. In addition to the survey work conducted within the Subject Site and immediate surrounds (Refer **Figure 5**), consideration has been afforded to the wider locality, via database searches within 10km of the site and consideration of habitat areas that may be linked ecologically to the site. Survey efforts undertaken are outlined in **Table 2** below.

Table 2 – Survey Methodology

Group	Survey Technique	Survey Effort	Target species	Effort Undertaken and Comments
Flora	Random Data point (RDP) & 2x BAM Plots	Floristic survey to cover the sections of the Subject Site.	Identify any threatened flora species and any TEC.	One (1) RDP was undertaken to ground-truth vegetation mapping. A detailed flora list was compiled for the site (refer **Attachment C).** No threatened species were identified during survey, and the majority of the site is cleared/exotic with a few canopy trees. Two (2) BAM Plots were undertaken to ascertain any PCT association with the vegetation on site. As the predominant vegetation on site consists of exotic species, both planted and invasive, with a small number of planted native trees, no association with any known PCT was found.
Habitat	Habitat Assessment	Detailed assessment of all the trees within the proposed development area containing tree hollows and ground habitat.	Tree species present on site containing visible hollows	Trees visually inspected to determine presence of hollows in April 2024. Two (2) HBT's were found within the Subject Site however the height at which these hollows occur was below 2m.
General	Habitat Assessment	Assessment of all species potentially occurring.	All species.	Random meander was undertaken across the Subject Site in April and July 2024. The habitat value of the Subject Site is considered very low. Very minimal ground habitat is present (fallen logs <10cm DBH, leaf litter etc) and only marginal foraging for highly mobile species is to be found.
All Mammals & Aves	Random Meander / Incidental	Opportunistic observations of fauna	All species	No threatened fauna was identified during survey. No evidence of species presence (scats, tracks, scratching or marking) were observed.

Database Searches

Searches were undertaken of databases within a 1.5km radius of the Subject Site for BC Act listings and 5km radius for EPBC Act listings. Note that any records considered erroneous, historic only, or obviously of no relevance to the site in regards to habitat (e.g., seabirds, marine species, etc.) were omitted.

The potential for listed threatened species to occur within the site was considered and the table containing such can be found attached at the end of this letter (See **Attachment E**).

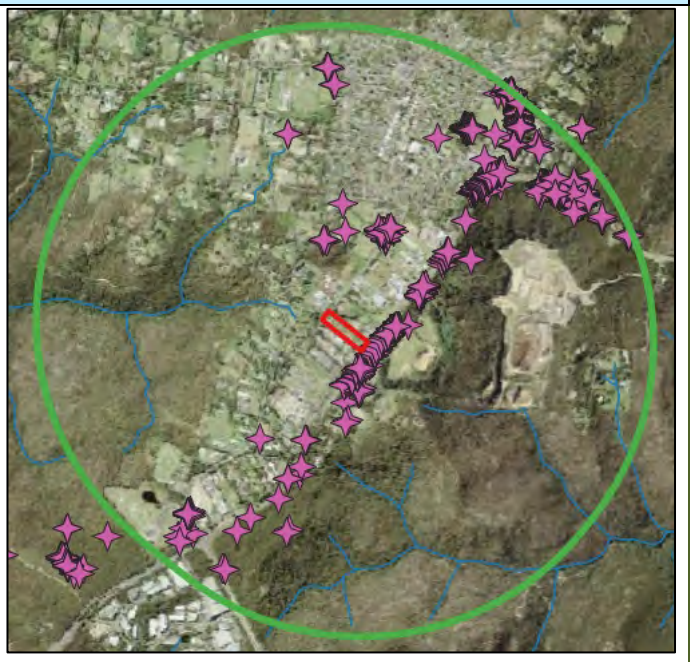
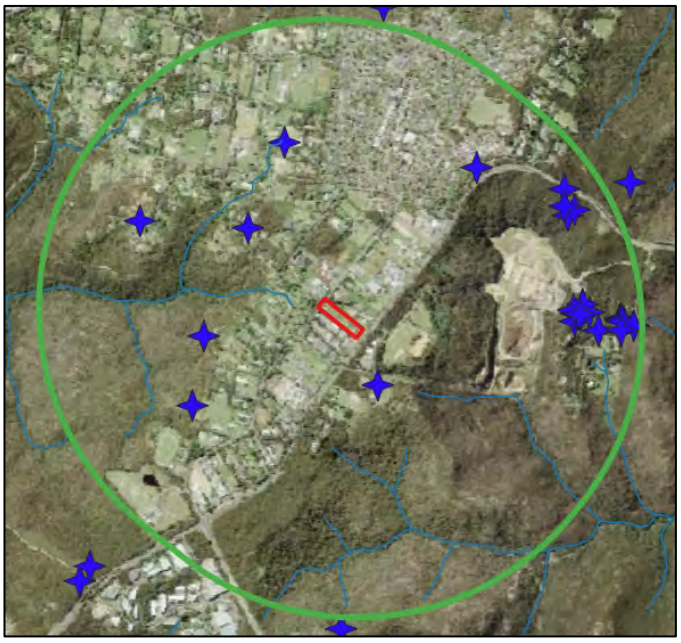
Detailed ecological profiles of threatened species can be found at https://www.environment.nsw.gov.au/threatenedspeciesapp/.

Subject Species

The Likelihood of Occurrence Assessment is provided in **Attachment E**. As the proposed development has the potential to impact only a small amount of planted native vegetation, impacts to threatened species are considered to be marginal to low. The species in **Table 3** were assessed against the Five-Part Test as prescribed by *Section 7.3* of the BC Act.

Table 3 – Key Species Analysis

Guild / Species	Key Habitat Feature	Comment
Angus's Onion Orchid *Microtis angusii*	Reason for inclusion	The species is known to occur within disturbed habitats and road verges within the Terrey Hills locality. Suitable habitat for this species exists within the site.  **Above - *Microtis angusii* BioNet records within 1.5km of the site**
	Habitat assessment	Disturbed areas exist within the northern portion of the site with road verges comprising the north-western and south-eastern site boundaries.
	Connectivity & Patch Size	Known populations exist along the northern road verge associated with Mona Vale Road within Terrey Hills, which lies adjacent to the Subject Site.
Caley's Grevillea *Grevillea clayey*	Reason for inclusion	Abundance and proximity of local BioNet records to the Subject Site.

Guild / Species	Key Habitat Feature	Comment
		 **Above - *Grevillea cagey* BioNet records within 1.5km of the site**
	Habitat assessment	The degraded nature and dominance of non-native species throughout the Subject Site offers poor habitat suitability for this species.
	Connectivity & Patch Size	There are a large number of BioNet records in proximity to the site including a dense stand of the species approximately 40m to the south-east of the Subject Site.
Tetratheca glandulosa	Reason for inclusion	Abundance and proximity of local BioNet records to the Subject Site. 

Guild / Species	Key Habitat Feature	Comment
		Above - *Tetratheca glandulosa* BioNet records within 1.5km of the site
	Habitat assessment	The degraded nature and dominance of non-native species throughout the Subject Site offers poor habitat suitability for this species.
	Connectivity & Patch Size	There are a large number of BioNet records in proximity to the site with a dense population located within the western Terrey Hills locality and multiple scattered records surrounding the Subject Site. The breeding system of this species is not well understood however, the dispersed nature of the identified records and proximity to the Subject Site suggest potential for colonisation of suitable niches on site is possible.
Eastern Pygmy-possum *Cercartetus nanus*	Reason for inclusion	Abundance and proximity of local BioNet records to the Subject Site. The species is known to occupy small patches of vegetation within fragmented landscapes.  **Above - *Cercartetus nanus* BioNet records within 1.5km of the site**
	Habitat assessment	Although the site is degraded and largely dominated by non-native species, the small area of eucalypt canopy found on site may offer potential habitat to support a small population of this species.
	Connectivity & Patch Size	The majority of BioNet records are associated with dense woodland/shrub within the wider area, particularly to the south and south-west of the site. A small number of records exist throughout the sub-urban surroundings of the Subject Site, the closest located approximately 0.1km away.

5 - Part Test Assessment

Section 7.3 of the BC Act lists five factors that must be taken into account when determining the significance of potential impacts of proposed activities on threatened species, populations, ecological communities and/or their habitats as listed within the BC Act.

The 5-part test is used to determine whether there is likely to be a significant impact, and thus whether the Biodiversity Offsets Scheme (BOS) is triggered.

Table 4 – 5 Part Test

Section of BC Act 7.3	Requirement	Assessment
a)	*in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.* *Including:* ● *Microtis angusii* ● *Grevillea caleyi* ● *Tetratheca glandulosa* ● Eastern Pygmy-possum	The majority of the Subject Site is comprised of exotic vegetation, including plant nurseries and landscaping. No threatened species were recorded on site, nor considered likely to be present. However, taking a precautionary approach, the following species were assessed: <u>Flora</u> ● Angus's Onion Orchid *Microtis angusii* ● Caley's Grevillea *Grevillea caleyi* ● *Tetratheca glandulosa* Habitat assessment of the Subject Site has confirmed that there is marginal habitat for these species. A full traversal of the site was conducted and did not record any of these species onsite. The disturbed nature of the site and dominance of non-native species throughout the site makes it unlikely these species would be present and therefore unlikely to be significantly impacted by the proposal or placed at risk of extinction within the locality. <u>Fauna</u> Eastern Pygmy-possum *Cercartetus nanus* The site offers sub-optimal habitat for this species however, this species is known to occupy small patches of vegetation within fragmented landscapes. The presence of Eucalypts being sufficient to support small populations. A large number of records were identified within 1.5km of the site, the vast majority of which being associated with dense woodland/shrubland and relatively few records within the fragmented sub-urban Terrey Hills locality. Whilst the species may be supported by the site, it is more likely to represents marginal

Section of BC Act 7.3	Requirement	Assessment
		habitat within the context of the wider landscape. Given the marginal nature of the site, this species is unlikely to be significantly impacted by the proposal or placed at risk of extinction within the locality.
b)	*in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:* *is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*	No areas of vegetation occurring on site were ascertained to be associated with any known PCTs within the Sydney Basin Bioregion. As such, this development is not anticipated to place any ecological community at risk of extinction.
	is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction	
c)	*in relation to the habitat of a threatened species or ecological community:* *the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and*	Only 0.15ha of planted vegetation will be impacted by the proposed development. No significant impacts to threatened species or ecological communities are anticipated as part of this proposal.
	Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and	Only 0.15ha of planted native vegetation is to be removed/modified as part of the development. Impacted vegetation is already fragmented due to past land uses on the site, however, the vegetation to be retained is of higher quality and is connected to larger areas outside the Subject Site. Furthermore, large swathes of better-quality vegetation along Kierans Creek are protected.
	the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality.	Due to the small area of native vegetation located within the Subject Site, the location of the habitat, and the disturbed nature of the area; significant impacts to local ecological communities are not expected. Larger, intact patches of native vegetation exist outside the site The proposal will not impact on the long-term survival of any threatened species or ecological community in the locality.
d)	*Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)*	The Subject Site is not within an area of outstanding biodiversity value.
e)	*Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process (KTP)*	Native vegetation to be impacted is minimal and in a highly modified condition. Impacts to KTPs such as Anthropogenic Climate Change and

Section of BC Act 7.3	Requirement	Assessment
		Native Vegetation clearing are considered to be marginal.

State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 4 Koala Habitat Protection 2021

State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BC SEPP) commenced on the 1st March 2022, under the Environmental Planning and Assessment Act 1979, and repealing the previous State Environmental Planning Policy (Koala Habitat Protection) 2020 and State Environmental Planning Policy (Koala Habitat Protection) 2021. This Policy aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.

The land which comprises the Subject Site has no approved koala plan of management (KPoM). According to the BC SEPP 2021, the policy applies if:

4.9 Development assessment process—no approved koala plan of management for land

(1) This clause applies to land to which this Policy applies if the land—

(a)has an area of at least 1 hectare (including adjoining land within the same ownership), and

(b)does not have an approved koala plan of management applying to the land.

The land within the Subject Site requires further assessment process as the land has an area of >1ha.

Assessment

Whilst, site inspections identified that trees belonging to the koala use tree species listed in Schedule 2 for the relevant koala management area were located on site, surveys identified no scats, scratching's, markings or presence of koala use.

The Subject Site is located within a fragmented sub-urban landscape comprising lots largely cleared of trees and shrubby vegetation. One small area of planted native canopy exists within the northern corner of the site. There is no continuous tree or shrub cover linking the Subject Site with the expansive forest habitats within the wider landscape. Furthermore, Mona Vale Road and Myoora Rd present a significant dispersal barrier at the southeastern northwestern boundaries of the site. Only 1 BioNet record from 1967 exists within 1.5km of the site, further suggesting that presence of Koalas and usage of the site is highly unlikely.

Considering these factors, the site is not considered to constitute core koala habitat, and it is not anticipated that the proposal will impact koalas in the present or future.

EPBC Act Assessment

A search was conducted in April 2024 of Matters of National Environmental Significance (MNES) as relevant to the *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act). The following MNES are considered in this assessment.

World Heritage Properties:

The site is not a World Heritage area and is not in close proximity to any such area.

National Heritage Places:

The site is not a National Heritage Place and does not contain any matters of national heritage. However, Ku-ring-gai Chase National Park, Lion, Long and Spectacle Island Nature Reserves are located approximately 0.85km from the Subject Site at its closest point.

Wetlands of International Significance (declared Ramsar wetlands):

The site does not contain Ramsar wetland.

Great Barrier Reef Marine Park:

The site is not part of, or within close proximity to, the Great Barrier Reef Marine Park.

Commonwealth Marine Areas:

The site is not part of, or within close proximity to, any Commonwealth Marine Area.

Threatened Ecological Communities:

Ten (10) Threatened Ecological Communities are listed as potentially present within 5km of the site;

- EEC - *Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion;*
- EEC – *Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community;*
- EEC – *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland;*
- EEC – *Coastal Upland Swamps in the Sydney Basin Bioregion;*
- CEEC – *Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion;*
- CEEC – *Eastern Suburbs Banksia Scrub of the Sydney Region;*
- CEEC - *River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria;*
- CEEC – *Shale Sandstone Transition Forest of the Sydney Basin Bioregion;*
- CEEC - *Subtropical and Temperate Coastal Saltmarsh; and*
- CEEC - *Western Sydney Dry Rainforest and Moist Woodland on Shale.*

TEC Assessment

Vegetation on site was not found to be associated with any known PCT, as such, no assessment of TEC was needed in this instance.

Threatened Species:

A total of 100 threatened fauna or flora listed under the EPBC Act are predicted to occur on, or within 5km of the site. However, no EPBC Act listed threatened flora or fauna species have been identified on site.

Migratory Species:

A total of 47 listed migratory species have been predicted to occur on, or within 5km of the site. There is potential for some of the migratory species listed in the EPBC Act to visit the site on an irregular

basis. However, it is considered that the proposal is unlikely to significantly affect the availability of potential habitat for such mobile species, or disrupt migratory patterns.

EPBC Act Assessment Conclusion:

Consideration of the EPBC Act revealed that it is unlikely that significant impacts on Matters of National Environmental Significance will occur as a result of the proposal. As such a referral is not considered likely to be necessary.

Recommendations

Through the assessments undertaken, it has been determined that the proposal is unlikely to have significant impacts on the ecological communities and threatened species. General recommendations are made for consideration to mitigate potential impacts on local biodiversity as a result of the development of the site.

Clearing Protocols

- A staged approach to clearing is to be undertaken to provide fauna the opportunity to disperse outside the area of impact. Staging to include;

  (i) Phase 1 Clearing: Underscrubbing;
  (ii) Phase 2 Clearing: Removal of non-habitat trees;
  (iii) Phase 3 Clearing: Removal of habitat and connecting trees; and
  (iv) All clearing works (Phase 1, 2 and 3) to be undertaken under the supervision of the Project Ecologist;

- Clearing should occur in a direction from previously disturbed lands towards retained lands;
- All clearing works to be attended by a suitably equipped and experienced ecologist to deal appropriately with any displaced fauna species;
- All hollow bearing features (if located on site following pre-clearance surveys) will be sectionally lowered by tree climbers (where safe to do so);
- Any fauna rescued during vegetation clearing is to be assessed for injuries, and subsequently released to a suitable nearby location; this may require holding fauna until dusk for release in accordance with relevant animal ethics licencing and standards;
- If any fauna is injured during vegetation clearing, they are to be taken promptly to a nearby veterinarian or suitable wildlife carer contact;
- In addition, prior to clearing of any vegetation, an ecologist is to inspect the area for any signs of resident fauna requiring attention, and in particular nesting birds. Where such is identified, appropriate strategies are to be developed and instigated to minimise impacts. Pre-clearance surveys to include diurnal surveys, stag watching and nocturnal surveys; and
- Civil Construction staff to be inducted into pre-clearing and clearing protocols, and to identify environmental features for protection.

Summary

Consideration has been given to the EP&A Act, BC Act, EPBC Act and other applicable legislation.

Given the nature of the proposed development and the small area of impact, it is considered that there will be minimal impacts associated with this development and no significant impacts to threatened species or ecological communities are anticipated.

We trust this information meets your requirements. Should you require any further details or clarification, please contact the writer.

Yours faithfully,

Anderson Environment & Planning

Jeremy Burrill

Ecologist / Project Manager

0487 154 036

Attachment A: Figures

Attachment B: BOSET Report

Attachment C: Flora List

Attachment D: Observed Fauna List

Attachment E: Likelihood of Occurrence Assessment

Attachment F: Site Photos

Attachment G: Authors' CV's

Attachment A: Figures

AEP

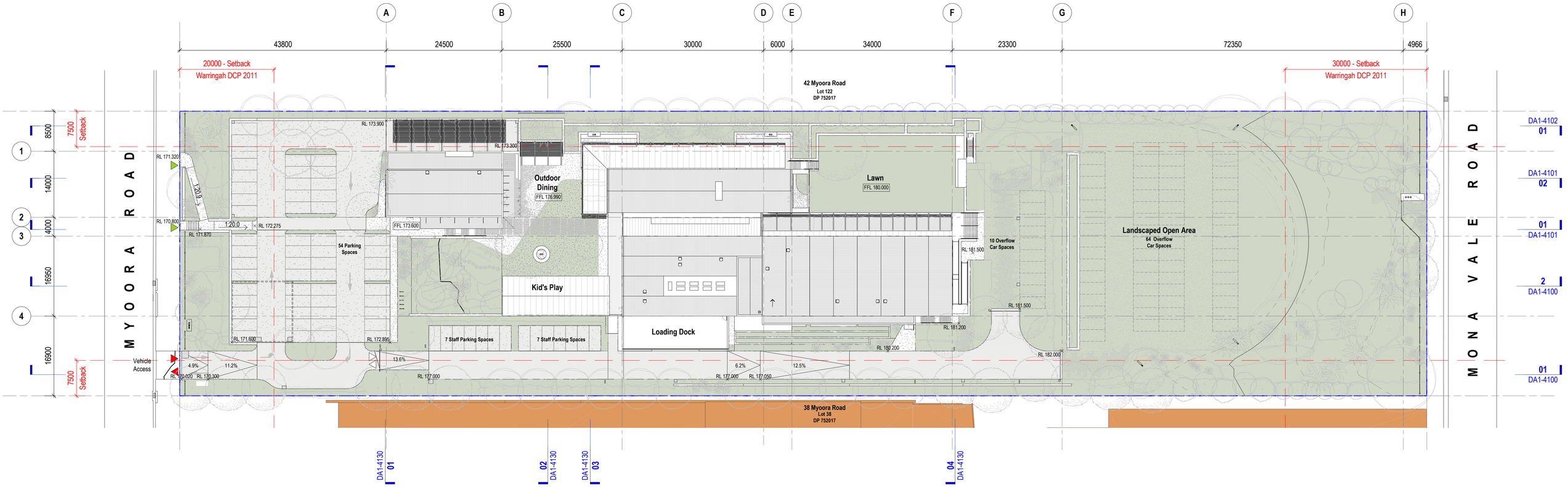
Figure 1 - Site Location

Date: September 2024

Location: 40 Myoora Road, Terrey Hills NSW 2084

Client: H & E Architects

AEP ref: 3550



DA Legend

UNO the general extent and location of alterations or additions, including demolition is indicated accordingly:

- Proposed new building fabric
- Area of proposed demolition
- Neighbouring Light Industrial Buildings
- Neighbouring Residential Buildings
- Subject to final layout this area is to comply with Australian Standard 4674-2004; Design, construction and fit out of food premises. Refer to DA1-1200.

For Development Approval

General Notes

Rev	Date	Amendments
01	28.09.23	Preliminary Issue for Information
02	16.10.23	Issue for Information
03	27.10.23	Issue for Information
04	31.10.23	Issue for Information
05	19.03.24	Consultant Issue
06	02.04.24	Issue for Information: Pre-DA Meeting
07	03.05.24	Issued for Landscape Coordination
08	21.05.24	Issue for Information: Design and Sustainability Advisory Panel

Rev	Date	Amendments
09	26.07.24	Issue for Information
10	14.08.24	Issue for Information
11	03.09.24	For Development Approval

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www.h-e.com.au
PO Box 490 Darlinghurst NSW 1300
Humphrey & Edwards Pty Ltd | ABN 89056638227
Nominated Architect: Glenn Cunnington #6415

Project
40 Myoora Road

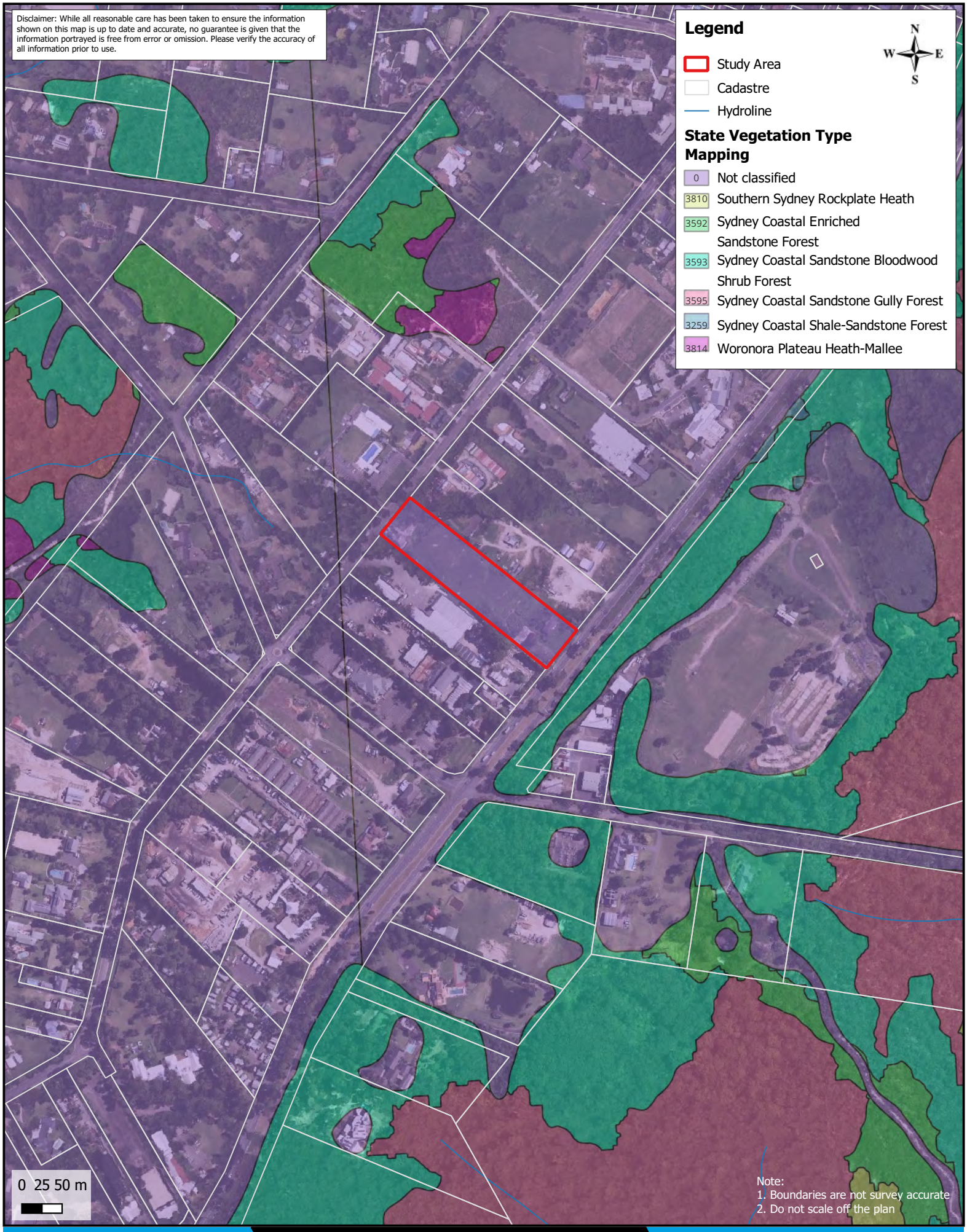
Client
Gardoxi P/L (Norwest)

Location
40 Myoora Road, Terrey Hills NSW 2084

Drawing
Site Plan - Proposed

Scale @ A1	1:400	Drawn by	Checked by
Scale @ A3	1:800		
Project Start Date	Issue Date	Sheet Issue Date	03/09/24
Project #	2725		
Drawing #	DA1-0500	Rev	11

4/09/2024 9:32:09 AM



AEP

Figure 3 - State Vegetation Type Mapping (DPE, 2023) Date: September 2024

Location: 40 Myoora Road, Terrey Hills NSW 2084

Client: H & E Architects AEP ref: 3550

AEP

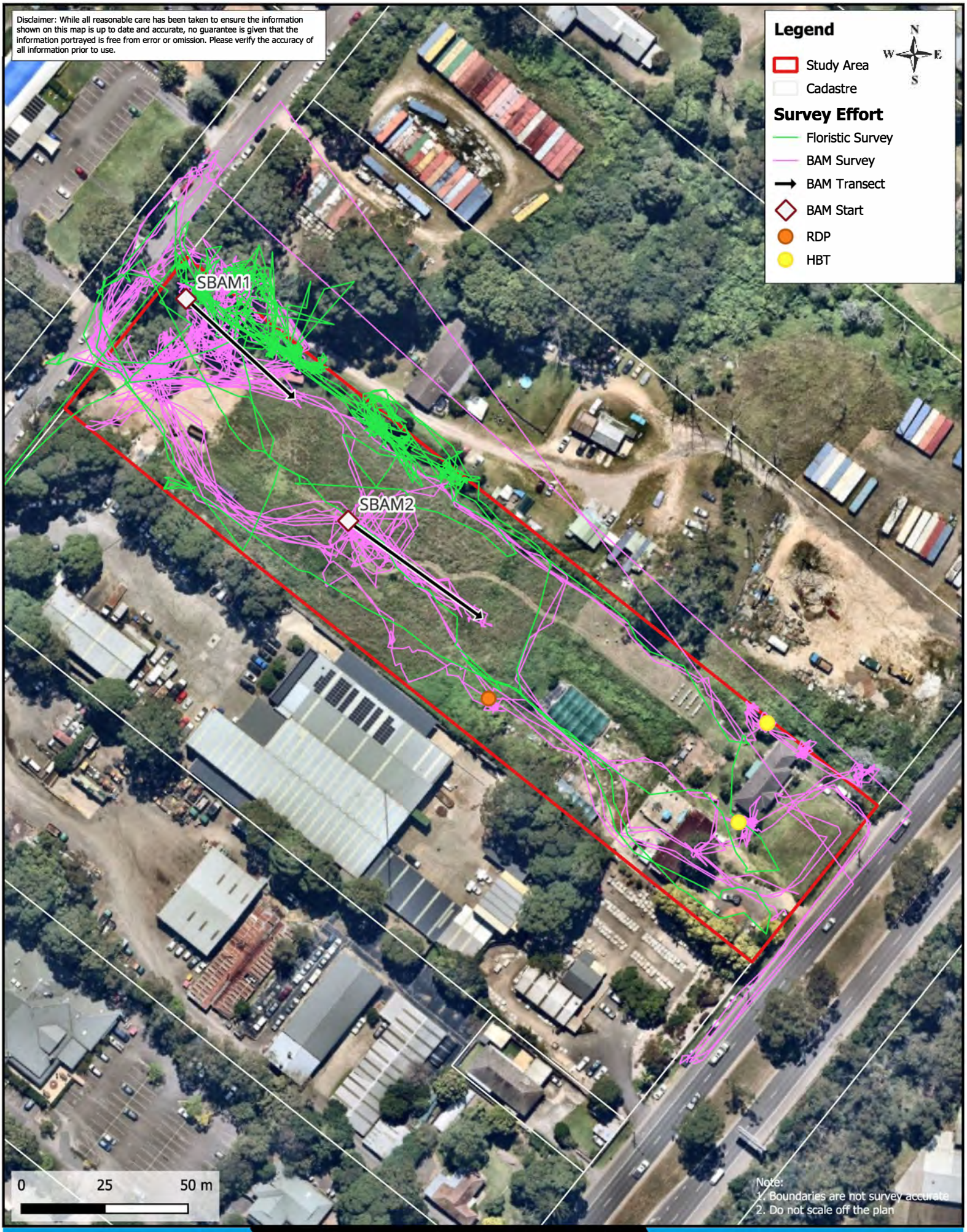
Figure 4 - Ground-Truthed Vegetation

Date: September 2024

Location: 40 Myoora Road, Terrey Hills NSW 2084

Client: H & E Architects

AEP ref: 3550



AEP

Figure 5 - Survey Effort

Date: September 2024

Location: 40 Myoora Road, Terrey Hills NSW 2084

Client: H & E Architects

AEP ref: 3550

Attachment B: BOSET Report

Department of Planning and Environment

Biodiversity Values Map and Threshold Report

This report is generated using the Biodiversity Values Map and Threshold (BMAT) tool. The BMAT tool is used by proponents to supply evidence to your local council to determine whether or not a Biodiversity Development Assessment Report (BDAR) is required under the Biodiversity Conservation Regulation 2017 (Cl. 7.2 & 7.3).

The report provides results for the proposed development footprint area identified by the user and displayed within the blue boundary on the map.

There are two pathways for determining whether a BDAR is required for the proposed development:

1. Is there Biodiversity Values Mapping?
2. Is the 'clearing of native vegetation area threshold' exceeded?

Biodiversity Values Map and Threshold Report

Date of Report Generation		12/09/2024 10:33 PM
1. Biodiversity Values (BV) Map - Results Summary (Biodiversity Conservation Regulation Section 7.3)		
1.1	**Does the development Footprint intersect with BV mapping?**	no
1.2	Was ALL BV Mapping within the development footprinted added in the last 90 days? (dark purple mapping only, no light purple mapping present)	no
1.3	**Date of expiry of dark purple 90 day mapping**	N/A
1.4	**Is the Biodiversity Values Map threshold exceeded?**	no
2. Area Clearing Threshold - Results Summary (Biodiversity Conservation Regulation Section 7.2)		
2.1	**Size of the development or clearing footprint**	15,590.9 sqm
2.2	**Native Vegetation Area Clearing Estimate (NVACE)** (within development/clearing footprint)	4,694.8 sqm
2.3	**Method for determining Minimum Lot Size**	LEP
2.4	**Minimum Lot Size** (10,000sqm = 1ha)	20,000 sqm
2.5	**Area Clearing Threshold** (10,000sqm = 1ha)	5,000 sqm
2.6	**Does the estimate exceed the Area Clearing Threshold?** (NVACE results are an estimate and can be reviewed using the Guidance)	no

REPORT RESULT: Is the Biodiversity Offset Scheme (BOS) Threshold exceeded for the proposed development footprint area? (Your local council will determine if a BDAR is required)	**no**

What do I do with this report?

• If the result above indicates the BOS Threshold has been exceeded, your local council may require a Biodiversity Development Assessment Report with your development application. Seek further advice from Council. An accredited assessor can apply the Biodiversity Assessment Method and prepare a BDAR for you. For a list of accredited assessors go to: https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor.

• If the result above indicates the BOS Threshold has not been exceeded, you may not require a Biodiversity Development Assessment Report. This BMAT report can be provided to Council to support your development application. Council can advise how the area clearing threshold results should be considered. Council will review these results and make a determination if a BDAR is required. Council may ask you to review the area clearing threshold results. You may also be required to assess whether the development is '"likely to significantly affect threatened species" as determined under the test in Section 7.3 of the *Biodiversity Conservation Act 2016*.

• If a BDAR is not required by Council, you may still require a permit to clear vegetation from your local council.

• If all Biodiversity Values mapping within your development footprint was less than 90 days old, i.e. areas are displayed as dark purple on the BV map, a BDAR may not be required if your Development Application is submitted within that 90 day period. Any BV mapping less than 90 days old on this report will expire on the date provided in Line item 1.3 above.

For more detailed advice about actions required, refer to the Interpreting the evaluation report section of the Biodiversity Values Map Threshold Tool User Guide .

Review Options:

• If you believe the Biodiversity Values mapping is incorrect please refer to our BV Map Review webpage for further information.

• If you or Council disagree with the area clearing threshold estimate results from the NVACE in Line Item 2.6 above (i.e. area of Native Vegetation within the Development footprint proposed to be cleared), review the results using the Guide for reviewing area clearing threshold results from the BMAT Tool.

Acknowledgement

I, as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature: _____ Date: _____

(Typing your name in the signature field will be considered as your signature for the purposes of this form)

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Biodiversity Values Map and Threshold Tool

The Biodiversity Values (BV) Map and Threshold Tool identifies land with high biodiversity value, particularly sensitive to impacts from development and clearing.

The BV map forms part of the Biodiversity Offsets Scheme threshold, which is one of the factors for determining whether the Scheme applies to a clearing or development proposal. You have used the Threshold Tool in the map viewer to generate this BV Threshold Report for your nominated area. This report calculates results for your proposed development footprint and indicates whether Council may require you to engage an accredited assessor to prepare a Biodiversity Development Assessment Report (BDAR) for your development.

This report may be used as evidence for development applications submitted to councils. You may also use this report when considering native vegetation clearing under the State Environmental Planning Policy (Biodiversity and Conservation) 2021 - Chapter 2 vegetation in non-rural areas.

What's new? For more information about the latest updates to the Biodiversity Values Map and Threshold Tool go to the updates section on the Biodiversity Values Map webpage.

Map Review: Landholders can request a review of the BV Map where they consider there is an error in the mapping on their property. For more information about the map review process and an application form for a review go to the Biodiversity Values Map Review webpage.

If you need help using this map tool see our Biodiversity Values Map and Threshold Tool User Guide or contact the Map Review Team at map.review@environment.nsw.gov.au or on 1800 001 490.

Biodiversity Values Map

692.3 0 346.16 692.3 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days
- Native Vegetation Area Clearing Estimate (NVACE)
- Development area selected by proponent

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The results provided in this tool are generated using the best available mapping and knowledge of species habitat requirements.

This map is valid as at the date the report was generated. Checking the Biodiversity Values Map viewer for mapping updates is recommended.

Attachment C: Observed Flora List

Family	Scientific Name	Common Name
Asteraceae	*Hypochaeris radicata*	Catsear
Asteraceae	*Senecio madagascariensis*	Fireweed
Asteraceae	*Solidago altissima subsp. altissima*	Goldenrod
Asteraceae	*Sonchus oleraceus*	Common Sowthistle
Brassicaceae	*Brassica fruticulosa*	Twiggy Turnip
Caprifoliaceae	*Lonicera japonica*	Japanese Honeysuckle
Commelinaceae	*Tradescantia fluminensis*	Wandering Jew
Cyperaceae	*Cyperus brevifolius*	
Cyperaceae	*Cyperus eragrostis*	Umbrella Sedge
Dennstaedtiaceae	*Hypolepis muelleri*	Harsh Ground Fern
Dicksoniaceae	*Calochlaena dubia*	Rainbow Fern
Fabaceae (Caesalpinioideae)	*Senna pendula var. glabrata*	
Fabaceae (Faboideae)	*Erythrina crista-galli*	Cockspur Coral Tree
Fabaceae (Faboideae)	*Trifolium repens*	White Clover
Fabaceae (Faboideae)	*Vicia spp.*	Vetch
Juncaceae	*Juncus usitatus*	
Liliaceae	*Lilium formosanum*	Formosan Lily
Lythraceae	*Lythrum hyssopifolia*	Hyssop Loosestrife
Malvaceae	*Sida rhombifolia*	Paddy's Lucerne
Myrtaceae	*Eucalyptus grandis*	Flooded Gum
Oleaceae	*Ligustrum lucidum*	Large-leaved Privet
Oleaceae	*Ligustrum sinense*	Small-leaved Privet
Oxalidaceae	*Oxalis latifolia*	
Pittosporaceae	*Pittosporum undulatum*	Sweet Pittosporum
Plantaginaceae	*Plantago lanceolata*	Lamb's Tongues
Poaceae	*Arundo donax*	Giant Reed
Poaceae	*Cenchrus clandestinus*	Kikuyu Grass
Poaceae	*Cynodon dactylon*	Common Couch
Poaceae	*Ehrharta erecta*	Panic Veldtgrass
Poaceae	*Paspalum dilatatum*	Paspalum
Poaceae	*Setaria parviflora*	
Polygonaceae	*Acetosella vulgaris*	Sheep Sorrel
Polygonaceae	*Persicaria decipiens*	Slender Knotweed
Polygonaceae	*Persicaria hydropiper*	Water Pepper
Polygonaceae	*Rumex crispus*	Curled Dock

Family	Scientific Name	Common Name
Primulaceae	*Lysimachia arvensis*	Scarlet Pimpernel
Solanaceae	*Solanum nigrum*	Black-berry Nightshade
Verbenaceae	*Lantana camara*	Lantana
Verbenaceae	*Verbena bonariensis*	Purpletop
Verbenaceae	*Verbena quadrangularis*	
Zingiberaceae	*Hedychium coronarium*	

Attachment D: Observed Fauna List

Key to Records:

Observed (O), Heard (H), Scat (S), Marking (M), Track (T), Nest (N), Burrow (B)

Scientific Name	Common Name	NSW status	Comm. status	Surveyed Observations
Aves				
Cacatua galerita	Sulphur-Created Cockatoo	P		H
Dacelo novaeguineae	Laughing Kookaburra	P		H
Gallus domesticus	Chicken			OH
Gymnorhina tibicen	Australian Magpie	P		OH
Manorina melanocephala	Noisy Miner	P		OH
Ocyphaps lophotes	Crested Pigeon	P		O
Trichoglossus moluccanus	Rainbow Lorikeet	P		OH
Vanellus miles	Masked Lapwing	P		O
Zanda funereal	Yellow-tailed Black Cockatoo	P		OH
Reptilia				
Eulamprus quoyii	Eastern Water Skink	P		O

Attachment E: Likelihood of Occurrence Assessment

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
Flora							
Epacris purpurascens var. purpurascens		V		2	Recorded from Gosford in the north, to Narrabeen in the east, Silverdale in the west and Avon Dam vicinity in the South. Found in a range of habitat types, most of which have a strong shale soil influence.	The closest BioNet Record is dated from 2020 and is located approx. 0.2km from the Subject Site. The lower-stratum is highly disturbed within the site and is dominated by exotic species. Although surveys were not undertaken during the flowering period, the species was not identified during the site survey. The species is not considered likely to occur within the site.	N
Eucalyptus nicholii	Narrow-leaved Black Peppermint	V	V	1	This species is sparsely distributed but widespread on the New England Tablelands from Nundle to north of Tenterfield, being most common in central portions of its range. Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock.	Conspicuous species – not observed during site survey and preferred habitat is not found within the site, therefore considered highly unlikely to occur.	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
Eucalyptus scoparia	Wallangarra White Gum	E	V	1	In NSW it is known from only three locations near Tenterfield, including Bald Rock National Park. Found in open eucalypt forest, woodland and heaths on well-drained granite/rhyolite hilltops, slopes and rocky outcrops, typically at high altitudes. At lower elevations can occur in less rocky soils in damp situations.	Conspicuous species – not observed during site survey and preferred habitat is not found within the site, therefore considered highly unlikely to occur.	N
Genoplesium baueri	Bauer's Midge Orchid	E	E	1	The species has been recorded from locations between Ulladulla and Port Stephens. Currently the species is known from just over 200 plants across 13 sites. The species has been recorded at locations now likely to be within the following conservation reserves: Berowra Valley Regional Park, Royal National Park and Lane Cove National Park. May occur in the Woronora, O'Hares, Metropolitan and Warragamba Catchments. Grows in dry sclerophyll forest and moss gardens over sandstone.	The closest BioNet record is located approximately 1.4km from the Subject Site. The preferred habitat for this species does not occur within the site therefore it is highly unlikely that the species occurs within the Subject Site.	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
Grevillea caleyi	Caley's Grevillea	CE	CE	2325	Grows in a small restricted area, approximately 8km^2, on Hawkesbury sandstone around Terrey Hills, 20 km or so north of Sydney NSW. It occurs in three major areas of suitable habitat, namely Belrose, Ingleside and Terrey Hills/Duffys Forest within the Ku-ring-gai and Northern Beaches Local Government Areas.	The Subject Site is located on Hawkesbury Sandstone and contains areas of potential habitat for this species. Due to the site conditions and abundance of records in the vicinity, further investigation is warranted.	Y
Melaleuca deanei	Deane's Paperbark	V	V	1	Deane's Paperbark occurs in two distinct areas, in the Ku-ring-gai/Berowra and Holsworthy/Wedderburn areas respectively. There are also more isolated occurrences at Springwood (in the Blue Mountains), Wollemi National Park, Yalwal (west of Nowra) and Central Coast (Hawkesbury River) area. The species occurs mostly in ridgetop woodland, with only 5% of sites in heath on sandstone.	Preferred habitat conditions for this species were not identified within the Subject Site, therefore, considered highly unlikely to occur.	N
Microtis angusii	Angus's Onion Orchid	E	E	2	All currently known records of the species are located within Northern Beaches LGA. All confirmed records of the species are from disturbed areas, with most individuals recorded in road verges. The Ingleside population occurs on soils that have been modified but were originally those of the restricted ridgetop lateritic soils in the	The closest record is located approximately 0.75km from the Subject Site. This species is known to occur in disturbed areas, and road verges within the locality. Therefore, there is the potential for this species to occur on site, particularly within disturbed areas to the north of the site and the road verges located at the north western and south eastern	Y

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
					Duffys Forest - Terrey Hills - Ingleside and Belrose areas. These soils support a specific and distinct vegetation type, the Duffys Forest Vegetation Community which is listed as an endangered ecological community under the TSC Act and ranges from open forest to low open forest and rarely woodland. Exists as subterranean tubers during most of the year. Produces leaves and then flowering stems in late winter and spring and flowers from May to October. By summer, the above ground parts have withered leaving no parts above ground.	boundaries. Further investigation is warranted.	
Persoonia hirsuta	Hairy Geebung	E	E	2	Found in sandy soils in dry sclerophyll open forest, woodland and heath on sandstone. It is usually present as isolated individuals or very small populations.	Preferred habitat conditions for this species were not identified within the Subject Site. Conspicuous species – not observed during site survey therefore considered highly unlikely to occur.	N
Pimelea curviflora var. curviflora		V	V	6	Occurs on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. Also recorded in Illawarra Lowland Grassy Woodland habitat at Albion Park on the Illawarra coastal plain. Has an inconspicuous cryptic habit as it is fine and	The closest BioNet record is located approximately 1.1km from the Subject Site. The geology and topography of the site is sub-optimal. In addition to the disturbed nature of the site and dominance of non-native dominated vegetation, the presence of	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
					scraggly and often grows amongst dense grasses and sedges. It may not always be visible at a site as it appears to survive for some time without any foliage after fire or grazing, relying on energy reserves in its tuberous roots.	this species within the Subject Site is highly unlikely.	
Syzygium paniculatum	Magenta Lilly Pilly	E	V	2	Found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest.	Preferred littoral rainforest habitat is absent within the site and was not observed during surveys. Not considered likely to occur on site.	N
Tetratheca glandulosa		V		29	Associated with shale-sandstone transition habitat where shale-cappings occur over sandstone. Topographically, the plant occupies ridgetops, upper-slopes and to a lesser extent mid-slope sandstone benches. Soils are generally shallow, consisting of a yellow, clayey/sandy loam. Stony lateritic fragments are also common in the soil profile on many of these ridgetops. Vegetation structure varies from heaths and scrub to woodlands/open woodlands, and open forest. Common woodland tree species include: *Corymbia gummifera*, *C. eximia*, *Eucalyptus*	A significant number of BioNet records for this species were identified within a 1.5km radius of the site. The Subject Site does not offer optimal habitat conditions for this species, however given the numerous records surrounding the site, there is a moderate likelihood of this species to occur on site. Further investigation is warranted.	Y

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
					haemastoma, *E. punctata*, *E. racemosa*, and/or *E. sparsifolia*, with an understorey dominated by species from the families Proteaceae, Fabaceae, and Epacridaceae.		
Fauna							
Anthochaera phrygia	Regent Honeyeater	CE	CE	1	Found in NSW in Capertee Valley and the Bundarra-Barraba. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests. The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak.	A historic record (1988) exists adjacent to the northern corner of the Subject Site. The species' usual habitat (comprising a large number of mature trees) and key food plants were not found to be present within the Subject Site. In addition, the site is not mapped as an Important Habitat Area for this species and is not considered likely to utilise the site to any notable degree.	N
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	6	Found inland to the southern tablelands and central western plains of NSW. Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of Sheoak occur. Black Sheoak (Allocasuarina littoralis) and Forest Sheoak (Allocasuarina torulosa) are important foods.	This species requires medium – large hollows for roosting that were absent in the site. Not considered likely to occur.	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
Cercartetus nanus	Eastern Pygmy-possum	V		31	In NSW the Eastern Pygmy-possum extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest.	There are a significant number of records reported within 1.5km of the Subject Site. This species is known to occupy small patches of vegetation within fragmented landscapes, with the presence of Eucalypts being sufficient to support small populations. It is possible that the Subject Site could support this species.	Y
Chalinolobus dwyeri	Large-eared Pied Bat	V	E	1	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. Found in well-timbered areas containing gullies.	No known caves exist close to the site. There were three built structures within the site, however they do not possess ideal roosting habitat for this species and therefore there is a low likelihood of occurrence the species is present on site. The foraging habitat within the Subject Site is also sub-optimal for this species therefore, it is unlikely that the Subject Site supports this species to any notable degree.	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
Dasyurus maculatus	Spotted-tailed Quoll	V	E	1	It is found in eastern NSW and recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.	Incidental presence within the site is possible due to presence of extensive surrounding forests. However, this species usually inhabits larger tracks of vegetation and is therefore unlikely to occur on this site due to lack of extensive supporting habitat.	N
Glossopsitta pusilla	Little Lorikeet	V		7	NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Forages primarily in the canopy of open Eucalyptus Forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.	Only a small area of eucalypt canopy is found within the Subject Site. The Subject Site also lacks suitable hollows for this species. While the site may be used for foraging, it is unlikely to support this species to any significant extent.	N
Haliaeetus leucogaster	White-bellied Sea-Eagle	V		2	In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea.	No large stick nests were identified on site, and vegetation with the locale is highly fragmented. Minimal trees present which could serve as potential habitat. No foraging habitat present within the Subject Site. Not considered likely to utilise the Subject Site to any notable degree.	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
Hirundapus caudacutus	White-throated Needletail	P	V	2	They build their nests in rock crevices in cliffs or hollow trees. They do not like to sit on the ground and spend most of their time in the air. The White-throated Needletail is widespread in eastern and south-eastern Australia. In eastern Australia, it is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains.	No rock crevices or suitable tree crevices were identified on site therefore nesting presence is highly unlikely. Foraging is entirely aerial and therefore this species is highly unlikely to utilise the Subject Site.	N
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	E	E	2	This species is a dual credit species due to the wide variety of vegetation types that may be utilised for breeding. They are known to inhabit a variety of habitats including heathland, shrubland, sedgeland, heathy open forest and woodland and are usually associated with infertile, sandy and well drained soils.	The Subject Site offers limited suitable habitat to support this species owing to the low coverage of trees and shrubs. It is unlikely that the Subject Site supports this species to any notable degree.	N
Lathamus discolor	Swift Parrot	E	CE	1	Distribution in NSW mostly occurs on the coast and south west slopes. Favoured feed trees include winter flowering species such as Swamp Mahogany (*Eucalyptus robusta*), Spotted Gum (*Corymbia maculata*), Red Bloodwood (*C. gummifera*), Forest Red Gum	The site is not mapped as an Important Habitat Area for this species and no favoured food trees were identified at the Subject Site. This species is not considered likely to utilise the site to any notable degree.	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
					(*Eucalyptus tereticornis*), Mugga Ironbark (*E. sideroxylon*), and White Box (*E. albens*).		
Litoria aurea	Green and Golden Bell Frog	E	V	1	Large populations in NSW are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast (one an island population). There is only one known population on the NSW Southern Tablelands. Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.).	Preferred habitat for this species is absent from the Subject Site, therefore, there is a low likelihood of the species being present at the Subject Site.	N
Lophoictinia isura	Square-tailed Kite	V		3	Found in a variety of timbered habitats including dry woodlands and open forests. Nesting sites generally located along or near water courses, in a fork or on large horizontal limbs. The species is allocated to dual credit because they tend to be sensitive to disturbance around nests. It will be difficult to identify a Kite nest (there are lots of comparable sized stick nests built by other species), especially given Kites have large	No large stick nests were identified on site, and vegetation with the locale is highly fragmented. Not considered likely to utilise the site to any notable degree.	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
					territories and other stick nesters will undoubtedly also be nesting where Kites might be recorded. Kites will need to be in attendance to confirm breeding sites.		
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V		1	The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. Associated with dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Roost mainly in tree hollows but will also roost under bark or in man-made structures.	Only a small area of eucalypt canopy is found on site and does not provide preferable roosting habitat. There were three built structures on site, however they do not possess ideal roosting habitat for this species and therefore there is a low likelihood of occurrence the species is present on site.	N
Miniopterus australis	Little Bent-winged Bat	V		1	East coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. Associated with moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas.	No caves were observed on or in proximity to the site. Only a small area of eucalypt canopy is found on site and does not provide preferable roosting habitat. There were three built structures on site, however they do not possess ideal roosting habitat for this species and therefore there is a low likelihood of the species utilising the Subject Site to any notable degree.	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
Miniopterus orianae oceanensis	Large Bent-winged Bat	V		3	Large Bent-wing bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.	This species breeds in large maternity colonies which require large caves or similar structures which do not occur within, or surrounding the Subject Site. Only a small area of eucalypt canopy is found on site and does not provide preferable roosting habitat. There were three built structures on site, however they do not possess ideal roosting habitat for this species and therefore there is a low likelihood of the species utilising the Subject Site to any notable degree.	N
Myotis macropus	Southern Myotis	V		1	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. In NSW females have one young each year usually in November or December.	No waterbodies were present on or adjacent to the site. There were three built structures on site, however they do not possess ideal roosting habitat for this species and therefore there is a low likelihood of the species utilising the Subject Site to any notable degree.	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
Ninox strenua	Powerful Owl	V		4	In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains suggesting occupancy prior to land clearing. The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest.	No suitable large hollows exist within the Subject Site. While the site may constitute marginal foraging habitat for this species, it is not considered likely to utilise the site to any notable degree.	N
Pandion cristatus	Eastern Osprey	V		1	Breed from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	The site is approximately 8km from the coast and no large stick nests were identified on site. Therefore, the species is not considered likely to utilise the site to any notable degree.	N
Petaurus norfolcensis	Squirrel Glider	V		1	Inhabits Blackbutt-Bloodwood Forest with heath understorey in coastal areas. Lives in family groups. Requires abundant tree hollows for refuge and nesting. Survey year round but sites with bi-pinnate acacia, autumn winter flowering trees and shrubs such as *Eucalyptus robusta* and *Banksia* spp. (*integrifolia* etc.) should be subject to a more retracted survey period of between March-August. Relies on large old trees with hollows for breeding and nesting. These trees are also critical for movement and typically need to be closely-connected (i.e. no more than 50 m	No tree hollows suitable for this species to nest and shelter were identified on site and important food plants were also absent. Therefore, the species is not considered likely to be present on the Subject Site.	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
					apart). Important known food plants – *Eucalyptus siderophloia/tereticornis/pilularis/robusta, Corymbia maculata/gummifera, Melaleuca quinquenervia, Acacia irrorata/longifolia, Banksia integrifolia/oblongifolia/serrata/spinulosa* and *Xanthorrhoea* spp.		
Phascolarctos cinereus	Koala	E	E	2	In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range. Inhabit eucalypt woodlands and forests.	This highly conspicuous species is not likely to occur within the fragmented suburban area. The Subject Site is located within a group of lots bound by roads on all sides. Due to the limited suitable habitat present within the Subject Site and limited ecological connectivity to suitable habitat within the wider landscape, it is unlikely that this species would utilise the site.	N
Pseudomys novaehollandiae	New Holland Mouse	P	V	1	In NSW, the New Holland Mouse is known from: Royal National and the Kangaroo Valley; Kuringai Chase NP; and Port Stephens to Evans Head near the Queensland border. The species is known to inhabit open heathland, open woodland with a heathland understorey and vegetated sand dunes.	All records occur within expansive woodland habitat. Whilst a small area of woodland habitat is present within the Subject Site, its small extent and limited connectivity to suitable habitat within the wider landscape indicate species presence within the Subject Site is unlikely.	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
Pseudophryne australis	Red-crowned Toadlet	V		5	All available evidence indicates that the Red-crowned Toadlet is restricted to the Triassic Hawkesbury and Narrabeen Sandstones of the Sydney Geological Basin. The principal vegetation community occupied by this species is Sydney Sandstone Ridgetop Woodland (mainly dominated by *Eucalyptus gummifera* and *Eucalyptus haemastoma*, although a number of different associations within this community are utilised depending upon the area. Red-crowned Toadlets usually live in the vicinity of permanently moist soaks or areas of dense ground vegetation or leaf litter along or near head-water stream beds. They prefer the first or second order ephemeral drainage lines commonly called 'feeder creeks' which drain the ridges, benches, cliffs and talus slopes. These watercourses are often dry or reduced to ponded areas for much of the year and only sustain flow for short periods. Under natural conditions these feeder creeks have flows of high-water quality and low nutrient loads.	Whilst no waterbodies or hydrolines were recorded within the Subject Site, Kierans Creek is located approximately 0.12km from the north western corner of the Subject Site. Dense leaf litter was present at the Northern corner of the Subject Site and along the North-Western boundary. The species is usually restricted to the immediate vicinity of suitable breeding habitat. However, it is possible the Subject Site is within the dispersal range for this species, outside of the breeding season, due to its proximity to potential breeding habitat (0.12km) and nearby BioNet record (0.45km).	Y
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	19	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia. Occur in subtropical and temperate	This species usually roosts within large colonies. No individuals were observed within the Subject Site. There is potential for	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
					rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines.	the species to utilise the site for foraging purposes however, larger more preferential habitat is located in the locality and therefore, it is unlikely to utilise the site to any notable degree.	
Ptilinopus superbus	Superb Fruit-Dove	V		1	The Superb Fruit-dove occurs principally from north-eastern in Queensland to north-eastern NSW. It is much less common further south, where it is largely confined to pockets of suitable habitat as far south as Moruya. Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees.	This species occurs mainly in rainforest habitat and nearby woodlands. The site may constitute marginal foraging habitat for this species however, it unlikely to utilise the site to any notable degree.	N
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V		1	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. Found in south-western NSW, it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and North West Slopes. Roosts singly or in groups of up to six, in tree hollows and	Only a small area of Eucalypt canopy is found on site and does not provide preferable roosting habitat. There were three built structures on site, however they do not possess ideal roosting habitat for this species and therefore there is	N

Scientific Name	Common Name	NSW status	EPBC Act	BioNet Records (1.5km)	Likelihood of Occurrence		Subject Species (Y/N)
					Species Description	Assessment	
					buildings; in treeless areas they are known to utilise mammal burrows.	a low likelihood of the species utilising the Subject Site to any notable degree.	
Tyto novaehollandiae	Masked Owl	V		3	Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. Lives in dry eucalypt forests and woodlands from sea level to 1100 m.	No suitable large hollows exist within the Subject Site. While the site may constitute marginal foraging habitat for this species, it is not considered likely to utilise the site to any notable degree.	N
Varanus rosenbergi	Rosenberg's Goanna	V		13	Rosenberg's Goanna occurs on the Sydney Sandstone in Wollemi National Park to the north-west of Sydney, in the Goulburn and ACT regions and near Cooma in the south. Found in heath, open forest and woodland. Associated with termites, the mounds of which this species nests in; termite mounds are a critical habitat component. Individuals require large areas of habitat.	No breeding habitat was identified within the Subject Site. Due to the lack of breeding habitat and the fragmented nature of the site vegetation within the wider environment, it is unlikely that the species is present within the Subject Site.	N

Attachment F: Site Photos

Above: General site condition – Looking north from the central area of the site.
Below: View northwest along the eastern boundary.

Above: BAM Plot 2 view northwest along eastern boundary.

Below: High weed load along the western boundary.

Above: View west to site entrance on Mona Vale Road.

Below: View east of entrance to site along Myoora Road.

Attachment G: CV’s

JEREMY BURRILL

Ecologist & Project Manager

Profile Summary

Jeremy works with AEP in the role of Ecologist / Project Manager. He is a graduate of environmental science and management, and has experience in voluntary roles in environmental fields, involving threatened fauna and flora surveying, biodiversity reporting, management plans, consultancy projects and project management. His background in environmental fields with his growing ecological knowledge and management experience is utilised in a diverse array of applications in his current role.

Academic Qualifications

- Bachelor of Environmental Science (Environmental Management and Sustainability) Deakin University (2020)

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)
- Work Safely at Heights

Professional Experience

Ecologist / Project Manager — 2022 – Present
Anderson Environment & Planning
Sydney NSW

Ecologist — 2020 – 2022
Anderson Environment & Planning
Sydney NSW

Relevant Project Experience

Ecological Surveys

- Botanical surveys including Biodiversity Assessment Method (BAM) vegetation plots under supervision of BAM accredited assessors Frances O'Brien and Timothy Mouton across various sites.
- Threatened flora surveys: Bundanoon, Greendale, Edmondson Park, Loftus, Glenning Valley, Wyee, Wadalba, Halloran, Somersby, Mardi, Wallsend, North Kellyville, Loftus and Pleasure Point.
- Threatened Nocturnal Fauna surveys: Bundanoon, Greendale, Edmondson Park, Loftus, Glenning Valley, Wyee, Wadalba, Halloran, Somersby, Mardi, Wallsend, Cattai, Barrington Tops and Somersby.
- Threatened Diurnal Fauna Surveys: Bundanoon, Greendale, Edmondson Park, Loftus, Glenning Valley, Wyee, Wadalba, Halloran, Somersby, Mardi, Wallsend, Cattai, Barrington Tops, Pleasure Point and Somersby.
- Microbat Nocturnal Harp Trapping: Wallsend and Mardi.

- Koala Spot Assessment Technique Surveys: Greendale, Wadalba, Girvan and Somersby.
- Nestbox installation: Glenning Valley and Narellan Vale.
- Habitat surveys including hollow bearing tree identification: Bundanoon, Greendale, Edmondson Park, Wyee, Somersby, Cattai, Barrington Tops and Somersby.
- Vegetation Clearance Surveys and Supervision: Glenning Valley, Wyee, Warnervale, Chain Valley Bay, Narellan Vale and Carramar.

Ecological Assessment

- Biodiversity Development Assessment Report contribution: Greendale, Edmondson Park, Austral, Rouse Hill and Annangrove.
- Ecological Assessment Reports: Minto, Berkeley Vale, Rooty Hill, Warriewood, Macquarie Park, Carramar and Ambarvale.
- Biocertification Assessments: West Wilton, Edmondson Park and Schofields.
- Weed Management Plan: Pheasants Nest and Tahmoor.
- Vegetation/ Biodiversity Management Plans: Woy Woy, Pheasants Nest, Vineyard, Grantham Farm, Warriewood, Loftus and Greendale.
- Riparian Assessment Reports: Schofields, Greendale, Quakers Hill and Ingleside.
- BDAR Waiver Letters: Revesby, Strathfield and Schofields.
- Plant Community Type determination.
- GIS Mapping.

Ecological Monitoring

- Vegetation Monitoring Plots: Pheasants Nest, Warriewood and Werrington.
- Fauna Monitoring/ Nestbox Monitoring: Glenning Valley and Wyee.

JOELAN SAWYER
Senior Ecologist

Profile Summary

Joelan works with AEP in the Role of Senior Ecologist, Joelan Specialises in botany with experience focused in the Greater Sydney area and along the NSW coastline. He is proficient in performing flora and fauna surveys, plant identification and taxonomy, GIS, and reporting for biodiversity and impact assessments. He also has in-depth knowledge of the NSW legislative pathways, namely the Biodiversity Conservation Act 2016 and the associated Biodiversity Assessment Method (BAM). Joelan is an accredited assessor. Accreditation No. BAAS23016

Academic Qualifications

- Bachelor of Science (Biology), The University of Western Sydney, completed September 2018
- BAM Assessor; accreditation number: BAAS23016.

Training, Licences and Professional Memberships

- NSW Class C Driver's Licence
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)

Professional Experience

Senior Ecologist — 2023 – Present
Anderson Environment & Planning
Sydney NSW

Ecologist — 2017 - 2023
Anne Clements & Associates

Nursery Worker / Horticulturalist — 2015 - 2017
Wingham Nursery & Florist

Relevant Project Experience

Ecological Surveys

- Flora
  - Targeted surveys for *Dichanthium setosum* in the Hunter Region;
  - Targeted surveys for *Tetratheca glandulosa* and *Hibbertia procumbens* on the Somersby Plateau;
  - Targeted surveys for *Eucalyptus benthamii*, *Dillwynia tenuifolia* and *Grevilliea juniperina*, Western Sydney;
  - Targeted surveys for *Genoplesium baueri*, and *Grammitis stenophylla* Northern Sydney;
- Fauna
  - Spot Analysis Techniques surveys: Muswellbrook, Gunnedah, Scone, Bermagui, Blue Mountains, Western Sydney;
  - Targeted surveys for Cumberland Plain Land Snail, Western Sydney;

- Targeted surveys for Broad Headed Snake, Cattai;
- Targeted surveys for Striped Legless Lizard and Pink Tailed Legless Lizard, Muswellbrook;
- Targeted surveys for Green and Golden Bell Frog, Eastern Suburbs, Sydney;

- Bushfire
  - Bushfire vegetation inspection and assessment in accordance with PBP 2019, various sites;
- Arboriculture
  - Waste recycling facility, 120 trees assessed, West Gosford;
  - Industrial development, 140 trees assessed, Stanmore Park;
  - Commercial development, 80 trees assessed, Marsden Park;

Ecological Assessment

- BAM assessment for Biodiversity Development Assessment Reports;
  - Sandstone quarry extension, Cattai;
  - Aged care housing, Bermagui;
  - Residential development, Pleasure Point;
  - Solar Farm, Stubbo;
  - Eco cabins, Colo;
  - Farm building and agricultural infrastructure, Richmond;
  - Mountain bike track, Delrio, Webbs Creek;
  - Aged care housing, Mollymook;
  - Hunter Gas Pipeline project, Hunter region;
- Accredited assessor for Landscaping Material Supply Facility Biodiversity Development Assessment Report, Greendale;
- BAM assessment and PCT for Ecological Assessment Reports;
  - Horse stabling development, Clarendon;
  - Great southern walk accommodation, Illawarra Escarpment;
  - Rezoning for Carrathool Shire Council at Merriwagga and Rankin Springs;
  - Biodiversity assessment of various Sydney Water assets, Greater Sydney;
  - Biodiversity assessment of Newcastle Councils bushland assets, Newcastle;
  - Biodiversity assessment of Penrith Councils assets at St Marys industrial area;

Ecological Monitoring

- Vegetation monitoring on VMP lands;
  - St Narsai Assyrian Christian College, Horsley Park;
  - Residential development, Cooranbong;
  - Sandstone Quarry restoration, Red Hill Reserve, Beacon Hill;
- Publications
  - Sawyer, J. (2021). *Achieving resilient biodiversity offsets on reconstructed landforms* [Poster Presentation]. Ecological Society of Australia 2021 “Symposium: Practitioners collaborating to restore and rewild landscapes” Darwin, Australia

BEN JONES

Ecologist - Project Manager

Profile Summary

Ben is an Ecologist and Project Manager with Anderson Environmental & Planning. He began his career as an Ecologist in 2015, working in the United Kingdom across a range of sectors including nationally significant infrastructure, minerals extraction, coastal defence and residential and mixed-use developments (urban and rural). Ben has worked in private consultancy and as an Ecology Manager on behalf of client organisations. He is also a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

Ben joined Anderson Environmental & Planning in April 2024, having relocated to Sydney from the United Kingdom. His early career involved conducting terrestrial field surveys for a wide range of flora and fauna, with particular skills gained with regards to herptiles, microbats and small mammals. As he progressed within the ecology field, Ben gained experience undertaking a wide range of assessments, producing reports and applications to undertake licensed ecological work. For the four years prior to joining AEP, Ben's roles have been more focussed towards technical review of contractor reports, documentation and licence applications in addition to management of ecological programmes of work for Tier 1 contractors.

Academic Qualifications

- Bachelor of Science (Zoology) Honours – Cardiff University, 2014

Training, Licences and Professional Memberships

- Full Member - Chartered Institute of Ecology and Environmental Management
- WHS NSW Construction Induction White Card
- First Aid (Provide First Aid HLTAID011)
- 4 x4 Vehicle Capability

Professional Experience

Ecologist Anderson Environment & Planning Newcastle NSW	2024 – Present
Ecology Manager EKFB Joint Venture Aylesbury, UK	2022 - 2023
Senior Ecologist Fusion Joint Venture Aylesbury, UK	2020 - 2022
Director Jones Ecology Ltd London, UK	2020 - Present
Ecologist Ricardo Energy and Environment	2017 - 2020
Ecologist Wardell Armstrong	2015 - 2017

Relevant Project Experience

Ecological Surveys

- Experience undertaking a large number of surveys for microbats in the UK, including roost assessments and monitoring as well as activity surveys and assessment.
- Experience undertaking a large number of surveys for amphibians, reptiles and mammals in the UK for the purpose of assessing presence or absence as well as population monitoring.
- Experience in undertaking a large number of high-level botany surveys in the UK to assess habitat types.
- Assisted in completion of Biodiversity Assessment Methodology (BAM) plots under supervision of BAM accredited assessor Joelan Sawyer (April, May, July 2024)
- Threatened flora transect surveys via 10m transects (Belrose, - 2024)
- Microbat Survey of multiple sites in Sydney to support BDAR consideration (May 2024)
- Microbat Assessment, Koala SAT survey, Snail searches and nocturnal surveys for Forest Owls for proposed quarry extension in Cattai (August 2024)

Ecological Assessment

- Experience in undertaking a wide range of ecological assessments in the UK including Preliminary Ecological Appraisals, Protected Species assessments, BREAAM, Biodiversity Net Gain, Ecological Impact Assessment and Habitat Regulations Assessment.
- Biodiversity Assessment Reports for 15 sites within Sydney Water Catchment in support of their Property Environmental Management Scheme
- Ecological Assessment Report for development at an Education facility in Woolwich (April 2024)

- Ecological Assessment Report for development at an Education facility in Woolwich (April 2024)
- Biodiversity Certification Compliance Report for a proposed subdivision in Oakville (July 2024)
- Contributing author to Biodiversity Development Assessment Report for proposed materials processing plant in Greendale (July 2024)
- Assessment of development adjacent to NPWS lands for a proposed Subdivision in Empire Bay (Aug 2024)

Bushfire

- Assisted colleague in bushfire vegetation inspection and site assessment in accordance with PBP 2019 for a proposed commercial development in Terry Hills (April 2024).

efficient LIVING

40 Myoora Rd, Terrey Hills

Ecologically Sustainable Design Report to support development application

Prepared for: H&E Architects

Attention: Megan Naylor

Issue	File Ref.	Description	Author	Date
b	2401018	ESD Report— To Support DA Application	RB	29 Aug 2024

Note: This report may contain details of manufacturer, products and environmental certification schemes that Efficient Living believe are examples of improved sustainability outcomes and worthy of investigation. For avoidance of doubt Efficient Living does not have a commercial relationship with third parties in this respect or warrant the statements and performance of the examples provided.

Sustainable Building Consultants
p. 02 9970 6181 **e.** admin@efficientliving.com.au **w.** efficientliving.com.au

40 Myoora Road, Terry Hills

ESD Report

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1. Introduction and Project Information

Introduction

This Ecologically Sustainable Design (ESD) report has been prepared by Efficient Living Pty Ltd to support a development application (DA) for a Restaurant & Leisure facility at 40 Myoora Rd, Terrey Hills. Efficient Living is collaborating with the architects, H&E Architects, to ensure that the proposal has strong ESD outcomes that meet or exceed the requirements of local and state regulations and controls for ESD.

The report outlines ESD commitments for the DA submission and also provides recommendations for consideration and inclusion in the later detailed design/construction certificate documentation for the proposal.

Property details

The property is located at 40 Myoora Rd, Terrey Hills in the Northern Beaches.

- Site area of approximately 15960 sqm
- Zoning RU4: Primary Production Small Lots
- The local character is defined by light industrial units, and a few institutional buildings in the semi rural setup and high canopy cover.
- The subject site is within the Warringah Development Control Plan (DCP) 2011 and the Warringah LEP 2011
- The site has frontages to Myoora Road in the West and Mona Vale Road in the East, forming the main vehicle access road.

Proposal description

The proposal is a Restaurant development with a substantial green landscape.

The existing buildings and temporary sheds on the site will be removed. The new building will be located towards Mona Vale Road integrated into the landscape with deep landscaping buffers.

The facility will comprise of 3 separate restaurant facilities with ancillary kitchens/bars, outdoor dining, on site parking, ancillary office premises and extensive landscaped open space including children's paly equipment.

The height and scale of the new building will be in keeping with surrounding dwellings.

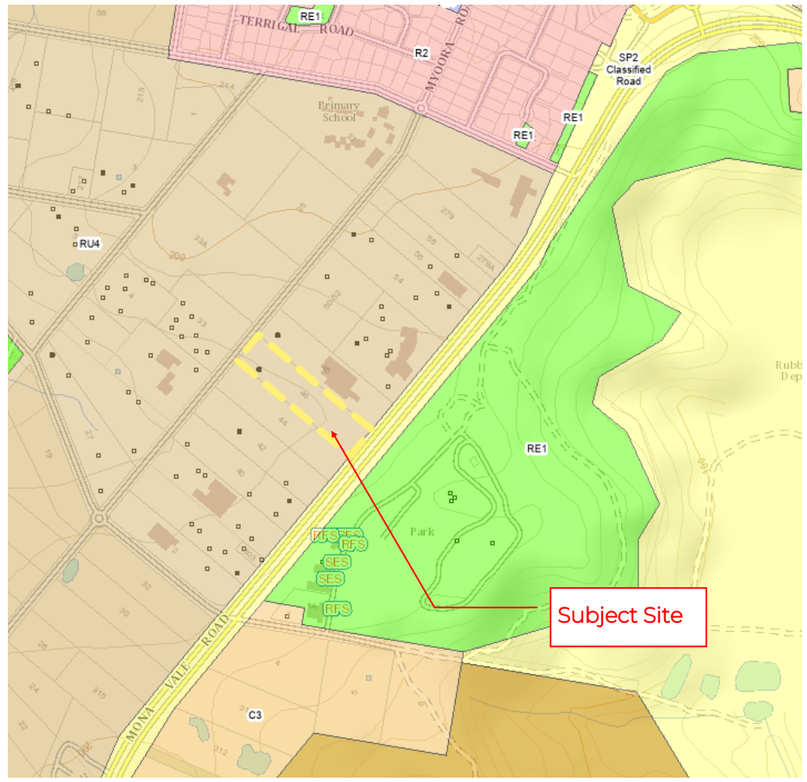
Car parking requirements will be delivered through construction of underground car parking and surface parking towards Mona Vale Road.

Strong ESD outcomes for the new proposal will be incorporated into the design and inclusions as detailed in this report.

Structure of this report

This report is structured into core ESD categories consolidating the requirements of relevant planning controls for the project. These requirements are discussed in Section 2 of this report and refer primarily to:

- The Sustainable Buildings SEPP in respect to various ESD considerations that need to be taken into account
- The Warringah DCP 2011 Part D22 in respect to Conservation of Energy and Water.



Local context of Site

2. Responding to Local and State ESD controls

Sustainable Buildings SEPP ESD considerations

As the project is expected to have a capital cost exceeding $5M Chapter 3, 3.2 of the Sustainable Building SEPP is relevant. Under the SEPP the consent authority needs to consider if the proposed design enables:

(a) the minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials

(b) a reduction in peak demand for electricity, including through the use of energy efficient technology

(c) a reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design

(d) the generation and storage of renewable energy

(e) the metering and monitoring of energy consumption

(f) the minimisation of the consumption of potable water

Warringah Council ESD controls

The overriding objective of the DCP is to create and maintain a high level of environmental quality throughout Warringah. Development should result in an increased level of local amenity and environmental sustainability. The other objectives of this plan are:

- To ensure development responds to the characteristics of the site and the qualities of the surrounding neighbourhood.
- To ensure new development is a good neighbour, creates a unified landscape, contributes to the street, reinforces the importance of pedestrian areas and creates an attractive design outcome
- To inspire design innovation for residential, commercial and industrial development
- To provide a high level of access to and within development.
- To protect environmentally sensitive areas from overdevelopment or visually intrusive development so that scenic qualities, as well as the biological and ecological values of those areas, are maintained
- To achieve environmentally, economically and socially sustainable development for the community of Warringah

Warringah Council core ESD controls are outlined in Part D22 of the DCP. The objectives of these parts of the DCP, that need to be outcomes for the proposal, are:

Part 22 Conservation of Energy and Water

1) To encourage innovative design solutions to improve urban environment.
2) To ensure energy and water use is minimised.

Parts C4 Stormwater (integrate Water Sensitive Urban Design measures in new developments), C8 Demolition and Construction (minimising and avoiding environmental impacts from construction activities), C9 Waste Management (sustainable management of waste), also need to be considered.

We note that Construction & operation waste management plan, environmental management plan for construction and flood and stormwater management plans will be included with the DA submission.

Structure of ESD Report

To ensure that the wide range of ESD planning considerations are addressed, this report has been consolidated under the following key sections.

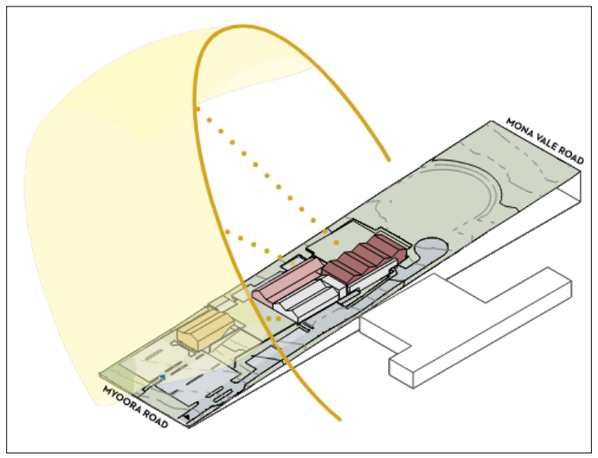
- Energy and low carbon emissions
- Water sensitive and water efficient design
- Responsible materials
- Responsible waste management
- Human wellbeing and indoor environmental quality
- Climate change resilience

3. Energy efficiency and low carbon emissions

Energy efficiency through passive design proposed design outcomes and specifications

Building fabric

- Building and window size and orientation has been refined to support solar access, daylight access and beneficial cross ventilation whilst mitigating unwanted solar heat gain and thermal losses.
- All key areas benefit from cross ventilation through inclusion of large operable windows and doors on multiple aspects. Ventilation is supported through the inclusion of ceiling fans as well as integrated mechanical ventilation.
- High performance insulation materials, aligned with Section J for walls, roofs, and floors will be included to minimize heat transfer.
- Energy efficient windows will be specified consistent with exceeding Section J requirements by 10%. A focus on the windows on the eastern façade in detailed design for the new building will be critical for this outcome.
- Light coloured materials and external finishes on horizontal surfaces, to reduce heat absorption and reduce urban heat island effect, have been specified.

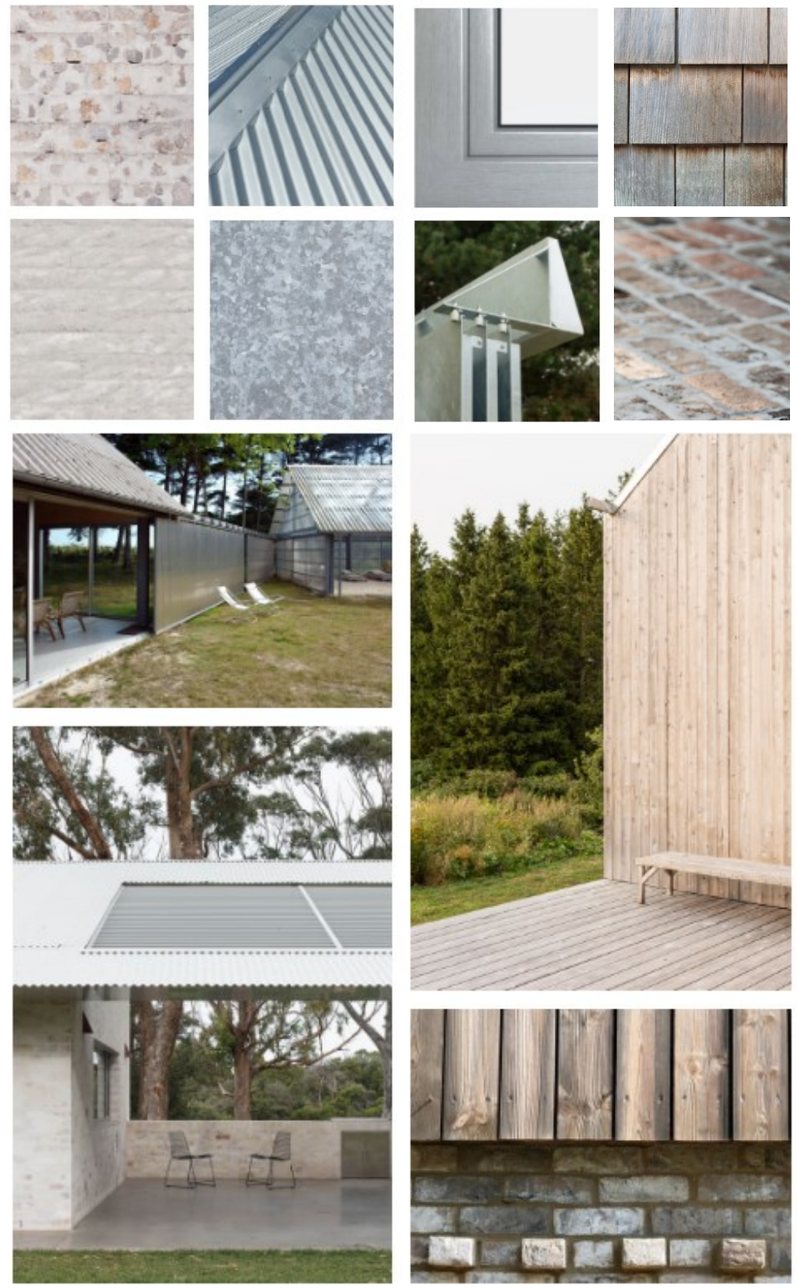


Passive Design for Optimised Solar Gain & Daylight

Building sealing

Preventing air leaks through the building envelope is critical for energy efficiency. The building construction methodologies will follow all requirements from NCC 2022 Section J Part J5 .

- Install vapor barriers on the warm side of insulated assemblies, such as walls and roofs, to prevent moisture migration and condensation with in the building envelope.
- Entrance to the building spaces must have an airlock, self closing door, rapid roller door, revolving door or the like as per J5D5.
- Doors and windows with effective seals and weather stripping to minimise air leakage. Ensure doors and windows are correctly installed and sealed to prevent drafts and heat loss.
- Seal joints, seams, and connections in ductwork to prevent air leakage in HVAC systems.
- Seal roof penetrations, such as vents, pipes, HVAC units, with appropriate flashing and sealants.
- Exhaust fans must be fitted with a sealing device such as a self closing damper or the like when serving a conditioned space or a habitable room.
- Skylights to be sealed, or capable of being sealed. Ensure skylight shafts have insulation installed as per Section J.



Architectural Expression & Light Coloured Finishes & Materials

3. Energy efficiency and low carbon emissions

Proposed energy measures to reduce emissions

- Improved thermal performance through passive design—target 10% improvement on baseline Section J compliance.
- Fully electric services wherever feasible
- High energy efficiency systems for mechanical air conditioning (ACOP with capacity to run consistently at a COP>3.5), lighting and hot water systems.
- Effective energy metering and monitoring for core services to allow refinement in performance of key services by the facilities manager
- Significant proportion of electrical energy will be targeted f rom rooftop solar PV arrays—targeting annual PV array kWh production to match 100% annual building electrical consumption (recognising that a net zero outcome will mean some export to the grid during the day and on weekends).

Energy Efficient systems

In addition to strong passive design, a buildings appliances, mechanical equipment and system automation and management must be inherently efficient to contribute to reduced energy, reduced peak load and reduced carbon emissions outcomes.

- Major services (except Cooking) to the building are proposed to be electric to drive towards reduced carbon emissions in operation.
- High efficiency Energy Star certified appliances (typically within 1 star of the highest rating available) such as refrigerators, dishwashers, washing machines, dryers, water coolers, microwaves, coffee makers, cooking equipment, and office devices to minimize energy usage and costs while ensuring efficient operations in buildings.

Air conditioning and ventilation proposed specifications

The natural ventilation of fresh outside air (helping to reduce CO2 levels and also build up of air borne pathogens) is regulated by the National Construction Code F4.6.

The following steps are recommended to guide final design and procurement of the best, and multi task, air conditioning/ HVAC system.

- Core heating an cooling efficiency of the air conditioning system to exceed an ACOP of 3.5 and ideally target 4.0.
- Restaurant design should allow for cross ventilation and openable windows to benefit from the often temperate climate of the Northern Beaches throughout the year.
- NCC compliance for size of openable windows is sufficient to generate an acceptable health and wellbeing result—but exceedance of NCC should be considered..
- If air conditioning/HVAC design does not include an outdoor air mode then a CO2 monitor alert system should be installed to notify staff to manually open common room windows when CO2 concentration starts to approach unacceptable levels.
- HVAC design should consider inclusion of air filters for air returning to the class rooms to minimise air pollution particularly given the increased likelihood of bushfire smoke impacts in Ku-ring-gai.
- HVAC system design should balance high ACOP efficiency with functionality to vary air management (ventilation and heating/cooling) according to different demands in building rooms.

Hot water proposed specifications

Electric heat pump hot water systems will be investigated to service the buildings. These systems are inherently up to three times more efficient than gas and electric resistance water heaters and can be cycled with renewable electricity from onsite solar PV arrays.

A smaller electric heat pump system (with water storage capacity) could be provided for each restaurant and linked to the proposed solar PV array electricity production.

Lighting proposed specifications

- High efficiency and programmable LED lighting throughout the building will be included to minimise lighting energy usage.
- Lighting will be considered to minimize over lighting and glare while providing adequate illumination for various tasks and activities.
- Lighting specifications in detailed design will consider factors such as fixture placement, light distribution, and color temperature to enhance visual comfort and energy efficiency.
- The maximum illumination power density will be 14W/m2 for the building and the restaurant areas.
- Dynamic Lighting control devices and daylight sensors will be considered in detailed design for dimmed or stepped switching of lights adjacent to windows/glazing.

Metering and building energy management proposed specifications

Metering

It is recommended that in detailed design all important end uses (air conditioning, lighting, hot water etc) will be logged to NCC Section J requirements. In combination with installing a PV array of the size indicated solar energy generation will be metered together with matching to electricity consumption of the building.

Energy monitoring and management

The air conditioning systems operation should be the main target for monitoring and management. This system should be tailorable room by room and also ideally switched so that when outside temperatures are acceptable for comfort the system switches off in favour of open windows.

3. Energy efficiency and low carbon emissions

Renewable electricity proposed approach/ specifications

Sizing of PV arrays

- An approximate assessment of roof space indicates that a 30-35kW capacity could be achievable — subject to final panel dimensions and installation requirements.
- The orientation of the roof spaces is well matched to strong solar PV array performance subject to an assessment of overshadowing from trees.
- The panels should be mounted directly to rails on the roof as compared to providing a complex racking system that will reduce the overall number of panels and increase cost.

System set up and battery potential

- The output from the solar PV array will feed in 'behind the meter' to service onsite electricity demand when matched—for example to provide energy to air conditioners, lights and hot water.
- A sufficient main switchboard set up should be designed so that a typical battery storage solution can be installed with the initial project or at a later date by the Child Care operator—we note that a location for a battery (as required) is on the plans.
- The set up should allow for export from the battery to the grid so that any excess production from the PV array system can be exported and so that joining virtual power plant schemes (where the renewable electricity is effectively shared with others) (VPPs) is achievable if desired.

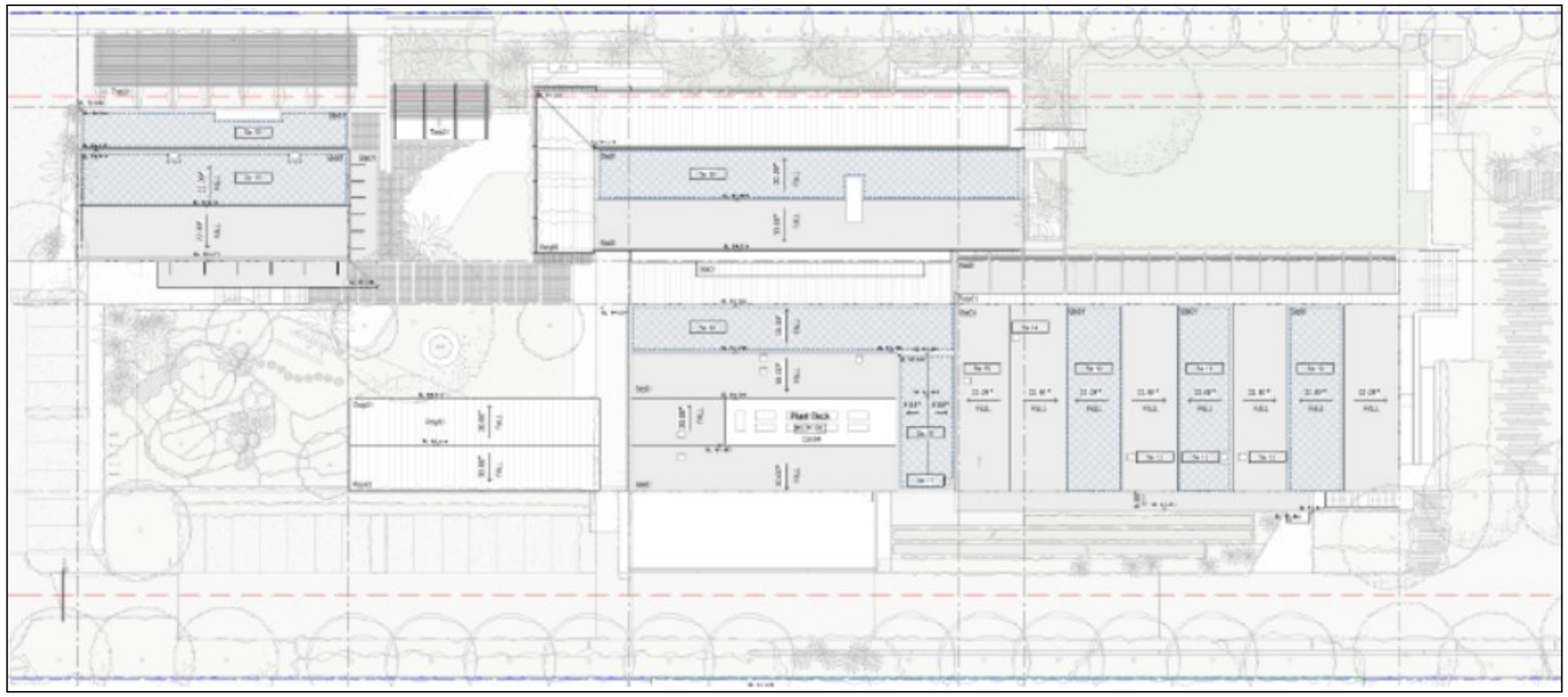
Final system design advice and procurement

- Roof design should include as a minimum that the structure of the roof has been certified to carry the weight/load of PV array system and that the electrical system design has allowed for a behind the meter, grid connected system with potential to add electricity storage/batteries in the future if desired.
- These provisions will also meet the requirements of NCC 2022 Section J

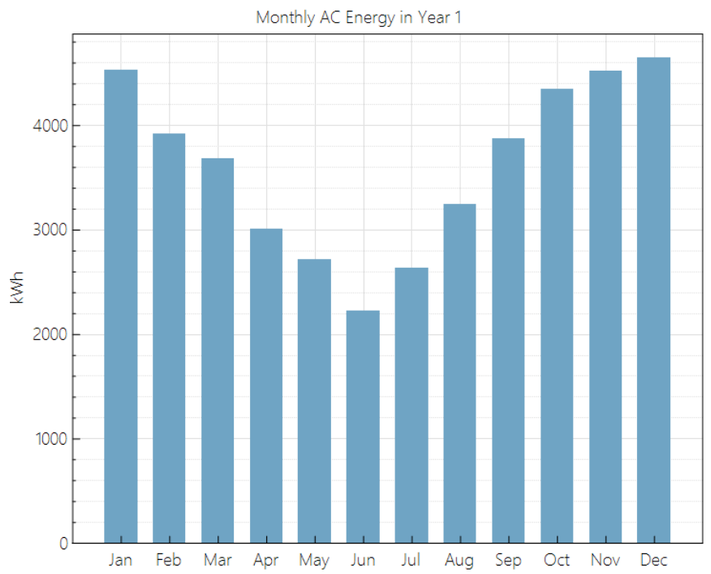
The recent amendment to the NSW Infrastructure SEPP indicates that the PV array component of the proposal could be delivered as complying development if required.

Procurement of Green Power

Ideally, to help achieve a net zero carbon building in operation, the operator would specify Green Power from the retail electricity



Roof layout—blue hatched areas indicate potential locations for PV panels; to be refined by supplier/operator taking into account over-shadowing from trees and roof limitations



Expected approximate monthly output from 30kW PV array (SAM software using Sydney climate data and northern orientation)

4. Water efficient design

Reduced potable water demand

Water resources will be managed to reduce the demand for potable water through water efficient fixtures and an alternative, rainwater based, water supply.

Proposed sustainability outcomes

- Target reduction in potable water demand of more than 25% and up to 50% against comparable buildings (combined savings from efficient fixtures and rainwater harvesting).
- 100% landscape irrigation from non-potable supply.
- High proportion of local native plant species with naturally low water demand/water demand matched to local rainfall.

Water efficient fixtures and fittings specifications

The following WELS water ratings are proposed for each key fitting:

- Toilets 4 star WELS.
- Taps 6 star WELS with timed flow mechanism.
- Dishwashers when installed 4-5 star WELS.

Rainwater harvesting

Two 10kL rainwater tank are currently proposed for this development . In detailed design a large proportion of the roof space will be plumbed to these tanks with a target of providing 100% irrigation capacity from these tanks.

These tanks will be plumbed to supply toilets and landscape irrigation with back up supply from the potable water mains.

Water sensitive urban design specifications

Water efficient irrigation methods

- Garden beds to be irrigated with undersurface/mulch drip irrigation where required.
- Irrigation water source to be connected to the rainwater tank system.
- Irrigation tap timers to be enabled with smart moisture sensors that restrict irrigation when soil moisture is already at the required level.

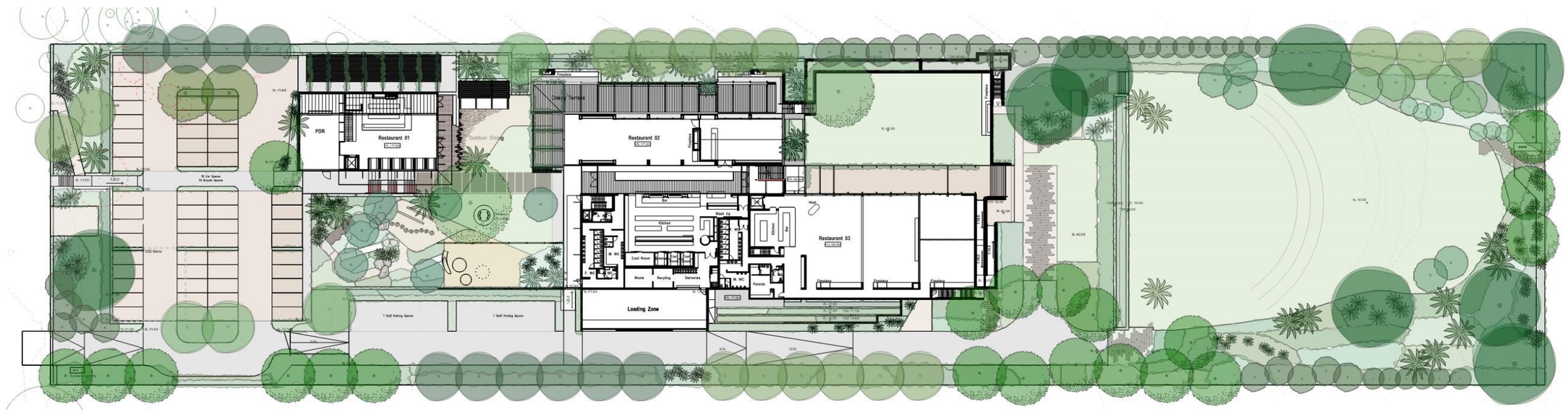
Water efficient plant selection

The detailed landscape design for the proposal includes:

- Extensive use of indigenous low water demand/ water demand matched to local rainfall plant species (target at least 80% of planting to Site).
- Irrigation zones that indicate areas of higher water demand and plant types that require regular irrigation (with controls above).
- No irrigation zones that indicate areas that should be resilient on local rainfall patterns after establishment.

Stormwater Quality Management

A Stormwater Quality Management Plan will be developed in detailed design stages considering the requirements of the DCP. The measures in the plan primarily address: Efficient management of stormwater quantities for high rainfall events and consistent with the overarching management strategy for the catchment. Stormwater quality must be maintained and improved according to the DCP requirements to manage gross pollutants and various nutrient levels in stormwater.



Landscape Plan (draft) —supporting significant local species and canopy trees

5. Responsible materials

Focus on responsible materials outcomes

Selection of more sustainable, recycled and lower environmental impact materials will be carried out in detailed design. Materials that are durable and robust over operational phases will be selected that will help enable a lower life cycle cost of materials.

Proposed sustainability outcomes

- Reduced embodied carbon—use of concrete mixes with > 30% cement or raw aggregate replacement
- Steel and plasterboard targeting suppliers with carbon neutral certification and/or a recycled content proportion
- FSC certified structural and joinery timber products
- Building tender to require consideration of certified low environmental impact materials
- Repurposing of existing dwelling provides substantial avoidance of new embodied carbon

Lower embodied carbon materials specifications

- A tender requirement for the building contractor to provide concrete options for reduced embodied carbon mixes through reduction in cement based carbon and aggregate based carbon.
- The Holcim Ecopact range is an example where embodied carbon can be reduced by 30%-60% across strength grades; Boral Envisia and Hymix 'HyLo' are other product and supplier options.
- Timber framework is to be used as a preference over steel framework in walling systems and roofing systems.
- Tender requirement for building contractor to provide steel products from suppliers/fabricators that are certified under the Australian Steel Institute ESC/SSA certification program.
- Tender requirement for building contractor to provide material supplier options where the supplier has been certified under the Climate Active program—for example Brickworks range of building products.

Holcim Ecopact lower carbon concrete range

Environmentally responsible contractors specifications

- It is recommended that the head building contractor preferred to have an established Environmental Management System for their operations compliant with ISO 14001.
- Building project team to assess key environmental risks and opportunities across building plant, equipment and materials; civil works and materials; landscape works and materials (using ISO 20400 principles).

Environmentally responsible materials specifications

It is recommended that a tender requirement is for procurement options with certified lower environmental impact products wherever feasible (with achievable cost and supply certainty).

Building structure:

- Concrete, steel and timber supply to include options from suppliers with GreenTag rating where possible and/or Environmental Product Declaration
- Timber must be FSC certified.

Building walls and façade

- Glazing/windows, insulation and cladding products to include options from suppliers with GreenTag or GECA ratings and/or Environmental Product Declarations—we note that Capral has recently introduced a range of lower embodied carbon emission aluminium windows that can be investigated.

Fitout and finishes

- Flooring, plasterboard, paints, ceilings, partitions, doors, internal glazing and furnishing to include options from suppliers with GreenTag or GECA ratings and/or Environmental Product Declaration

GECA and Green Tag ratings provide confidence on the environmental credential of key materials

6. Responsible waste management

Reduced waste to landfill and responsible materials

Together with supporting lower upfront carbon emissions, the project will investigate the inclusion of responsible materials and include space for splitting and recycling of waste 'resources' during project construction and ongoing operation.

Waste management will focus on a very high recycling and reuse rate for construction phase materials followed by a dedicated waste streaming and recycling system for the operation of the facility

Construction waste recycling

Construction and demolition waste should target a recycle or reuse rate of at least 80% of demolition and construction waste consistent with modern best practice in the NSW construction industry (NSW EPA data for 2021/22) with sufficient record keeping procedures to evidence this outcome.

Another aspect can be to design out waste and utilise pre-fabricated materials to ensure a reduction of waste generated on site.

A Construction Waste Management Plan will be prepared by the Consulting team and should be referred to.

For demolition and construction this plan sets out:

- Types and volumes of waste generated.
- How these waste volumes will be reused on site or taken to a recycling yard.
- Nil to landfill outcomes for concrete, bricks/pavers, and roof tiles
- The details of the recognised local waste recycling yard with NSW EPA licence.

This plan will focus on reuse and recycling onsite before management at a Waste Recovery and Landfill Facility. The steps in this process should identify all options to avoid waste to landfill.

Designing in Waste Sorting and Storage Facilities

An Operational Waste Management Plan has been prepared by Elephants Foot Consulting and should be referred to.

The project will provide adequately sized waste storage areas on site with separation of major waste streams according to Northern Beaches Council services.

Proposed sustainability outcomes should include providing sufficient waste splitting areas to match Northern Beaches Council recycling schemes and additional holding area for e-waste.

Providing an organic waste composting system with finished compost to be returned to gardens (including food garden/vege patch) should be considered.

Examples of Waste Bins to be used Internally

7. Sustainable Transport & Human wellbeing

Capitalising on location

Active and Public Transport

The site is particularly well located for accessing public transport, services and recreation.

- Approximately 390m walk to the closest Bus Stop
- Bus route number 271, 270 connecting to the Bus/Rail Interchange which run along Myoora Street with a bus stop.
- Close proximity to other recreational facilities like Terrey Hills BMX track, Terrey Hills Tavern, Hills Marketplace, and other facilities like German International School, Wyvern Private Hospital.

The road network serving the site comprises:

- Mona Vale Road – arterial route connecting between suburban Sydney and Mona Vale
- Myoora Road – suburban road for main site access and connection to public transport

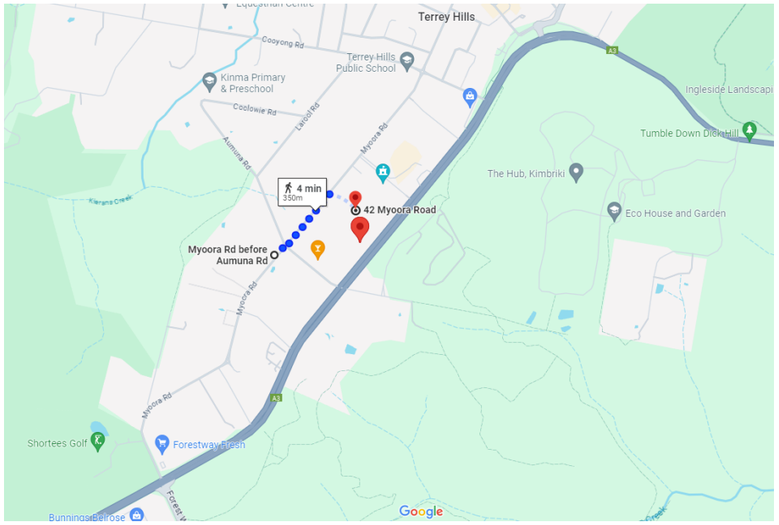
The combination of these locational factors with clearly demarcated route s provided for pedestrians can support significant mode split to more energy efficient active and public transport modes from individual car use.

On Site parking

A total of open 54 parking spaces and 10 Bicycle spaces, with Underground carpark of 156 parking spaces and 5 Motorcycle will be provided accessed by a driveway on Myoora Road on the northern side of the site. The onsite parking will have permeable surfaces throughout.

Provisions for electric vehicles

The future provisions will be installed in accordance with the Section J requirements. Offering EV charging stations demonstrates a commitment to sustainability, attracting eco-conscious consumers who prioritize businesses with sustainable initiatives.



4 minute walk to the closest Bus Stop & Access to local Services (Google Maps)

The design development stages can investigate allowance for EV provisions whereby parking spots can have building infrastructure capacity in place (for later installation of final services and chargers as required) to provide a 7kW slow charger or a fast charger.

Human wellbeing initiatives

Air quality

Air quality will primarily be protected by separating outdoor air intakes (including natural ventilation/windows) from pollution sources. AS 1668.2:2012 is the standard for this outcome.

Minimum separation distances will be identified based on the expected airflow rate into the building—the greater the air flow rate the larger the distance required from exhausts (such as food processing exhausts etc). Details will be assessed in further design stages.

Lighting Comfort

To further enhance the health and wellbeing of occupants, the proponent will investigate lighting design and quality strategies that exceed compliance to achieve high levels of human eye comfort. This exercise can take place in the detailed design and tender phase.

Low exposure to toxins

Future procurement of paints, adhesives, sealants, carpets and other large surface area materials for internal finishes will be required to meet very low Total Volatile Organic Compound' limits. The GBCA published limits from December 2021 could be used for this purpose.

The tender issued for this stage of work will include clear guidelines on the requirements for products and materials to be used. Any engineered wood products selected for the building will also have low or no formaldehyde content generally recognised as below 1mg/L.

Communal Spaces

Significant part of the site has been proposed as landscaped areas with open space and tree shade. These areas on the Eastern end provide a great opportunity for communal and social interaction for the occupants.

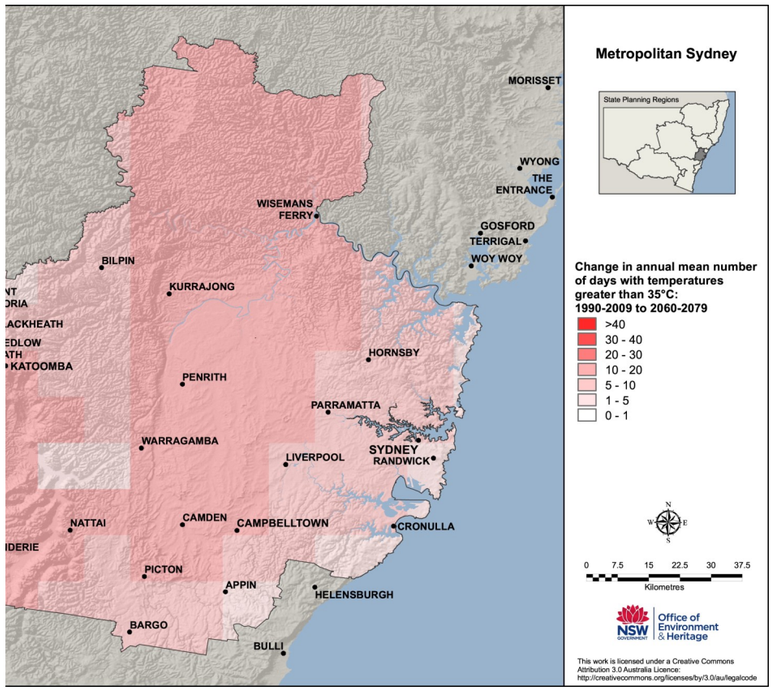
8. Climate change resilience

The building will be resilient to urban heating and help to mitigate urban heat island effect

Terry Hills is moderately exposed to urban heat island build up in summer months as the predominant north easterly summer breeze pushes hot air across the Sydney basin.,

To help mitigate and adapt to urban heating the proposal includes the following measures to target mitigation measures for c.75% of the horizontal surface area.

- Minimum SRIs for roof areas on the new building (80) and ground hardstand areas (50)
- Integrated landscape plan to maximise tree canopy for shade benefits and overall coverage of vegetation—727sqm total green landscape



An additional 5-10 days per year over 35 degrees can be expected in the life of the building—Office of Environment and Heritage

The buildings will be climate change resilient

Climate change impacts will be felt more heavily over the coming decades and particularly from 2050-2100. We note that the life of the building should exceed 50 years meaning that strong consideration should be given now to how the building and its students, carers and teachers can live and learn well with climate change.

The most recent climate modelling supporting IPCC6 predictions of climate change, and former more tailored modelling for NSW supporting IPCC5, indicate moderate to high confidence of more high temperature, high rainfall and storm extremes together with sea level rise. Increases in average winter temperatures and reduced average winter rainfalls are also indicated.

Proposed resilience outcomes

- Able to operate in heat wave events.
- Buildings designed to cope with 20-30% higher intensity short term extreme rainfall events.
- Buildings designed to cope with extreme storm events—particularly hail.
- Able to operate in bush fire smoke air pollution events.
- Landscape and materials specified to minimise urban heating.
- Building with strong Energy Efficiency measures using NCC 2022 Section J compliance will have good thermal performance and energy outcomes.
- In detailed design any roof top equipment will be assessed for resilience against storm damage (hail storms and short term high wind events) with storm protection measures considered at this time.

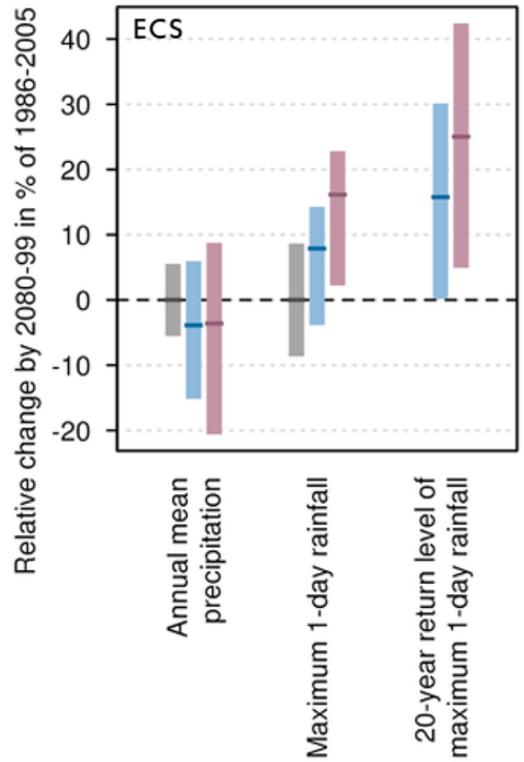


FIGURE 4.3.7: PROJECTED CHANGES IN MEAN RAINFALL, MAGNITUDE OF ANNUAL MAXIMUM 1-DAY RAINFALL AND MAGNITUDE OF THE 20-YEAR RETURN VALUE FOR THE 1-DAY RAINFALL FOR 2090 FOR EAST COAST NORTH (TOP) AND EAST COAST SOUTH (BOTTOM) (SEE TEXT FOR DEFINITION OF VARIABLES). CHANGES ARE GIVEN IN PERCENTAGE WITH RESPECT TO THE 1986–2005 MEAN FOR RCP4.5 (BLUE AND RCP8.5 (PURPLE). NATURAL CLIMATE VARIABILITY IS REPRESENTED BY THE GREY BAR. BAR PLOTS ARE EXPLAINED IN BOX 4.2.

East Coast Region Climate Change Report—CSIRO update 2021