139 Grandview Dr,
Newport, NSW, 2106
E: gillian@thrive-ecology.com.au
M: 0433 711 986

Adam Mardini and Jeff Chan
Turner & Townsend
Level 21, 363 George Street, Sydney, NSW 2000
P:02 8245 0000 | M: 0404 252 200
E: adam.mardini@turntown.com

Monday, 18 September 2023

Dear Adam and Jeff,

This letter report has been prepared to assess the impacts of the proposed Total Asset Management (TAM) development on threatened species listed under the *Biodiversity Conservation Act 2016* (BC Act) and the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The outcomes of this assessment will assist in determining the approval pathway for the development and can be used to inform a Review of Environmental Factors (REF).

If you have any questions please don't hesitate to contact me.

Best regards

Gillian Teear
Director | Senior Ecologist & BAM Accredited Assessor (BAAS22036)
M: 0433 711 986 | E: gillian@thrive-ecology.com.au

1 Background

NSW Health Infrastructure is proposing the development of a Total Asset Management (TAM) building and associated infrastructure within the Nepean Hospital Precinct. See Appendix A for the proposed plans. The development is currently in the planning stages. The scope of this report is to determine if a significant impact on threatened species or threatened ecological communities under the *Biodiversity Conservation Act 2016* (BC Act) and the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) is likely. The outcomes of this assessment will assist planners in determining the most appropriate approval pathway for the development based on the impact on threatened species and threatened ecological communities.

1.1 Proposal Location

The Subject Site is located within the Nepean Hospital Precinct, Kingswood, NSW. The proposed TAM location is on Derby Street adjacent to the Wilsons Parking at the corner of Somerset Street. See Table 1-1 for Subject Site details and Figure 1-1 for the mapped Subject Site and estimated construction footprint. See Figure 1-2, 1-3, 1-4 and 1-5 for site photos.

Table 1-1 Subject Site details.

Feature	Description
Site name	Nepean Hospital – TAM site
Site address	Derby Street, Kingswood, NSW
Property identifier (Lot and DP)	DP 1238301
Local Government Area (LGA)	Penrith City Council
Zoning	SP2 Health Services Facilities
Study Area	Refers to the area specified for the ecological and landscape desktop assessment only. The Study Area is specified as a 5 km polygon around the outer edge of the defined construction activity footprint.
Subject Site	The proposed construction activity footprint.

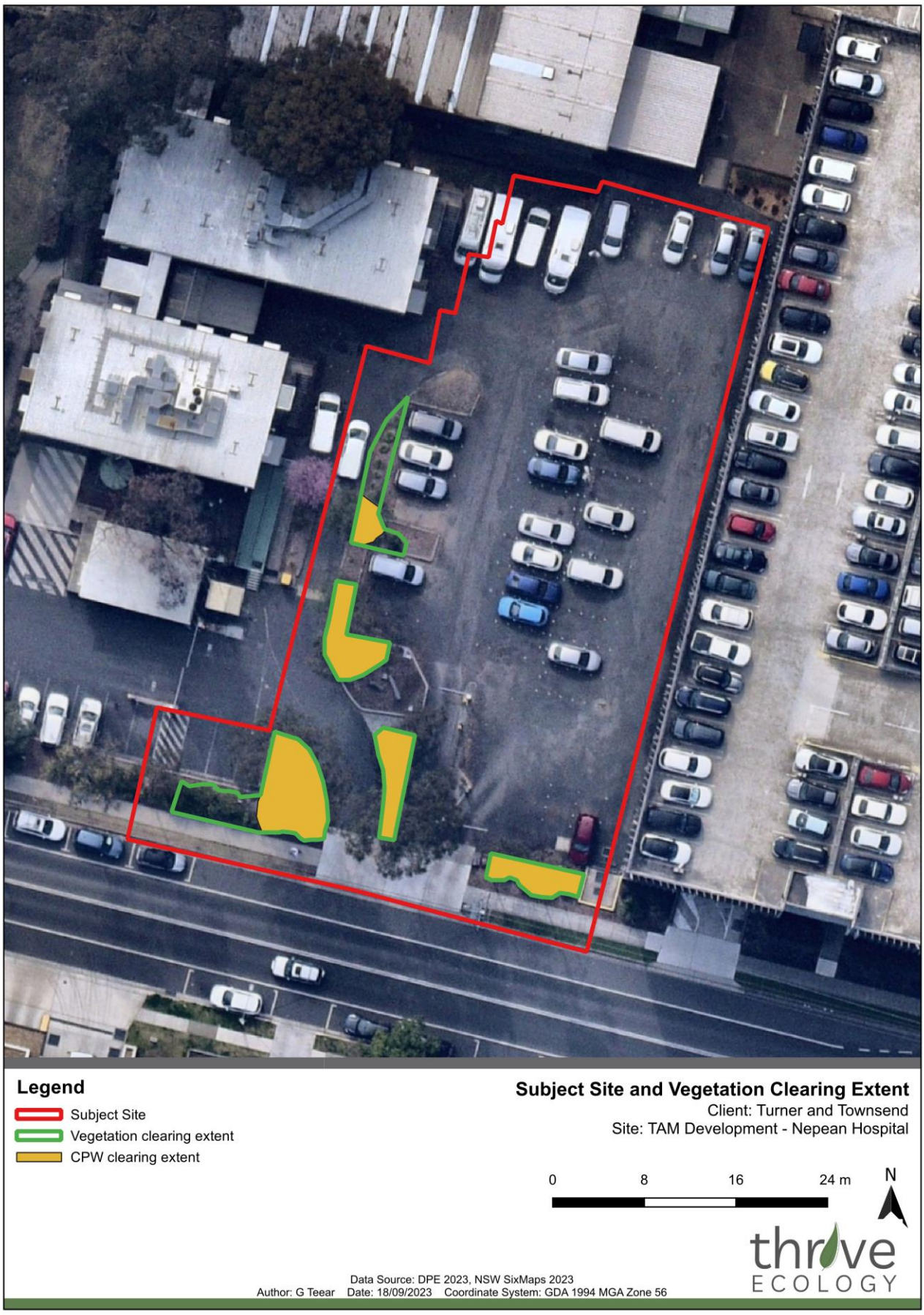


Figure 1-1. Subject Site and vegetation clearing extent.

Figure 1-2. Site facing south-east

Figure 1-3. Site facing south

Figure 1-4. Site facing south-east.

Figure 1-5 Site facing south.

2 Legislative Context

The following legislative outcomes are based on the proposal falling under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

2.1 *Biodiversity Conservation Act 2016* (BC Act)

The *Biodiversity Conservation Act 2016* (BC Act) seeks to conserve biological diversity and promote ecologically sustainable development, to prevent extinction and promote recovery of threatened species, populations, and ecological communities and to protect Areas of Outstanding Biodiversity Value.

No threatened fauna species under the BC Act were observed during the survey. Two threatened species under the BC Act were determined to have a high likelihood of occurring on the Subject Site. These are:

- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable under the BC Act
- Swift Parrot (*Lathamus discolor*) – Endangered under the BC Act

One Threatened Ecological Communities (TEC), *Cumberland Plain Woodland within the Sydney Basin Bioregion* listed as Critically Endangered under the BC Act was identified within the Subject Site.

Assessments of Significance (5 Part-test) under s7.3 of BC Act determined that the Proposal is unlikely to have a significant impact on a threatened entity (see Appendix E). Therefore, a Species Impact Statement (SIS) or Biodiversity Development Assessment Report (BDAR) is not required.

The Subject Site is not mapped under the Biodiversity Values Map and is not an Area of Outstanding Biodiversity.

2.2 *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places which are considered Matters of National Environmental Significance (MNES). Under the EPBC Act, approval is required for actions that have, would have, or are likely to have a significant impact on MNES.

No threatened flora or fauna under the EPBC Act were observed within the Subject Site during the site survey. Two threatened species listed under the EPBC Act was determined to have a high likelihood of occurrence within the Subject Site:

- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable under the EPBC Act
- Swift Parrot (*Lathamus discolor*) – Critically Endangered under the EPBC Act

An assessment of significant impact criteria under the EPBC Act (see Appendix F) found the Proposal is unlikely to have a significantly impact on either the Grey-headed Flying-fox (*Pteropus poliocephalus*) or the Swift Parrot (*Lathamus discolor*). As such, no referral to the Australian Government Minister for the Environment (the Minister) is required.

The Cumberland Plain Woodland did not meet the condition thresholds of the EPBC Critically Endangered listing of *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest*. As such an assessment of significant impact criteria for this entity is not required.

3 Methodology

The assessment included desktop research of the locality (5km radius from the subject site) including review of relevant document and relevant databases as well as a site investigation to ground-truth the vegetation and determine the plant community type and condition.

3.1 Desktop Research

The desktop study included a review of the following documents and database searches:

- Review of the State Vegetation Type Mapping (DPE 2022a)
- Biodiversity Development Assessment Report (BDAR) by Total Earth Care, 2022 (TEC 2022)
- Review of soil landscape on eSpade (DPE 2023c)
- Search of relevant databases including the Bionet Wildlife Atlas (DPE 2023a) and Protected Matters Search (DECCEW 2023a).
- Review of the final determination under the BC Act and conservation listing advice under the EPBC Act for *Cumberland Plain Woodland within the Sydney Basin Bioregion*.

3.2 Site Investigation

A site visit was undertaken on Tuesday 29th August 2023 by one ecologist to ground-truth the vegetation. Due to the small extent of vegetation within the Subject Site the random meander

(Cropper 1993) method was used to cover all proposed impact areas. The following was also assessed/observed during the site visit:

- Visual assessment of the hydrology and topography of the study area.
- Existing condition of the vegetation including resilience and weed cover.
- Assessment of potential fauna habitat.
- Opportunistic detections of fauna were recorded.

The identification of native and exotic plant species was in accordance with:

- *Field Guide to the Native Plants of Sydney* (Robinson 2003).
- *Flora of NSW, Volumes 1-4* (Harden 1992, 1993, 2000, 2002).
- *Weeds of the south-east: an identification guide for Australia* (Richardson et al. 2011).
- PlantNET with reference to recent taxonomic changes (National Herbarium of NSW 2023).

All flora identified were recorded and an inventory of species was compiled, see Appendix B.

3.3 Plant Community Type Classification

The plant community type (PCT) was determined by review of the following documents and databases:

- State Vegetation Type Mapping (SVTM) (DPE 2022a).
- NSW Plant Community Type profiles accessed from BioNet Vegetation Classification database (DPE 2023d).
- Definitions under the relevant final determination under the BC Act or conservation listing advice under the EPBC Act.

The PCT was confirmed by filtering the following data in the excel of the exported PCT data from the BioNet Vegetation Classification application (DPE, 2023f):

- IBRA Bioregion: Sydney Basin
- IBRA Subregion: Sydney Cataract
- Vegetation Formation: Grassy Woodlands
- Vegetation Class: Coastal Valley Grassy Woodlands

Dominant species from each stratum. The remaining filtered PCTs were then cross-referenced against their descriptive attributes as outlined in the BioNet Vegetation Classification application (DPE, 2023d). Soil type, topography, and underlying geology were also considered.

3.4 Threatened species likelihood of occurrence assessment

A preliminary desktop study was conducted to assess the likelihood of the Subject Site to support threatened species, populations or endangered ecological communities, or their habitats. All records of all threatened species and populations within 5km of the Subject Site (10km locality search) were obtained from the Department of Planning and Environment (DPE) BioNet Wildlife Atlas database (DPE, 2023a), and the Federal Department of Environment Protected Matters Search Tool. Recent vegetation mapping was used to determine the likelihood of any nearby areas of endangered ecological communities and included database searches from the State Vegetation Type Map (SVTM) (DPE 2022a) and the BioNet Vegetation Classification System (DPE 2023d)

After reviewing the list of threatened species records, additional matters were considered in assessing which threatened species are likely to occur within the Subject Site. This included information such as the number of records within the 5 km of the Subject Site, the dates of these records, the likelihood of detecting the species during a survey, the preferred species habitat requirements and whether the Subject Site contained suitable habitat for the species.

The determination of species for likelihood assessment requires the exclusion of those species that are not relevant to the Subject Site including species that either have not been recorded on the Subject Site during the field investigations and/or are unlikely to be present on the Subject Site due to the absence of suitable habitats (i.e., Extremely Low category).

3.5 Limitations

The field surveys were conducted over one day in September 2023. As the surveys were undertaken at a discrete time of the year and during the day, it is possible that some species that may utilise the Subject Site were not recorded (i.e. migratory species, species present in soil bank, nocturnal species)

As stated by the DECC (2004) 'The absence of a species from survey data does not necessarily mean it does not inhabit the survey area. It may simply mean that the species was not detected at that time with the survey method adopted and the prevailing seasonal or climatic conditions.' Therefore, the relative brevity of the survey and its timing mean that the full spectrum of fauna species and ecological processes likely to occur on the Subject Site cannot be fully quantified or described in this report.

All spatial data was collected used a hand-held GPS which is accurate to 3 metres.

4 Results

4.1 Flora species

Ten (10) flora species were recorded during the site investigation. Of these four are exotic cultivar species and one is a weed species. The canopy includes:

- 6x *Eucalyptus moluccana* (Box Gum)
- 1x *Eucalyptus tereticornis* (Forest Red Gum)
- 1x *Casuarina glauca* (Swamp She-oak)
- 1x *Casuarina cunninghamiana* (River She-oak).

The Subject Site consists of a small area (approximately 53 m²) of planted *Lomandra longifolia* (Spiny-headed Mat-rush) and a row (approximately 16 m²) of planted *Callistemon citrinis* (Crimson Bottlebrush). No threatened species were observed during the site visit.

The flora species inventory is provided in Appendix B.

4.1.1 Threatened flora species

No threatened fauna were observed on the Subject Site or deemed likely to occur (see Appendix D). The Subject Site is highly disturbed with the only remaining vegetation existing within designated garden beds which has likely all been planted. Some Eucalypts may be remnant regrowth species. Additionally, the Subject Site was thoroughly surveyed due to the limited vegetation and small extent of the Subject Site and no threatened species were observed.

4.2 Plant Community Types

The vegetation within the study area does align to Plant Community Type (PCT) 3320: Cumberland Shale Plains Woodland. Details of the community and justification for the classification are provided in Table 4-1.

Table 4-1 PCT 3320 description and justification.

PCT 3320: Cumberland Shale Plains Woodland	
Vegetation Formation / Class	Grassy Woodlands / Coastal Valley Grassy Woodlands
Condition of PCT	Poor - Canopy only.
Description from DPE (2023d)	
A tall sclerophyll open forest to woodland with a sparse mid-stratum of soft-leaved shrubs and small trees with a grassy ground cover on the undulating shale plains of western Sydney. The canopy very frequently includes *Eucalyptus tereticornis* and *Eucalyptus moluccana*, with ironbarks (*Eucalyptus crebra* and *Eucalyptus fibrosa*) occasionally present however prominent in localised areas. The sparse shrub to small tree layer very frequently includes *Bursaria spinosa* and one or more species of Acacia, of which *Acacia parramattensis*, *Acacia decurrens* and *Acacia falcata* are the most frequent and abundant. Presence of these Acacia species helps to distinguish this PCT from PCT 3319 which typically includes *Acacia implexa*. The mid-dense ground layer typically includes grasses, forbs, twiners and a hardy fern. *Microlaena stipoides* is almost always present and *Themeda triandra, Dichondra repens, Brunoniella australis, Cheilanthes sieberi subsp. sieberi, Desmodium varians, Aristida vagans* and *Glycine tabacina* are very frequent. This is the most widespread PCT on the Cumberland Plain, occupying much of the plain between Bankstown and the Hawkesbury and Nepean rivers. It typically occurs in a warm, moist climate below 120 metres a.s.l., however can occur up to 200 metres a.s.l. on the undulating terrain between Douglas Park and Campbelltown to the east of the Nepean River. While widespread, this PCT primarily occurs in small, often disturbed patches within a rural or urban matrix. In the hilly country to the west of the Nepean River, this PCT is replaced by PCT 3a319. On thinner shales above sandstone around the periphery of the Cumberland Plain, it grades into PCT 3321. Ironbarks are very frequent and *Eucalyptus punctata* is common in the canopy of PCT 3321, and *Eucalyptus moluccana* and *Eucalyptus tereticornis* are both rare.	
Description of Vegetation within the Subject Site	
The canopy species consists of *Eucalyptus moluccana* (Box Gum), *Eucalyptus tereticornis* (Forest Red Gum), *Casuarina glauca* (Swamp She-oak) and *Casuarina cunninghamiana* (River She-oak). Ground cover species are typical of urban exotic and native plantings. Native ground and shrub species include dense plantings of *Lomandra longifolia* (Spiny-headed Mat-rush) and *Callistemon citrinis* (Crimson Bottlebrush). Other exotic planted species include *Citrus limon* (Lemon), *Ophiopogon sp.* (Mondo Grass) and a juvenile *Pheonix canariensis* (Pheonix Palm). The vegetation exists within designated garden beds within a carpark. Large areas of the garden beds are mulched and unvegetated.	
Justification for Assignment	**Characteristic Flora Species**
	The vegetation within Subject Site contained the two canopy species with the highest recorded frequency of occurrence for PCT 3320: *Eucalyptus*

	moluccana (Box Gum) and *Eucalyptus tereticornis* (Forest Red Gum). The two additional canopy species (*Casuarina spp.*) identified are listed as occurring within PCT 3320. The only ground cover that is representative of PCT 3320 is *Lomandra longifolia* (Spiny-headed Mat-rush) which is typically planted in urban areas and common in a wide range of PCTs. Many components of this PCT are missing and most species are likely planted. It is possible some trees may be remnant regrowth after reviewing historical imagery. The soil has previously been disturbed for the carpark construction and is mulched.
	Geology and Landscape Position The Subject Site is within the Luddenham soil landscape which is part of the Wianamatta Group Shales. The Subject Site is within the Sydney urban landscape east of the Nepean River. The Subject Site is approximately 50 m as..l.
BC Act Status	PCT 3320: Cumberland Shale Plains Woodland conforms to the Critically Endangered Ecological Community (CEEC) *Cumberland Plain Woodland in the Sydney Basin Bioregion* listed under the BC Act. Item 6 of the *Final determination for Cumberland Plain Woodland in the Sydney Basin Bioregion - critically endangered ecological community listing* identifies that the structure of the community may vary depending on levels of disturbance and that most of the community is regrowth from historical clearing. Given the critically endangered status and that an estimated 7% of the original extent of the community remains the precautionary principle is used to classify this vegetation as *Cumberland Plain Woodland* (CPW).
EPBC Act Status	PCT 3320: Cumberland Shale Plains Woodland does not meet the condition thresholds of the Critically Endangered listing of *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest* under the EPBC Act for the following reasons: • Patch size is <5 ha. • The perennial understory has <30% native species cover.

4.3 Fauna species and their habitat

Four native fauna species were recorded during the site survey. These are:

- Rainbow Lorikeet (*Trichoglossus haematodus*)
- Noisy Miner (*Manorina melanocephala*)
- Australian Raven (*Corvus coronoides*)
- Sulphur-crested Cockatoo (*Cacatua galerita*)

Further details are provided in Appendix C.

All fauna species are typical of the Sydney urban environment. No exotic species were recorded during the site survey. No threatened species were recorded during the site survey.

Approximately 7 m of felled logs have been placed in the garden beds and have potential to provide habitat for small common reptile species. They serve as important refuge within the urban landscape. However, given the disturbed nature and lack of connectivity to bushland the logs are unlikely to provide important habitat to threatened species.

4.3.1 Threatened fauna species

No threatened fauna were observed during the site survey. Two species were determined to have a high likelihood of occurring on the Subject Site (See Appendix D). These are:

- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable under the BC Act and EPBC Act.
- Swift Parrot (*Lathamus discolor*) – Endangered under the BC Act and Critically Endangered under the EPBC Act.

The Grey-headed Flying-fox (*Pteropus poliocephalus*) has 217 recorded sightings within 5 km of the Subject Site. The species is known to feed on native and exotic trees and shrubs within the urban landscape. The closest flying-fox camp in located 3.7km north-west at Emu Plains. The Eucalypt species within the Subject Site are provide potential winter foraging resources for the Grey-headed Flying-fox (*Pteropus poliocephalus*).

Swift Parrot (*Lathamus discolor*) has been recorded 13 times within 5 km of the Subject Site. The closest recorded sighting was near the Emergency Department of the Nepean Hospital in 2003. The Eucalypt species within the Subject Site are provide potential winter foraging resources for the Swift Parrot (*Lathamus discolor*).

The Cumberland Plain Woodland Snail (*Meridolum corneovirens*) is strongly associated with Cumberland Plain Woodland. However, it is highly unlikely the species would occur at this Subject Site due to the degraded nature of the understorey and lack of connectivity to bushland areas.

The Subject Site does not contain a shrub layer and has limited ground cover to support threatened species nor does it contain any hollows. The Subject Site is approximately 2 km from the nearest vegetation corridor at Shaw Park to the north-east. The limited connectivity of the Subject Site to bushland reduces the likelihood of threatened species to use the Subject Site. The Subject Site is mostly only accessible to mobile threatened species such as birds and bats.

5 Impacts

The Proposal will result in the following direct impacts:

- Loss of 115 m² (canopy excluded above man-made structures i.e. buildings , roads and footpaths) of PCT 3320 which conforms to the Critically Endangered Ecological Community (CEEC) *Cumberland Plain Woodland in the Sydney Basin Bioregion* listed under the BC Act. This includes the loss of:
    - Loss of six *Eucalyptus moluccana* (Box Gum)
    - Loss of one *Eucalyptus tereticornis* (Forest Red Gum).
    - Loss of two *Casuarina sp.*

- Loss of approximately 340 m² of garden beds contained planted native and exotic species and areas of bare mulch.
- Loss of 7 m of felled logs.

It is estimated that less than approximately 7% (7,841 ha) of PCT 3320 remains since European settlement. The loss of PCT 3320 for the Proposal is approximately 0.00015% of the total remaining area. As per the Assessment of Significance (5-Part Test) provided in Appendix E this is unlikely to have a significant impact on the Critically Endangered Ecological Community (CEEC) *Cumberland Plain Woodland in the Sydney Basin Bioregion*.

The loss of the canopy species will reduce the foraging habitat, including potential winter foraging for the Grey-headed Flying-fox (*Pteropus poliocephalus*) and Swift Parrot (*Lathamus discolor*) as well as native urban bird species within the locality. Assessment of Significance (5-Part Test) (under the BC Act) and Assessment of Significant Impact Criteria under the EPBC Act determined the Proposal would be unlikely to have a significant impact on a threatened fauna species (see Appendices E and F).

The loss of the ground cover vegetation is likely to have a very low impact on native fauna as the habitat extent is very limited, isolated and lacks connectivity with bushland areas. The loss of the ground cover vegetation and logs may reduce some sheltering habitat for native urban reptiles.

Due to the urbanised nature of the Subject Site and the locality, lack of connectivity to bushland areas and limited vegetation on the Subject Site no other biodiversity impacts are expected. The Subject Site is not within close proximity to any waterways or bushland areas.

The Proposal will contribute to the Key Threatening Process (KTP) '*Clearing of native vegetation*' to a very minor extent due to the limited extent of vegetation to be removed.

6 Recommendations

The following mitigation measures are to be implemented as part of the construction process. Taking into consideration the results from the desktop research and surveys, site-specific mitigation measures are made in order to either reduce the impacts of the Proposal on the Subject Site's biodiversity values, or to ensure potential impacts to the retained vegetation and biodiversity on the Subject Site is minimised. The mitigation measures are provided in Table 6-1.

Table 6-1 Recommended safeguards and mitigation measures.

Safeguards	Responsibility	Timing
Offset tree clearing by planting two trees for each tree removed within the Nepean Hospital Precinct. Tree species are to be characteristic species of the Cumberland Plain Woodland and from local provenance seed.	Project Manager	Pre-construction
A preclearance assessment is to be conducted by a qualified ecologist within 3 weeks of the clearing to check for nests or new hollows. If any nests or hollows are observed a qualified ecologist/fauna handler will be	Construction contractor/Project Manager/Ecologist	Pre-construction

Safeguards	Responsibility	Timing
required to supervise the tree clearing of the identified habitat trees.		
Existing felled logs are to be relocated to an area of retained vegetation within the precinct if possible. The relocation site is to be confirmed by an ecologist when undertaking the preclearance survey.	Project Manager/Ecologist	Pre-construction
Any retained vegetation within proximity to the proposed works is to be appropriately protected during the entire extent of the works, e.g. temporary fencing, flagging and tree protection. Tree protection is to be installed tin accordance with the Australian Standard AS 4970-2009 'Protection of Trees on Development Sites' (SA, 2009).	Construction contractor/Project Manager	Construction
During clearing or construction works, if any species of threatened flora or fauna are identified, works must stop immediately and a qualified Ecologist must be contacted.	All personnel on site	Pre-construction and construction
If any fauna are identified during works and require rescue, a qualified Ecologist, or fauna rescue volunteer, must be notified. Works will not continue until the animal has been rescued. Call either Sydney Metro Wildlife on 9413 4300 or WIRES on 1300 094 737.	All personnel on site	Pre-construction and construction
Erosion and sediment control will be detailed in a Construction and Environmental Management Plan (CEMP), including types of control, method of installation, locations, maintenance regime, responsibilities, and stockpile storage. All sedimentation and erosion control measures will be designed, installed, and maintained using procedures outlined in the *Standards of the Soil Conservation Service of NSW, WR Volume 4* and *Managing Urban Stormwater: Soils and Construction 2004 4th edition* (Landcom, 2004). Controls are to be maintained daily and installed prior to any construction activity.	Construction contractor	Pre-construction
Best practice hygiene will be implemented to prevent the spread of invasive weeds. Vehicles and plant will be inspected for mud and soils before entering and leaving site. Stockpiles of materials containing invasive weed plant matter will be covered and bunded to prevent spread.	All personnel on site	Pre-construction and construction
Stockpiling or refuelling will be undertaken in allocated areas such as existing asphalt and/or hard standing or cleared grassy areas. Stockpiles and refuelling areas will	Construction contractor/Project Manager	Pre-construction and construction

Safeguards	Responsibility	Timing
be clearly marked and have appropriate bunding and erosion and sediment controls in place.		
Heavy machinery, plant or equipment are to be stored in allocated areas. These will be on existing hardstand areas or previously cleared areas.	Construction contractor/Project Manager	Pre-construction and construction
Waste and excess spoil will be managed in accordance with the *NSW EPA Waste Classification Guidelines* (EPA, 2014). Waste (including weed materials) will be disposed of at an appropriately licenced facility.	Construction contractor/Project Manager	Pre-construction and construction

7 Conclusion

The Proposal for the construction of the TAM building will impact approximately 115 m² of Cumberland Plain Woodland (Critically Endangered under the BC Act). It will remove foraging habitat for Grey-headed Flying-fox (*Pteropus poliocephalus*) (Vulnerable under the BC Act and EPBC Act) and the Swift Parrot (*Lathamus discolor*) (Endangered under the BC Act and Critically Endangered under the EPBC Act). However, due to the limited extent of the vegetation to be impacted and the existing degraded nature of the vegetation it is unlikely to have a significant impact on threatened species or threatened ecological communities. As such, a BDAR or SIS is not required under Part 5 of the EP&A Act. This assessment can be used to inform the REF for assessment of threatened entities under the BC Act and EPBC Act.

8 References

Cropper, S. C. (1993). *Management of endangered plants* (CSIRO, V. D. of C. and N. Resources, & A. N. C. Agency (eds.)). CSIRO.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2023a). *Protected Matters Search Tool*. Available at:https://www.awe.gov.au/environment/epbc/protected-matters-search-tool

Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2023b). *Grey-headed Fluing-fox SPRAT Profile*. Available at: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=186

Department of Planning Environment (DPE) (2020). *Grey-headed Flying-fox – profile* Retrieved 8 September 2023. Available at: https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10697

Department of Planning Environment (DPE) (2022a). *NSW State Vegetation Type Map*. Available at: https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet/state-vegetation-type-map

Department of Planning Environment (DPE) (2022b). *Swift Parrot – profile* Retrieved 8 September 2023. Available at: https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10455

Department of Planning Environment (DPE) (2023a). *BioNet Atlas*. Available at: https://www.environment.nsw.gov.au/asmslightprofileapp/account/login?ReturnUrl=%252fAtlasApp%252fDefault.aspx

Department of Planning Environment (DPE) (2023b). *ePlanning Spatial Viewer*. Available at: https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address

Department of Planning Environment (DPE) (2023c). *Soil Landscapes of Central and Eastern NSW - v2*. Available at: https://www.environment.nsw.gov.au/eSpade2Webapp

Department of Planning and Environment (DPE). (2023d). *BioNet Vegetation Classification*. Department of Planning and Environment. Available at: https://www.environment.nsw.gov.au/NSWVCA20PRapp/default.aspx

Harden, G. J. (1993a). *Flora of New South Wales Volume 3* (1st ed., Vol. 3). UNSW Press.

Harden, G. J. (1993b). *Flora of New South Wales Volume 4* (1st ed., Vol. 4). UNSW Press.

Harden, G. J. (2000). *Flora of New South Wales Volume 1* (G. J. (Gwenneth J. Harden (ed.); 2nd ed., Vol. 1). UNSW Press.

Harden, G. J. (2002). *Flora of New South Wales Volume 2* (2nd ed., Vol. 2). UNSW Press.

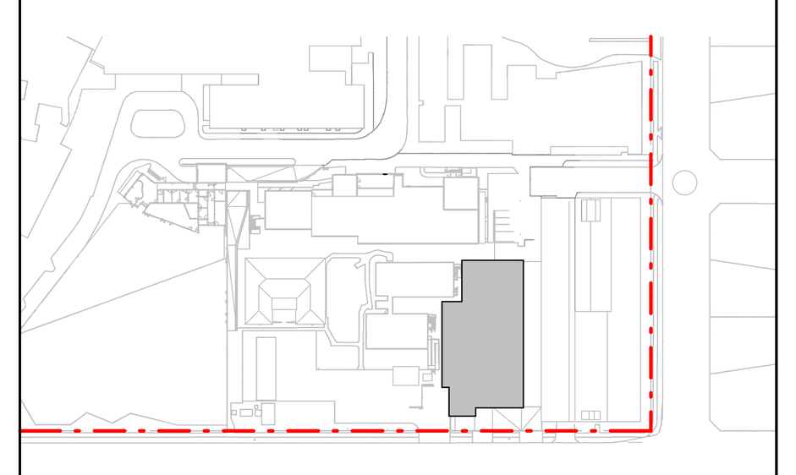
National Herbarium of NSW. (2023). *PlantNET*. https://plantnet.rbgsyd.nsw.gov.au/

Richardson, Richardson, & Shepherd. (2011). *Weeds of the south-east : an identification guide for Australia* (3rd ed.). R.G. and F.J. Richardson.

Robinson, L. (2003). *Field guide to the native plants of Sydney*. Kangaroo Press.

Total Earth Care (TEC) (2022) *Biodiversity Development Assessment Report: Stage 2 Redevelopment of Nepean Hospital.*

Appendix A. Proposal Plans



REV	DESCRIPTION	DRN	DATE
A	TAM - Schematic design issue	NM	11/03/2022

DIMENSIONS

USE FIGURED DIMENSIONS, DO NOT SCALE. CONTRACTORS MUST VERIFY ALL DIMENSIONS ON THE SITE BEFORE COMMENCING ANY WORK OR MAKING ANY SHOP DRAWING WHICH MUST BE SUBMITTED AND REVIEWED BEFORE MANUFACTURE.

FIXTURES, FITTINGS & EQUIPMENT SPECIFICATIONS

SUBSTITUTE FF&E EQUIPMENT SPECIFICATIONS
THE FIT-OUT DESIGN AND DOCUMENTATION HAS BEEN COMPLETED ON THE BASIS OF FF&E AND EQUIPMENT ADVISED TO THIS OFFICE AT THE TIME OF BRIEFING THE DESIGN. THE DESIGN PROVISIONS FOR FF&E AND EQUIPMENT INCORPORATES SPATIAL ALLOCATIONS, SERVICING, LOADING AND ACCESS CLEARANCES AND WHERE APPROPRIATE SERVICES REQUIREMENTS, HAVING DUE REGARD FOR SURROUNDING FIXTURES AND FITTINGS. IT SHOULD BE NOTED THAT SUBSTITUTE FF&E OR EQUIPMENT WITH ALTERNATE SPECIFICATIONS SHOULD NOT BE PROCURED PRIOR TO VALIDATING THOSE SPECIFICATIONS AGAINST THE ITEM CONTROL SCHEDULE AND DESIGN PROVISIONS IN THE MODEL. THIS OFFICE ACCEPTS NO RESPONSIBILITY FOR THE PROCUREMENT OF SUBSTITUTE FF&E AND EQUIPMENT WHICH HAS NOT BEEN REVIEWED AND VALIDATED AGAINST THE ORIGINAL DESIGN PROVISIONS.

SERVICE POINTS DISCLAIMER

THE SERVICE POINTS IDENTIFIED ON THESE DRAWINGS HAVE BEEN OVERLAYED FROM THE BUILDING SERVICES ENGINEERING MODEL, AND ARE PROVIDED FOR INFORMATION AND SET-OUT PURPOSES ONLY. WE HAVE BEEN ADVISED BY THE SERVICES ENGINEERS THAT THE POINTS REPRESENTED ON THESE DRAWINGS ARE CORRECT AT THE TIME OF PUBLICATION. THIS OFFICE DOES NOT WARRANT THE ACCURACY OF THIS DATA. REFER TO THE BUILDING SERVICES ENGINEERING DOCUMENTATION FOR THE INSTALLATION OF THE SERVICES POINTS, AND THE INTERFACE BETWEEN THE SERVICES POINTS AND THE RESPECTIVE ENGINEERING SYSTEMS.

ISSUED FOR INFORMATION

ARCHITECTS

STH

ABN: 21 134 476 065
PELACO COMPLEX, BUILDING 3, LEVEL 2
21-31 GOODWOOD ST, RICHMOND VIC 3121, AUSTRALIA
PH: (03) 9885 2333 FAX: (03) 9885 2455

CLIENT

HEALTH INFRASTRUCTURE

PROJECT

NEPEAN HOSPITAL TAM

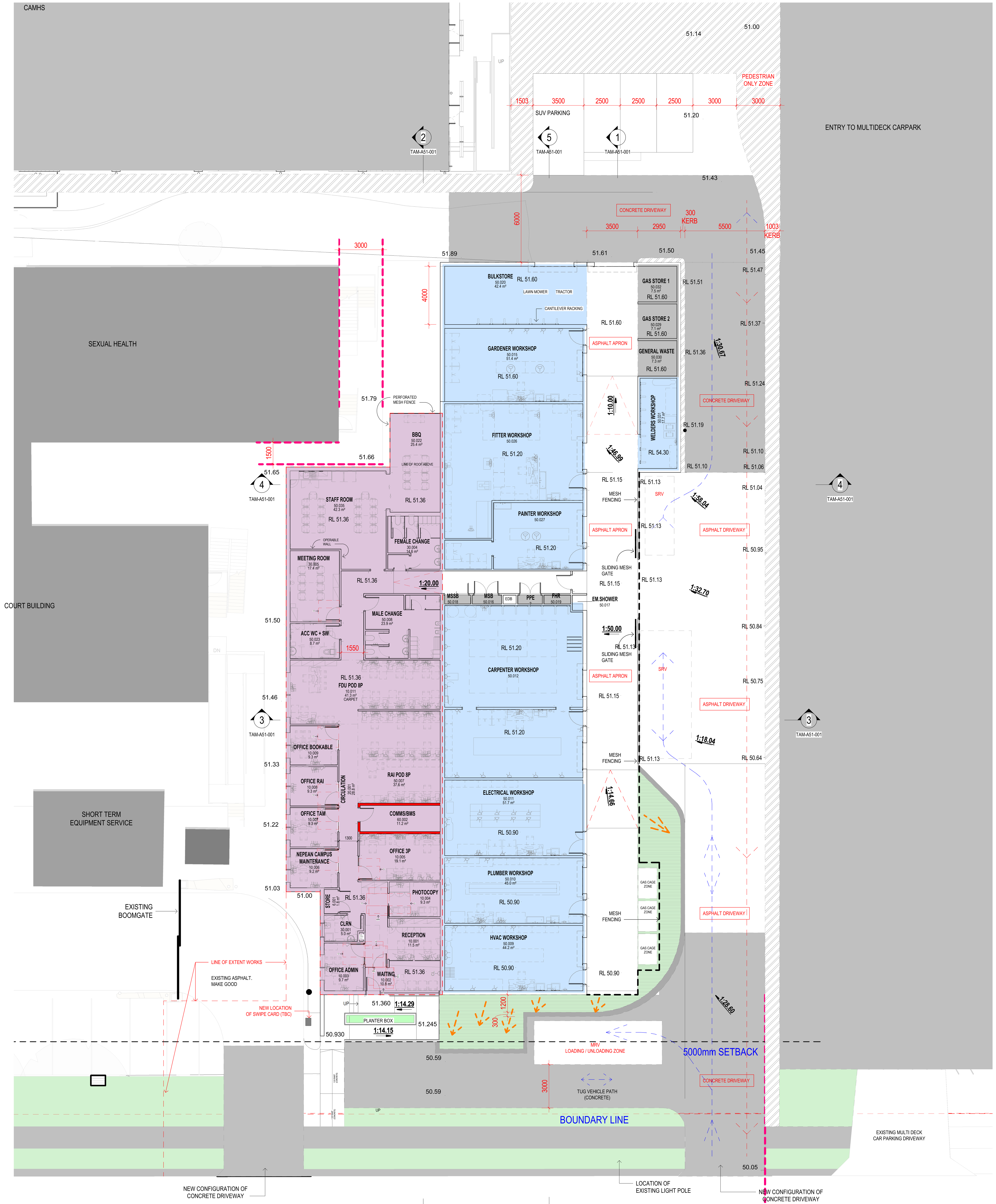
Derby Street, Kingswood, NSW, 2747

DRAWING TITLE

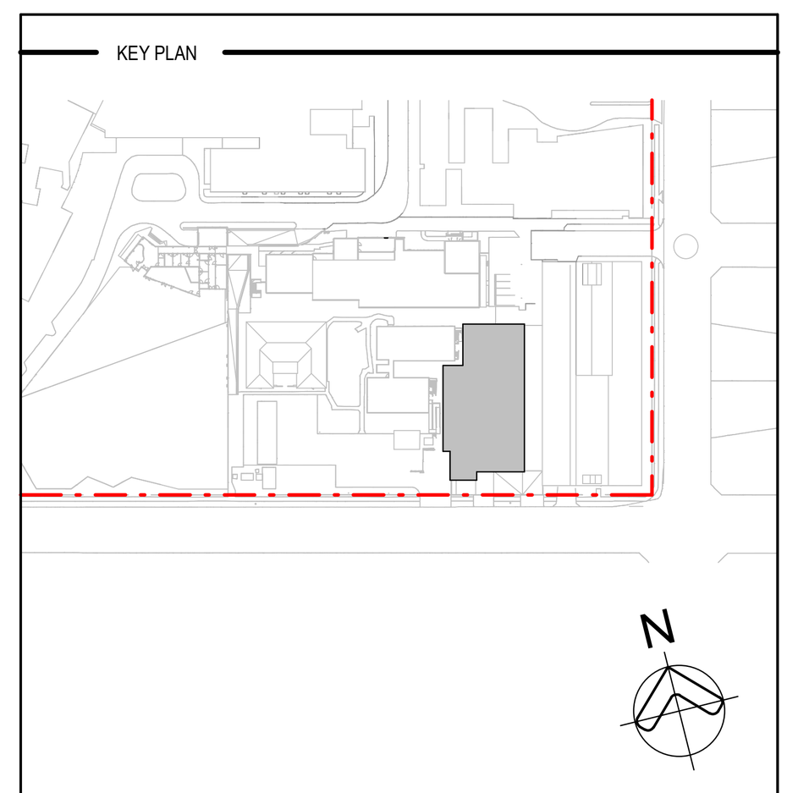
SITE PLAN

SCALE	DATE	DRAWN BY	CHECKED
1 : 100@A0	02/02/22	NM	Checker

PROJECT No	DRAWING No	REVISION
10442	NHR-STH-DRW-ARC-TAM-A10-002	A



KEY PLAN



REV	DESCRIPTION	DRN	DATE
A	TAM - Schematic design issue	NM	11/03/2022

DIMENSIONS

USE FIGURED DIMENSIONS, DO NOT SCALE. CONTRACTORS MUST VERIFY ALL DIMENSIONS ON THE SITE BEFORE COMMENCING ANY WORK OR MAKING ANY SHOP DRAWING WHICH MUST BE SUBMITTED AND REVIEWED BEFORE MANUFACTURE.

FIXTURES, FITTINGS & EQUIPMENT SPECIFICATIONS

SUBSTITUTE FF&E EQUIPMENT SPECIFICATIONS
THE FIT-OUT DESIGN AND DOCUMENTATION HAS BEEN COMPLETED ON THE BASIS OF FF&E AND EQUIPMENT ADVISED TO THIS OFFICE AT THE TIME OF BRIEFING THE DESIGN. THE DESIGN PROVISIONS FOR FF&E AND EQUIPMENT INCORPORATES SPATIAL ALLOCATIONS, SERVICING, LOADING AND ACCESS CLEARANCES AND WHERE APPROPRIATE SERVICES REQUIREMENTS, HAVING DUE REGARD FOR SURROUNDING FIXTURES AND FITTINGS. IT SHOULD BE NOTED THAT SUBSTITUTE FF&E OR EQUIPMENT WITH ALTERNATE SPECIFICATIONS SHOULD NOT BE PROCURED PRIOR TO VALIDATING THOSE SPECIFICATIONS AGAINST THE ITEM CONTROL SCHEDULE AND DESIGN PROVISIONS IN THE MODEL. THIS OFFICE ACCEPTS NO RESPONSIBILITY FOR THE PROCUREMENT OF SUBSTITUTE FF&E AND EQUIPMENT WHICH HAS NOT BEEN REVIEWED AND VALIDATED AGAINST THE ORIGINAL DESIGN PROVISIONS.

SERVICE POINTS DISCLAIMER

THE SERVICE POINTS IDENTIFIED ON THESE DRAWINGS HAVE BEEN OVERLAYED FROM THE BUILDING SERVICES ENGINEERING MODEL, AND ARE PROVIDED FOR INFORMATION AND SET-OUT PURPOSES ONLY. WE HAVE BEEN ADVISED BY THE SERVICES ENGINEERS THAT THE POINTS REPRESENTED ON THESE DRAWINGS ARE CORRECT AT THE TIME OF PUBLICATION. THIS OFFICE DOES NOT WARRANT THE ACCURACY OF THIS DATA. REFER TO THE BUILDING SERVICES ENGINEERING DOCUMENTATION FOR THE INSTALLATION OF THE SERVICES POINTS, AND THE INTERFACE BETWEEN THE SERVICES POINTS AND THE RESPECTIVE ENGINEERING SYSTEMS.

ISSUED FOR INFORMATION

ARCHITECTS

STH

ABN: 21 134 476 065
PELACO COMPLEX, BUILDING 3, LEVEL 2
21-31 GOODWOOD ST, RICHMOND VIC 3121, AUSTRALIA
PH: (03) 9885 2333 FAX: (03) 9885 2455

CLIENT

HEALTH INFRASTRUCTURE

PROJECT

NEPEAN HOSPITAL TAM

Derby Street, Kingswood, NSW, 2747

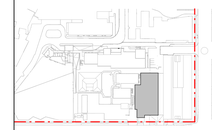
DRAWING TITLE

GROUND FLOOR - GENERAL ARRANGEMENT PLAN

SCALE	DATE	DRAWN BY	CHECKED
1 : 100@A0	12/15/21	NM	Checker

PROJECT No	DRAWING No	REVISION
10442	NHR-STH-DRW-ARC-TAM-A20-101	A

KEY PLAN



N

REV	DESCRIPTION	DRN	DATE
A	TAM - Schematic design issue	NM	11/03/2022

DIMENSIONS

USE FIGURED DIMENSIONS. DO NOT SCALE. CONTRACTORS MUST VERIFY ALL DIMENSIONS ON THE SITE BEFORE COMMENCING ANY WORK OR MAKING ANY SHOP DRAWING WHICH MUST BE SUBMITTED AND REVIEWED BEFORE MANUFACTURE.

FIXTURES, FITTINGS & EQUIPMENT SPECIFICATIONS

SUBSTITUTE FF&E EQUIPMENT SPECIFICATIONS
THE FIT-OUT DESIGN AND DOCUMENTATION HAS BEEN COMPLETED ON THE BASIS OF FF&E AND EQUIPMENT ADVISED TO THIS OFFICE AT THE TIME OF BRIEFING THE DESIGN. THE DESIGN PROVISIONS FOR FF&E AND EQUIPMENT INCORPORATES SPATIAL ALLOCATIONS, SERVICING, LOADING AND ACCESS CLEARANCES AND WHERE APPROPRIATE SERVICES REQUIREMENTS, HAVING DUE REGARD FOR SURROUNDING ENVIRONMENTAL CONDITIONS. SUBSTITUTION OF SPECIFIED FF&E AND EQUIPMENT WITH ALTERNATE SPECIFICATIONS SHOULD NOT BE PROCURED PRIOR TO VALIDATING THOSE SPECIFICATIONS AGAINST THE ITEM CONTROL SCHEDULE AND DESIGN PROVISIONS IN THE MODEL. THIS OFFICE ACCEPTS NO RESPONSIBILITY FOR THE PROCUREMENT OF SUBSTITUTE FF&E AND EQUIPMENT WHICH HAS NOT BEEN REVIEWED AND VALIDATED AGAINST THE ORIGINAL DESIGN PROVISIONS.

SERVICE POINTS DISCLAIMER

THE SERVICE POINTS IDENTIFIED ON THESE DRAWINGS HAVE BEEN OVERLAYED FROM THE BUILDING SERVICES ENGINEERING MODEL, AND ARE PROVIDED FOR INFORMATION AND SET OUT PURPOSES ONLY. WE HAVE BEEN ADVISED BY THE SERVICES ENGINEERS THAT THE POINTS REPRESENTED ON THESE DRAWINGS ARE CORRECT AT THE TIME OF PUBLICATION. THIS OFFICE DOES NOT WARRANT THE ACCURACY OF THIS DATA. REFER TO THE BUILDING SERVICES ENGINEERING DOCUMENTATION FOR THE INSTALLATION OF THE SERVICES POINTS, AND THE INTERFACE BETWEEN THE SERVICES POINTS AND THE RESPECTIVE ENGINEERING SYSTEMS.

ISSUED FOR INFORMATION

ARCHITECTS

STH

ABN: 21 134 476 066
PELACO COMPLEX, BUILDING 3, LEVEL 2
21-31 DODDWOOD ST, RICHMOND VIC 3121, AUSTRALIA
PH: (03) 9885 2333 FAX: (03) 9885 2405

CLIENT

HEALTH INFRASTRUCTURE

PROJECT

NEPEAN HOSPITAL TAM

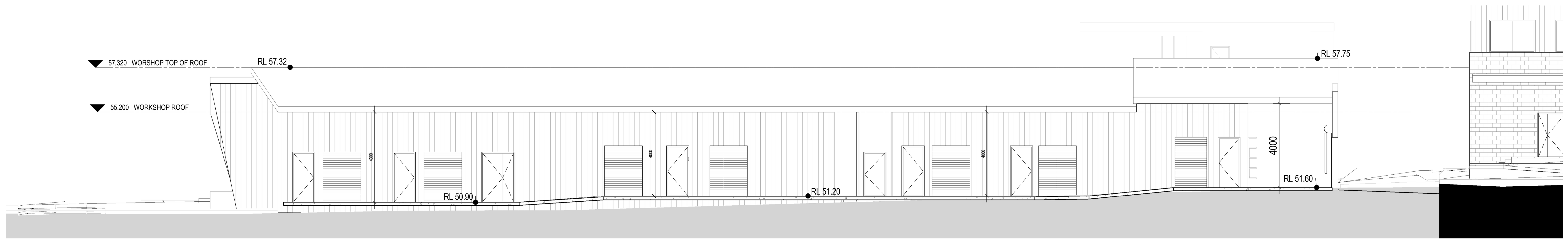
Derby Street, Kingswood, NSW, 2747

DRAWING TITLE

ROOF PLAN

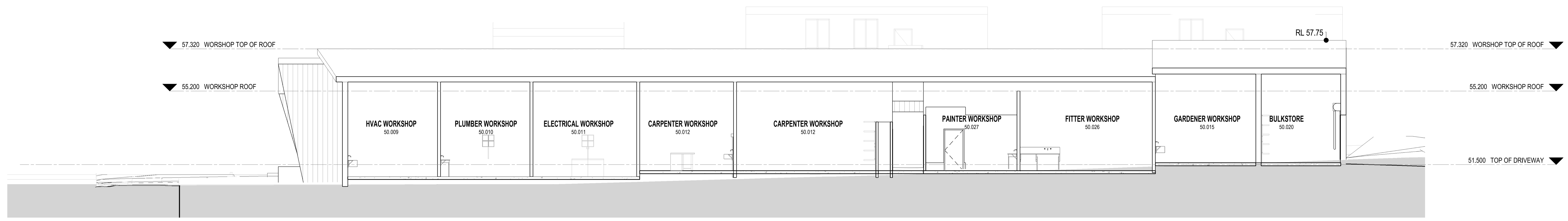
SCALE	DATE	DRAWN BY	CHECKED
1 : 100@A0	02/02/22	NM	Checker

PROJECT No	DRAWING No	REVISION
10442	NHR-STH-DRW-ARC-TAM-A40-001	A

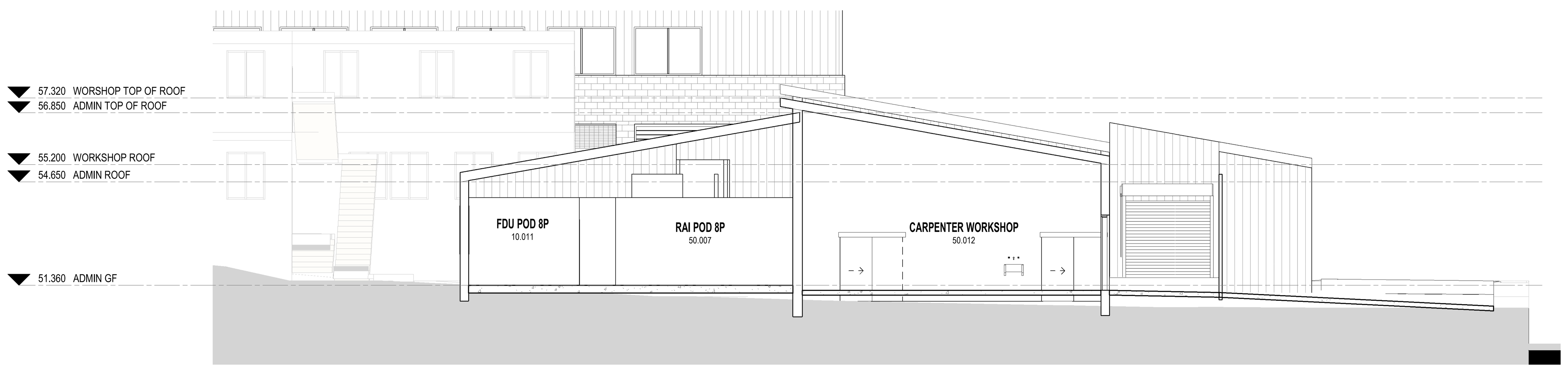


1 Workshops Driveway
SCALE: 1 : 100

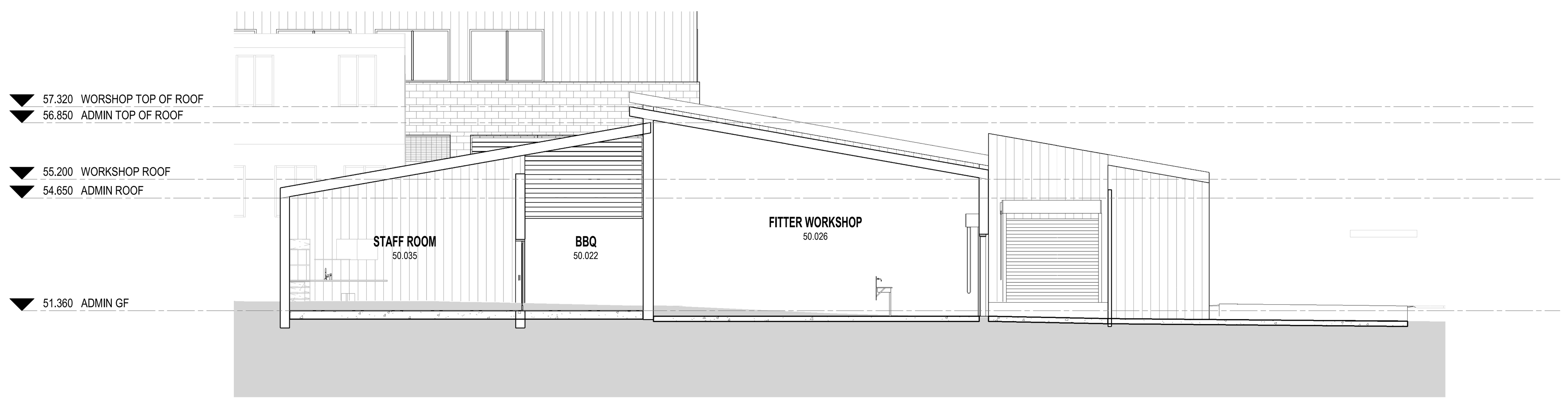
2 Admin Section
SCALE: 1 : 100



5 Workshops Section
SCALE: 1 : 100

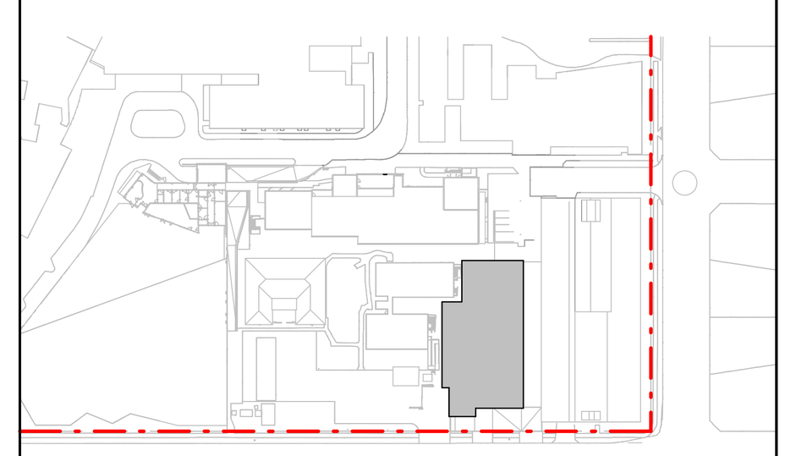


3 Section 3
SCALE: 1 : 100



4 Section 4
SCALE: 1 : 100

KEY PLAN



REV	DESCRIPTION	DRN	DATE
A	TAM - Schematic design issue	NM	11/03/2022

DIMENSIONS

USE FIGURED DIMENSIONS, DO NOT SCALE. CONTRACTORS MUST VERIFY ALL DIMENSIONS ON THE SITE BEFORE COMMENCING ANY WORK OR MAKING ANY SHOP DRAWING WHICH MUST BE SUBMITTED AND REVIEWED BEFORE MANUFACTURE.

FIXTURES, FITTINGS & EQUIPMENT SPECIFICATIONS

SUBSTITUTE FF&E EQUIPMENT SPECIFICATIONS
THE FIT-OUT DESIGN AND DOCUMENTATION HAS BEEN COMPLETED ON THE BASIS OF FF&E AND EQUIPMENT ADVISED TO THIS OFFICE AT THE TIME OF BRIEFING THE DESIGN. THE DESIGN PROVISIONS FOR FF&E AND EQUIPMENT INCORPORATES SPATIAL ALLOCATIONS, SERVICING, LOADING AND ACCESS CLEARANCES AND WHERE APPROPRIATE SERVICES REQUIREMENTS, HAVING DUE REGARD FOR SURROUNDING FIXTURES AND FITTINGS. IT SHOULD BE NOTED THAT SUBSTITUTE FF&E OR EQUIPMENT WITH ALTERNATE SPECIFICATIONS SHOULD NOT BE PROCURED PRIOR TO VALIDATING THOSE SPECIFICATIONS AGAINST THE ITEM CONTROL SCHEDULE AND DESIGN PROVISIONS IN THE MODEL. THIS OFFICE ACCEPTS NO RESPONSIBILITY FOR THE PROCUREMENT OF SUBSTITUTE FF&E AND EQUIPMENT WHICH HAS NOT BEEN REVIEWED AND VALIDATED AGAINST THE ORIGINAL DESIGN PROVISIONS.

SERVICE POINTS DISCLAIMER

THE SERVICE POINTS IDENTIFIED ON THESE DRAWINGS HAVE BEEN OVERLAYED FROM THE BUILDING SERVICES ENGINEERING MODEL, AND ARE PROVIDED FOR INFORMATION AND SET-OUT PURPOSES ONLY. WE HAVE BEEN ADVISED BY THE SERVICES ENGINEERS THAT THE POINTS REPRESENTED ON THESE DRAWINGS ARE CORRECT AT THE TIME OF PUBLICATION. THIS OFFICE DOES NOT WARRANT THE ACCURACY OF THIS DATA. REFER TO THE BUILDING SERVICES ENGINEERING DOCUMENTATION FOR THE INSTALLATION OF THE SERVICES POINTS, AND THE INTERFACE BETWEEN THE SERVICES POINTS AND THE RESPECTIVE ENGINEERING SYSTEMS.

ISSUED FOR INFORMATION

ARCHITECTS

STH
ABN: 21 134 476 065
PELACO COMPLEX, BUILDING 3, LEVEL 2
21-31 GOODWOOD ST, RICHMOND VIC 3121, AUSTRALIA
PH: (03) 9885 2333 FAX: (03) 9885 2455

CLIENT

HEALTH INFRASTRUCTURE

PROJECT

NEPEAN HOSPITAL TAM

Derby Street, Kingswood, NSW, 2747

DRAWING TITLE

SECTIONS

SCALE	DATE	DRAWN BY	CHECKED
1 : 100@A0	02/02/22	NM	Checker

PROJECT No	DRAWING No	REVISION
10442	NHR-STH-DRW-ARC-TAM-A51-001	A

Appendix B. Flora species

Table 8-1 Flora species recorded in the study area.

Family	Scientific Name	Common Name	Exotic Species	BC Act Status	EPBC Act Status
Arecaceae	*Phoenix canariensis*	Canary Island Date Palm	*		
Asparagaceae	*Ophiopogon sp.*	Mondo Grass	*		
Casuarinaceae	*Casuarina cunninghamiana subsp. cunninghamiana*	River Oak			
Casuarinaceae	*Casuarina glauca*	Swamp Oak			
Lomandraceae	*Lomandra longifolia*	Spiny-headed Mat-rush			
Myrtaceae	*Callistemon citrinus*	Crimson Bottlebrush			
Myrtaceae	*Eucalyptus moluccana*	Grey Box			
Myrtaceae	*Eucalyptus tereticornis*	Forest Red Gum			
Ochnaceae	*Ochna serrulata*	Mickey Mouse Plant	*		
Rutaceae	*Citris Limon*	Lemon	*		

Appendix C. Fauna species

Table 8-2 Fauna species identified in the Study Area

Family	Scientific Name	Common Name	BC Act Status	EPBC Act Status	Obs Type
Cacatuidae	*Cacatua galerita*	Sulphur-crested Cockatoo	P		W
Corvidae	*Corvus coronoides*	Australian Raven	P		W
Meliphagidae	*Manorina melanocephala*	Noisy Miner	P		W
Psittacidae	*Trichoglossus haematodus*	Rainbow Lorikeet	P		OW

BC Act Status – P = Protected
Observation Type – O = observed, W = heard

Appendix D. Threatened species likelihood of occurrence assessments

Table 8-3 Likelihood of threatened flora species under the BC Act 2016 and/or the EPBC Act 1999 to occur on the Subject Site

BC Act Status – V – Vulnerable, E1 Endangered, E4A - Critically Endangered, P – Protected, 2 – Category 2 sensitive species, 3 - Category 3 sensitive species

EPBC Act Status - CE - Critically Endangered, E – Endangered, V – Vulnerable, C – Camba, J – Jamba, K – Rokamba

All distribution, habitat and ecology description are as described in the threatened species profiles by DPE and/or SPRAT profiles from DCCEW.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
Acacia bynoeana	Bynoe's Wattle	E1	V	PMST	0	Found in central eastern NSW from the Hunter District (Morisset) south to the Southern Highlands and west to the Blue Mountains. Currently known from about 30 locations with the size of the populations at most locations being very small (1-5 plants). Has recently been found in the Colymea and Parma Creek areas west of Nowra.	Occurs in heath or dry sclerophyll forest on sandy soils. Seems to prefer open, sometimes slightly disturbed sites such as trail margins, edges of roadside spoil mounds and in recently burnt patches. Associated overstorey species include Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.
Acacia gordonii	null	E1	E	PMST	0	Restricted to the north-west of Sydney, it has a disjunct distribution occurring in the lower Blue Mountains in the west, and in the Maroota/Glenorie area in the east. This species is known from only a few locations and current information suggests the total number of individuals may be less than 2000, with only one population supporting greater than 400 individuals. A relatively large proportion of individuals (approximately 850) occur on conservation reserve within Blue Mountains National Park. This species is found within the Hawkesbury, Blue Mountains and Baulkham Hills local government areas.	Grows in dry sclerophyll forest and heathlands amongst or within rock platforms on sandstone outcrops. Flowers August to September and produces fruit October to February. The fruit is a pod containing hard-coated seed. The seed ultimately forms a persistent soil stored seedbank. Is identified in Benson and McDougall (1996) as a resprouter, however it is likely that the species' ability to resprout following fire varies as anecdotal observations suggest (at least in one instance) few adults resprouted following a fire (Ross Doig pers. comm. 2002). Such variation in fire response is not unusual for Acacia.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
							Fire promotes germination of the soil stored seedbank and seed germination will not occur in the absence of fire as the hard-coated seed requires heat to break seed dormancy, as is typical of species within Fabaceae.	
Acacia pubescens	Downy Wattle	V	V	Bionet, PMST	1	Concentrated around the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon.	Occurs on alluviums, shales and at the intergrade between shales and sandstones. The soils are characteristically gravely soils, often with ironstone. Occurs in open woodland and forest, in a variety of plant communities, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland. Longevity is unknown, but clonal species have been known to survive for many decades. Flowers from August to October. Pollination of Acacia flowers is usually by insects and birds. The pods mature in October to December. Recruitment is more commonly from vegetative reproduction than from seedlings. The percentage of pod production and seed fall for this species appears to be low. Acacia species generally have high seed dormancy and long-lived persistent soil seedbanks. It is thought that the species needs a minimum fire free period of 5 - 7 years to allow an adequate seedbank to develop.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.
Allocasuarina glareicola		E1	E	PMST	0	Primarily restricted to the Richmond (NW Cumberland Plain) district, but with an outlier population found at	Found in open woodland with *Eucalyptus parramattensis*, *Eucalyptus fibrosa, Angophora bakeri, Eucalyptus sclerophylla* and *Melaleuca decora*.	**Low**. Not found during the current survey which was thorough due to the

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
						Voyager Point, Liverpool. Grows in Castlereagh woodland on lateritic soil.	Common associated understorey species include *Melaleuca nodosa, Hakea dactyloides, Hakea sericea, Dillwynia tenuifolia, Micromyrtus minutiflora, Acacia elongata, Acacia brownei, Themeda australis* and *Xanthorrhoea minor*. Not killed outright by fire but resprouts from the rootstock. Spreads by vegetative means, such that clumps of up to 100s of stems may be a single individual. The time taken for the plants to flower and set seed is not known, but only those plants growing in areas unburnt for some time produced substantial numbers of fruit.	small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.
Cynanchum elegans	White-flowered Wax Plant	E1	E	PMST	0	Restricted to eastern NSW where it is distributed from Brunswick Heads on the north coast to Gerroa in the Illawarra region. The species has been recorded as far west as Merriwa in the upper Hunter River valley. White-flowered Wax Plant occurs on a variety of lithologies and soil types, usually on steep slopes with varying degrees of soil fertility (Quinn et al. 1995). Geology is not a limiting factor for this species and associated substrate varies at different locations. This species occurs from near sea level to about 600 m above sea level and experiences hot humid summers with high summer-autumn rainfall, and cool winters with low spring rainfall. Annual average rainfall ranges from 700–1450 mm (Matthes & Nash 1993; Quinn et al. 1995).	The White-flowered Wax Plant usually occurs on the edge of dry rainforest vegetation. Other associated vegetation types include littoral rainforest; *Leptospermum laevigatum, Banksia integrifolia* subsp. *integrifolia*; Eucalyptus tereticornis aligned open forest and woodland; *Corymbia maculata* aligned open forest and woodland; and *Melaleuca armillaris* scrub to open scrub. Flowering occurs between August and May, with a peak in November. Flower abundance on individual plants varies from sparse to prolific. The fruit can take up to six months to mature. Seed production is variable and unreliable. Seeds are wind dispersed. It is considered to be unlikely that a soil seed bank for this species exists. Plants are capable of suckering from rootstock in response to occasional slashing or grazing. The fire response of the species is unknown although it has been known to reshoot following fire. Annual burning at one site	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
							has been shown to result in population decline.	
Dillwynia tenuifolia	Null	E2,V		Bionet	7	The core distribution is the Cumberland Plain from Windsor and Penrith east to Dean Park near Colebee. Other populations in western Sydney are recorded from Voyager Point and Kemps Creek in the Liverpool LGA, Luddenham in the Penrith LGA and South Maroota in the Baulkham Hills Shire. Disjunct localities outside the Cumberland Plain include the Bulga Mountains at Yengo in the north, and Kurrajong Heights and Woodford in the Lower Blue Mountains.	In western Sydney, may be locally abundant particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays. May also be common in transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland. At Yengo, is reported to occur in disturbed escarpment woodland on Narrabeen sandstone. Eucalyptus fibrosa is usually the dominant canopy species. *Eucalyptus globoidea, E. longifolia, E. parramattensis, E. sclerophylla and E. sideroxylon* may also be present or codominant, with *Melaleuca decora* frequently forming a secondary canopy layer. Associated species may include *Allocasuarina littoralis, Angophora bakeri, Aristida spp. Banksia spinulosa, Cryptandra spp. Daviesia ulicifolia, Entolasia stricta, Hakea sericea, Lissanthe strigosa, Melaleuca nodosa, Ozothamnus diosmifolius* and *Themeda australis. D. tenuifolia* is often found in association with other threatened species such as *Dodonaea falcata, Grevillea juniperina, Micromyrtus minutiflora, Pultenaea parviflora* and *Styphelia laeta*. At Yengo *D. tenuifolia* is reported to occur in disturbed escarpment woodland on Narrabeen sandstone. Associated tree species include *Eucalyptus eximia, E. punctata, E.*	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
							sparsifolia and *Callitris endlicheri*. The shrub layer is dominated by D. tenuifolia, *Leucopogon muticus, Leptospermum parvifolium* and *Pultenaea microphylla* (Maryott-Brown & Wilks 1993). Flowering occurs sporadically through the year with a peak from from August to March depending on environmental conditions. Pollinators are unknown. The lifespan is estimated to be 20-30 years. It is thought a minimum of 3-4 years is required before seed is produced. Seeds are hard coated and are persistent in the soil seed bank. Dispersal is likely to be localised and ants are the probable vectors Killed by fire and re-establishes from soil-stored seed. Abundance is influenced by past disturbance history e.g. fire. The high population densities at some recorded sites (200,000+ individuals) reflects prolific seed germination in response to fire.	
Eucalyptus aggregata	Black Gum	E2,V	V	PMST	0	Black Gum is found in the NSW Central and Southern Tablelands, with small isolated populations in Victoria and the ACT. In NSW it occurs in the South Eastern Highlands Bioregion and on the western fringe of the Sydney Basin Bioregion. Black Gum has a moderately narrow distribution, occurring mainly in the wetter, cooler and higher parts of the tablelands, for example in the Blayney, Crookwell, Goulburn, Braidwood and Bungendore districts. Grows in the lowest parts of the landscape. Grows on alluvial soils, on	Often grows with other cold-adapted eucalypts, such as Snow Gum or White Sallee (*Eucalyptus pauciflora*), Manna or Ribbon Gum (*E. viminalis*), Candlebark *(E. rubida*), Black Sallee (*E. stellulata*) and Swamp Gum (*E. ovata*). Black Gum usually occurs in an open woodland formation with a grassy groundlayer dominated either by River Tussock (*Poa labillardierei*) or Kangaroo Grass (*Themeda australis*), but with few shrubs. Also occurs as isolated paddock trees in modified native or exotic pastures. Many populations occur on travelling stock reserves, though stands and	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
						cold, poorly-drained flats and hollows adjacent to creeks and small rivers.	isolated individuals also occur on private land. There are very few stands in conservation reserves."	
Eucalyptus benthamii	Camden White Gum	E4A	V	PMST	0	Occurs on the alluvial flats of the Nepean River and its tributaries. There are two major subpopulations: in the Kedumba Valley of the Blue Mountains National Park and at Bents Basin State Recreation Area. Several trees are scattered along the Nepean River around Camden and Cobbitty, with a further stand at Werriberri (Monkey) Creek in The Oaks. At least five trees occur on the Nattai River in Nattai National Park. Large areas of habitat were inundated by the formation of Warragamba Dam in 1933. Requires a combination of deep alluvial sands and a flooding regime that permits seedling establishment. Recruitment of juveniles appears to be most successful on bare silt deposits in rivers and streams. The recorded elevation range for the species is from 30m ASL at Bents Basin to 750m ASL in the Kedumba population. Most of the individuals are around 60 to 300m ASL.	"Occurs in open forest. Associated species at the Bents Basin site include *Eucalyptus elata, E. bauerina, E. amplifolia, E. deanei* and *Angophora subvelutina.* Understorey species include Bursaria spinosa, Pteridium esculentum and a wide variety of agricultural weeds. The Kedumba Valley site lists *E. crebra, E. deanei, E. punctata, Leptospermum flavescens, Acacia filicifolia* and *Pteridium esculentum* among its associated species. Flowering & Reproduction: White flowers occur in summer and autumn, although buds and sporadic flowering occurs throughout the year"	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
Genoplesium baueri	Bauer's Midge Orchid	E1,P,2	E	PMST	0	The species has been recorded from locations between Ulladulla and Port Stephens. About half the records were made before 1960 with most of the older records being from Sydney suburbs including Asquith, Cowan, Gladesville, Longueville and Wahroonga. No collections have been made from those sites in recent years. 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. In the Ku-ring-gai Wildflower Garden, the species ocupies damn soils dominated by sedges and rushes such as *Gahnia* sp. Flowers February to March.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.
Grevillea juniperina* subsp. *juniperina	Juniper-leaved Grevillea	V		Bionet	110	Endemic to Western Sydney, centred on an area bounded by Blacktown, Erskine Park, Londonderry and Windsor with outlier populations at Kemps Creek and Pitt Town.	Grows on reddish clay to sandy soils derived from Wianamatta Shale and Tertiary alluvium (often with shale influence), typically containing lateritic gravels. Recorded from Cumberland Plain Woodland, Castlereagh Ironbark Woodland, Castlereagh Scribbly Gum Woodland and Shale/Gravel Transition Forest. Associated canopy species within Cumberland Plain Woodland and Shale/Gravel Transition Forest include *Eucalyptus tereticornis, E. moluccana, E. crebra, E. fibrosa* and *E. eugenioides*. Understorey species include *Bursaria spinosa, Dillwynia sieberi, Ozothamnus diosmifolius, Daviesia ulicifolia, Acacia falcata, Acacia parramattensis, Themeda australis, Aristida ramosa, Cymbopogon refractus, Eragrostis brownii, Cheilanthes*	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
							sieberi, Dianella revoluta and *Goodenia hederacea.* In Castlereagh Woodland on more sandy soils the dominant canopy species are E*ucalyptus fibrosa, E. sclerophylla, Angophora bakeri* and *Melaleuca decora*. Understorey species include *Melaleuca nodosa, Hakea sericea, Cryptandra spinescens, Acacia elongata, Gonocarpus teucrioides, Lomandra longifolia* and the threatened species *Dillwynia tenuifolia, Pultenaea parviflora, Micromyrtus minutiflora and Allocasuarina glareicola*. Flowering may occur sporadically throughout the year, but particularly between July and October. Flowers are reported to be bird pollinated although bees have also been observed visiting flowers. Plants are killed by fire with regeneration solely from soil-stored seed. Fire leads to a sudden increase in the recruitment of seedlings. Germination experiments show that germination rates are improved by exposure to both smoke and heat. The frequency of fire is likely to be an important factor. If fires are too frequent there may be insufficient time to build up seed in the soil to replace plants killed in the fire. Physical disturbance of the soil appears to result in an increase in seedling recruitment. Has a tendency to colonise mechanically disturbed areas Dense growth of blackthorn (Bursaria) can limit the ability of the species to spread. Most prolific seeding occurs on plants more than 1m high.	

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
Grevillea parviflora* subsp. *parviflora	Small-flower Grevillea	V	V	PMST	0	Sporadically distributed throughout the Sydney Basin with sizeable populations around Picton, Appin and Bargo (and possibly further south to the Moss Vale area) and in the Hunter at in the Cessnock - Kurri Kurri area (particularly Werakata NP). Separate populations are also known from Putty to Wyong and Lake Macquarie on the Central Coast. Sydney region occurrences are usually on Tertiary sands and alluvium, and soils derived from the Mittagong Formation. Soil landscapes include Lucas Heights or Berkshire Park. Found over a range of altitudes from flat, low-lying areas to upper slopes and ridge crests. Hunter occurrences are usually 30-70m ASL, while the southern Sydney occurrences are typically at 100-300m ASL.	Grows in sandy or light clay soils usually over thin shales, often with lateritic ironstone gravels and nodules. Occurs in a range of vegetation types from heath and shrubby woodland to open forest. In Sydney it has been recorded from Shale Sandstone Transition Forest and in the Hunter in Kurri Sand Swamp Woodland. however, other communities occupied include *Corymbia maculata - Angophora costata* open forest in the Dooralong area, in Sydney Sandstone Ridgetop Woodland at Wedderburn and in Cooks River / Castlereagh Ironbark Forest at Kemps Creek. Associated species in the Kurri Sand Swamp Woodland include *Eucalyptus parramattensis subsp. decadens, Angophora bakeri and E. fibrosa with Acacia elongata, Dillwynia parvifolia, Melaleuca thymifolia, Grevillea montana, Eragrostis brownii* and *Aristida vagans.* In the Shale Sandstone Transition Forest associated species include *Eucalyptus fibrosa, E. punctata, Corymbia gummifera, Pultenaea scabra var. biloba, Kunzea ambigua, Allocasuarina littoralis* and *Themeda australis.* At sites with a stronger sandstone influence *Eucalytpus sclerophylla, E. piperita, E. oblonga, Grevillea diffusa, G. mucronulata, Acacia suaveolens* and *Persoonia pinifolia* are found. Despite the range of associated communities several understorey species which are common to several of the known sites of Grevillea parviflora subsp. parviflora can be identified and include *Allocasuarina littoralis, Daviesia ulicifolia, Kunzea ambigua, Banksia spinulosa,*	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
							Leptospermum trinervium, Melaleuca nodosa, Pimelea linifolia, Themeda australis, Entolasia stricta and Eragrostis brownii. Recorded growing with several other threatened species including Acacia bynoeana (Heddon Greta), Dillwynia tenuifolia (Kemps Creek) and Persoonia bargoensis (S. of Appin and at Bargo). Often occurs in open, slightly disturbed sites such as along tracks. Plants are capable of suckering from a rootstock and most populations demonstrate a degree of vegetative spread, particularly after disturbance such as fire. This can make counts of individual genets in a population very difficult, and stem counts are usually an acceptable means of assessment for management purposes. Flowering has been recorded between July to December as well as April-May. Flowers are insect-pollinated and seed dispersal is limited. Seedling recruitment after fire is uncommon, and most recovery after disturbance appears to be resprouting from rhizomes. Competition from tick bush (Kunzea ambigua) can affect recruitment and recovery, including spread, following disturbance.	
Hakea dohertyi	Kowmung Hakea	E1	E	PMST	0	Kowmung Hakea is confined to a small area (18 sq. km) in the Kowmung Valley in Kanangra Boyd National Park. Population varies, but up to 7000 plants have been counted. Additional small populations occur in Bindook area and at Tonalli Cove on Lake Burragorang.	Kowmung Hakea grows in dry sclerophyll forest, usually dominated by grey gum or silvertop ash, with a sparse groundcover and midstorey. It is an obligate seeder - i.e. it is killed by fire. The fruit are possibly susceptible to fire also, and seed may be killed within the follicle with even moderate heating.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
						Two smaller populations are found ata distance from the main population, on the north side of Bent Hook Swamp (leading up to the ridge) and near the Tonalli Cove of Lake Burragorang. All populations appear to favour shrubby woodland communities.	Seed is stored in woody fruits on mature plants and is released after fire or death of the stem. Older follicles are retained on the plant and open as a result of secondary thickening. The seeds are often still viable and germinating and immature plants may be found within the population. No particular age cohorts are evident in the populations.	limited suitable habitat.
Haloragis exalata* subsp. *exalata	Square Raspwort	V	V	PMST	0	The species occurs in 4 locations in eastern NSW. It is located in the Central Coast, South Coast, and North Western Slopes botanical subdivisions of NSW.	The species is found in riparian habitat and requires shaded damp and protected situations. The species flowers from November to January.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.
Marsdenia viridiflora* subsp. *viridiflora	Marsdenia viridiflora R. Br. subsp. viridiflora	E2		Bionet	682	Recent records are from Prospect, Bankstown, Smithfield, Cabramatta Creek and St Marys. Previously known north from Razorback Range.	Grows in vine thickets and open shale woodland. Flowers in spring. Has large underground tubers.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.
Melaleuca deanei	Deane's Melaleuca	V	V	PMST	0	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) areas.	The species occurs mostly in ridgetop woodland, with only 5% of sites in heath on sandstone. Flowers appear in summer but seed production appears to be small and consequently the species exhibits a limited capacity to regenerate.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
Micromyrtus blakelyi	-	V	V	PMST	0	Restricted to areas near the Hawkesbury River, north of Sydney. Distribution extends from north of Maroota in the north, to Cowan in the south. All known populations occur within the Baulkham Hills and Hornsby local government areas.	Typically occurs within heathlands in shallow sandy soil in cracks and depressions of sandstone rock platforms. Flowers in Spring from September to November and produces fruit (an indehiscent nut) October to November. Fire sensitive, with adults killed by fire and recruitment occurring from a soil seed bank. It is not known whether germination occurs in the absence of disturbance.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.
Micromyrtus minutiflora	-	E1	V	Bionet, PMST	1	Restricted to the general area between Richmond and Penrith, western Sydney.	Grows in Castlereagh Scribbly Gum Woodland, Ironbark Forest, Shale/Gravel Transition Forest, open forest on tertiary alluvium and consolidated river sediments. Sporadic flowering, June to March Response to fire and mechanical disturbance is uncertain. Regeneration may be due to resprouting or germination of soil-stored seed.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.
Persicaria elatior	Tall Knotweed	V	V	PMST	0	Tall Knotweed has been recorded in south-eastern NSW (Mt Dromedary (an old record), Moruya State Forest near Turlinjah, the Upper Avon River catchment north of Robertson, Bermagui, and Picton Lakes. In northern NSW it is known from Raymond Terrace (near Newcastle) and the Grafton area (Cherry Tree and Gibberagee State Forests). The species also occurs in Queensland.	This species normally grows in damp places, especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.
Persoonia acerosa	Needle Geebung	V,P	V	PMST	0	The Needle Geebung has been recorded only on the central coast and in the Blue Mountains, from Mt Tomah in the north to as far south as Hill Top where it is now believed to be extinct. Mainly in the Katoomba/ Wentworth Falls/ Springwood area.	The Needle Geebung occurs in dry sclerophyll forest, scrubby low-woodland and heath on low fertility soils. Plants are likely to be killed by fire and recruitment is solely from seed. This species seems to benefit from the reduced competition and increased light	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
							available on disturbance margins including roadsides.	urbanised site with limited suitable habitat.
Persoonia hirsuta	Hairy Geebung	E1,P,3	E	PMST	0	Has a scattered distribution around Sydney from Singleton in the north, along the east coast to Bargo in the south and the Blue Mountains to the west. Has a large area of occurrence but occurs in small populations. 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.	Flowers November to January. It is probably killed by fire (as other *Persoonia* species are) but will regenerate from seed.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.
Persoonia nutans	Nodding Geebung	E1,P	E	Bionet, PMST	1	Restricted to the Cumberland Plain in western Sydney, between Richmond in the north and Macquarie Fields in the south. Northern populations are confined to aeolian and alluvial sediments and occur in a range of sclerophyll forest and woodland vegetation communities, with the majority of individuals occurring within Agnes Banks Woodland or Castlereagh Scribbly Gum Woodland and some in Cooks River/Castlereagh Ironbark Forests.	Flowering from November to March with sporadic flowering all year round. Seed is likely to be dispersed, after consumption of the fruit, by large birds.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited suitable habitat.
Pimelea curviflora* var. *curviflora	-			PMST	0	Confined to the coastal area of the Sydney and Illawarra regions. Populations are known between northern Sydney and Maroota in the north-west. New population discovered at Croom Reserve near Albion Park in Shellharbour LGA in August 2011. Formerly recorded around the Parramatta River and Port Jackson region including Five Dock, Bellevue Hill and Manly.	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. Flowers October to May. Has an inconspicuous cryptic habit as it is fine and scraggly and often grows amongst dense grasses and sedges. It may not always be visible at a site as it appears	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with no suitable habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
							to survive for some time without any foliage after fire or grazing, relying on energy reserves in its tuberous roots. Likely to be fire tolerant species capable of resprouting following fire due to the presence of a tap root. Seedlings have been observed following fire.	
Pimelea spicata	Spiked Rice-flower	E1	E	Bionet, PMST	380	Occurs in two disjunct areas: Cumberland Plain (Narellan, Marayong, Prospect Reservoir areas) and Illawarra (Landsdowne to Shellharbour to northern Kiama).	Found on well-structured clay soils. On the Cumberland Plain sites, it is associated with Grey Box communities (particularly Cumberland Plain Woodland variants and Moist Shale Woodland) and in areas of ironbark. Mature plants spread over short distances through underground rhizomes, and this can assist them to recover from disturbances like fire and irregular grazing. Flowers may be self-pollinating, although fruit production is variable. Fruit is not dispersed well, with most seedlings germinating close to the adult (within 30cm or so). A soil seedbank develops and is maintained in the presence of a suitable disturbance regime.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with no suitable habitat.
Pomaderris brunnea	Brown Pomaderris	E1	V	PMST	0	Brown Pomaderris is restricted to the Colo, Nepean and Hawkesbury Rivers.	It grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines. The sepcies flowers in September and October. It is found in association with *Eucalyptus amplifolia, Angophora floribunda, Acacia paramattensis, Bursaria spinosa,* and *Kunzea ambigua*.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with no suitable habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
Pterostylis saxicola	Sydney Plains Greenhood	E1,P,2	E	Bionet, PMST	1	Two populations occur within Georges River NP and Scheyville NP.	Mostly found on shallow soil in depressions on sandstone rock shelves on cliff lines. Vegetation communities where the species occurs are sclerophyll forest or woodland on shale/sandstone transition soils or shale soils.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with no suitable habitat.
Pultenaea parviflora	null	E1	V	Bionet, PMST	3	Endemic to the Cumberland Plain. Core distribution is from Windsor to Penrith and east to Dean Park. Outlier populations are recorded from Kemps Creek and Wilberforce. Populations range in number between 10 and more than 5000 individuals, with disturbance history often important in numbers at a site. This also influences the population structure, with fire-induced recruitment producing a more evenly-aged population than soil disturbances. Dominance at a site largely depends on competition from other shrubby plants.	May be locally abundant, particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays. May also be common in transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland. Eucalyptus fibrosa is usually the dominant canopy species. *Eucalyptus globoidea, E. longifolia, E. parramattensis, E. sclerophylla and E. sideroxylon* may also be present or co-dominant, with Melaleuca decora frequently forming a secondary canopy layer. Associated species may include *Allocasuarina littoralis, Angophora bakeri, Aristida spp. Banksia spinulosa, Cryptandra spp., Daviesia ulicifolia, Dodonaea falcata, Entolasia stricta, Hakea sericea, Lissanthe strigosa, Melaleuca nodosa, Ozothamnus diosmifolius, Styphelia laeta and Themeda australis.* Often found in association with other threatened species such as *Dillwynia tenuifolia, Grevillea juniperina, Micromyrtus minutiflora and Persoonia nutans.*	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with no suitable habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
							Flowering may occur between August and November depending on environmental conditions. Pollinators are unknown. Current estimates are that reproductive maturity is not reached for 3-4 years, and peak reproduction until 5-6 years. The individual lifespan is estimated at about 20 years. Killed by fire and re-establishes from soil-stored seed. There is no evidence of vegetative spread. Ants are implicated in the dispersal of the species as the seed has an aril. Germination can be prolific after a moderate to high intensity fire.	
Rhizanthella slateri	*Rhizanthella slateri*	V,P,2	E	PMST	0	*Rhizanthella slateri* is restricted to New South Wales where it is currently known from 14 populations including Bulahdelah, the Watagan Mountains, the Blue Mountains, Wiseman's Ferry area, Agnes Banks and near Nowra. The *Rhizanthella slateri* population in the Great Lakes Local Government Area (LGA) occurs at the known northern limit of the species' range and is disjunct from other known populations of the species.	Habitat requirements are poorly understood and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest. Highly cryptic given that it grows almost completely below the soil surface, with flowers being the only part of the plant that can occur above ground. Therefore usually located only when the soil is disturbed. Flowers September to November.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with no suitable habitat.
Rhodamnia rubescens	Scrub Turpentine	E4A	CE	PMST	0	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Populations typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm.	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. Flowering late winter to spring. Flowers August to October, fruit October to December.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited habitat.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat and Ecology	Likelihood
Senna acclinis	Rainforest Cassia	E1		Bionet	1	Occurs in coastal districts and adjacent tablelands of NSW from the Illawarra in NSW to Queensland.	Grows on the margins of subtropical, littoral and dry rainforests. Often found as a gap phase shrub. Flowering occurs in spring and summer and the fruit is ripe in summer and autumn. Primarily pollinated by a variety of bees.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited habitat.
Syzygium paniculatum	Magenta Lilly Pilly	E1	V	Bionet, PMST	1	Naturally found only in NSW in a narrow, linear coastal strip from Bulahdelah to Conjola State Forest.	On the south coast occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest. On the central coast occurs on gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforest communities.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited habitat.
Thesium australe	Austral Toadflax	E4A,P,2	CE	PMST	0	It is found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands.	Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. Often found in association with Kangaroo Grass (*Themeda australis*) and often hidden amongst grasses and herbs.	**Low**. Not found during the current survey which was thorough due to the small extent and limited vegetation. Highly disturbed urbanised site with limited habitat.

Table 8-4 Likelihood of threatened fauna species under the BC Act 2016 and/or the EPBC Act 1999 to occur on the Subject Site

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
Actitis hypoleucos	Common Sandpiper	P	C,J,K	Bionet	1	The Common Sandpiper mainly breeds in parts of Europe and Asia, and occasionally Africa. The population that migrates to Australia breeds in the Russian far east. European breeding birds rarely remain in Europe during the non-breeding period, with individuals moving to Africa and Asia.	The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags. Generally the species forages in shallow water and on bare soft mud at the edges of wetlands; often where obstacles project from substrate, e.g. rocks or mangrove roots. Birds sometimes venture into grassy areas adjoining wetlands. Roost sites are typically on rocks or in roots or branches of vegetation, especially mangroves. The species is known to perch on posts, jetties, moored boats and other artificial structures, and to sometimes rest on mud or 'loaf' on rocks.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Anthochaera phrygia	Regent Honeyeater	E4A,P,2	CE	PMST	0	The species is distributed from North-eastern Victoria to south-east Queensland.	Mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Also found in drier coastal woodlands and forests. A generalist forager, which mainly feeds on the nectar from a wide range of eucalypts and mistletoes. Insects make up 15% of diet. Breeding occurs between July and	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							January. There are only three known key breeding regions remaining: two of which are in NSW at Capertee Valley, and the Bundarra-Barraba region. Nesting in horizontal branches or forks in tall mature Eucalypts and she-oaks, and also in mistletoe haustoria.	
Aphelocephala leucopsis	Southern Whiteface	P		PMST	0	The Southern Whiteface prefers the drier habitats of southern Australia. In Queensland they are found only as far north as Birdsville and east to Darling Downs, in NSW east to about Tenterfield and south-west to the shale areas in the Sydney region. In Victoria they occur mostly in the drier foothills north of the Divide, in SA south to Eyre Peninsula. They are also found in southern Northern Territory and southern WA except the far south-west corner. They are not found in Tasmania.	Dry open forests and woodland and inland scrubs of mallee, mulga and saltbush are the preferred habitat of Southern Whiteface, especially areas with fallen timber or dead trees and stumps. Southern Whiteface are locally common birds and are not migratory. Feeding mainly on insects and spiders, the Southern Whiteface forages on the ground and low in shrubbery where they may also take seeds and leaves. In breeding season the Southern Whiteface builds an untidy domed nest of grass, rootlets and bark. Nests are built in a hollow limb, stump or fence post or in the foliage of shrubs and small trees, in sheds or in nest- boxes.	**Low**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V,P		Bionet	14	Widespread in eastern, southern, and south-western Australia.	Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. Also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland. Primarily eats invertebrates, which are captured whilst hovering or sallying above the canopy. The species breed August to January. Generally breed in solitary pairs. Nest is a scanty of twigs,	**Moderate**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							1-20m high on a horizontal branch/fence post.	
Botaurus poiciloptilus	Australasian Bittern	E1,P	E	PMST	0	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west.	They favour permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleoacharis* spp.).Australasian Bitterns hide during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. Feeding platforms may be constructed over deeper water from reeds trampled by the bird; platforms are often littered with prey remains. The species requires shallow water, less than 30 cm deep with medium to low density reeds, grasses or shrubs for foraging and needs deeper water, with medium to high density reeds, rushes or sedges for nesting (Pickering 2013). Nests are built in secluded places in densely-vegetated wetlands on a platform of reeds, and there are usually six olive-brown eggs to a clutch.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Calidris ferruginea	Curlew Sandpiper	E1,P	CE,C,J,K	PMST	0	Occurs along most of the Australian coastline (including Tasmania). Occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Inland records are probably mainly of birds pausing for a few days during migration.	Generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. Also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. The species will breed in Siberia and migrates to Australia (as well as Africa and Asia) for the non-breeding period, arriving in Australia between August and November, and departing between March and mid-April. The species will forage in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							Omnivorous, feeding on worms, molluscs, crustaceans, insects and some seeds. Roosting: On shingle, shell or sand beaches; spits or islets on the coast or in wetlands; or sometimes in salt marsh, among beach-cast seaweed, or on rocky shores.	
Callocephalon fimbriatum	Gang-gang Cockatoo	E2,V,P,3	E	PMST	0	The species is distributed from southern Victoria through south- and central-eastern New South Wales.	In spring and summer, they are generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. The species forages mainly on seeds of native and introduced trees and shrubs, with a preference for eucalypts, wattles and introduced hawthorns. They will also eat berries, fruits, nuts and insects and their larvae. Favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 10 cm in diameter or larger and at least 9 m above the ground in eucalypts.	**Extremely Low**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.
Calyptorhynchus lathami	Glossy Black-Cockatoo	E2,V,P,2	V	Bionet, PMST	1	Uncommon, although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. An isolated population exists on Kangaroo Island, South Australia. Inhabits open forest and woodlands of	The species forages on Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*), which are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak (*Allocasuaraina diminuta*), and *A. gymnathera*. Belah (*Casuarina cristata*) is also utilised and may be a critical food source for some populations. Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and	**Moderate**. Not found during the current survey. Suitable foraging trees on site and are known to occur in some urban environments. However the site is very urbanised with

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
						the coast and the Great Dividing Range where stands of sheoak occur.	*Allocasuarina* spp), shredding the cones with the massive bill. Orts discarded at base of tree can be an indicator of local populations, with fresh orts a light tan/pale brown and older orts grey. A single egg is laid between March and May. Dependent on large hollow-bearing eucalypts for nest sites.	limited bushland within 2km.
Chalinolobus dwyeri	Large-eared Pied Bat	V,P	V	PMST	0	Generally rare with a very patchy distribution in NSW. Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands.	Found in well-timbered areas containing gullies. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. Likely to hibernate through the coolest months. It is uncertain whether mating occurs early in winter or in spring. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Probably forages for small, flying insects below the forest canopy.	**Low**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.
Chthonicola sagittata	Speckled Warbler	V,P		Bionet	7	The Speckled Warbler has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. There has been a decline in population density throughout its range, with the decline exceeding 40% where no vegetation remnants larger than 100ha survive.	The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area. The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							trees. Pairs are sedentary and occupy a breeding territory of about ten hectares, with a slightly larger home-range when not breeding. The rounded, domed, roughly built nest of dry grass and strips of bark is located in a slight hollow in the ground or the base of a low dense plant, often among fallen branches and other litter. A side entrance allows the bird to walk directly inside. The species may act as host to the Black-eared Cuckoo. Speckled Warblers often join mixed species feeding flocks in winter, with other species such as Yellow-rumped, Buff-rumped, Brown and Striated Thornbills.	
Climacteris picumnus victoriae	Brown Treecreeper	V,P		PMST	0	endemic to eastern Australia, occuring in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. Less commonly found on coastal plains and ranges. Sedentary, considered to be resident in many locations throughout its range; present in all seasons or year-round at many sites; territorial year-round, though some birds may disperse locally after breeding.	Gregarious and usually observed in pairs or small groups of 8 to 12 birds; terrestrial and arboreal in about equal proportions; active, noisy and conspicuous while foraging on trunks and branches of trees and amongst fallen timber; spend much more time foraging on the ground and fallen logs than other treecreepers. When foraging in trees and on the ground, they peck and probe for insects, mostly ants, amongst the litter, tussocks and fallen timber, and along trunks and lateral branches; up to 80% of the diet is comprised of ants; other invertebrates (including spiders, insects larvae, moths, beetles, flies, hemipteran bugs, cockroaches, termites and lacewings) make up the remaining percentage; nectar from Mugga Ironbark (Eucalyptus sideroxylon) and paperbarks, and sap from an unidentified eucalypt are also eaten, along with lizards and food scraps; young birds are fed ants, insect larvae,	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							moths, craneflies, spiders and butterfly and moth larvae. Hollows in standing dead or live trees and tree stumps. Breeding: In pairs or cooperatively breeding groups of two to five birds."	
Daphoenositta chrysoptera	Varied Sittella	V,P		Bionet	3	Sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west.	Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and *Acacia* woodland. Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy. Breeding July – December. Cup-shaped nest in a tree fork, often use the same fork or tree for successive years.	**Moderate**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.
Dasyurus maculatus	Spotted-tailed Quoll	V,P	E	Bionet	3	The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania. Only in Tasmania is it still considered relatively common.	Habitats include rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Uses hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces for nesting. Use communal 'latrine sites', often on flat rocks among boulder fields, rocky cliff-faces or along rocky stream beds or banks. Large home ranges (Fe up to 750 ha, Ma up to 3,500ha). Known to traverse their home ranges along densely vegetated creeklines. Generalist predator with a preference for medium-sized (0.5kg – 5kg) mammals. Breeding from April – July.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Delma impar	Striped Legless Lizard	V,P	V	PMST, Bionet	0	The species is distributed in the Riverina, Upper Hunter, South West Slopes, and Southern Tablelands.	Found mainly in Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Sometimes present in	**Extremely Low**. Not found during the current survey. No

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							modified grasslands with significant exotic species.	suitable habitat within the urbanised Subject Site.
Ephippiorhynchus asiaticus	Black-necked Stork	E1,P		Bionet	2	The species Ephippiorhynchus asiaticus comprises two subspecies, E. a. asiaticus in India and south-east Asia, and E. a. australis in Australia and New Guinea. In Australia, Black-necked Storks are widespread in coastal and subcoastal northern and eastern Australia, as far south as central NSW (although vagrants may occur further south or inland, well away from breeding areas). In NSW, the species becomes increasingly uncommon south of the Clarence Valley, and rarely occurs south of Sydney. Since 1995, breeding has been recorded as far south as Buladelah. The NSW breeding population has been estimated at about 75 pairs. Territories are large and variable in size. They have been estimated to average about 9,000ha, ranging from 3,000-6,000ha in high quality habitat and 10,000-15,000ha in areas where habitat is poor or dispersed.	Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries. Storks usually forage in water 5-30cm deep for vertebrate and invertebrate prey. Eels regularly contribute the greatest biomass to their diet, but they feed on a wide variety of animals, including other fish, frogs and invertebrates (such as beetles, grasshoppers, crickets and crayfish). Black-necked Storks build large nests high in tall trees close to water. Trees usually provide clear observation of the surroundings and are at low elevation (reflecting the floodplain habitat). In NSW, breeding activity occurs May - January; incubation May - October; nestlings July - January; fledging from September. Parents share nest duties and in one study about 1.3-1.7 birds were fledged per nest.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Erythrotriorchis radiatus	Red Goshawk	E4A,P,2	V	PMST	0	This unique Australian endemic raptor is distributed sparsely through northern and eastern Australia, from the western Kimberley Division of northern Western Australia to north-eastern Queensland and south to far north-eastern NSW, and with scattered records in central Australia. The species is very rare in NSW, extending south to about 30°S, with	Red Goshawks inhabit open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers.	**Low**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
						most records north of this, in the Clarence River Catchment, and a few around the lower Richmond and Tweed Rivers. Formerly, it was at least occasionally reported as far south as Port Stephens.	Adults appear to occupy territories throughout the year and breeding territories are traditionally used from year to year. Adults have large home-ranges, estimated in the Northern Territory to be as great as about 120 km2 for females and 200 km2 for males. Red Goshawks mainly eat medium to large birds, including species as large as Australian Brush-turkeys, Kookaburras, Tawny Frogmouths, Sulphur-crested Cockatoos and Rainbow Lorikeets, but they also take mammals, reptiles and insects. Breeding is likely to be in spring and summer in southern Queensland and NSW. The birds lay clutches of 1-2 eggs between July and September, in a stick nest in a tall tree (>20 m tall) within 1 km of a watercourse or wetland. Young fledge around November and December. In winter in eastern Australia, the birds appear to move from nesting sites in the ranges to coastal plains, where they are associated with permanent wetlands. The age at which Red Goshawks first breed is not known, nor is the life expectancy. Young remain with their parents for at least 70-80 days after they leave the nest and may remain with their parents for 4-5 months.	
Falco hypoleucos	Grey Falcon	V,P,2	V	PMST	0	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range.	There are possibly less than 5000 individuals left. Population trends are unclear, though it is believed to be extinct in areas with more than 500mm rainfall in NSW. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken. Like other falcons it utilises old nests of other birds of prey and ravens, usually high in a living eucalypt near water or a watercourse; peak laying season is in late winter and early spring; two or three eggs are laid.	
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V,P		Bionet	3	Found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania.	It prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Hibernates in winter. Hunts beetles, moths, weevils and other flying insects above or just below the canopy. Females are pregnant in late spring to early summer.	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Glossopsitta pusilla	Little Lorikeet	V,P		Bionet	1	The Little Lorikeet is distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year and 'locally nomadic' movements are suspected of breeding pairs.	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. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species. Feeds mostly on nectar and pollen, occasionally on native fruits such as mistletoe, and only rarely in orchards Gregarious, travelling and feeding in small flocks (<10), though often with other lorikeets. Flocks numbering hundreds are still occasionally observed and may have been the norm in past centuries. Roosts in treetops, often distant from feeding areas.	**Moderate**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Entrance is small (3 cm) and usually high above the ground (2–15 m). These nest sites are often used repeatedly for decades, suggesting that preferred sites are limited. Riparian trees often chosen, including species like Allocasuarina. Nesting season extends from May to September.	
Grantiella picta	Painted Honeyeater	V,P	V	PMST	0	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution.	Inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland Eucalypts and *Acacias*. Prefers mistletoes of the genus *Amyema*. Insects and nectar from mistletoe or eucalypts are occasionally eaten. Nest from spring to autumn in a small, delicate nest hanging within the outer canopy of drooping eucalypts, she-oak, paperbark or mistletoe branches.	**Low**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.
Haliaeetus leucogaster	White-bellied Sea-Eagle	V,P		Bionet	1	The White-bellied Sea-Eagle is a large eagle with a distribution around the Australian coastline, including Tasmania. Widespread along the east coast and all major rivers and waterways.	The species prefers large areas of open water including large rivers, the sea, lakes, and swamps. The species is also found in terrestrial habitats including coastal dunes, tidal flats, grassland, heathland, woodland, and forest. Feed mainly on freshwater turtles, fish, waterbirds, reptiles, mammals, and carrion.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Heleioporus australiacus	Giant Burrowing Frog	V,P	V	PMST	0	The Giant Burrowing Frog is distributed in south eastern NSW and Victoria, and appears to exist as two distinct populations: a northern population largely confined to the sandstone geology of the Sydney Basin and	Found in heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based. Spends more than 95% of its time in non-breeding habitat in areas up to 300 m from breeding sites. Whilst in non-breeding	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
						extending as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria.	habitat it burrows below the soil surface or in the leaf litter. Individual frogs occupy a series of burrow sites, some of which are used repeatedly. The home ranges of both sexes appear to be non-overlapping suggesting exclusivity of non-breeding habitat. Home ranges are approximately 0.04 ha in size. Individuals move into the breeding site either immediately before or following heavy rain and occupy these sites for up to 10 days. Most individuals will not attempt to breed every year. The Giant Burrowing Frog has a generalist diet and studies to date indicate that they eat mainly invertebrates including ants, beetles, cockroaches, spiders, centipedes and scorpions. When breeding, frogs will call from open spaces, under vegetation or rocks or from within burrows in the creek bank. Males show strong territoriality at breeding sites. This species breeds mainly in autumn, but has been recorded calling throughout the year. Egg masses are foamy with an average of approximately 500-800 eggs and are laid in burrows or under vegetation in small pools. After rains, tadpoles are washed into larger pools where they complete their development in ponds or ponded areas of the creekline. Tadpole development ranges from around 12 weeks duration to up to 12 months with late developing tadpoles overwintering and completing development when warmer temperatures return. Breeding habitat of this species is generally soaks or pools within first or second order streams. They are also commonly recorded from	

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							'hanging swamp' seepage lines and where small pools form from the collected water.	
Hieraaetus morphnoides	Little Eagle	V,P		Bionet	5	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW.	Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Preys on birds, reptiles and mammals, occasionally adding large insects and carrion.	**Low**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.
Hirundapus caudacutus	White-throated Needletail	P	V,C,J,K	PMST	0	Widespread in eastern and south-eastern Australia. Almost exclusively aerial.	Occurring over most types of habitat, they are probably recorded most often above wooded areas, including open forest, heathlands and rainforest but less often over treeless areas, such as grassland or swamps. Foraging aerially, often in areas of updraughts. They eat a wide variety of insects, including beetles, cicadas, flying ants, bees, wasps, flies, termites, moths, locusts and grasshoppers. The species roosts in trees in forests and woodlands, both among dense foliage in the canopy or in hollows. It has been suggested that they also sometimes roost aerially. Breeding in eastern Siberia, north-eastern China and Japan, leaving the breeding grounds from August. They begin appearing in Australia from September for the non-breeding season.	**Low**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.
Hoplocephalus bungaroides	Broad-headed Snake	E1,P,2	V	PMST	0	Largely confined to Triassic and Permian sandstones, including the Hawkesbury, Narrabeen and Shoalhaven groups, within the coast and ranges in an area within approximately 250 km of Sydney.	Found in rocky outcrops and adjacent sclerophyll forest and woodland. Most suitable sites occur in sandstone ridgetops. They prefer sites with a W to NW aspect, sheltering under thin (<20 cm) rocks on exposed sites, which fit closely with a rocky substrate. Occupied crevices have a sunny aspect and rocks	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							used are those that receive the most warmth from the sun. In woodland, they shelter in hollows in a variety of tree species. Behaviour: Nocturnal. Shelters in rock crevices and under flat sandstone rocks on exposed cliff edges during autumn, winter and spring. Moves from the sandstone rocks to shelters in crevices or hollows in large trees within 500m of escarpments in summer. Diet: Feeds mostly on geckos and small skinks; will also eat frogs and small mammals occasionally. Breeding: Females produce 4-12 live young from January to March.	
Lathamus discolor	Swift Parrot	E1,P	CE	Bionet, PMST	13	Occurs in woodlands and forests of NSW from May to August. Migrates from Tasmania to southeast Australia between March – October	. Preferred non-breeding habitat is woodlands and riparian vegetation where there are winter flowering eucalypts such as the Swamp Mahogany, *Eucalyptus robusta* in coastal areas. Foraging in Eucalpyt dominated forests, where eucalypts are flowering profusely or where there are abundant lerp infestations. They return to some foraging sites on a cyclic basis depending on food availability. Diet includes eucalypt nectar, pollen and associated insects. Breeding from September to January in Tasmania. Nesting in old trees with hollows.	**High**. Not found during the current survey. Species has previously been recorded feeding within close proximity to the Subject Site.
Litoria aurea	Green and Golden Bell Frog	E1,P	V	Bionet, PMST	1	Formerly distributed from the NSW north coast near Brunswick Heads, southwards along the NSW coast to Victoria where it extends into east Gippsland. Records from west to	Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (*Typha* spp.) or spike rushes (*Eleocharis* spp.). Optimum habitat includes water-bodies that are unshaded, free of	**Low**. Not found during the current survey. No suitable habitat within the

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
						Bathurst, Tumut and the ACT region. Since 1990 there have been approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations. These locations occur over the species' former range, however they are widely separated and isolated. 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.	predatory fish such as Plague Minnow (*Gambusia holbrooki*), have a grassy area nearby and diurnal sheltering sites available. Some sites, particularly in the Greater Sydney region occur in highly disturbed areas. Behaviour active by day. Breeding in summer when conditions are warm and wet.	urbanised Subject Site.
Lophoictinia isura	Square-tailed Kite	V,P,3		Bionet	3	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March.	Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. Foraging: a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy. Appears to occupy large hunting ranges of more than 100km^2. Breeding: July to February. Nest sites generally located along or near watercourses, in a fork or on large horizontal limbs."	**Moderate.** Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.
Melanodryas cucullata cucullata	South-eastern Hooded Robin	V,P		PMST	0	Distribution & Habitat: widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. The south-eastern form (subspecies cucullata) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by	It prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. Foraging: Often perches on low dead stumps and fallen timber or on low-hanging branches, using a perch-and-pounce method of hunting insect prey. Territories range from around 10 ha	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
						subspecies picata. Two other subspecies occur outside NSW.	during the breeding season, to 30 ha in the non-breeding season. Breeding: any time between July and November, often rearing several broods. Nesting: The nest is a small, neat cup of bark and grasses bound with webs, in a tree fork or crevice, from less than 1 m to 5 m above the ground. It is defended by both sexes with displays of injury-feigning, tumbling across the ground."	
Meridolum corneovirens	Cumberland Plain Land Snail	E1		Bionet	137	Primarily inhabits Cumberland Plain Woodland. Lives in small areas on the Cumberland Plain west of Sydney, from Richmond and Windsor south to Picton and from Liverpool west to the Hawkesbury and Nepean Rivers at the base of the Blue Mountains. Known from over 100 different locations.	Active at night. Lives under litter of bark, leaves and logs, or shelters in loose soil around grass clumps. The species is a fungi specialist	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site. The ground has previously been disturbed and mulched.
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V,P		Bionet	7	Found along the east coast from south Queensland to southern NSW.	Occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. Probably insectivorous. Roosts mainly in tree hollows but will also roost under bark or in human-made structures. Usually solitary but also recorded roosting communally. Little is known about its biology or ecology. Females with young have been observed in grey mangrove forests.	**Moderate**. Not found during the current survey. Limited habitat within the Subject Site
Miniopterus orianae oceanensis	Large Bent-winged Bat	V,P		Bionet	14	Occurs along the east and north-west coasts of Australia.	Caves are the primary roosting habitat but also use human-made structures. Breeding in Spring and Summer. Form discrete populations centred on large maternity caves. Maternity caves have very specific temperature and humidity regimes. At other times of the year, populations disperse within about 300 km	**Moderate**. Not found during the current survey. Limited habitat within the Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							range of maternity caves. Foraging in forested areas, catching flying insects above the canopy. Cold caves are used for hibernation in southern Australia.	
Mixophyes balbus	Stuttering Frog, Southern Barred Frog (in Victoria)	E1,P,2	V	PMST	0	Stuttering Frogs occur along the east coast of Australia from southern Queensland to north-eastern Victoria. Considered to have disappeared from Victoria and to have undergone considerable range contraction in NSW, particularly in south-east NSW. It is the only Mixophyes species that occurs in south-east NSW and in recent surveys it has only been recorded at three locations south of Sydney. The Dorrigo region, in north-east NSW, appears to be a stronghold for this species.	Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range.Outside the breeding season adults live in deep leaf litter and thick understorey vegetation on the forest floor. Feed on insects and smaller frogs. Breed in streams during summer after heavy rain. Eggs are laid on rock shelves or shallow riffles in small, flowing streams.As the tadpoles grow they move to deep permanent pools and take approximately 12 months to metamorphose.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Myotis Macropus	Southern Myotis	V,P		Bionet	3	Found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers.	Foraging over streams and pools catching insects and small fish by raking their feet across the water surface. Roosts in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Breeding in NSW, one young per year usually in November or December.	**Moderate**. Not found during the current survey. Limited suitable habitat.
Neophema chrysostoma	Blue-winged Parrot	E4A,P,3	CE	PMST	0	Breed on mainland Australia south of the Great Dividing Range in southern Victoria from Port Albert in Gippsland west to Nelson, and sometimes in the far south-east of South Australia, and the north-western, central and eastern parts of Tasmania (Map 1; Emison et al. 1987; Higgins 1999). A partial migrant, variable numbers of birds migrate across Bass Strait in	Blue-winged parrots inhabit a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands and are often found near wetlands both near the coast and in semi-arid zones (Higgins 1999; Holdsworth et al. 2021). The species can also be seen in altered environments such as airfields, golf-courses and paddocks. Pairs or small parties of blue-winged parrots forage	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
						winter, apparently making the flight non-stop based on the scarcity of records from the Bass Strait islands. During the non-breeding period, from autumn to early spring, birds are recorded from northern Victoria, eastern South Australia, south-western Queensland and western New South Wales, with some birds reaching south-eastern New South Wales and eastern Victoria, particularly on the southern migration (Higgins 1999).	mainly near or on the ground for seeds of a wide range of native and introduced grasses, herbs and shrubs (Higgins 1999). During the breeding season (spring and summer), birds occupy eucalypt forests and woodlands (Higgins 1999). Blue-winged parrots form monogamous pairs. Nests are made in hollows, preferably with a vertical opening, in live or dead trees or stumps. In Victoria, birds are known to breed mainly in heathy forests and woodlands and in wetter forests soon after fire or logging (Emison et al. 1987). Before migrating from Tasmania in autumn, many birds congregate on saltmarshes and agricultural land before departing north (Higgin 1999). While on the mainland, mobile flocks feed in saltmarsh and rough pasture in coastal Victoria. Birds are known to move more than 100 km inland during winter to feed in semi-arid chenopod shrubland and sparse grassland (Holdsworth et al. 2021). Many aspects of the movements of the blue-winged parrot are poorly understood. Researchers know that most blue-winged parrots that breed in Tasmania migrate to the mainland, leaving a handful behind. However, detailed information about their wintering migration routes is lacking.	
Ninox strenua	Powerful Owl	V,P,3		Bionet	4	The Powerful Owl is endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range from Mackay to south-western Victoria. In NSW, it is widely distributed throughout the eastern forests from the coast inland to	Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest and requires large tracts of forest or woodland habitat but can occur in fragmented landscapes. Foraging on medium arboreal mammals in open or	**Moderate**. Not found during the current survey. Four (4) species occurrence records within 5 km of the Subject Site. Some

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
						tablelands, with scattered records on the western slopes and plains suggesting occupancy prior to land clearing. Now at low densities throughout most of its eastern range, rare along the Murray River and former inland populations may never recover. Recent increases in population density across Sydney and some other semi-urban areas do not seem to be solely due to increased awareness of this flagship species.	closed sclerophyll forest or woodlands. Roosts by day in dense vegetation Breeding in late autumn to mid-winter in large tree hollows (at least 0.5 m deep), in large eucalypts (diameter at breast height of 80-240 cm) that are at least 150 years old.	suitable foraging present, however the site is within a highly urbanised area with no large patches of vegetation within close proximity. Limited prey species available in the urban environment.
Notamacropus parma	Parma Wallaby	V,P	V	PMST	0	The species once occurred in north-eastern NSW from the Queensland boarder to the Bega area in the southeast. Their range is now confined to the coast and ranges of central and northern NSW from the Gosford district to south of the Bruxner Highway between Tenterfield and Casino.	Preferred habitat is moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest. Typically feed at night on grasses and herbs in more open eucalypt forest and the edges of nearby grassy areas. During the day they shelter in dense cover.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Numenius madagascariensis	Eastern Curlew	P	CE,C,J,K	PMST	0	Within Australia, the Eastern Curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. They are rarely recorded inland.	It is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes in saltworks and sewage farm. Forages mainly on soft sheltered intertidal sandflats or mudflats, open and without vegetation or covered with	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							seagrass, often near mangroves, on saltflats and in saltmarsh, rockpools and among rubble on coral reefs, and on ocean beaches near the tideline. Diet includes crustaceans, small molluscs and insects. Roosts on sandy spits and islets, especially on dry beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves. It occasionally roosts on reef-flats, in the shallow water of lagoons and other near-coastal wetlands. They are also recorded roosting in trees and on the upright stakes of oyster-racks. Breeding: Russia and north- eastern China, in early May to late June. Arrives back in Australia in August.	
Pandion cristatus	Eastern Osprey	V,P,3		Bionet	1	The Osprey has a global distribution with four subspecies previously recognised throughout its range. However, recent studies have identified that there are two species of Osprey - the Western Osprey (*P. halietus*) with three susbpecies occurring in Europe, Asia and the Americas and the Eastern Osprey (*P. cristatus*) occurring between Sulawesi (in Indonesia), Australia and New Caledonia. Eastern Ospreys are found right around the Australian coast line, except for Victoria and Tasmania. They are common around the northern coast, especially on rocky shorelines, islands and reefs. The species is uncommon to rare or absent from closely settled parts of south-eastern Australia. There are a handful of records from inland areas.	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water. 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.	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
Petauroides volans	Greater Glider	E1,P	E	PMST	0	Endemic to eastern Australia. Eucalypt forests and woodlands.	Favours forests with a diversity of eucalypt species. Studies suggest that the species needs at least 2-4 live den trees for every 2 ha of suitable forest habitat. Home ranges are typically relatively small with a low dispersal ability. Modelling suggests that they need native forest patches of at least 160 km² to maintain viable populations. Foraging: primarily folivorous, with a diet mostly comprising eucalypt leaves, and occasionally flowers. Rest by day in tree hollows. Breeding from March to June in large tree hollows. Relatively low reproductive rate.	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site. Nor is the site connected to larger patches of vegetation that could support the species.
Petaurus australis	Yellow-bellied Glider	E2,V,P	V	PMST	0	Found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria.	Occurs in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Feed primarily on plant and insect exudates, including nectar, sap, honeydew and manna with pollen and insects providing protein. They extract sap by incising (or biting into) the trunks and branches of favoured food trees, often leaving a distinctive 'V'-shaped scar. Live in small family groups of two - six individuals and are nocturnal. Very mobile and occupy large home ranges between 20 to 85 ha to encompass dispersed and seasonally variable food resources. Den, often in family groups, in hollows of large trees.	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site. Nor is the site connected to larger patches of vegetation that could support the species.
Petaurus norfolcensis	Squirrel Glider	E2,V,P		Bionet	1	Occurs in a broad band from Cape York Peninsula (Qld) to central Victoria, extending to the coastal side of the	They inhabit mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing	**Low**. Not found during the current survey. No suitable

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
						Great Dividing Range between southern Qld and central NSW. More abundant in coastal forests of northern NSW and south-eastern Qld than inland of the Great Dividing Range or in southern parts of its range.	Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey. Require abundant tree hollows for refuge and nest sites."	habitat within the urbanised Subject Site. Nor is the site connected to larger patches of vegetation that could support the species.
Petrogale penicillata	Brush-tailed Rock-wallaby	E1,P	V	PMST	0	The range of the Brush-tailed Rock-wallaby extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit.	They occupy rocky escarpments with a preference for complex structures with fissures, caves and ledges, often facing north. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Breeding throughout the year with a peak in births between February and May, especially in the southern parts of the range and at higher altitudes.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Phascolarctos cinereus	Koala	E1,P	E	Bionet, PMST	1	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. 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. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Inactive for most of the day, feeding and moving mostly at night. Spend most of their time in trees, but will descend and traverse open ground to move between trees. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size. Generally solitary, but have complex social hierarchies based on a dominant male with a territory overlapping several females and sub-ordinate males on the periphery.	**Low**. Not found during the current survey. The site is too urbanised and is not connected to any large areas of vegetation that could support the species.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
Pluvialis squatarola	Grey Plover	P	C,J,K	Bionet	1	Coastal areas within Australia.	In non-breeding grounds in Australia, occur almost entirely in coastal areas, where they usually inhabit sheltered embayments, estuaries and lagoons with mudflats and sandflats, and occasionally on rocky coasts with wave-cut platforms or reef-flats, or on reefs within muddy lagoons. Also occur around terrestrial wetlands such as near-coastal lakes and swamps, or salt-lakes. Very occasionally recorded further inland, where they occur around wetlands or salt-lakes. Foraging: on large areas of exposed mudflats and beaches of sheltered coastal shores such as inlets, estuaries and lagoons. They also occasionally feed in pasture and at the muddy margins of inland wetlands. Rosting: in sandy areas, such as on unvegetated sandbanks or sand-spits on sheltered beaches or other sheltered environments such as estuaries or lagoons.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Pommerhelix duralensis	Dural Land Snail	E1	E	PMST	0	The species is a shale-influenced-habitat specialist, which occurs in low densities along the western and northwest fringes of the Cumberland IBRA subregion on shale-sandstone transitional landscapes. There is currently a degree of uncertainty about the distribution and identity of the snails in this and related species. Pommerhelix duralensis in the strict sense is found in an area of north-western Sydney between Rouse Hill - Cattai and Wiseman's Ferry, west from Berowra Creek. North of the Hawkesbury and Wiseman's Ferry there is an entity with morphologically	The species has a strong affinity for communities in the interface region between shale-derived and sandstone-derived soils, with forested habitats that have good native cover and woody debris. It favours sheltering under rocks or inside curled-up bark. It does not burrow nor climb. The species has also been observed resting in exposed areas, such as on exposed rock or leaf litter, however it will also shelter beneath leaves, rocks and light woody debris. Migration and dispersal is limited, with overnight straight-line distances of under 1 metre identified in the literature and studies. The species is active from	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
						similar shells but which have not had the DNA sequenced. The Blue Mountains records have been assigned to Pommerhelix 'Elizabeth', a genetically distinct species which has been sampled at Elizabeth Lookout in Glenbrook, and which extends along the eastern escarpment of the Blue Mountains. In the northern side of Sydney, between Parramatta and Port Jackson and east of Berowra Creek is identified as Meridolum middenense. The species is definitely found within the Local Government Areas of The Hills Shire, Hawkesbury Shire and Hornsby Shire. Records from the Blue Mountains City, Penrith City and Parramatta City may represent this species. Occurrence in Wollondilly Shire is considered unlikely in light of current knowledge.	approximately one hour after dusk until dawn and no confirmed diurnal activity is reported. It exhibits no roost-site behaviour. The species is known to aestivate, and secretes an epiphragm to protect against dessication. The main food sources are hyphae and fruiting bodies of native fungi. It is possible other detritus may be consumed.	
Pseudomys novaehollandiae	New Holland Mouse	P	V	PMST	0	The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, New South Wales and Queensland.	Across the species' range, the total population size of mature individuals estimated to be less than 10,000 individuals (Menkhorst et al., 2008). The species is known to inhabit open heathlands, open woodlands with a heathland understorey and vegetated sand dunes (Lazenby et al., 2008). The species peaks in abundance during early to mid stages of vegetation succession typically induced by fire (Fox and Mckay, 1981). It is a social animal, living predominantly in burrows shared with other individuals.	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Pteropus poliocephalus	Grey-headed Flying-fox	V,P	V	Bionet, PMST	217	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South	Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	**High**. Not found during the current survey. Likely to forage in the canopy

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
						Australia. In times of natural resource shortages, they may be found in unusual locations.	Roosting sites generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Annual mating commences in January and conception occurs in April or May; a single young is born in October or November. Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km.	within the Subject Site.
Pycnoptilus floccosus	Pilotbird	P	V	PMST	0	The species is distributed from the coast and inland to the Great Dividing Range from the Blue Mountains to eastern Victoria.	The species is mostly found in temperate wet sclerophyll forests and occasionally temperate rainforest. The species requires dense undergrowth.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Rostratula australis	Australian Painted Snipe	E1,P	E	PMST	0	The Australian Painted Snipe is restricted to Australia. Most records are from the south east, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Other important locations with recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys.	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. The nest consists of a scrape in the ground, lined with grasses and leaves. Breeding is often in response to local conditions; generally occurs from September to December. Incubation and care of young is all undertaken by the male only. Forages nocturnally on mud-flats and in shallow water. Feeds on worms, molluscs, insects and some plant-matter.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V,P		Bionet	1	Wide-ranging across northern and eastern Australia. Seasonal movements are unknown; there is speculation about a migration to	Roosting singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. Breeding from December to mid-March. Foraging in most habitats	**Moderate**. Not found during the current survey. Limited suitable habitat within the

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
						southern Australia in late summer and autumn.	across its very wide range, with and without trees; appears to defend an aerial territory.	urbanised Subject Site.
Scoteanax rueppellii	Greater Broad-nosed Bat	V,P		Bionet	2	Found mainly in the gullies and river systems that drain the Great Dividing Range, from north eastern Victoria to the Atherton Tableland.	It utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Does not occur at altitudes above 500 m. Usually roosts in tree hollows, it has also been found in buildings. Foraging after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m, searching for beetles and other large slow-flying insects. Little is known of its reproductive cycle, however a single young is born in January.	**Moderate**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.
Stagonopleura guttata	Diamond Firetail	V,P		Bionet, PMST	1	The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Cental and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River.	Grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. Foraging: exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects (especially in the breeding season). Behaviour: Usually encountered in flocks of between 5 to 40 birds, occasionally more. Appears to be sedentary. Breeding: August – January. Nests are globular structures built either in the	**Low**. Not found during the current survey. Limited suitable habitat within the urbanised Subject Site.

Scientific Name	Common Name	BC Status	EPBC Status	Source	# of records	Distribution	Habitat Description and Ecology	Likelihood
							shrubby understorey, or higher up, especially under hawk's or raven's nests. Roosts: in dense shrubs	
Stictonetta naevosa	Freckled Duck	V,P		Bionet	2	The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and Victoria during such times.	Although the duck prefers permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree, during drier times they will move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. During the day they generally rest in dense cover, usually in deep water. At dawn and dusk and at night is when the duck feeds on algae, seeds and vegetative parts of aquatic grasses and sedges and small invertebrates. Nesting usually occurs between October and December but can take place at other times when conditions are favourable. Nests are usually located in dense vegetation at or near water level.	**Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.
Tringa glareola	Wood Sandpiper	P	C,J,K	Bionet	2	In NSW there are records east of the Great Divide, from Stratheden and Casino, south to Nowra and elsewhere, mostly from the Riverina, but also from the Upper and Lower Western Regions.	The Wood Sandpiper uses well-vegetated, shallow, freshwater wetlands, lakes, pools and waterholes. They are typically associated with emergent, aquatic plants or grass, and dominated by taller fringing vegetation, such as dense stands of rushes or reeds, shrubs, or dead or live trees, often with fallen timber. They also frequent inundated grasslands, short herbage or wooded floodplains, where floodwaters are temporary or receding. The Wood Sandpiper forages on moist or dry mud at the edges of wetlands, either along shores, among open scattered aquatic vegetation, or in clear shallow water.	**Extremely Low**. Not found during the current survey. No suitable habitat within the urbanised Subject Site.

Appendix E. Assessments of Significant (5-part Test) (BC Act)

Under Part 7, Division 1 of the *BC Act*, the test of significance is to be taken into account for the purposes of determining whether a proposed activity or activity is likely to significantly affect threatened species, populations or communities, or their habitats. This test should be applied to species, populations and communities listed under the *BC Act* that have a high likelihood or known occurrence on Subject Site and where potential or known habitat has not been avoided and/ or indirect impacts are likely regardless of the minimisation or mitigation measures proposed. The Tests of Significance have been completed in accordance with the *Threatened Species Test of Significance Guidelines* (OEH, 2018).

The Critically Endangered Ecological Community *Cumberland Plain Woodland in the Sydney Basin* was determined to exist on the Subject Site.

Two threatened fauna species under the BC Act were found to have a high likelihood of occurring on site, these are:

- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable under the BC Act.
- Swift Parrot (*Lathamus discolor*) – Endangered under the BC Act

8.1 Cumberland Plain Woodland in the Sydney Basin

Name of threatened ecological community	**Cumberland Plain Woodland in the Sydney Basin**
The trees proposed to be removed are considered to conform to the Critically Endangered Ecological Community (CEEC) *Cumberland Plain Woodland in the Sydney Basin* (CPW). The Final Determination for this CEEC states that it may come in different forms depending on the level of disturbance. The ground and shrub layer is highly disturbed and contains planted native and exotic species within designated carpark garden beds. Based on historical aerial imagery it is possible that some of the trees may be remnant regrowth. The precautionary principle is used to assume that the canopy species within the Subject Site conform to CPW. **Ecology** The ecology of the community is described in details in Section 4.2. It is estimated that less than approximately 7% (7,841 ha) of PCT 3320 remains since European settlement. The loss of PCT 3320 for the Proposal is approximately 0.00015% of the total remaining area.	
(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	
N/A	
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	

Name of threatened ecological community	Cumberland Plain Woodland in the Sydney Basin
(i) 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	
The Proposal will remove approximately 115m² of CPW, which is 0.00015% of the estimated remaining extent of CPW. Due to the limited extent of CPW proposed to be removed and its degraded condition it is unlike to have a significant adverse effect such that its local occurrence is likely to be placed at risk of extinction.	
(ii) 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	
The CPW within the Subject Site is currently highly modified and disturbed. Only the canopy species represent CPW. The vegetation is within designated garden beds bordering a carpark and access road. The ground and shrub layer consists of planted native and exotic species. The Proposal will not modify the ecological community, rather it will be removed as described above.	
(c) in relation to the habitat of a threatened species or ecological community	
(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	
The Proposal will remove approximately 115m² of CPW. Due to the surrounding development and infrastructure no further habitat will be removed or disturbed within the Subject Site or immediately adjacent to it.	
(ii) 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	
Due to the existing fragmentation of CPW and lack of connectivity to bushland within the urban locality, no existing habitat will become further fragmented or isolated from other areas of habitat as a result of the Proposal.	
(iii) 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	
The vegetation proposed to be removed is highly degraded. The canopy species are the most important component of the vegetation proposed to be removed. They provide habitat to mobile fauna species including threatened species. However, the habitat within the Subject Site is limited due to a lack of understory species, its isolation from connecting bushland and lack of ability to recruit. As such, the Proposal is unlikely to threaten the long-term survival of the ecological community in the locality.	

Name of threatened ecological community	Cumberland Plain Woodland in the Sydney Basin
(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 proposal is not located in any declared 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	
The *BC Act* defines a 'key threatening process' (KTP) as a process that 'adversely affects threatened species or ecological communities' or 'could cause species or ecological communities that are not threatened to become threatened' (s 4.32). Schedule 4 of the *BC Act* provides a list of KTPs. The Proposal has will contribute to the KTP 'Clearing of native vegetation'. However, only 340m² of degraded and mostly planted vegetation will be cleared. The Proposal is unlikely to contribute significantly to any KTPs relevant to the Cumberland Plain Woodland in the Sydney Basin.	
Conclusion	
After careful consideration of the above factors and available information, the proposed activity within the Subject Site is not likely to have a "significant impact" on the CEEC CPW. The Proposal: • Will not adversely affect the lifecycle of the species; • Will not remove, modify, or further fragment or isolate a significant area of habitat for the species, and; • Does not significantly contribute to any KTP. Consequently, a Species Impact Statement (SIS) or a Biodiversity Development Assessment Report (BDAR) is not required.	

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

Name of threatened species	Grey-headed Flying-fox (*Pteropus poliocephalus*)
A Grey-headed Flying-fox (GHFF) (*Pteropus poliocephalus*) camp is located approximately 3.7 km to the north-west of the Subject Site in Emu Plains (DCCEEW, 2023b). This species is listed as vulnerable under the *BC Act*. The species was not identified on the Subject Site during the current site assessment as no nocturnal survey was conducted. However, due to a large number of historical records in the locality, the proximity of the Subject Site to the Emu Plains flying-fox camp and the potential for the trees proposed to be removed to provide foraging habitat, a 5-Part Test	

Name of threatened species	Grey-headed Flying-fox (*Pteropus poliocephalus*)
under Section 7.3 of the *BC Act* is required for this Proposal. The following is to be taken into account to determine whether a proposed activity or development is likely to significantly impact the Grey-headed Flying-fox. **Ecology** Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia. Occurring typically in subtropical and temperate rainforests, tall sclerophyll forests and woodland, heaths and swamps as well as urban gardens and cultivated fruit crops. They feed on the nectar and pollen of native trees, in particular *Eucalyptus, Melaleuca* and *Banksia* spp., and fruits of rainforest trees and vines. Site fidelity to camps is high and they exist up to 20 km away from a regular food source.	
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction	
The Subject Site does not contain a known flying-fox camp however, the nearby Emu Plains camp likely uses the vegetation within the Subject Site as foraging habitat. Seven Eucalypt trees are proposed to be removed that are likely to provide foraging habitat, including winter foraging for the Grey-headed Flying-fox. Feed trees within the urban environment are important resources for the species, however given the limited extent of the vegetation clearing and the available foraging habitat within proximity of the west of the Emu Plains flying-fox camp, it is unlikely that the proposal will adversely affect the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction	
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	
(i) 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	
N/A	
(ii) 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	
N/A	
(c) in relation to the habitat of a threatened species or ecological community	
(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	

Name of threatened species	Grey-headed Flying-fox (*Pteropus poliocephalus*)
Seven (7) Eucalypt trees are proposed to be removed that are likely to provide foraging habitat for the Grey-headed Flying-fox. Feed trees within the urban environment are important resources for the species. The extent of foraging habitat to be removed is considered minor, however it is at risk of contributing to cumulative impacts on the species if other feed trees are removed across the locality without being replaced by suitable feed tree species.	
(ii) 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	
Due to the existing fragmentation of potential foraging habitat within the urban locality, and given the highly mobile nature of the species, no potential foraging habitat will become fragmented or isolated from other areas of habitat as a result of the Proposal.	
(iii) 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	
Seven (7**)** Eucalypt trees are proposed to be removed that are likely to provide foraging habitat, including winter foraging for the Grey-headed Flying-fox. Feed trees within the urban environment are important resources for the species. The extent of foraging habitat to be removed is considered minor, however it is at risk of contributing to cumulative impacts on the species if other feed trees are removed across the locality without being replaced by suitable feed tree species.	
(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 proposal is not located in any declared 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	
The *BC Act* defines a 'key threatening process' (KTP) as a process that 'adversely affects threatened species or ecological communities' or 'could cause species or ecological communities that are not threatened to become threatened' (s 4.32). Schedule 4 of the *BC Act* provides a list of KTPs. The Proposal has will contribute to the KTP 'Clearing of native vegetation'. However, only 340m² of degraded and mostly planted vegetation will be cleared. The Proposal is unlikely to contribute significantly to any KTPs relevant to the Grey-headed Flying-fox.	
Conclusion	

Name of threatened species	Grey-headed Flying-fox (*Pteropus poliocephalus*)

After careful consideration of the above factors and available information, the proposed activity within the Subject Site is not likely to have a "significant impact" on the threatened Grey-headed Flying-Fox (*Pteropus poliocephalus*).

The Proposal:

- Will not adversely affect the lifecycle of the species;
- Will not remove, modify, or further fragment or isolate a significant area of habitat for the species, and;
- Does not significantly contribute to any KTP.

Consequently, a Species Impact Statement (SIS) or a Biodiversity Development Assessment Report (BDAR) is not required.

8.3 Swift Parrot (*Lathamus discolor*)

Name of threatened species	Swift Parrot (*Lathamus discolor*)

Swift Parrot (*Lathamus discolor*) has been recorded 13 times within 5 km of the Subject Site. The closest recorded sighting was near the Emergency Department of the Nepean Hospital in 2003.

This species is listed as Endangered under the *BC Act*. The species was not identified on the Subject Site during the current survey. However, due to a moderate number of historical records in the immediate vicinity of the Subject Site and potential for the trees proposed to be removed to provide foraging habitat, a 5-Part Test under Section 7.3 of the *BC Act* is required for this Proposal. The following is to be taken into account to determine whether a proposed activity or development is likely to significantly impact the Swift Parrot.

Ecology

Swift Parrots breed in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW they mostly occurs on the coast and south west slopes. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany (*Eucalyptus robusta*), Spotted Gum (*Corymbia maculata*), Red Bloodwood (*Corymbia gummifera*), Forest Red Gum (*Eucalyptus tereticornis*), Mugga Ironbark (*Eucalyptus sideroxylon*), and White Box (*Eucalyptus albens*).

Commonly used lerp infested trees include Inland Grey Box (*Eucalyptus macrocarpa*), Grey Box (*Eucalyptus moluccana*), Blackbutt (*Eucalyptus pilularis*), and Yellow Box (*Eucalyptus melliodora*). (DPE 2022b)

Name of threatened species	Swift Parrot (*Lathamus discolor*)
(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	
Seven (7) Eucalypt trees are proposed to be removed that are favoured foraging tree species for the Swift and include winter flowering species. Feed trees within the urban environment are important resources for the species however given the limited extent of the vegetation clearing it is unlikely the proposal will adversely affect the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.	
(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	
(i) 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	
N/A	
(ii) 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	
N/A	
(c) in relation to the habitat of a threatened species or ecological community	
(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	
Seven (7) Eucalypt trees are proposed to be removed that are likely to provide foraging habitat for the Swift Parrot and include winter flowering species. Feed trees within the urban environment are important resources for the species. The extent of foraging habitat to be removed is considered minor, however it is at risk of contributing to cumulative impacts on the species if other feed trees are removed across the locality without being replaced by suitable feed tree species.	
(ii) 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	
Due to the existing fragmentation of potential foraging habitat within the urban locality, and given the highly mobile nature of the species, no potential foraging habitat will become fragmented or isolated from other areas of habitat as a result of the Proposal.	
(iii) 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	

Name of threatened species	Swift Parrot (*Lathamus discolor*)
Seven (7) Eucalypt trees are proposed to be removed that are likely to provide foraging habitat for the Swift Parrot. Feed trees within the urban environment are important resources for the species. The extent of foraging habitat to be removed is considered minor, however it is at risk of contributing to cumulative impacts on the species if other feed trees are removed across the locality without being replaced by suitable feed tree species.	
(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 proposal is not located in any declared 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	
The *BC Act* defines a 'key threatening process' (KTP) as a process that 'adversely affects threatened species or ecological communities' or 'could cause species or ecological communities that are not threatened to become threatened' (s 4.32). Schedule 4 of the *BC Act* provides a list of KTPs. The Proposal has will contribute to the KTP 'Clearing of native vegetation'. However, only 340m² of degraded and mostly planted vegetation will be cleared. The Proposal is unlikely to contribute significantly to any KTPs relevant to the Swift Parrot.	
Conclusion	
After careful consideration of the above factors and available information, the proposed activity within the Subject Site is not likely to have a "significant impact" on the threatened Swift Parrot (*Lathamus discolor*) The Proposal: • Will not adversely affect the lifecycle of the species; • Will not remove, modify, or further fragment or isolate a significant area of habitat for the species, and; • Does not significantly contribute to any KTP. Consequently, a Species Impact Statement (SIS) or a Biodiversity Development Assessment Report (BDAR) is not required.	

Appendix F. Assessments of Significant Impact Criteria (EPBC Act)

Under Part 3 of the *EPBC Act*, assessment is required for actions that may impact on Matters of National Environmental Significance (MNES) or for actions proposed to be carried out upon Commonwealth Land. This self-assessment is applied to Matters of National Environmental Significance (MNES) listed under the *EPBC Act* that have a high likelihood of occurrence or known occurrence on the Subject Site.

Two Matter of National Environmental Significance (MNES) listed under the *EPBC Act* have a high likelihood of occurring on the Subject Site. These are:

- Grey-headed Flying-fox (*Pteropus poliocephalus*) – Vulnerable under EPBC Act.
- Swift Parrot (*Lathamus discolor*) – Critically Endangered under the EPBC Act.

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

Vulnerable Species	**Grey-headed Flying-fox (*Pteropus poliocephalus*)**
An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:	
Lead to a long-term decrease in the size of an important population of a species	
The Subject Site does not contain a known flying-fox camp however, the nearby Emu Plains camp likely uses the vegetation within the Subject Site as foraging habitat. Seven (7) Eucalypt trees are proposed to be removed that are likely to provide foraging habitat, including winter foraging for the Grey-headed Flying-fox. Feed trees within the urban environment are important resources for the species. The species is known to travel up to 50km away from a roost site to forage (DCCEEW, 2023b). The Proposal would not directly impact the nearby camp. Given the limited extent of the vegetation clearing and the available foraging habitat within proximity of the west of the Emu Plains flying-fox camp it is unlikely the proposal will adversely affect the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction. Therefore, it is unlikely that the proposed works would lead to a long-term decrease in the size of an important population.	
Reduce the area of occupancy of an important population	
The Subject Site does not contain a roosting camp nor does it contain roosting habitat. The Subject Site provides limited feeding resources for the species. Given the limited extent of the vegetation clearing and the available better quality feeding resources within the species home range, the Proposal is unlikely to reduce the area of occupancy of an important population of Grey-headed Flying-foxes.	
Fragment an existing important population into two or more populations	
The Subject Site is currently highly fragmentated and isolated from bushland. No further fragmentation or isolation from other areas of habitat will occur due to the proposed works. Due to the mobile nature of the species, the Proposal would not fragment any local population.	
Adversely affect habitat critical to the survival of a species	
Seven (7) Eucalypt trees are proposed to be removed that are likely to provide foraging habitat, including winter foraging for the Grey-headed Flying-fox. Feed trees within the urban environment	

Vulnerable Species	Grey-headed Flying-fox (*Pteropus poliocephalus*)
are important resources for the species. The extent of foraging habitat to be removed is considered minor and is unlikely to be critical to the survival of the species. However, it is at risk of contributing cumulative impacts on the species if other feed trees are removed across the locality without being replaced by suitable feed tree species.	
Disrupt the breeding cycle of an important population	
Grey-headed Flying Foxes have a high fidelity to roosting camps where breeding occurs in January with a single young born in October or November (DPE 2020). The Subject Site is 3.5 km from the closest camp and will not impact on their breeding cycle. Therefore, the Proposal will not disrupt the breeding cycle of an important population.	
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	
Seven (7) Eucalypt trees are proposed to be removed that are likely to provide foraging habitat, including winter foraging for the Grey-headed Flying-fox. Feed trees within the urban environment are important resources for the species. The extent of foraging habitat to be removed is considered minor, however it is at risk of contributing cumulative impacts on the species if other feed trees are removed across the locality without being replaced by suitable feed tree species. Due to the minor extent of foraging habitat loss this Proposal alone is unlikely to cause the species to decline.	
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	
The vegetation proposed to be removed is highly disturbed and located within a carpark. No other Grey-headed Flying-fox habitat is expected to directly or indirectly impacted. Any surrounding trees to be retained within close proximity to the proposed works will have tree protection installed. As such, the Proposal is unlikely to result in an invasive species becoming established in Grey-headed Flying-fox habitat.	
Introduce disease that may cause the species to decline	
Other than the vegetation proposed to be removed no other Grey-headed Flying-fox habitat is expected to directly or indirectly impacted. Any surrounding trees to be retained within close proximity to the proposed works will have tree protection installed. The Subject Site is within a highly urbanised setting and not adjacent to and bushland or important Grey-headed Flying-fox habitat. As such, it is unlikely that the Proposal will introduce disease that may cause the species to decline.	
Interfere substantially with the recovery of the species	
The species has a National Recovery Plan that outlines recovery objectives. The Proposal will not impact on a Grey-headed Flying-fox camp or roosting habitat. Nor will it impact habitat critical to the survival of the species. As such, the Proposal will not interfere with any recovery objectives outline in the plan and will therefore not interfere with the recovery of the species.	
Conclusion	
Under the *EPBC Act* an action requires approval from the Australian Government Minister for the Environment (the Minister) if the action has, would have, or is likely to have, a significant impact on a matter of national environmental significance such as the Vulnerable Grey-headed Flying-fox	

Vulnerable Species	Grey-headed Flying-fox (*Pteropus poliocephalus*)
(*Pteropus poliocephalus*). The assessment above concludes that the proposed works would not have a significant impact on this species and as such, the action does not require referral to the Minister for further assessment and approval under the *EPBC Act.*	

8.5 Swift Parrot (*Lathamus discolor*)

Critically Endangered	Swift Parrot (*Lathamus discolor*)
An action is likely to have a significant impact on a critically endangered species if there is a real chance or possibility that it will:	
Lead to a long-term decrease in the size of a population	
Seven (7) Eucalypt trees are proposed to be removed that are favoured foraging tree species for the Swift Parrot and include winter flowering species. Feed trees within the urban environment are important resources for the species however given the limited extent of the vegetation clearing it is unlikely the proposal will lead to a long-term decrease in the size of the Swift Parrot population.	
Reduce the area of occupancy of the species	
The Subject Site provides limited foraging resources for the species. Given the limited extent of the vegetation clearing and the available better quality foraging resources within the species range, the Proposal is unlikely to reduce the area of occupancy of the Swift Parrot.	
Fragment an existing population into two or more populations	
The Subject Site is currently highly fragmentated and isolated from bushland. No further fragmentation or isolation from other areas of habitat will occur due to the proposed works. Due to the mobile nature of the species, the Proposal is unlikely to fragment any local population.	
Adversely affect habitat critical to the survival of a species	
Seven (7) Eucalypt trees are proposed to be removed that are likely to provide foraging habitat for the Swift Parrot and include winter flowering species. Feed trees within the urban environment are important resources for the species. The extent of foraging habitat to be removed is considered minor and is unlikely to be critical to the survival of the species. However, it is at risk of contributing to cumulative impacts on the species if other feed trees are removed across the locality without being replaced by suitable feed tree species.	
Disrupt the breeding cycle of a population	
The Swift Parrot breeds in Tasmania and migrates to south-eastern Australia over autumn and winter. Therefore, the Proposal will not disrupt the breeding cycle of a population.	
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	
Seven (7) Eucalypt trees are proposed to be removed that are likely to provide foraging habitat for the Swift Parrot and include winter flowering species. Feed trees within the urban environment are important resources for the species. The extent of foraging habitat to be removed is considered minor, however it is at risk of contributing to cumulative impacts on the species if other feed trees	

Critically Endangered	Swift Parrot (*Lathamus discolor*)
are removed across the locality without being replaced by suitable feed tree species. Due to the minor extent of foraging habitat loss this Proposal alone is unlikely to cause the species to decline.	
Result in invasive species that are harmful to a critically endangered species becoming established in the critically endangered species' habitat	
The vegetation proposed to be removed is highly disturbed and located within a carpark. No other Swift Parrot habitat is expected to be directly or indirectly impacted. Any surrounding trees to be retained within close proximity to the proposed works will have tree protection installed. As such, the Proposal is unlikely to result in an invasive species becoming established in Swift Parrot habitat.	
Introduce disease that may cause the species to decline	
Other than the vegetation proposed to be removed no other Swift Parrot habitat is expected to be directly or indirectly impacted. The Subject Site is within a highly urbanised setting and not adjacent to and bushland or important Swift Parrot habitat. Any surrounding trees to be retained within close proximity to the proposed works will have tree protection installed. As such, it is unlikely that the Proposal will introduce disease that may cause the species to decline.	
Interfere with the recovery of the species	
The species has a National Recovery Plan that outlines recovery objectives. The Proposal will not impact on habitat critical to the survival of the species. As such, the Proposal will not interfere with any recovery objectives outline in the plan and will therefore not interfere with the recovery of the species.	
Conclusion	
Under the *EPBC Act* an action requires approval from the Australian Government Minister for the Environment (the Minister) if the action has, would have, or is likely to have, a significant impact on a matter of national environmental significance such as the Critically Endangered Swift Parrot (*Lathamus discolor*). The assessment above concludes that the proposed works would not have a significant impact on this species and as such, the action does not require referral to the Minister for further assessment and approval under the *EPBC Act.*	