



Flora and Fauna Assessment

Milton Public School Upgrade - Biodiversity

NSW Department of Education

22 July 2025



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ACKNOWLEDGEMENT OF COUNTRY

The Board and employees of Water Technology acknowledge and respect the Aboriginal and Torres Strait Islander Peoples as the Traditional Custodians of Country throughout Australia. We specifically acknowledge the Traditional Custodians of the land on which our offices reside and where we undertake our work.

We respect the knowledge, skills and lived experiences of Aboriginal and Torres Strait Islander Peoples, who we continue to learn from and collaborate with. We also extend our respect to all First Nations Peoples, their cultures and to their Elders, past and present.



Artwork by Maurice Goolagong 2023. This piece was commissioned by Water Technology and visualises the important connections we have to water, and the cultural significance of journeys taken by traditional custodians of our land to meeting places, where communities connect with each other around waterways.

The symbolism in the artwork includes:

- Seven circles representing each of the States and Territories in Australia where we do our work
- Blue dots between each circle representing the waterways that connect us
- The animals that rely on healthy waterways for their home
- Black and white dots representing all the different communities that we visit in our work
- Hands that are for the people we help on our journey



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ACRONYMS AND DEFINITIONS

Acronym	Definition
BC Act	<i>Biodiversity Conservation Act 2016</i>
BV	Biodiversity Values
DCP	Development Control Plan
DD	Due Diligence
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
DoE	<i>NSW Department of Education</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
FM Act	<i>Fisheries Management Act 1994</i>
LEP	Local Environment Plan
LGA	Local Government Area
MNES	Matter of National Environmental Significance
PCT	Plant Community Type
FFA	Flora and Fauna Assessment
SEARS	Secretary's Environmental Assessment Requirements
DOE	Department of Education
SSD	State Significant Development
TEC	Threatened Ecological Community
WM Act	<i>Water Management Act 2000</i>



1 EXECUTIVE SUMMARY

A Flora and Fauna Assessment has been conducted to identify potential constraints that may impede the future school infrastructure upgrades for the Milton Public School. This assessment aims to seek approval for a development without consent application under Part 5 of the Environmental Planning and Assessment Act, whilst minimising ecological risks throughout project delivery. This report presents the outcomes of detailed biodiversity investigations, examining potential ecological limitations pertaining to the proposed works under the NSW Biodiversity Conservation Act 2016 (BC Act), Commonwealth Environment Protection and Biodiversity Conservation Act 1999, and NSW Fisheries Management Act 1994. The assessment process incorporated all applicable requirements outlined in Section 7.2 of the BC Act, following established protocols within Division 5.1 Assessment Guidelines.

Three Plant Community Types (PCTs) were mapped as occurring within the subject site. Of these, two PCTs demonstrated associations with recognised threatened ecological communities. Particular consideration was given to PCT 4052, which requires specific assessment under the relevant guidelines. Comments and consideration for PCT 4052 were incorporated into the assessment methodology to ensure comprehensive evaluation of this community type. Nevertheless, the proposed development activities will not adversely affect these plant communities.

No biodiversity values were mapped within the study area. One Magenta Lilly Pilly (*Syzygium paniculatum*), a threatened species, was recorded on site. This tree is not proposed for removal. Considering its conservation status, protective measures shall be established to safeguard this specimen throughout construction phases. The Grey-headed Flying-fox (*Pteropus poliocephalus*) had a moderate likelihood of occurrence. The site has no Key Fish habitat.

Ecological assessment findings indicate negligible impacts upon matters of national environmental significance. Although impacts were determined to be minimal, the investigation process verified that all statutory requirements under the BC Act were thoroughly addressed, incorporating Division 5.1 Assessment Guidelines and Section 7.2 provisions. Given the absence of threatened species records or substantial probability of occurrence, Test of Significance procedures were deemed unnecessary. Accordingly, referral to the Australian Environment Minister under the Environment Protection and Biodiversity Conservation Act 1999 is not warranted.

Environmental impact analysis suggests the proposal presents low risk of significant ecological impacts. Consequently, preparation of an Environmental Impact Statement, Species Impact Statement, or Biodiversity Assessment Report is not required, nor is Ministerial approval under the Environment Protection and Biodiversity Conservation Act 1999 necessary. Assessment outcomes confirm the proposal's limited environmental impact potential, therefore eliminating requirements for Species Impact Statement preparation or Planning Minister approval.



2 INTRODUCTION

This Milton Public School Upgrade Flora and Fauna Assessment (FFA) has been prepared to support a Review of Environmental Factors (REF) for the NSW Department of Education (DoE) for Milton Public School upgrade (the activity).

The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&I SEPP) as “development permitted without consent” on land carried out by or on behalf of a public authority under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The activity is to be undertaken pursuant to Chapter 3, Part 3.4, Section 3.37 of the T&I SEPP.

This document has been prepared in accordance with the Guidelines for Division 5.1 assessments (the Guidelines) by the Department of Planning, Housing and Infrastructure (DPHI) as well as the Addendum Division 5.1 guidelines for schools. The purpose of this report is to assess the potential biodiversity impacts that could arise from the redevelopment of the Milton Public School at 9 Thomas Street, Milton NSW, 2038 (the site).

This report has been prepared to assess potential biodiversity impacts for the Milton Public School Upgrade.

The proposed activity relates to upgrades to Milton Public School. Specifically, the proposed activity comprises the following:

- Construction of a new two-storey home base building.
- Installation of additional solar panels.
- Relocation of existing cricket nets to the eastern boundary of site.
- Construction of new stairs and covered walkways linking the new building to the existing school.
- Construction of new fencing.
- Construction of new hardstand area.
- Minor alterations to the existing staff car park.
- Disconnection and relocation of existing LPG tank.
- Tree removal.
- External landscape works.

Any works relating to demountables or the water tank will proceed via a separate planning pathway.

Figure 2-1 provides an extract of the proposed site plan.

Refer to the Review of Environmental Factors for a full description of works.

The Milton Public School upgrade will be assessed under Part 5, Division 5.1, the Department of Education serves as both the proponent and the determining authority. The Department of Education must examine all matters likely to affect the environment from this activity.

The construction company will make sure the proposal is carried out as described in this FFA. If the scope of work or work methods, described in this FFA, change significantly following determination, an additional environmental impact assessment, or FFA Addendum, may be required.

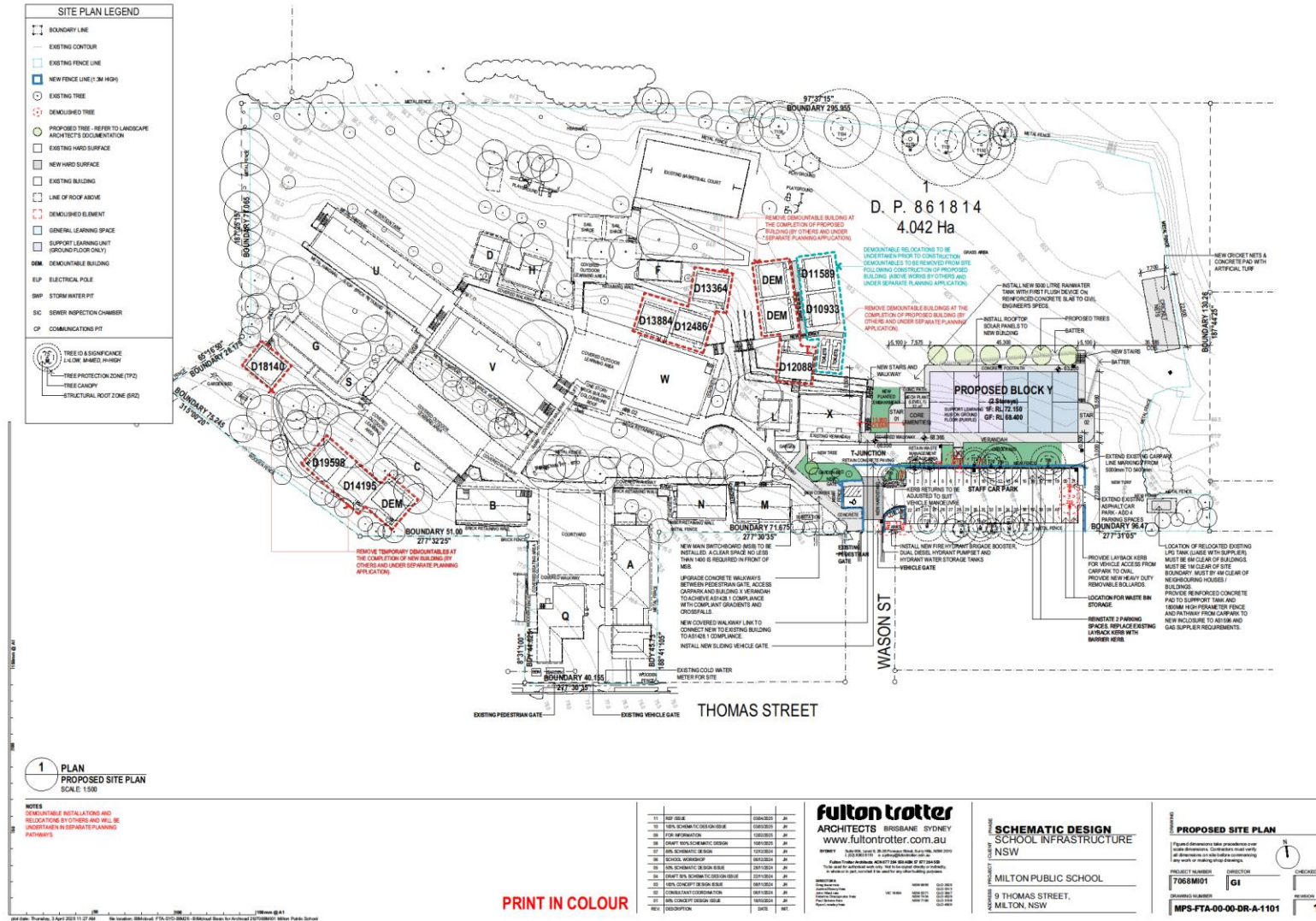


Figure 2-1 Site Plan Source: Fulton Trotter, 2024



2.1 Determination

- The proposed activity can proceed subject to mitigation measures and/or conditions relayed in this FFA.
- The activity is unlikely to be classed as a controlled action under the Commonwealth Environmental Protection (EPBC Act) and Biodiversity Conservation Act 1999 (BC Act) so no referral is required.

2.2 Statement of Significance

Based on the identification of potential issues, and an assessment of the nature and extent of the impacts of the proposed activity, it was determined that:

- The extent and nature of potential impacts are low and will not have significant adverse effects on the locality, community and the environment.
- Potential impacts can be appropriately mitigated or managed to ensure that there is minimal effect on the locality, community.



3 DELIVERABLE

See below FFA deliverable requirement from Department of Education (DoE) Table 3-1.

Table 3-1 FFA Deliverable

Item	Requirement	Relevant Section of Report
1.0	Address all relevant legislation, environmental planning instruments (EPIs) (including drafts), plans, policies, guidelines and planning circulars.	See Section 6
2.0	Trees and Landscaping	See Section 7.3
	Assess the number, location, condition and significance of trees to be removed and retained.	See Section 7.3
3.0	Ecologically Sustainable Development (ESD)	See Section 4.2
4.0	Biodiversity	See Section 7



4 PROJECT JUSTIFICATION

The Milton Public School Upgrade is part of the NSW Government's plan to rebuild public education in 2024-25. This upgrade will ensure growing communities get access to public education.

4.1 Options

Option 1 – Do Nothing: The current schools will continue to become dilapidated and outdated.

Option 2 – Implement Project Proposal: (Preferred option) Milton Public School Upgrade enhanced by providing more educational facilities for the local community. By providing enhanced services and spaces, the new proposed Milton Public School Upgrade aims to meet the current and future needs of the community.

4.2 Consideration of Ecologically Sustainable Development

The proposal has been considered against the principles of ecologically sustainable development (ESD) (refer to Table 4-1).

Table 4-1 Consideration of principles of ecologically sustainable development (ESD)

ESD Principle	Consideration in FFA
Precautionary principle	The proposal will not result in serious or irreversible environmental damage and there is no scientific uncertainty relating to the proposal.
Intergenerational equity	The proposal will help to meet the needs of future generations by providing education facilities, which can be used for future generations.
Conservation of biological diversity and ecological integrity	The proposal will not significantly impact on biological diversity or impact ecological integrity.
Improved valuation, pricing and incentive mechanisms	The proposal will provide cost efficient use of resources and provide optimum outcomes for the community, environment and with respect to financial cost.



5 SITE DESCRIPTION

The site is located at 9 Thomas Street, Milton, NSW, 2538 (the site). The site is legally referred to as Lot 1 in Deposited Plan 861814 and is within the Shoalhaven Local Government Area (LGA) and has an approximate area of 4 hectares. An aerial photograph of the site is provided at Figure 5-1.

The site is zoned SP2 Educational Establishment and existing development comprises various buildings, sports facilities and play space associated with Milton Public School. Milton Public School currently comprises 24 permanent teaching spaces (PTS) and 10 demountable teaching spaces (DTS). The site contains two locally heritage listed buildings (Building A and Q).

The site is predominantly cleared; however there is existing vegetation interspersed throughout the site and significant trees are present along the northern and western boundary of the site. There is a gradual slope downwards from the south-east to the north-east. of the site.

The site is an irregularly shaped lot with a narrow frontage along Thomas Street. Pedestrian and vehicular access is provided from Thomas Street and from Wason Street. Milton Public School is adjoined by low density residential properties to the south, west and east and Milton Rainforest Reserve is located to the north.



Figure 5-1 Site Aerial Source: Urbis, April, 2025



6 RELEVANT LEGISLATION

Legislation and policy relevant to the biodiversity component of works within the subject site are outlined below:

6.1 Environmental Planning, Assessment Act 1979 and Local Government Act 1993

Planning and development within NSW is regulated by the Environmental Planning & Assessment Act 1979 (EP&A Act).

The proposed works are permitted without consent under the State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP). Where works do not require development consent but require approval of a Government organisation under any legislation, then they are defined as an activity under Part 5 of the EP&A Act. Division 5.1 and Section 5.7 of the EP&A Act requires any such Government body to determine whether the impacts of the activity are likely to be significant. A FFA contributes to that determination.

A FFA is prepared, to inform a Review of Environmental Factors, to meet the requirements of Clause 171 of the *Environmental Planning and Assessment Regulation 2023*.

6.1.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

The State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP) provides for the efficient provision of public infrastructure in NSW. The aim of this Policy is to facilitate the effective delivery of infrastructure across the State.

6.2 Water Management Act 2000

The Water Management Act 2000 (WM Act) provides for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations. The WM Act defines principles of water management, sets out water licensing laws and environmental water provisions.

Section 91 (2) states that: *waterfront land means—...where the prescribed distance is 40 metres or (if the regulations prescribe a lesser distance, either generally or in relation to a particular location or class of locations) that lesser distance.*

This project is being carried out further than 40 metres so is exempt from requiring a Controlled Activity Approval in accordance with the WM Act.

6.3 Biodiversity Conservation Act 2016

The Biodiversity Conservation Act 2016 (BC Act) includes the Biodiversity Offsets Scheme (BOS) that governs how biodiversity offsets will be used to ensure they offset the loss due to development and deliver conservation outcomes. The Act and Regulations also govern the Biodiversity Assessment Method (BAM) as a scientific method that assesses biodiversity losses from impacts at development sites and gains from conserving land at stewardship sites.

Public authorities seeking to undertake an activity under Part 5 of the EP&A Act can voluntarily opt-in to the BOS and BAM scheme, or alternatively can elect to undertake an Assessment of Significance and proceed with a Part 5 approval. It will be required to:

- take serious and irreversible impacts into consideration
- determine if there are any additional and appropriate measures that will minimise the impact if the activity is to be carried out or approved
- The potential ecological impacts of the proposal are discussed in Section 9 of this FFA



6.4 Fisheries Management Act 1994

The provisions of the Fisheries Management Act 1994 relating to project development and approval processes operate similarly to the BC Act. The Act identifies threatened aquatic species, populations and ecological communities, as well as Key Fish Habitat.

Significant impacts trigger the need for a species impact statement for Part 4 and Part 5 projects. The potential ecological impacts of the proposal are discussed in Section 9 of this FFA report. It is concluded that the proposal is not likely to have a significant impact on any threatened aquatic species, populations or communities, or Key Fish Habitat.

6.5 Environment Protection and Biodiversity Conservation Act 1999

Under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), Commonwealth approval is required for certain actions. Actions which have or may have or are likely to have a significant impact on Matters of National Environmental Significance (MNES). MNES include nationally threatened species or endangered ecological communities. Under the EPBC Act an assessment of the impact of a proposal on a MNES must be undertaken to determine whether there is likely to be a significant impact. If the assessment concludes there is a significant impact, then it will become a controlled action under the EPBC Act and the proposal must be referred to the Commonwealth. Approval from the relevant Federal Minister is also required for any actions that may have a significant impact on matters of National Environmental Significance, except in circumstances which are set out in the EPBC Act.

Approval from the Commonwealth is in addition to any approvals under NSW legislation.

The potential ecological impacts of the proposal are discussed in Section 9 of this FFA. It is concluded that the proposal is not likely to have a significant impact on any EPBC listed threatened species, populations or communities nor is it likely to impact on any MNES and so does not require referral to the Commonwealth under the EPBC Act.

6.6 Shoalhaven Local Environmental Plan 2014

This plan aims to make local environmental planning provisions for land in the Shoalhaven LGA in accordance with the relevant standard environmental planning instrument.

The works are to be conducted as per LEP SP2 zoned land. The objectives of this zone include:

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

6.7 Shoalhaven Development Control Plan 2014

The aim of the Shoalhaven Development Control Plan 2014 (DCP) is to allow detailed provisions to be made to control and guide development and subdivision within the Shoalhaven LGA.



7 EXISTING ENVIRONMENT

7.1.1 Desktop search

Prior to undertaking the ecological field survey, desktop searches were conducted to provide a context of the surrounding environment.

7.1.2 Vegetation communities

A review of the vegetation mapping databases using the SEED portal- (NSW Government's central resource for Sharing and Enabling Environmental Data in NSW) was undertaken to identify Plant Community Types (PCTs) present within the area. As indicated in Figure 7-1, three PCTs were mapped as being present within the project site.

According to the NSW State Vegetation Type Mapping, three Plant Community Types (PCTs) are mapped as occurring within the subject site:

- PCT 3267 – Shoalhaven Foothills Turpentine Forest.
- PCT 3077 – Illawarra Complex Dry Rainforest.
- PCT 4052 – South Coast Low Hills Red Gum Grassy Forest.

PCT 3077 is associated with the following threatened ecological communities:

- Illawarra Subtropical Rainforest in the Sydney Basin Bioregion (Endangered – BC Act)
- Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions (Endangered – BC Act)
- Milton Ulladulla Subtropical Rainforest in the Sydney Basin Bioregion (Endangered – BC Act)
- Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion (Critically Endangered – EPBC Act).

7.2 Threatened Species

7.2.1 Vegetation

According to the NSW State Vegetation Type Mapping, three Plant Community Types are mapped as present within the subject site: PCT 3267 (Shoalhaven Foothills Turpentine Forest), PCT 3077 (Illawarra Complex Dry Rainforest), and PCT 4052 (South Coast Low Hills Red Gum Grassy Forest).

PCT 3077 is linked to several threatened ecological communities, including Illawarra Subtropical Rainforest in the Sydney Basin Bioregion (Endangered – BC Act), Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions (Endangered – BC Act), Milton Ulladulla Subtropical Rainforest in the Sydney Basin Bioregion (Endangered – BC Act), and Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion (Critically Endangered – EPBC Act). PCT 4052 is associated with TEC 20070 Lowland Grassy Woodland in the South East Bioregion under the BC Act, which is listed as endangered and recognised as having high sensitivity to loss. This PCT is not classified as a Serious and Irreversible Impact (SAIL) entity under current biodiversity legislation. Additionally, PCT 4052 corresponds to TEC 20391 Illawarra and south coast lowland forest and woodland ecological community under the EPBC Act, which is listed as critically endangered. PCT 4052 represents vegetation communities of exceptionally high conservation value owing to their endangered and critically endangered status, with the Lowland Grassy Woodland community noted for its high sensitivity to loss and the corresponding EPBC Act community being critically endangered.

Both PCT 3077 and PCT 4052 are confined to the northeastern corner of the site and positioned outside the proposed development boundaries. Given the high conservation significance of these associated threatened ecological communities, particularly the critically endangered status under Commonwealth legislation, recommended protective measures encompass the installation of protective fencing around both TEC areas



before construction commences, establishment of buffer zones to prevent indirect impacts, construction methodology to avoid encroachment into TEC areas, and ongoing monitoring throughout the construction phase. Whilst these threatened ecological communities are present on-site, their position outside the development footprint considerably reduces direct impact potential. Nevertheless, their high conservation status, particularly the critically endangered EPBC Act communities, necessitates stringent protective measures and careful consideration of potential indirect impacts.

The Arboricultural Impact Assessment Draft Report, (Varley, 2025) indicated that no Magenta Lilly Pilly (*Syzygium paniculatum*) trees, are slated for removal. Magenta Lilly Pilly are Endangered under the BC Act and Vulnerable under the EPCB Act. Due to the threatened status of this species, these trees will remain and be mitigated against in the proposed activity. Based on the arborist report, 16 trees are proposed for removal to facilitate the Milton Public School upgrade, with the majority appearing to be located in the area designated for the carpark off Wason Street.

Tree canopy cover was assessed to be less than 15% at maturity as part of the bushfire protection measures. This condition aligns with the bushfire protection planning guidelines, ensuring compliance with the vegetation management requirements. While the Arboricultural Impact Assessment meets these guidelines and outlines mitigation measures for tree management and habitat protection, it does not include specific actions for maintaining or offsetting canopy cover. The absence of explicit canopy cover retention or offset strategies raises concerns about long-term biodiversity impacts. Although the approach complies with the minimum requirements of the BC Act Part 5, a more proactive strategy to minimise habitat loss would be beneficial.

A search of the DCCEE BioNet Atlas revealed 603 records of 61 threatened species previously recorded within 10 km of the site. Analysis of the Protected Matters Search Tool indicated 5 listed threatened ecological communities, 49 listed threatened species, and 13 listed migratory species previously recorded within 1 km of the subject site. No World Heritage Properties, National Heritage Places, Protected Marine Areas, nor Wetlands of international importance occurred within 1 km of the site (Appendix A).

7.2.2 Fauna

The DCCEE BioNet Atlas mapping identified one threatened species near the site, being the Grey-headed Flying-fox (*Pteropus poliocephalus*) is listed as Vulnerable under both the BC Act and the EPBC Act

Three species of fauna are considered to have a moderate likelihood of occurrence within the subject site due to previously being recorded near the subject site, and due to having potential suitable habitat within the subject site. Species with a moderate likelihood of occurrence include the Grey-headed Flying-fox (*Pteropus poliocephalus*), Powerful Owl (*Ninox strenua*), and Masked Owl (*Tyto novaehollandiae*) (Appendix B).

Additionally, the subject site was not mapped as containing any Key Fish Habitat, nor is it in proximity to significant waterways or waterfront land, thus no further provisions within the FM Act and WM Act are not required for the proposed activity.

Due to the cryptic and nocturnal nature of many species, the fauna assessment primarily evaluated the site's potential as habitat. The precautionary principle was adopted, assuming the presence of threatened species if suitable habitat exists.

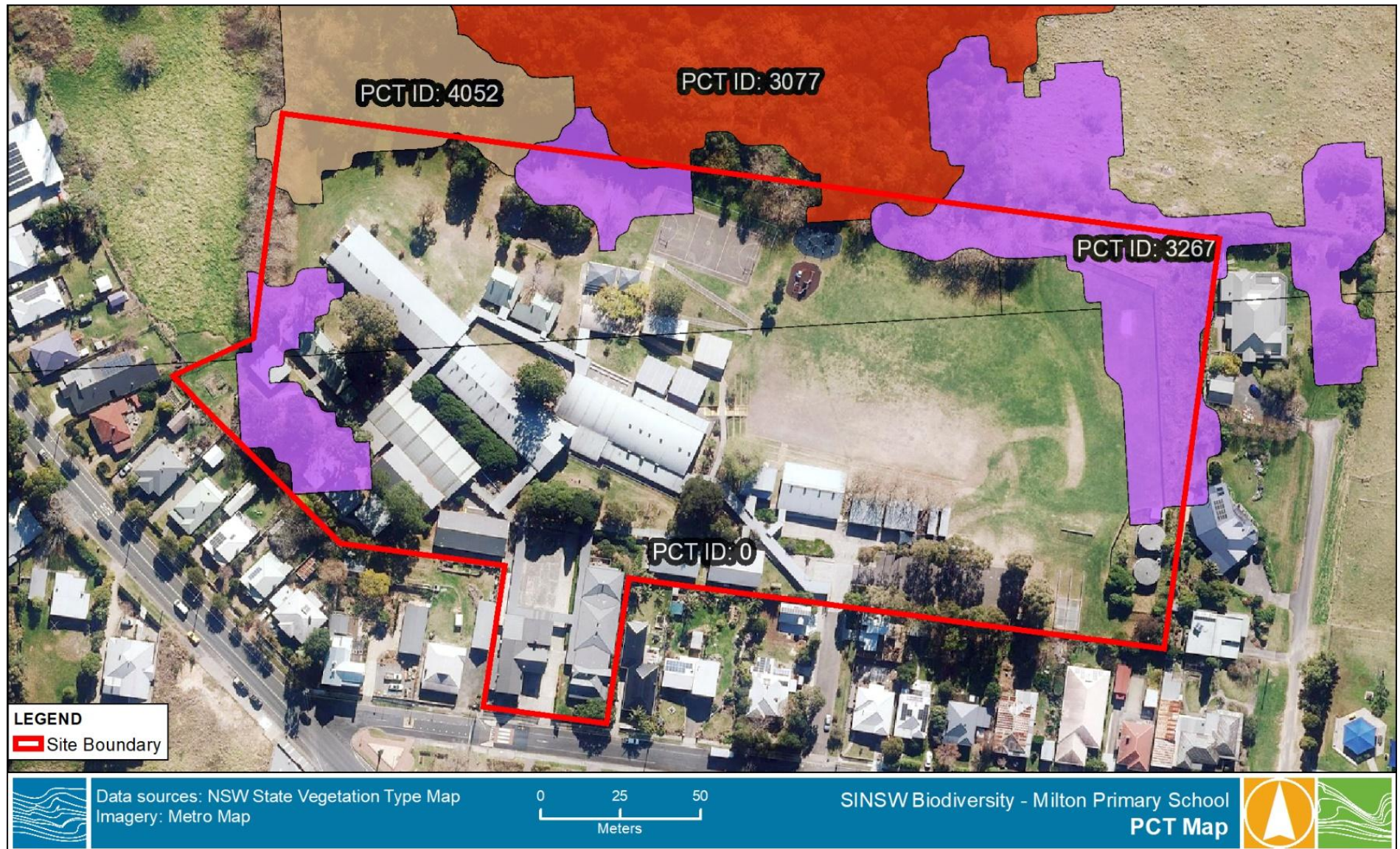


Figure 7-1 Plant Community Types



Figure 7-2 Threatened species



7.3 Site Visit

An assessment of the site was undertaken on 14 January 2025 by ecologist Caroline Weller and previously by ecologist Clayton Woods on 14 September 2023. The survey comprised a walkthrough of all the accessible vegetated areas of the site. Flora species were surveyed by stratum and were identified and recorded. The vegetation communities observed were later cross checked with those already mapped surrounding the property. An assessment of potential habitat features for threatened species, such as tree hollows or crevices in tree bark was also conducted.

An opportunistic fauna survey included searches for proxy evidence of fauna activity such as tree scratches, scat, and bird nests. The fauna assessment is largely an assessment of the potential of the site as habitat for various fauna species. Apart from species recorded from the site, there is no certainty as to the presence or absence of the species discussed. Therefore, it is important to adopt the precautionary principle such that it is assumed that any threatened species are likely to occur at the site if suitable habitat exists.

7.3.1 Flora

The site was primarily dominated by scattered, canopy species such as Brush Box (*Lophostemon confertus*), and Spotted Gum (*Corymbia maculata*). Brush Box is native to the north coast of NSW, however Spotted Gum are associated with the surrounding mapped PCT 3267 (Figure 7-1). There was limited midstorey and understorey presence, typically found in garden areas around the site, indicating they were planted for aesthetic purposes rather than biodiversity. The ground surface was mainly artificial turf or concrete. A detailed native flora list can be found in Table 7-1.

The Floor Plans provided by the client (Figure 2-1) assign numbers or letters to each building and demountable. These are referenced below. Native plantings were observed behind and adjacent to school buildings particularly near Blocks U, G, C, D18140, D19598, and D14195 (Figure 2-1). The walkways were predominantly planted with native species, though not specifically related to the nearby PCT. The draft Arboriculture Report highlighted that trees along the southwestern boundary fence line are of high landscape significance. This area includes predominantly high and medium-valued trees, with a priority on retaining the high-value trees and removing medium-valued trees only when necessary.

Exotic species are present on site, including Magnolia (*Magnolia × soulangeana*), Golden Elm (*Ulmus glabra*), London Plan (*Platanus × acerifolia*), and African Olive (*Olea europaea subsp. cuspidata*). A comprehensive list of weeds is in Table 7-2.

7.3.2 Fauna Habitat

Scratch marks on a Forest Red Gum (*Eucalyptus tereticornis*) were observed, with small marks likely caused by a possum (Figure 7-3). A nest was found in a Paperbark (*Melaleuca sp.*) tree in the western part of the school site, just inside the boundary line. It is positioned between a playground and the house on the southern side. (Figure 7-3). There is also a potential hollow in trees near the building zone adjacent to the top carpark. A family of Magpies (*Cracticus tibicen*) was seen hovering around this area, but no nests were observed.



Figure 7-3 Forest Red Gum with scratch marks



Figure 7-4 Nest in a Paperbark

Potential habitat sites were identified, including two nests near D19598, (Figure 2-1) one within an air conditioning unit and another large nest in trees on the northeastern side of the site. Additional habitat potential includes vegetative debris at the base of a Phoenix Palm (*Phoenix sp.*) in the northwestern corner and beneath a large cut stump on the walkway, which has previously been used by an infant Tawny Frogmouth (*Podargus strigoides*) (pers. communication) by Clayton Woods on 14 September 2023.

Frog calls were also heard from a natural spring on-site. A list of fauna and potential habitat sites is provided in Table 7-3. The school has expressed that these areas are highly valued as important habitat, and it is recommended that an ecologist be present to check for wildlife before, during, and after the removal process.

No large hollows were observed, limiting the site's potential to support breeding habitat for threatened species such as the Powerful Owl or Masked Owl. However, the site may serve as a foraging area for small mammals, such as possums, as indicated by the scratch mark, which would then also support foraging habitat for these owls. The Grey-headed Flying-fox (*Pteropus poliocephalus*) may forage on-site, but it is unlikely to roost here due to the absence of preferred waterways. Furthermore, a roost camp was not found on site. The nearest roosting site is also 700 m northeast in Flat Rock Gully.

One Forest Oak (*Allocasuarina torulosa*) and one Black Sheoak (*A. littoralis*) were recorded on site which are both important food trees for South-Eastern Glossy Black-cockatoo (*Calyptorhynchus lathami lathami*).

Table 7-1 Native Species list

Scientific Name	Common Name
<i>Leptospermum petersonii</i>	Lemon-scented Tea Tree
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly (E – BC Act)
<i>Callistemon viminalis</i>	Weeping Red Bottlebrush



Scientific Name	Common Name
<i>Melaleuca linariifolia</i>	Narrow-leaved Paperbark
<i>Grevillea robusta</i>	Silky Oak
<i>Toona ciliata</i>	Red Cedar
<i>Allocasuarina torulosa</i>	Forest Oak
<i>Ficus microcarpa</i> var. <i>hillii</i>	Hill's Fig
<i>Pittosporum undulatum</i>	Sweet Pittosporum
<i>Melaleuca salignus</i>	Willow Bottlebrush
<i>Eucalyptus botryoides</i>	Bangalay
<i>Eucalyptus saligna</i> x <i>botryoides</i>	Wollongong Woollybutt
<i>Melaleuca citrinus</i>	Crimson Bottlebrush
<i>Lophostemon confertus</i>	Brush Box
<i>Melia azedarach</i>	White Cedar
<i>Casuarina glauca</i>	Swamp Sheoak
<i>Callitris glaucophylla</i>	White Cypress Pine
<i>Eucalyptus moluccana</i>	Grey Box
<i>Eucalyptus pilularis</i>	Blackbutt
<i>Melaleuca bracteata</i>	Black Tea-tree
<i>Corymbia maculata</i>	Spotted Gum
<i>Allocasuarina littoralis</i>	Black Sheoak
<i>Hymenosporum flavum</i>	Native Frangipani
<i>Eucalyptus tereticornis</i>	Forest Red Gum
<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark
<i>Eucalyptus nicholii</i>	Black Peppermint
<i>Elaeocarpus reticulatus</i>	Blue-berry Ash
<i>Syzygium australe</i>	Brush Cherry
<i>Ficus coronata</i>	Sandpaper Fig
<i>Acacia</i> spp.	Wattle

Table 7-2 Exotic species list

Scientific Name	Common Name
<i>Magnolia grandiflora</i>	Bull Bay
<i>Quercus robur</i>	English Oak
<i>Zelkova serrata</i>	Zelkova
<i>Pinus pinaster</i>	Maritime Pine
<i>Cupressus macrocarpa</i>	Monterey Cypress
<i>Lagunaria patersonii</i>	Norfolk Island Hibiscus



Scientific Name	Common Name
<i>Olea europaea subsp. cuspidata</i>	African Olive
<i>Fraxinus angustifolia</i> 'Raywood'	Claret Ash
<i>Araucaria cunninghamii</i>	Hoop Pine
<i>Magnolia</i> × <i>soulangeana</i>	Magnolia
<i>Syzygium smithii</i>	Lilly Pilly
<i>Erythrina</i> × <i>sykesii</i>	Coral Tree
<i>Araucaria heterophylla</i>	Norfolk Island Pine
<i>Harpephyllum caffrum</i>	Kaffir Plum
<i>Fraxinus griffithii</i>	Evergreen Ash
<i>Ulmus glabra</i> 'Lutescens'	Golden Elm
<i>Liquidambar styraciflua</i>	Sweet Gum
<i>Jacaranda mimosifolia</i>	Jacaranda
<i>Platanus</i> × <i>acerifolia</i>	London Plane

Table 7-3 Fauna species list and potential habitat locations.

FAUNA SPECIES	
Scientific Name	Common Name
<i>Alectura lathamii</i>	Australian Brush-turkey
<i>Gymnorhina tibicen</i>	Australian Magpie
<i>Lampropholis guichenoti</i>	Common Garden Skink
<i>Manorina melanocephala</i>	Noisy Minor
<i>Trichoglossus moluccanus</i>	Rainbow Lorikeet
Unknown	Frog (Heard Call)
Potential habitat found	
Two nests on side of building	-33.820545, 151.211125
Old nest in tree	-33.820421, 151.211882
Potential habitat in base of Phoenix Palm	-33.820499, 151.210921

(*) None of the listed exotic species were identified as Weeds of National Significance (WONS)



8 THE PROPOSED ACTIVITY

The Arboricultural Impact Assessment Report for Milton Public School assessed trees on and near the site that may be impacted by activity and outlined recommended tree protection measures. It emphasised that construction activities within Tree Protection Zones (TPZ) should be carefully managed to prevent harm to trees.

Specific activities, including trenching, soil level changes, material storage, and machinery use, will be restricted within the TPZ unless approved by a project arborist. Excavation methods will be designed to preserve root systems, with smaller roots requiring clean cuts and treatment with fungicide, while larger roots will be assessed by the arborist. Crown pruning will also be regulated, with no more than 10-15% of the crown allowed to be removed without prior approval. The arborist report provided individual assessments of specific trees, noting issues such as multiple leaders, crown pruning, and signs of decay, which could be exacerbated by activity. Some trees were identified for possible removal due to low significance, while others, such as trees of medium significance, might be removed if they conflict with the proposed design. Encroachment on TPZs will be limited to 10%, and any work within neighbouring TPZs will not adversely affect those trees. The report stressed the importance of consulting a project arborist for assessments, reports, and certifications before the proposed activity proceeds.



9 POTENTIAL IMPACTS

During the pre-construction and construction phases, several detailed mitigation measures are essential to prevent adverse impacts on existing trees, vegetation, and local wildlife. The following impacts and corresponding mitigation measures are crucial to ensuring ecological protection and compliance with relevant standards:

9.1 Vegetation Communities

The mapped extent of PCT 3077 (Illawarra Complex Dry Rainforest) on the site is restricted to a small patch located to the north of the site. This area lies outside the proposed development footprint and is not anticipated to be directly impacted by construction activities. Given the association of PCT 3077 with multiple threatened ecological communities, including the critically endangered Illawarra-Shoalhaven Subtropical Rainforest of the Sydney Basin Bioregion under the EPBC Act, potential indirect impacts such as edge effects, altered drainage patterns, or construction-related disturbances require careful consideration. To mitigate any potential indirect impacts and provide additional security for this high-value vegetation community, protective fencing around the PCT 3077 area is recommended prior to construction commencement. This measure would establish a clear exclusion zone and prevent inadvertent encroachment or damage during construction activities. With appropriate protective measures in place, the risk of impact to this threatened ecological community is considered minimal.

9.2 Tree Protection Measures

Construction activities can damage trees through physical injury, soil compaction, and root damage. To mitigate these impacts, tree protection must be approved by a Consulting Arborist (AQF Level 5). No materials, mixing, parking, disposal, repairs, refuelling, fires, stockpiling, or backfilling is allowed near remaining trees, in accordance with NSW guidelines and Australian Standard AS 4970–2009. These measures ensure that trees are safeguarded from construction-related disturbances.

Identification and Surveying: Incorrect or inadequate identification of trees can lead to unintentional damage or removal. To prevent this, all trees to be protected shall be clearly identified, and all Tree Protection Zones (TPZs) surveyed. This ensures accurate recognition and protection of trees throughout the construction process.

9.3 Protective Fencing

Without proper fencing, trees are susceptible to damage from construction equipment and personnel. Protective fencing around existing trees and within TPZs must be installed before any site work begins. The fence must be 1800mm high chain-wire mesh fixed to galvanised steel posts, enclosing an area to prevent damage as defined in the Tree Protection Plan. No storage is allowed inside the fenced area. This creates a physical barrier protecting trees from accidental harm.

9.4 Use of Mulch

Soil degradation and root damage can occur without adequate ground cover. To address this, AS 4454 leaf mulch with 90% recycled content will be used for tree protection fencing. The mulch required for the project will need to be sourced from a supplier who can provide confirmation that the material is free from asbestos and any other contaminants. Prior to any chipping activities, the site asbestos register must be consulted due to recorded assumptions of in-ground asbestos-containing materials (ACM). Root material chipping must not proceed where ACM risk is identified, and alternative management procedures must be implemented to prevent potential exposure. This practice improves soil health and provides a protective layer for tree roots. This practice improves soil health and provides a protective layer for tree roots.



9.5 Signage

Lack of awareness among construction personnel can lead to non-compliance with tree protection measures. Tree protection signage must be attached to tree protection zones before works begin, displayed prominently and repeated at 10m intervals or closer when the fence changes direction. Signs must include information about the tree protection zone, access restrictions, the developer's contact details, and Site Arborist information. This ensures that all site personnel are informed about the tree protection requirements.

9.6 Inspection for Fauna

Construction activities can harm wildlife inhabiting the trees. The site assessment found potential habitat features within the subject site, which may affect the activity process. These include two birds' nests abutting the air-conditioning units on D19598, (Figure 2-1) in the southwest section of the site; a nest in the base of the fronds in an exotic Phoenix Palm (*Phoenix canariensis*); an old nest in a native canopy tree; a nest in a Paperbark (*Melaleuca sp.*) tree near the PCT patch; a potential hollow in trees near the building zone adjacent to the top carpark; and a natural spring producing frog calls.

Prior to the commencement of construction, all trees and vegetation must be inspected for hollows and nests. If fauna is discovered inhabiting hollows or nests, a qualified ecologist is required to remove and relocate any fauna if the tree or vegetation is to be removed. No tree removal activities shall proceed until fauna relocation has been completed and verified by the ecologist. This measure ensures wildlife protection and compliance with ecological regulations.

9.7 Contractor Induction

Uninformed contractors may inadvertently cause ecological damage. To prevent this, induction of all contractors and staff outlining the ecological sensitivity of the site, no-go areas, the need to minimise ecological impact, and all other required mitigation measures must be undertaken. This ensures that all personnel understand the ecological importance of the site and adhere to the necessary protection measures.

9.8 Maintaining Tree Protection Zones

Construction activities within TPZs can cause root damage and stress to trees. To mitigate this, TPZs will be maintained around vegetation to be retained, in accordance with Australian Standard 4970 (2009) Protection of Trees on Development Sites (AS-4970). No activities are to take place within the Structural Root Zones (SRZs) of mature trees unless a Level 5 Arborist confirms that the works will not impact the tree. This preserves the health and structural integrity of mature trees.

9.9 Access Restrictions

Unauthorized access to TPZs can lead to soil compaction and root damage. No pedestrian or plant access is permissible to the TPZ. This restriction prevents any damage from foot traffic or machinery.

9.10 Material Storage and Spoil Management

Storing materials near trees can lead to contamination and physical damage. To prevent this, avoid storing bulk or harmful materials near trees. Keep spoil from excavations away from TPZs. Ensure wind-blown materials like cement don't harm trees. Contaminants must be stored properly with spill measures in place. These precautions protect trees from physical and chemical damage.



9.11 Trenching Restrictions

Trenching within TPZs can severely damage tree roots. To prevent this, trenching is not allowed in TPZs or tree protection fencing without approval. If trenching is necessary, it must be done by hand with arborist supervision. This minimizes root damage and preserves tree health.

9.12 Watering and Maintenance

Insufficient water during construction can stress or kill trees. Contractors are to ensure that plants are watered appropriately during periods of little or no rainfall. This maintains the health and vitality of trees throughout the construction process.

9.13 Facility and Chemical Management

Improper location of site facilities and storage of chemicals can lead to tree damage. To mitigate this, all site facilities must be located outside of TPZs. Chemicals and contaminants must be stored properly in an enclosed area with a spill bund to prevent runoff in case of accidents. This prevents contamination and ensures safe storage practices.

9.14 Hygiene Protocols

Construction activities can introduce plant pathogens and diseases. To mitigate this risk, basic hygiene protocols will be implemented for construction personnel and machinery to reduce the potential for invasion by plant pathogens, including *Phytophthora cinnamomi*, the fungus myrtle rust (*Uredo rangelli*), and amphibian chytrid fungus. This prevents the spread of harmful pathogens and protects the local ecosystem.

9.15 Operational Impacts

During the operational phase, no significant operational impacts to flora and fauna are anticipated as a result of the proposal. These detailed mitigation measures are essential to minimise the environmental impact of construction activities, protect existing trees, and ensure compliance with relevant ecological and safety standards.



10 EVALUATION OF ENVIRONMENTAL IMPACTS

1. The extent and nature of potential impacts are low and will not have significant impact on the locality, community and/or the environment.
2. Potential impacts can be appropriately mitigated or managed to ensure that there is minimal impact on the locality, community and/or the environment.



11 MITIGATION MEASURES

During the pre-construction phase, a series of mitigation measures will be implemented to ensure the protection and preservation of existing trees. Tree protection must be approved by a Consulting Arborist AQF Level 5. No materials, mixing, parking, disposal, repairs, refuelling, fires, stockpiling, or backfilling is allowed near remaining trees.

To mitigate any potential indirect impacts and provide additional security for this high-value vegetation community, protective fencing around the PCT 3077 area shall be installed prior to construction commencement. This measure will establish a clear exclusion zone and prevent inadvertent encroachment or damage during construction activities, ensuring the preservation of the threatened ecological community associations.

Trees to be protected shall be clearly identified, and all Tree Protection Zones (TPZs) surveyed. Protective fencing around existing trees and within TPZs must be installed before any site work begins. The fence must be 1800mm high chain wire mesh fixed to galvanised steel posts, enclosing an area to prevent damage as defined in the Tree Protection Plan. No storage is allowed inside the fenced area. AS 4454 leaf mulch with 90% recycled content will be used for tree protection fencing. The mulch required for the project will need to be sourced from a supplier who can provide confirmation that the material is free from asbestos and any other contaminants. Prior to any chipping activities, the site asbestos register must be consulted due to recorded assumptions of in-ground asbestos-containing materials (ACM). Root material chipping must not proceed where ACM risk is identified, and alternative management procedures must be implemented to prevent potential exposure. This practice improves soil health and provides a protective layer for tree roots.

Measures that will be implemented to address potential pre-construction impacts are listed in [Table 11-1](#) and construction impacts are listed in [Table 11-2](#). Detailed tree mitigation measures during pre-construction and construction should be adhered to, as described in [Table 11-1](#).

- (D) Design
- (C) Construction
- (O) Operation

Table 11-1 Mitigation measures for pre-construction impacts (PI)

Project Stage*	Mitigation Measures	Reason for Mitigation Measure	Section of Report
PI1	Establish exclusion zones around Magenta Lilly Pilly during construction.	To ensure the physical protection of trees during construction.	9.2
PI2	Tree protection approved by AQF Level 5 Consulting Arborist. No materials, parking, or activities near remaining trees.	To ensure tree protection measures are in place and prevent any damage or unauthorised removal of trees.	9.2
PI3	Clearly identify all protected trees and survey TPZs.	To ensure proper identification and protection of trees during the construction process.	9.2
PI4	Install 1800mm chain wire protective fencing around trees/TPZs before site work. No storage inside fenced area.	To physically protect trees from damage during construction activities and prevent unauthorised access to protected areas.	9.3
PI5	Use AS 4454 leaf mulch (90% recycled) 100mm deep.	To enhance soil health and tree protection through the use of appropriate mulch and recycling materials from removed trees.	9.4



Project Stage*	Mitigation Measures	Reason for Mitigation Measure	Section of Report
PI6	Install tree protection signage at 10m intervals with zone info and contact details.	To inform and educate all site personnel about tree protection zones and access restrictions, ensuring compliance with protection measures.	9.5
PI7	Inspect trees for fauna. Ecologist to relocate any discovered fauna before removal.	To ensure the protection and safe relocation of fauna that may inhabit the trees, preventing harm to wildlife during tree removal or vegetation clearing activities.	9.6
P18	Induct all contractors on site ecological sensitivity and mitigation measures.	To ensure all personnel are aware of the ecological importance of the site and understand the measures needed to minimise ecological impact during construction activities.	9.7

Table 11-2 Mitigation measures for construction impacts (CI)

Project Stage*	Mitigation Measures	Reason for Mitigation Measure	Section of Report
CI1	Maintain TPZs around retained vegetation per AS-4970. No activities in SRZs without Level 5 Arborist approval.	To ensure the protection of trees during construction by maintaining Tree Protection Zones (TPZs) and adhering to Australian standards.	9.2
CI2	No pedestrian or plant access to TPZ.	To prevent damage to trees by restricting access to Tree Protection Zones.	9.2
CI3	Keep bulk/harmful materials away from trees. Store contaminants properly with spill measures.	To protect trees from contamination and physical damage caused by construction materials and activities.	9.10
CI4	Protect trees from harm. No ropes, cables, staff, or equipment within tree protection fencing.	To prevent physical damage to trees from construction equipment and materials.	9.2
CI5	No soil filling or compaction above tree roots. Use elevated planks to prevent ground compression.	To protect tree roots from soil compaction and other construction-related damage.	9.10
CI6	Avoid trenching in TPZs. Reroute outside TPZ or underbore. Arborist approval required for TPZ excavation.	To prevent damage to tree roots by restricting trenching activities within Tree Protection Zones.	9.11
CI7	Water plants during dry periods at appropriate rates for species.	To ensure the health and survival of trees and plants during construction by providing adequate water.	9.12
CI8	Locate site facilities outside TPZ. Store chemicals in enclosed areas with spill bunds.	To prevent contamination and damage to trees from construction site facilities and chemicals.	9.13
CI9	Implement hygiene protocols for personnel/machinery to prevent plant pathogen spread.	To prevent the spread of plant pathogens and diseases that could harm vegetation and wildlife on the construction site.	9.14





12 CONCLUSION AND RECOMMENDATIONS

Activities within the Tree Protection Zone (TPZ) will require precautions to avoid damage, with a qualified arborist overseeing the process and providing a Tree Protection Plan. Trees and vegetation will be inspected for hollows and nests, with an ecologist relocating any fauna found. Contractors and staff will be inducted on the site's ecological sensitivity, and basic hygiene protocols will be implemented to prevent plant pathogens and fungi.

No biodiversity values were mapped within the study area. One Magenta Lilly Pilly (*Syzygium paniculatum*), a threatened species, was recorded on site. This tree is not proposed for removal. Given its threatened status, appropriate mitigation measures will be implemented to ensure its protection throughout the proposed activity.

No operational impacts to flora and fauna are anticipated, and mitigation measures will include maintaining TPZs, inspecting trees for fauna, and implementing hygiene protocols. If these mitigation measures are followed, the ecological impact of the construction can be minimised, ensuring the protection of the remaining trees and local wildlife.

This FFA for the Milton Public School, conducted by Water Technology, found no significant biodiversity areas or threatened species on the site.

The proposal would be unlikely to cause a significant impact on the environment. Therefore, it is not necessary for an Environmental Impact Statement, a Species Impact Statement nor a Biodiversity Assessment Report to be prepared and approval to be sought from the Minister for Planning under the Biodiversity Conservation Act 2016. The assessment determined that the proposal is not likely to have a significant impact on matters of national environmental significance, so referral to the Commonwealth Minister for the Environment under the Environment Protection and Biodiversity Conservation Act 1999 is not required.

This conclusion supports the progression of the redevelopment project under the current planning and environmental regulations, ensuring that the school infrastructure upgrades can proceed with minimal biodiversity disruption.



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APPENDIX A

PROTECTED MATTERS SEARCH

APPENDIX B

LIKELIHOOD OF OCCURRENCE





Recorded The species was observed in the study area during the current survey.	
High	It is highly likely that a species inhabits the study area and is dependent on identified suitable habitat (i.e., for breeding or important life cycle periods such as winter flowering resources), has been recorded recently in the locality (10km) and is known or likely to maintain resident populations in the study area. Also includes species known or likely to visit the study area during regular seasonal movements or migration.
Moderate	Potential habitat is present in the study area. Species unlikely to maintain sedentary populations, however, may seasonally use resources within the study area opportunistically or during migration. The species is unlikely to be dependent (i.e., for breeding or important life cycle periods such as winter flowering resources) on habitat within the study area, or habitat is in a modified or degraded state. Includes cryptic flowering flora species that were not seasonally targeted by surveys and that have not been recorded.
Low	It is unlikely that the species inhabits the study area and has not been recorded recently in the locality (10km). It may be an occasional visitor, but habitat similar to the study area is widely distributed in the local area, meaning that the species is not dependent (i.e., for breeding or important life cycle periods such as winter flowering resources) on available habitat. Specific habitat is not present in the study area, or the species are a non-cryptic perennial flora species that were specifically targeted by surveys and not recorded.
None	Suitable habitat is absent from the study area.

Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Limnodynastidae	<i>Heleioporus australiacus</i>	Giant Burrowing Frog	V,P	V	2	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 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.	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Hylidae	<i>Litoria aurea</i>	Green and Golden Bell Frog	E1,P	V	4	<p>Inhabits marshes, dams and stream-sides, particularly those containing bullrushes (<i>Typha spp.</i>) or spikerushes (<i>Eleocharis spp.</i>).</p> <p>Optimum habitat includes water-bodies that are unshaded, free of predatory fish such as Plague Minnow (<i>Gambusia holbrooki</i>), have a grassy area nearby and diurnal sheltering sites available.</p> <p>Some sites, particularly in the Greater Sydney region occur in highly disturbed areas.</p> <p>The species is active by day and usually breeds in summer when conditions are warm and wet.</p>	Low
Columbidae	<i>Ptilinopus superbus</i>	Superb Fruit-Dove	V,P		2	<p>Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees.</p> <p>Part of the population is migratory or nomadic. There are records of single birds flying into lighted windows and lighthouses, indicating that birds travel at night. At least some of the population, particularly young birds, moves south through Sydney, especially in autumn.</p>	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Apodidae	<i>Hirundapus caudacutus</i>	White-throated Needle-tail	P	V,C,J,K	21	In Australia, the White-throated Needle-tail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps. When flying above farmland, they are more often recorded above partly cleared pasture, plantations or remnant vegetation at the edge of paddocks. In coastal areas, they are sometimes seen flying over sandy beaches or mudflats, and often around coastal cliffs and other areas with prominent updraughts, such as ridges and sand-dunes. They are sometimes recorded above islands well out to sea.	Low
Diomedidae	<i>Thalassarche cauta</i>	Shy Albatross	E1,P	E	1	This pelagic or ocean-going species inhabits subantarctic and subtropical marine waters, spending the majority of its time at sea. While at sea, it soars on strong winds and when calm, individuals may rest on the ocean, in groups during the breeding season or as individuals at other times. Occasionally the species occurs in continental shelf waters, in bays and harbours.	Low
Diomedidae	<i>Thalassarche melanophrys</i>	Black-browed Albatross	V,P	V	1	Inhabits antarctic, subantarctic, subtropical marine and coastal waters over upwellings and boundaries of currents. Spends most of its time at sea, breeding on small isolated islands.	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Procellariidae	<i>Ardenna grisea</i>	Sooty Shearwater	P	J	1	The species nests on islands and headlands in large colonies. Burrows are dug for breeding under tussock grass, low scrub and on the Snares Islands under Olearia forest. Birds typically do not return to their natal colonies until the age of four. The species feeds on fish, crustacea and cephalopods, which are caught while diving.	Low
Procellariidae	<i>Ardenna pacifica</i>	Wedge-tailed Shearwater	P	J	10	The Wedge-tailed Shearwater is a pelagic, marine bird known from tropical and subtropical waters. In tropical zones the species may feed over cool nutrient-rich waters. The species has been recorded in offshore waters of eastern Victoria and southern NSW, mostly over continental slope with sea-surface temperatures of 13.9–24.4 °C	Low
Procellariidae	<i>Ardenna tenuirostris</i>	Short-tailed Shearwater	P	C,J,K	20	Colonies can be found in coastal areas from New South Wales through Western Australia, with the majority found through Bass Strait and around Tasmania. The birds begin by renovating old burrows or building new ones that extend one to two metres long in sandy headlands amongst low lying vegetation like bower spinach and tussock grasses. From early April to late September, they will spend all of their time out in the ocean, resting on the surface of the water when needed.	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Accipitridae	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P		21	<p>Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea.</p> <p>Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh.</p> <p>Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest).</p> <p>Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass.</p>	Low
Accipitridae	<i>Lophoictinia isura</i>	Square-tailed Kite	V,P,3		9	<p>Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.</p> <p>In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland.</p> <p>Is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage.</p> <p>Appears to occupy large hunting ranges of more than 100km².</p> <p>Breeding is from July to February, with nest sites generally located along or near watercourses, in a fork or on large horizontal limbs.</p>	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Accipitridae	<i>Pandion cristatus</i>	Eastern Osprey	V,P,3		4	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
Burhinidae	<i>Esacus magnirostris</i>	Beach Stone-curlew	E4A,P		1	Beach Stone-curlews are found exclusively along the coast, on a wide range of beaches, islands, reefs and in estuaries, and may often be seen at the edges of or near mangroves. They forage in the intertidal zone of beaches and estuaries, on islands, flats, banks and spits of sand, mud, gravel or rock, and among mangroves. Beach Stone-curlews breed above the littoral zone, at the backs of beaches, or on sandbanks and islands, among low vegetation of grass, scattered shrubs or low trees; also among open mangroves.	Low
Haematopodidae	<i>Haematopus fuliginosus</i>	Sooty Oystercat cher	V,P		7	Favours rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries. Forages on exposed rock or coral at low tide for foods such as limpets and mussels.	Low
Haematopodidae	<i>Haematopus longirostris</i>	Pied Oystercat cher	E1,P		25	Favours intertidal flats of inlets and bays, open beaches and sandbanks. Forages on exposed sand, mud and rock at low tide, for molluscs, worms, crabs and small fish. The chisel-like bill is used to pry open or break into shells of oysters and other shellfish. Nests mostly on coastal or estuarine beaches although occasionally they use saltmarsh or grassy areas. Nests are shallow scrapes in sand above the high tide mark, often amongst seaweed, shells and small stones.	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Charadriidae	<i>Pluvialis squatarola</i>	Grey Plover	P	C,J,K	2	In non-breeding grounds in Australia, Grey Plovers 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. They also occur around terrestrial wetlands such as near-coastal lakes and swamps, or salt-lakes. The species is also very occasionally recorded further inland, where they occur around wetlands or salt-lakes	Low
Charadriidae	<i>Thinornis cucullatus cucullatus</i>	Eastern Hooded Dotterel	E4A	V	8	The Hooded Plover is endemic to southern Australia and is nowadays found mainly along the coast from south of Jervis Bay, NSW, south through Victoria and Tasmania to the western side of the Eyre Peninsula (South Australia). Hooded Plovers prefer sandy ocean beaches, especially those that are broad and flat, with a wide wave-wash zone for feeding, much beachcast seaweed, and backed by sparsely vegetated sand-dunes for shelter and nesting. Occasionally Hooded Plovers are found on tidal bays and estuaries, rock platforms and rocky or sand-covered reefs near sandy beaches, and small beaches in lines of cliffs.	Low
Scolopacidae	<i>Numenius madagascariensis</i>	Eastern Curlew	P	CE,C,J,K	2	It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed. It 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. May also roost on wooden oyster leases or other similar structures	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Scolopacidae	<i>Numenius phaeopus</i>	Whimbrel	P	C,J,K	1	On passage in the autumn and spring the species frequents wetlands, tidal flats, short-sward wet and dry grasslands, farmland and heathland with <i>Empetrum spp.</i> , generally occupying coastal habitats in the winter such as muddy, rocky or sandy beaches, coral shores, exposed reefs, tidal mudflats, sandflats, mangrove swamps, tidal marshes and lagoons	Low
Laridae	<i>Hydroprogne caspia</i>	Caspian Tern	P	J	2	Outside of breeding, the Caspian Tern occurs mostly singly or in small groups. Occasional larger groups of 30 or more birds are seen, often at rich fishing areas or at nightly roost sites, where they may roost with other terns. The species may also aggregate into flocks on passage (migration)	Low
Laridae	<i>Sternula albifrons</i>	Little Tern	E1,P	C,J,K	9	Almost exclusively coastal, preferring sheltered environments; however may occur several kilometres from the sea in harbours, inlets and rivers (with occasional offshore islands or coral cay records). Nests in small, scattered colonies in low dunes or on sandy beaches just above high tide mark near estuary mouths or adjacent to coastal lakes and islands. The nest is a scrape in the sand, which may be lined with shell grit, seaweed or small pebbles.	Low
Laridae	<i>Thalasseus bergii</i>	Crested Tern	P	J	14	The greater crested tern occurs in tropical and warm temperate coastal parts of the Old World from South Africa around the Indian Ocean to the Pacific and Australia. The nests are located on low-lying sandy, rocky, or coral islands, sometimes amongst stunted shrubs, often without any shelter at all. When not breeding, the greater crested tern will roost or rest on open shores, less often on boats, pilings, harbour buildings and raised salt mounds in lagoons. It is rarely seen on tidal creeks or inland waters.	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Cacatuidae	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V,P,3	E	11	<p>In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests.</p> <p>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.</p> <p>May also occur in sub-alpine Snow Gum (<i>Eucalyptus pauciflora</i>) woodland and occasionally in temperate rainforests.</p> <p>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.</p>	Low
Cacatuidae	<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo	V,P,2	V	10	<p>Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (<i>Allocasuarina littoralis</i>) and Forest Sheoak (<i>A. torulosa</i>) are important foods.</p> <p>Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, <i>Allocasuarina diminuta</i>, and <i>A. gymnanthera</i>. Belah (<i>Casuarina cristata</i>) is also utilised and may be a critical food source for some populations.</p> <p>In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah.</p> <p>Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May.</p>	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Psittacidae	<i>Glossopsitta pusilla</i>	Little Lorikeet	V,P		6	<p>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.</p> <p>Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species.</p> <p>Feeds mostly on nectar and pollen, occasionally on native fruits such as mistletoe, and only rarely in orchards</p>	Low
Psittacidae	<i>Lathamus discolor</i>	Swift Parrot	E1,P	CE	5	<p>Migrates to the Australian south-east mainland between February and October.</p> <p>On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations.</p> <p>Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i>, Spotted Gum <i>Corymbia maculata</i>, Red Bloodwood <i>C. gummifera</i>, Forest Red Gum <i>E. tereticornis</i>, Mugga Ironbark <i>E. sideroxylon</i>, and White Box <i>E. albens</i>.</p> <p>Commonly used lerp infested trees include Inland Grey Box <i>E. microcarpa</i>, Grey Box <i>E. moluccana</i>, Blackbutt <i>E. pilularis</i>, and Yellow Box <i>E. melliodora</i>.</p> <p>Return to some foraging sites on a cyclic basis depending on food availability.</p>	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Strigidae	<i>Ninox strenua</i>	Powerful Owl	V,P,3		23	<p>The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest.</p> <p>The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. It roosts by day in dense vegetation comprising species such as Turpentine <i>Syncarpia glomulifera</i>, Black She-oak <i>Allocasuarina littoralis</i>, Blackwood <i>Acacia melanoxylon</i>, Rough-barked Apple <i>Angophora floribunda</i>, Cherry Ballart <i>Exocarpos cupressiformis</i> and a number of eucalypt species.</p>	Low
Tytonidae	<i>Tyto novaehollandiae</i>	Masked Owl	V,P,3		5	<p>Lives in dry eucalypt forests and woodlands from sea level to 1100 m.</p> <p>A forest owl, but often hunts along the edges of forests, including roadsides.</p>	Low
Tytonidae	<i>Tyto tenebricosa</i>	Sooty Owl	V,P,3		8	<p>Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests.</p> <p>Roosts by day in the hollow of a tall forest tree or in heavy vegetation; hunts by night for small ground mammals or tree-dwelling mammals such as the Common Ringtail Possum (<i>Pseudocheirus peregrinus</i>) or Sugar Glider (<i>Petaurus breviceps</i>).</p> <p>Nests in very large tree-hollows.</p>	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Meliphagidae	<i>Anthochaera phrygia</i>	Regent Honeyeater	E4A,P,2	CE	2	<p>The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes.</p> <p>Every few years non-breeding flocks are seen foraging in flowering coastal Swamp Mahogany and Spotted Gum forests, particularly on the central coast and occasionally on the upper north coast. Birds are occasionally seen on the south coast.</p>	Low
Meliphagidae	<i>Epthianura albifrons</i>	White-fronted Chat	V,P		1	<p>Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.</p> <p>Have been observed breeding from late July through to early March, with 'open-cup' nests built in low vegetation. Nests in the Sydney region have also been seen in low isolated mangroves. Nests are usually built about 23 cm above the ground (but have been found up to 2.5 m above the ground).</p>	Low
Neosittidae	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		3	<p>Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland.</p>	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Artamidae	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V,P		1	<p>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. It has 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.</p> <p>Depending on location and local climatic conditions (primarily temperature and rainfall), the dusky woodswallow can be resident year round or migratory. In NSW, after breeding, birds migrate to the north of the state and to southeastern Queensland, while Tasmanian birds migrate to southeastern NSW after breeding. Migrants generally depart between March and May, heading south to breed again in spring. There is some evidence of site fidelity for breeding. Although dusky woodswallows generally breed as solitary pairs or occasionally in small flocks, large flocks may form around abundant food sources in winter. Large flocks may also form before migration, which is often undertaken with other species.</p>	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Petroicidae	<i>Petroica boodang</i>	Scarlet Robin	V,P		3	<p>The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs.</p> <p>This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps.</p> <p>The Scarlet Robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude.</p> <p>The Scarlet Robin is primarily a resident in forests and woodlands, but some adults and young birds disperse to more open habitats after breeding.</p> <p>In autumn and winter many Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees.</p>	Low
Dasyuridae	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	1	<p>Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.</p> <p>Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites.</p>	Low
Peramelidae	<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot (eastern)	E1,P	E	5	<p>Southern Brown Bandicoots are largely crepuscular (active mainly after dusk and/or before dawn). They are generally only found in heath or open forest with a heathy understorey on sandy or friable soils.</p>	Low
Phascolarctidae	<i>Phascolarctos cinereus</i>	Koala	E1,P	E	1	<p>Inhabit eucalypt woodlands and forests.</p> <p>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.</p>	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Burramyidae	<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V,P		1	<p>Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest.</p> <p>Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes; an important pollinator of heathland plants such as banksias; soft fruits are eaten when flowers are unavailable.</p>	Low
Pseudocheiridae	<i>Petauroides volans</i>	Southern Greater Glider	E1,P	E	14	<p>Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Shelter during the day in tree hollows and will use up to 18 hollows in their home range.</p> <p>Occupy a relatively small home range with an average size of 1 to 3 ha.</p>	Low
Pteropodidae	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	99	<p>Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.</p> <p>Roosting camps are 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.</p>	Moderate (may utilise site for foraging)
Molossidae	<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V,P		1	<p>Occur in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range.</p>	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Vespertilionidae	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V,P	V	1	<p>Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (<i>Petrochelidon ariel</i>), frequenting low to mid-elevation dry open forest and woodland close to these features. 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.</p> <p>Found in well-timbered areas containing gullies.</p>	Low
Vespertilionidae	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V,P		5	<p>Prefers moist habitats, with trees taller than 20 m.</p> <p>Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.</p>	Low
Vespertilionidae	<i>Myotis macropus</i>	Southern Myotis	V,P		5	<p>Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage.</p>	Low
Vespertilionidae	<i>Phoniscus papuensis</i>	Golden-tipped Bat	V,P		2	<p>Found in rainforest and adjacent wet and dry sclerophyll forest up to 1000m. Also recorded in tall open forest, Casuarina-dominated riparian forest and coastal Melaleuca forests.</p> <p>Bats will fly up to two kilometres from roosts to forage in rainforest and sclerophyll forest on mid and upper-slopes.</p> <p>Roost mainly in rainforest gullies on small first- and second-order streams in usually abandoned hanging Yellow-throated Scrubwren and Brown Gerygone nests modified with an access hole on the underside. Bats may also roost under thick moss on tree trunks, in tree hollows, dense foliage and epiphytes.</p>	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
Vespertilionidae	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V,P		2	<p>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.</p> <p>Although this species usually roosts in tree hollows, it has also been found in buildings.</p> <p>Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species.</p>	Low
Miniopteridae	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P		6	<p>Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.</p> <p>Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very specific temperature and humidity regimes.</p> <p>At other times of the year, populations disperse within about 300 km range of maternity caves.</p> <p>Cold caves are used for hibernation in southern Australia.</p> <p>Breeding or roosting colonies can number from 100 to 150,000 individuals.</p> <p>Hunt in forested areas, catching moths and other flying insects above the tree tops.</p>	Low
Myrtaceae	<i>Rhodamnia rubescens</i>	Scrub Turpentine	E4A	CE	10	<p>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 of <i>R. rubescens</i> 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.</p>	Low



Family	Scientific Name	Common Name	NSW status	Comm. status	Records	Description	Likelihood
	<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E1	V	4	The Magenta Lilly Pilly is a small to medium sized rainforest tree that grows to 8 m tall. The Magenta Lilly Pilly is found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. On the south coast the Magenta Lilly Pilly occurs on grey soils over sandstone, restricted mainly to remnant stands of littoral (coastal) rainforest.	Moderate
Orchidaceae	<i>Genoplesium baueri</i>	Bauer's Midge Orchid	E1,P,2	E	1	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.	Low
Santalaceae	<i>Thesium australe</i>	Austral Toadflax	V	V	1	Confined to a relatively small area south-west of Sydney, from Mt Armour within Blue Mountains National Park south to the Wombeyan area. Known from four locations, three of which occur within Blue Mountains National Park.	Low

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