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Campbelltown, Kellicar and Camden Road Flora and Fauna Assessment

Erilyan

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Abbreviations

Abbreviation	Description
BC Act	NSW Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
DCP	Development Control Plan
DAWE	Department of Agriculture, Water and the Environment
DPIE	Department of Planning, Industry and Environment
EEC	Endangered Ecological Community
CEEC	Critically Endangered Ecological Community
ELA	Eco Logical Australia Pty Ltd.
EP&A Act	NSW Environment/ Planning and Assessment Act 1979

Abbreviation	Description
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
FFA	Flora and Fauna Assessment
FM Act	NSW <i>Fisheries Management Act 1994</i>
KTP	Key Threatening Processes
LEP	Local Environmental Plan
LGA	Local Government Area
MNES	Matters of National Environmental Significance
NSW	New South Wales
PW	Priority Weed listed under the <i>Biosecurity Act 2015</i>
PCT	Plant Community Type
OEH	Office of Environment and Heritage (now DPIE)
SIS	Species Impact Statement
TEC	Threatened Ecological Community
WM Act	NSW <i>Water Management Act 2000</i>

Executive Summary

Eco Logical Australia Pty Ltd (ELA) was commissioned by Erilyan to prepare a Flora and Fauna Assessment (FFA) for the proposed development at the corner of Kellicar and Camden Roads, Campbelltown (Lot 1 DP 883417). Erilyan proposed to submit a development application (DA) under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to Campbelltown City Council for Stage 1 of a Healthcare facility.

The study area is a highly modified environment and consists of open exotic landscape with planted native and exotic species. No threatened ecological communities (TECs) were recorded within the study area. Additionally, no threatened flora and fauna species have previously been recorded from BioNet records or field surveys.

No native Plant Community Types (PCTs) or threatened ecological communities (TECs) will be impacted by the proposed works. No suitable habitat was available for any threatened flora species or any threatened fauna species was found.

Two planted *Eucalyptus scoparia* trees containing small and medium hollows will be removed as a result of development works.

The amount of native vegetation clearing does not exceed the native vegetation clearing threshold (0.25 ha) under the Biodiversity Offsets Scheme (BOS) for the minimum lot size for the current zoning (1 ha). Therefore, the BOS will not be triggered by the proposed development and a Biodiversity Development Assessment Report (BDAR) will not be required. This Flora and Fauna Assessment documents the ecological values within the study area and considers the current environmental planning legislation.

A test of Significance under Section 5A of the BC Act was undertaken for threatened microbat species which may be impacted by the removal of the hollow-bearing trees. The assessment concluded that the proposal is unlikely to have a significant impact and, therefore, the biodiversity offset scheme is not triggered and a BDAR is not required.

Mitigation measures have been recommended within this report to ameliorate potential direct and indirect impacts on native vegetation within and adjacent to the development.

1. Introduction

1.1 Purpose of the report

Eco Logical Australia Pty Ltd (ELA) was engaged by Erilyan to prepare a Flora and Fauna Assessment (FFA) for the proposed Stage 1 development within Lot 1 DP 883417. This FFA has been prepared to assess potential impacts to flora and fauna associated with the proposed development.

This report assesses potential impacts of the proposed works on flora and fauna species listed under the New South Wales (NSW) *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

1.2 Study area

The area of land that is subject to the proposed development application, is located on the corner of Kellicar and Camden Roads, Campbelltown (Figure 1). The site (hereafter referred to as the 'study area') includes Lot 1 DP 883417 and is located within City of Campbelltown local government area. It is zoned B4 (Mixed Use) under the Campbelltown Local Environmental Plan (LEP) 2015.

The study area is currently owned by Campbelltown City Council. The study area features an open landscape area which contains mown exotic grasses and several planted native and exotic trees. There are no built structures within the study area.

1.3 Background and proposed works

The site has previously been assessed under an FFA as part of a larger study area by EnviroTech Pty Ltd., incorporating Lot 1 DP 883417 and part of Lot 1002 DP 873452. Erilyan propose to construct Stage 1 works within Lot 1 DP 883417 which will include a four-storey high Healthcare facility. The concept plan for the Healthcare facility is provided in Figure 2.

1.4 Key definitions

The following key terms and definitions are used in this flora and fauna assessment:

- *Proposed works* – the proposed development a Healthcare facility as described in Section 1.3.
- *Study area* – the extent of Lot 1 DP 883417 this area is displayed in Figure 1.
- *Subject site* - the area to be directly or indirectly impacted by the proposal. For the purpose of this report, the subject site includes the entire area within the study area as described above.



Figure 1: Location of the study area

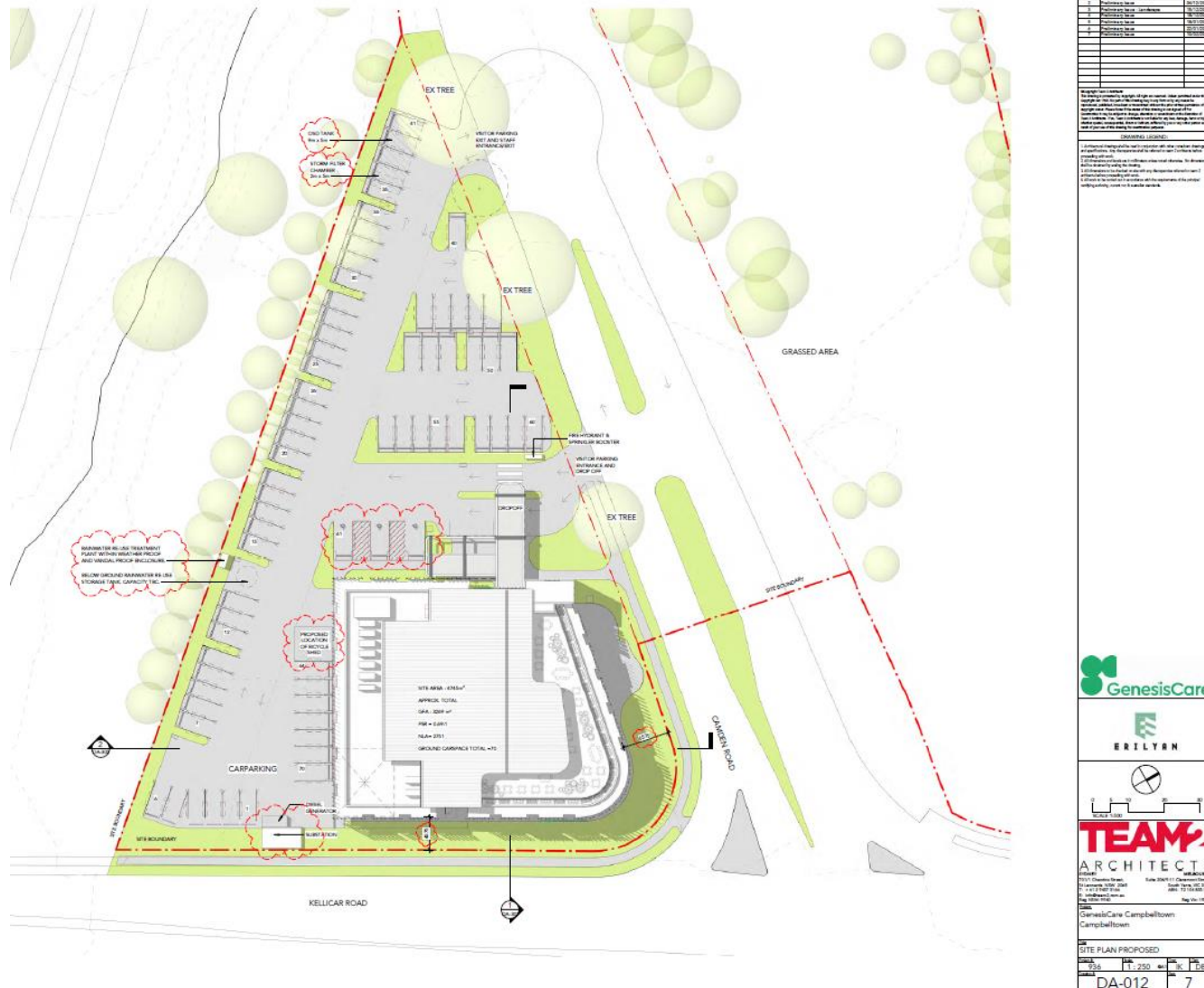


Figure 2: Concept plans of the proposed Stage 1 Healthcare facility (provided by Erilya)

2. Legislative Context

Table 1: Legislation relevant to the proposed works

Name	Relevance to the project
Commonwealth	
<i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)	<p>The EPBC Act aims to protect Matters of National Environmental Significance (MNES) including wetlands of international importance, threatened species and communities, and listed migratory species. An action that may or is likely to have a significant impact on MNES should be referred to the Commonwealth to determine whether it is a Controlled Action that requires approval from the Commonwealth.</p> <p>Assessment of potential impacts to MNES have been assessed in this report. MNES have been identified within the study area. MNES within the study area are considered unlikely to be significantly affected by the proposed works.</p>
State	
<i>Environmental Planning and Assessment Act 1979</i> (EP&A Act)	The EP&A Act is the principal planning legislation for NSW, providing a framework for the overall environmental planning and assessment of development proposals. The EP&A Act places a duty on the determining authority to adequately address a range of environmental matters including maintenance of biodiversity and the likely impact to threatened species, populations or ecological communities (under the BC Act– refer below). The proposed enabling works are to be assessed under Part 4 of the EP& Act 1979.
<i>Biodiversity Conservation Act 2016</i> (BC Act)	<p>The <i>Biodiversity Conservation Act 2016</i> outlines the assessment requirements to determine whether proposed development (Part 4 of the EP&A Act) or activity (Part 5 of the EP&A Act) is likely to significantly affect threatened species or ecological communities, or their habitats under section 7.3, and whether the Biodiversity Offsets Scheme (BOS) will be triggered. Works that exceed the BOS thresholds as set out in Part 7 of the Act and Part 7 of the Biodiversity Conservation Regulation 2017 (BC Regulation), are required to undertake the ecological assessment in accordance with the Biodiversity Assessment Method (BAM), including the preparation of a Biodiversity Development Assessment Report (BDAR).</p> <p>Assessments of significance for the impact to threatened species and endangered ecological communities in accordance with s7.3 of the Act have been undertaken for the proposed works. A significant impact is not likely to result from the development and an assessment under the BOS is not required.</p>
<i>Biodiversity Conservation Regulation 2017</i>	<p>The Biodiversity Values Map identifies land with high biodiversity value, as defined by the Biodiversity Conservation Regulation 2017.</p> <p>The study area does not contain land identified on the BV Map (accessed 19 February 2021).</p>
<i>Biosecurity Act 2015</i> (BS Act)	<p>Under the <i>Biosecurity Act</i>, priority weeds have been identified for local government areas and assigned strategies to contain, remove or manage. Occupiers of land (this includes owners of land) have responsibility for taking appropriate action for priority weeds on the land they occupy.</p> <p>No priority weeds listed under the Greater Sydney Regional Strategic Weed Management Plan 2017 - 2022 (updated 2019) occur within the subject site.</p>
<i>Fisheries Management Act 1994</i> (FM Act)	The objectives of the FM Act are to conserve, develop and share the fishery resources of the State for the benefits of present and future generations. The Act provides protection and approval

Name	Relevance to the project
	<p>processes for activities which may impact on threatened species, protected marine vegetation, or involve dredging, reclamation, or obstruction of fish passage.</p> <p>The development does not involve harm to mangroves or other protected marine vegetation, dredging, reclamation or blocking of fish passage and therefore a permit under s205 the FM Act is not required.</p>
<i>Water Management Act 2000 (WM Act)</i>	<p>The WM Act 2000 aims to provide for the sustainable and integrated management of the state's water for the benefit for both present and future generations. If a local development is proposed on 'waterfront land' (within 40 m of the top of bank), it is considered a Controlled Activity and requires a Controlled Activity Approval (CAA) approval under s91 of the WM Act.</p> <p>There are no waterbodies mapped within the subject site and Birunji Creek, a second order creek occurs within 90 m of the site. Therefore, a Controlled Activity Approval is not required for the proposed works.</p>
Planning Instruments	
<i>State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP).</i>	There are no Coastal Wetlands mapped under the Coastal Management SEPP within the study area.
<i>Campbelltown City Council Local Environment Plan (LEP) 2015</i>	<p>The study area is zoned B4 (Mixed Use) under the Campbelltown LEP.</p> <p>The LEP 2015 contains a clause (7.2) pertaining to protecting terrestrial biodiversity. The proposed works do not impact upon any mapped areas of biodiversity within the study area under this LEP.</p>
<i>Campbelltown City Council Sustainable City Development Control Plan (DCP) 2015</i>	<p>Part 11 Vegetation and Wildlife Management has the objectives to:</p> <ul style="list-style-type: none"> • Protect and conserve the City's biodiversity through the retention of native vegetation. • Maintain, enhance and/or establish corridors, which enable existing plant and animal communities to survive and range in their natural habitat. • Protect habitat resources including hollow-bearing trees and hollow logs within Campbelltown LGA. • Provide appropriate measures to compensate for the loss of hollow-bearing trees within the LGA. <p>Section 11.2.1 Management of Native Vegetation and Wildlife Habitat has specific requirements for sites containing native vegetation and / or fauna habitat that are addressed in Section 5.5 of this report.</p>
<i>Greater Metropolitan Regional Environmental Plan No 2 – Georges River Catchment (1999 EPI 52)</i>	<p>Specific aims and objectives are as follows:</p> <ul style="list-style-type: none"> • to preserve and protect and to encourage the restoration or rehabilitation of regionally significant sensitive natural environments such as wetlands (including mangroves, saltmarsh and seagrass areas), bushland and open space corridors within the Catchment, by identifying environmentally sensitive areas and providing for appropriate land use planning and development controls, • to preserve, enhance and protect the freshwater and estuarine ecosystems within the Catchment by providing appropriate development, • to ensure that development achieves the environmental objectives for the Catchment. <p>The proposed development does not impact upon the objectives of this SEPP.</p>

Name	Relevance to the project
<i>State Environmental Planning Policy (SEPP) (Vegetation in Non-Rural Areas) 2017</i>	The Vegetation SEPP applies to development that does not require consent. As this project requires consent under the EP&A Act, the Vegetation SEPP does not apply.
<i>State Environmental Planning Policy (SEPP) No 19 – Bushland in Urban Areas (1986 EPI 14)</i>	The general aim of this Policy is to protect and preserve bushland within the urban areas. The proposed development does not impact upon bushland.
<i>State Environmental Planning Policy (SEPP) (Koala Habitat Protection) 2021</i>	The proposed development is located within a local government area to which SEPP (Koala Habitat Protection) 2021 applies. A Comprehensive Koala Plan of Management (CKPoM) has been approved for the Campbelltown LGA. These are further discussed in Section 5.6.

3. Methodology

3.1 Literature and data review

A review of readily available databases pertaining to the ecology and environmental features of the study area and surrounding area and existing vegetation mapping was conducted to identify records of threatened species, populations and communities and their potential habitat. Databases, reports and vegetation mapping that were reviewed included:

- BioNet / Atlas of NSW Wildlife database search (Department of Planning, Industry, and Environment DPIE 2021a) within 5 km of the study area accessed February 2021
- EPBC Act Protected Matters Search Tool 5 km database search (Department of Agriculture, Water and the Environment (DAWE) 2021) accessed February 2021
- NSW Threatened Species Profiles (DPIE 2021b)
- Sydney Metropolitan Catchment Management Authority vegetation mapping (OEH 2016)
- Review of relevant planning instruments, documentation and information relating to biodiversity values and threatened habitat
- Previous ecological assessments
 - EnviroTech, Kellicar & Camden Roads – Flora and Fauna Assessment 2017
- Aerial imagery and topographic maps of the study area.

Species from both the BioNet and DAWE online search had been combined to produce a list of threatened species, populations and communities that may occur within the subject site. The likelihood of occurrence for threatened species, populations and communities on the site was determined based on location of database records, the likely presence or absence of suitable habitat in the subject site, and knowledge of the species' ecology.

Five categories for the likelihood of occurrence of species are used in this report, defined as follows:

- “yes” = the species was or has been observed in the study area
- “likely” = a medium to high probability that a species uses the study area
- “potential” = suitable habitat for a species occurs in the study area, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur
- “unlikely” = a very low to low probability that a species uses the study area, and
- “no” = habitat in the study area and in its vicinity is unsuitable for the species.

Following the site inspection, this list of “potentially affected species” was refined with an understanding of the local environment and available habitat in the study area. The likelihood table in Appendix B reflects the final list of species and their likelihood of occurrence.

3.2 Field survey

A site inspection of the subject site was conducted on 18 February 2021 by ELA ecologist James King. The purpose of the inspection was to:

- Validate or 'ground truth' the extent and quality of native vegetation.
- Identify the presence of threatened species/populations or whether potential habitat for these species/populations is likely to occur.
- Any other potential ecological values such as regionally or locally significant flora and fauna species.

The vegetation and habitat on the site were identified by walking over the entire site using the random meandering technique of Cropper (1993) and recording dominant flora species. The boundaries of vegetation communities and species assemblages within the site were confirmed. Where the boundaries of vegetation communities differed from existing vegetation mapping, these were modified on hard copy maps and marked with a hand-held GPS. If hollow-bearing trees (HBTs) were present, they were mapped using a handheld GPS.

4. Results

4.1 Database searches and literature review

4.1.1 Previous ecological surveys

The study area has been subject to a previous Flora and Fauna Assessment report by EnviroTech (2017). Prior to field surveys this report was reviewed. A summary of key findings in the report is provided below (Table 2).

Table 2: Summary of key findings EnviroTech 2017

Company report and date	Surveys	Results
Envirotech Flora and Fauna Assessment 2017	Random meander over the entire development site over 3 hours.	The site comprised of a mix of weeds and exotics and planted natives in an area maintained as parkland.
	Site was traversed and flora species observed were recorded.	No threatened species or endangered populations were recorded within the study area.
	The composition of species and vegetation structure were used to determine habitat.	The surveys concluded that the development site lacks habitat for threatened fauna species that have previously been recorded within a 10 km radius due to an absence of suitable foraging, roosting or breeding habitat.
	Opportunistic observations for fauna species and habitat assessment for Koalas, hollow-bearing trees (HBT), caves, waterbodies.	

4.1.2 Previous vegetation mapping

Prior to field validation, previous vegetation mapping undertaken by Office of Environment and Heritage (OEH) 2016 was reviewed. Several trees within the study area were mapped but were not assigned to any vegetation community (Figure 3). The cleared area was not assigned to any vegetation community.

4.1.3 Threatened Ecological Communities, Flora, Fauna and Migratory species records

A review of the BioNet Atlas and EPBC Act protected matters search tool to within 5km of the development site identified 10 threatened ecological communities, 27 threatened flora and 53 threatened fauna (including migratory species) either known or considered likely to occur in the development area. The BioNet Atlas search identifies species previously positively recorded while the protected matters search identifies species that have potential to exist in the area.

No threatened flora or fauna species BioNet records are located within the study area (Figure 4). However, there are records for *Pteropus poliocephalus* (Grey-headed Flying-Fox) located within close proximity to the study area.



Figure 3: Previously mapped vegetation surrounding the study area

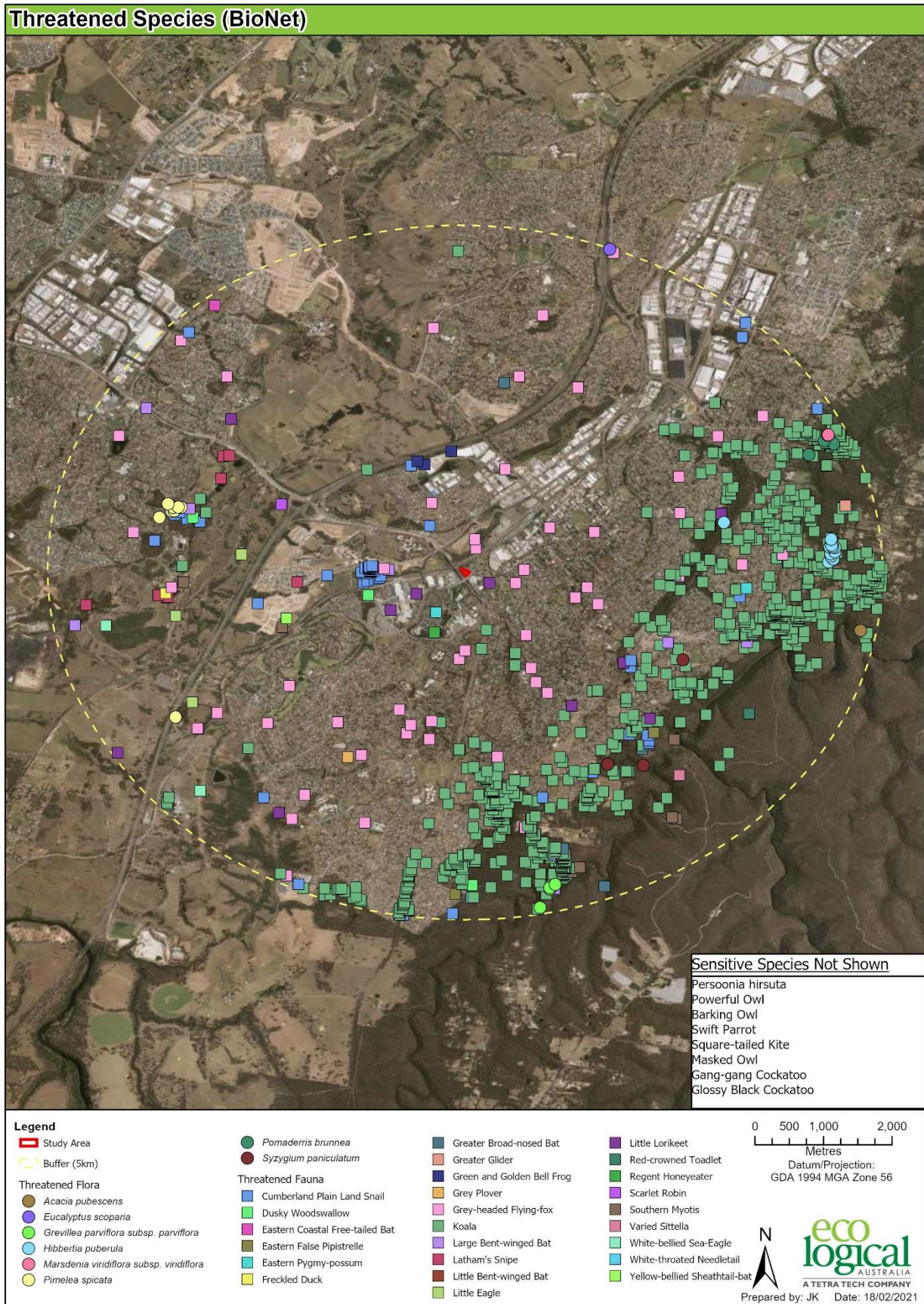


Figure 4: BioNet Atlas threatened species search within 5 km of the study area

4.2 Field survey results

4.2.1 Vegetation communities

4.2.1.1 Planted native/exotic

The study area primarily consisted of parkland and several planted trees. No remnant native vegetation was present in the study area. Planted native species present in the study area included *Eucalyptus scoparia* (Wallangarra White Gum), *Eucalyptus microcorys* (Tallowwood), *Casuarina glauca* (Swamp Oak) and a number of native forbs and grasses including *Dichondra repens* (Kidney Weed), *Cyperus gracilis* (Slender Flat-sedge), *Microlaena stipoides* var. *stipoides* (Weeping Grass) *Portulaca oleracea* (Common Purslane) and *Chloris truncata* (Windmill Grass). The native groundcover was present only in small areas in the park.

The dominant vegetation consisted of a number of exotic, planted species and opportunistic weeds. Species present included, *Schinus molle* (Pepper Tree), *Brachychiton acerifolius* (Flame Tree), and grasses and groundcovers including *Eleusine tristachya* (Goose Grass), *Conyza bonariensis* (Flax-leaf Fleabane) and *Sonchus oleraceus* (Common Sowthistle), *Oxalis* sp., *Lysimachia arvensis* (Scarlet pimpernel), *Ehrharta erecta* (Panic Veldtgrass), *Paspalum dilatatum* (Dallis Grass), *Cynodon dactylon* (Common Couch) and *Pennisetum clandestinum* (Kikuyu Grass).

The vegetation identified within the subject site was not representative of any native PCT, nor is it consistent with any threatened ecological community (TEC). A map of vegetation within the development site is shown in Figure 4. Photos of the vegetation within the subject site is provided in

Figure 6: and Figure 7: .

It should be noted that *Eucalyptus scoparia* (Wallangarra White Gum) is listed as Endangered under the NSW *Biodiversity Conservation Act 2016* and Vulnerable under the Commonwealth *Environment Protection Biodiversity Conservation Act 1999*. Within NSW and nationally this species has a highly restricted natural range, and does not occur naturally within the Sydney Basin. It is a widely cultivated horticultural species, and has been planted as an amenity tree within the study area. Therefore further assessment under the state and Commonwealth legislation is not required.

4.2.1.2 Threatened flora

No threatened flora species were identified within the study area. The vegetation within the study area was not considered suitable habitat for threatened flora species; this was determined due to the absence of remnant native vegetation within the subject site, and highly modified nature of the site (i.e. mown, regularly maintained grassland).

4.2.1.3 Threatened fauna and fauna habitat

No threatened fauna species were identified during the field survey. Two planted native trees with small and medium hollows, which could provide potential roosting habitat for threatened microbat species was identified within the subject site. No other habitat features, such as built structures, buildings, culverts and bridges where threatened microbats can potentially occur were identified within the subject site.

Vegetation within the study area was not connected to any larger areas of quality habitat. The highly fragmented canopy within the subject site provides potential foraging habitat for highly mobile species such as birds and Grey-headed Flying-fox.

Several peri-urban avian species were identified during the field survey, including *Cacatua galerita* (Sulphur-crested cockatoo), *Corvus coronoides* (Australian Raven), *Cracticus tibicen* (Australian Magpie), *Cacatua sanguinea* (Little Corella) and *Manorina melanocephala* (Noisy Miner).

Due to the fragmented nature of habitat within the urban landscape the fauna that are likely to utilise the vegetation within the subject site is restricted to highly mobile, urbanised fauna species which are likely to forage within this vegetation intermittently.

4.2.1.4 Priority Weeds

The *Biosecurity Act 2015* and Greater Sydney Regional Strategic Weed Management Plan (Local Land Services 2019) provide specific legal requirements for state level priority weeds and recommendations for regionally significant weeds. Priority weeds, regionally significant weeds and Weeds of National Significance (WoNS) recorded in the study area are listed in Table 3.

Table 3: Priority Weeds and Weeds of National Significance recorded in the study area

Scientific Name	Common Name	Priority weed objective / Required duty	Other weed of regional concern - Asset at risk	WoNS
<i>Senecio madagascariensis</i>	Fireweed	State priority weed – asset protection	-	Yes
<i>Pennisetum clandestinum</i>	Kikuyu Grass	Regional priority weed – local government action	Environment	No

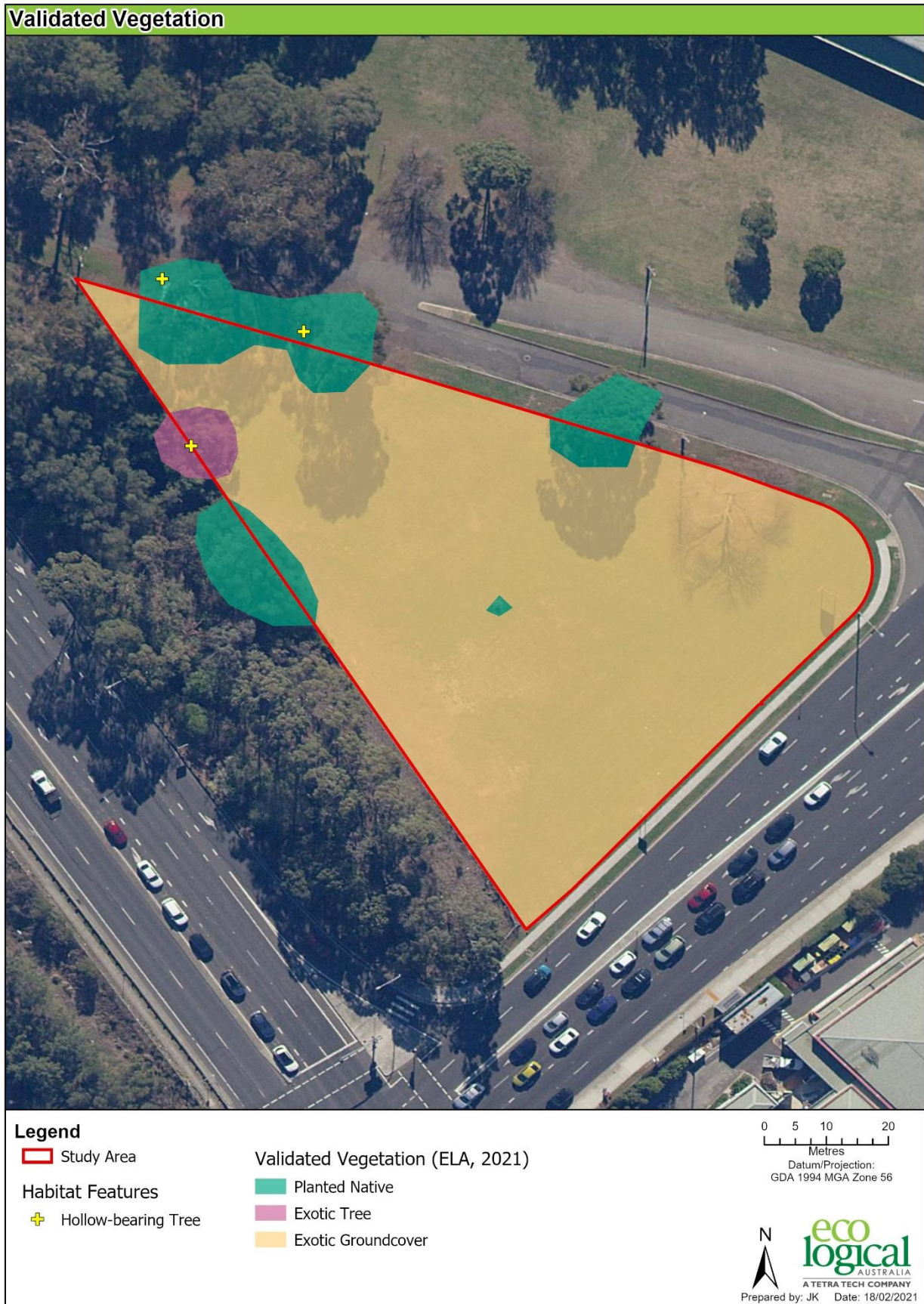


Figure 5: Vegetation within the subject site



Figure 6: Planted native *Eucalyptus* sp. containing hollows



Figure 7: Planted native *Brachychiton acerifolius*

5. Impact Assessment

5.1 Summary of impacts

5.1.1 Direct impacts

The proposed works will result in the removal of two planted *Eucalyptus scoparia* (Wallangarra White Gum) trees (one containing small hollows). The works will also result in the removal of a small, recently planted native *Brachychiton acerifolius*. This tree does not require approval for removal by Council as it is under the required height limit requiring Council approval. Neither tree forms part of a Plant Community Type or Threatened Ecological Community.

No other vegetation consisting of a native PCTs or TECs will be directly or indirectly impacted by the proposed works. No threatened flora will be directly impacted by the proposed works.

The small hollows within the *Eucalyptus scoparia* on site may be utilised by highly mobile species such as threatened microbats that are known to occur within the locality. Taking a precautionary approach, a Test of Significance was undertaken for threatened microbat species (Appendix C).

5.1.1.1 Removal of Hollow-bearing Trees

One of the planted *Eucalyptus scoparia* contained small hollows, which may provide roosting habitat for threatened microbat species. Under the proposed works, this hollow will be removed.

5.1.2 Indirect impacts

Indirect impacts as a result of the proposed works may include:

- Rubbish dumping.
- Noise and vibration that may affect local fauna
- Surface and stormwater runoff from increased impervious areas associated with construction and any associated landscaped areas.

These indirect impacts will be reduced through the mitigation measures and recommendations provided in Section 5.4.

5.2 Biodiversity Conservation Act 2016

In November 2016 the NSW parliament passed the BC Act, that replaced the *Threatened Species Conservation Act 1995*, and which took effect on 25 November 2018 in the Campbelltown City LGA. Among other things, the BC Act introduces new requirements for biodiversity assessment (Biodiversity Assessment Methodology (BAM)) and requires proponents to offset certain biodiversity impacts through the purchase and retirement of biodiversity credits known as the Biodiversity Offset Scheme (BOS). For a local development under Part 4 of the *Environmental Planning and Assessment Act 1979*, the BOS and the BAM may be triggered by the following means:

- Exceeding the area of clearing threshold associated with the minimum lot size for the property (Table 4)
- The impacts occur on an area mapped on the NSW Government Biodiversity Values Map.

Even if the development site does not satisfy either of these criteria, if a 'test of significance' under section 7.3 of the BC Act determines a significant impact on threatened species, the BOS will be triggered and a Biodiversity Development Assessment Report (BDAR) must be prepared. If none of these triggers are met, a Flora and Fauna Assessment can be prepared as was the case in the previous application.

Table 4: Area clearing threshold

Minimum lot size associated with the property	Threshold for clearing native vegetation, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1000 ha	1 ha or more
1000 ha or more	2 ha or more

5.2.1 Area clearing threshold

The threshold for clearing, above which the BAM and offsets scheme apply, for a property with a minimum lot size in the LEP of less than 1 ha is 0.25 ha or more. The proposed development will not remove any native vegetation; therefore, it does not meet the threshold trigger for the Biodiversity Offset Scheme (BOS) under s7.3 of the BC Act and a Biodiversity Development Assessment Report (BDAR) is not required.

5.2.2 Biodiversity Values Map

The BV Map identifies land considered to have high biodiversity value as defined by the *Biodiversity Conservation Regulation 2017*. The development area does not contain any areas mapped as high biodiversity value on the BV Map (v11.2, DPIE 2021) (accessed 19 February 2021) and does not trigger the BOS and a BDAR is not required.

5.2.3 Biodiversity Conservation Act 2016 - Test of Significance

A 'test of significance' (also known as a 5-part test) is required for Part 4 development to determine if the development is likely to have a significant impact on any threatened species, population or ecological community. If a significant impact is indicated by the 5-part test, then the proposal would trigger the BOS and a BDAR is required.

A test of significance was undertaken for microbats (Appendix C) and concluded that there not a significant impact, therefore it does not trigger the BOS and a BDAR is not required.

5.2.3.1 Endangered Ecological Communities

No endangered ecological communities were identified in the study area.

5.2.3.2 Threatened Flora

No threatened flora species were recorded within the study area during the survey. Further, no suitable habitat is considered to be present for any threatened flora species due to the high level of vegetation modification, disturbance and weed infestation within the development area. Hence no further assessment is required under Section 7.3 of the BC Act.

5.2.3.3 Threatened fauna

No threatened fauna species were recorded within the study area during the survey. Highly mobile, wide ranging and vagrant may use portions of the study area intermittently for foraging. For these fauna species, the habitat to be impacted is not considered to be important to the threatened species, particularly in relation to the amount of similar good quality habitat remaining in the surrounding landscape.

The small and medium hollows within the *Eucalyptus scoparia* on site may be utilised by highly mobile species such as threatened microbats that are known to occur within the locality. Taking a precautionary approach, a Test of Significance was undertaken for threatened microbat species. This assessment is provided in Appendix C.

5.2.4 Key threatening processes

One Key Threatening Processes (KTPs) listed under the BC Act is relevant to the proposed works:

- Loss of Hollow-bearing Trees

Two planted native trees with small and medium hollows will require removal as a result of the proposed works.

5.3 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) - Significant Impact Criteria

The EPBC Act establishes a process for assessing the environmental impact of activities and developments where “Matters of National Environmental Significance” (MNES) may be affected. Under the Act, any action which “has, will have, or is likely to have a significant impact on a MNES” is defined as a “controlled action”, and requires approval from the Commonwealth DAWE which is responsible for administering the EPBC Act.

No MNES are likely to be impacted by the proposed works and therefore a Significant Impact Criteria Assessment was not required.

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5.4 Campbelltown Local Environmental Plan 2015

The development site is not mapped on the Environmental Constraint Map – Riparian Protection under the LEP. The development site is not mapped on the Terrestrial Biodiversity Map under the LEP.

5.5 Campbelltown Sustainable City Development Control Plan (DCP) 2015

Part 11 Vegetation and Wildlife Management of the Campbelltown Sustainable City DCP has the following objectives:

- Protect and conserve the City's biodiversity through the retention of native vegetation.
- Maintain, enhance and/or establish corridors, which enable existing plant and animal communities to survive and range in their natural habitat.
- Protect habitat resources including hollow-bearing trees and hollow logs within Campbelltown LGA.
- Provide appropriate measures to compensate for the loss of hollow-bearing trees within the LGA.

Section 11.2.1 Management of Native Vegetation and Wildlife Habitat states:

- a. *for sites containing native vegetation and / or fauna habitat*
 - i *the development shall be sited, designed and managed to avoid any negative impact on biodiversity where possible;*
 - ii *where an impact on biodiversity cannot be avoided and no reasonable alternative is available the proposed development shall be sited, designed, constructed and managed in a manner that minimises the impact on native biodiversity and maintains habitat connectivity as much as practicable;*
 - iii *any impact on biodiversity shall be essential for the development and limited to the extent necessary to facilitate the safe and orderly use of the land for the purpose of the development;*
 - iv *arrangements must be put into place to ensure that the biodiversity values on site will be proactively managed to mitigate the impacts.*
 - v *in circumstances where impacts on biodiversity cannot be avoided, a Biodiversity Statement shall be prepared and submitted with the DA to demonstrate how Clause 11.2.1 a) ii) and iv) above have been addressed.*

Where possible the proposed works have avoided impacts to biodiversity. However, the proposed works will be removing potential fauna habitat (small and medium hollows in two planted native trees). The hollow-bearing trees to be removed should be supervised by a qualified ecologist and the hollow replaced with nestboxes or microbat box to offset the loss of the hollows. The proposed works are therefore considered to be compliant with the Campbelltown DCP.

5.6 State Environmental Planning Policy (SEPP) (Koala Habitat Protection) 2021

The Koala Habitat Protection SEPP aims to *encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.*

The proposed development is located within an LGA which is listed in the Koala Habitat Protection SEPP, and the *Eucalyptus microcorys* is a koala feed tree under Schedule 2 in the SEPP, however the development site is less than 1 ha in one ownership, so the SEPP does not apply.

There have been 946 records of Koala within 5 km of the development site, with most records occurring approximately 3 km south east of the development site. The closest records to the development are within 400 m north northeast of the site in 2014.

5.6.1 Campbelltown Comprehensive Koala Plan of Management (CKPoM) 2018

The subject site is located within the Campbelltown LGA, to which the CKPoM applies. The works will involve the removal of two isolated *Eucalyptus scoparia* trees. This species is not listed as a Preferred Koala Food Tree Species (PKFTS) under Appendix E of the CKPoM. The study area is not mapped as potential or core habitat or part of a strategic linkage area under the CKPoM. It is therefore considered that this development will have no impact on koala habitat. (*Figure 6.1: Development Assessment framework flowchart – CKPoM 2018*).

The CKPoM then only requires consideration of design requirements outlined in section 5.5.

6. Mitigation Measures / Recommendations

A number of general mitigation measures will be implemented which will reduce the potential impact on biodiversity values. Specific mitigation measures that relate to specific sensitive areas, threatened species and threatened ecological communities are outlined below in this section.

The following mitigation measures are recommended to reduce the ecological impacts associated with the proposed works within the subject site:

- Protective barrier fencing should be erected pre-construction and during construction to ensure that related impacts are contained within the work areas and trees to be retained are not impacted.
- Erosion/sediment controls should be implemented during any excavation or construction works to avoid offsite impacts or areas of vegetation being retained.
- The small and medium hollows in the trees being removed should be replaced in nearby vegetation with nestboxes of a similar size, and a qualified ecologist should be present during tree removal to ensure any fauna present can be relocated to a nearby area of native vegetation.

7. Conclusion

Eco Logical Australia Pty Ltd. (ELA) was engaged by Erilyan to prepare a Flora and Fauna Assessment (FFA) for proposed development on the corners of Kellicar Road and Camden Road, Campbelltown (Lot 1 DP 883417) for assessment under Part 4 of the EP&A Act.

The subject site is highly modified and contains only a small amount of planted native and exotic vegetation. Planted native species included *Eucalyptus scoparia* (Wallangarra White Gum), *Eucalyptus microcorys* (Tallowwood), a *Brachychiton acerifolius* (Flame Tree) sapling, a stand of *Casuarina glauca* and a mix of native and exotic grasses and forbs. The vegetation within the study area was not consistent with any native PCT or any TEC listed under the BC Act or EPBC Act.

The proposed works are unlikely to have a significant impact on any threatened species or ecological communities listed under the NSW BC Act or Commonwealth EPBC Act.

No threatened flora species were recorded during the field survey or considered likely to occur within the study area. As such, a significant impact under Section 7.3 of the BC Act for threatened flora was considered unnecessary and a Test of Significance was not undertaken.

Suitable foraging habitat for threatened fauna species was limited within the impact area due to the relatively small amount of native vegetation present, previous clearing and historical and on-going disturbances. Two *Eucalyptus scoparia* trees with hollows are to be removed under the proposed works.

The hollows within the *Eucalyptus scoparia* trees may be utilised by highly mobile species such as threatened microbats that are known to occur within the locality. A test of Significance under Section 5A of the BC Act was undertaken for threatened microbat species which may be impacted by the removal of the hollow-bearing trees. The assessment concluded that the proposal is unlikely to have a significant impact and, therefore, a BDAR is not required.

It is recommended that the hollow-bearing tree to be offset with nestboxes or microbat boxes of a similar size in nearby vegetation. It is also recommended that the removal of the hollow-bearing trees is supervised by an ecologist.

A number of mitigation measures have been recommended within this report to ameliorate potential direct and indirect impacts on native vegetation within and adjacent to the development.

8. References

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Appendix A - Flora species recorded in the study area

Table 5: Flora species recorded in the study area

Species Name	Common Name	Exotic (*) & Weed of National Significance (WoNS)
<i>Alternanthera pungens</i>	Khaki Weed	*
<i>Bidens pilosa</i>	Farmers Friends	*
<i>Brachychiton acerifolius</i>	Flame Tree	
<i>Casuarina glauca</i>	Sheoak	
<i>Conyza bonariensis</i>	Flax-leaf Fleabane	*
<i>Cynodon dactylon</i>	Common Couch	*
<i>Cyperus gracilis</i>	Slender Flat Sedge	
<i>Dichondra repens</i>	Kidney Weed	
<i>Ehrharta erecta</i>	Panic Veldtgrass	*
<i>Eleusine tristachya</i>	Goose Grass	*
<i>Eucalyptus microcorys</i>	Tallowood	
<i>Eucalyptus</i> sp.		* (Planted)
<i>Hypochaeris radicata</i>	Flatweed	*
<i>Lysimachia arvensis</i>	Scarlet Pimpernel	*
<i>Modiola caroliniana</i>	Red-flowered Mallow	*
<i>Oxalis perennans</i>		
<i>Paronychia brasiliensis</i>	Chilean Whitlow	*
<i>Paspalum dilatatum</i>	Dallis Grass	*
<i>Pennisetum clandestinum</i>	Kikuyu Grass	* Weed of regional significance
<i>Plantago lanceolata</i>	Plantain	*
<i>Polygonum aviculare</i>	Wireweed	*
<i>Portulaca oleracea</i>	Common Purslane	
<i>Schinus molle</i>	Pepper Tree	*
<i>Senecio madagascariensis</i>	Fireweed	* WoNS
<i>Sida rhombifolia</i>		*
<i>Solanum nigrum</i>	Black Nightshade	*
<i>Sonchus oleraceus</i>	Common Sowthistle	*
<i>Urochloa panicoides</i>	Urochloa Grass	*

Appendix B - Likelihood of occurrence

An assessment of likelihood of occurrence was made for threatened and migratory species identified from the database search. Five terms for the likelihood of occurrence of species are used in this report. This assessment was based on database or other records, presence or absence of suitable habitat, features of the proposal site, results of the site inspection and professional judgement. Some Migratory or Marine species identified from the Commonwealth database search have been excluded from the assessment, due to lack of habitat. The terms for likelihood of occurrence are defined below:

- “known” = the species was or has been observed on the site
- “likely” = a medium to high probability that a species uses the site
- “potential” = suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur
- “unlikely” = a very low to low probability that a species uses the site
- “no” = habitat on site and in the vicinity is unsuitable for the species.

A test of significance was conducted for threatened species or ecological communities that were recorded within the study area or had a higher likelihood of occurring and would be impacted by the proposed works. It is noted that some threatened fauna species that are highly mobile, wide ranging and vagrant may use portions of the study area intermittently for foraging. For these fauna species, the habitat present and likely to be impacted is not considered to be important to the threatened species, particularly in relation to the amount of similar habitat remaining in the surrounding landscape. As such, a test of significance in reference to State or Commonwealth legislation was not considered necessary.

The records column refers to the number of records occurring within 5 km of the study area, as provided by the Atlas of NSW Wildlife (BioNet) and Protected Matters Search Tool database search.

Information provided in the habitat associations’ column has primarily been extracted (and modified) from the Commonwealth Species Profile and Threats Database and the NSW Threatened Species Profiles.

Table 6: Threatened ecological communities (TECs) likelihood table

Name	BC Act	EPBC Act	Habitat Associations	Likelihood of Occurrence	Assessment of Significance required
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	V / CE	E	Occurs almost exclusively on soils derived from Tertiary alluvium, or on sites located on adjoining shale or Holocene alluvium. Often adjacent to and on slightly higher ground than Castlereagh Ironbark Forest or Shale Gravel Transition Forest in the Sydney Basin Bioregion. Dominated by <i>Eucalyptus parramattensis</i> subsp. <i>parramattensis</i> , <i>Angophora bakeri</i> and <i>E. sclerophylla</i> . A small tree stratum of <i>Melaleuca decora</i> is sometimes present, generally in areas with poorer drainage. It has a well-developed shrub stratum consisting of sclerophyllous species such as <i>Banksia spinulosa</i> var. <i>spinulosa</i> , <i>Melaleuca nodosa</i> , <i>Hakea sericea</i> and <i>H. dactyloides</i> (multi-stemmed form). The ground stratum consists of a diverse range of forbs including <i>Themeda australis</i> , <i>Entolasia stricta</i> , <i>Cyathochaeta diandra</i> , <i>Dianella revoluta</i> subsp. <i>revoluta</i> , <i>Stylidium graminifolium</i> , <i>Platysace ericoides</i> , <i>Laxmannia gracilis</i> and <i>Aristida warburgii</i> .	Unlikely – this TEC was not recorded within the study area.	No
Coastal Upland Swamps in the Sydney Basin Bioregion	E	E	Endemic to NSW and confined to the Sydney Basin Bioregion. It occurs in the eastern Sydney Basin from the Somersby district in the north (Somersby-Hornsby plateaux) to the Robertson district in the south (n the Woronora plateau). Occurs primarily on impermeable sandstone plateaux with shallow groundwater aquifers in the headwaters and impeded drainage lines of streams, and on sandstone benches with abundant seepage moisture. Generally associated with acidic soils. May include tall open scrubs, tall closed scrubs, closed heaths, open graminoid heaths, sedgelands and fernlands. Larger examples may include a complex of these structural forms.	Unlikely – this TEC was not recorded within the study area.	No
Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion	E	CE	Associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains. The structure of the community may vary from tall open forests (>40m) to woodlands. The most widespread and abundant dominant trees include <i>Eucalyptus tereticornis</i> (forest red gum), <i>E. amplifolia</i> (cabbage gum), <i>Angophora floribunda</i> (rough-barked apple) and <i>A. subvelutina</i> (broad-leaved apple). <i>Eucalyptus baueriana</i> (blue box), <i>E. botryoides</i> (bangalay) and <i>E. elata</i> (river peppermint) may be common south from Sydney. <i>E. ovata</i> (swamp gum) occurs on the far south coast, <i>E. saligna</i> (Sydney blue gum) and <i>E. grandis</i> (flooded gum) may occur north of Sydney, while <i>E. benthamii</i> is restricted to the Hawkesbury floodplain. A layer of small trees may be present, including <i>Melaleuca decora</i> , <i>M. styphelioides</i> (prickly-leaved teatree), <i>Backhousia myrtifolia</i> (grey myrtle), <i>Melia azadarach</i> (white cedar), <i>Casuarina cunninghamiana</i> (river oak) and <i>C. glauca</i> (swamp oak). Scattered shrubs include <i>Bursaria spinosa</i> , <i>Solanum prinophyllum</i> , <i>Rubus parvifolius</i> , <i>Breynia oblongifolia</i> , <i>Ozothamnus diosmifolius</i> , <i>Hymenanthera dentata</i> , <i>Acacia floribunda</i> and <i>Phyllanthus gunnii</i> . The groundcover is composed of abundant forbs, scramblers and grasses.	Unlikely – this TEC was not recorded within the study area.	No

Name		BC Act	EPBC Act	Habitat Associations	Likelihood of Occurrence	Assessment of Significance required
Cumberland Woodland	Plain in the Sydney Basin Bioregion	CE	CE	Has an open forest structure and occurs primarily where shallow deposits from ancient river systems overlay shale soils, but also associated with localised concentrations of iron-hardened gravel. A transition plant community which grades into Cumberland Plain Woodland where the influence of gravel soil declines, and grades into Cooks River/Castlereagh Ironbark Forest or Castlereagh Scribbly Gum Woodland where gravel deposits are thick.	Unlikely – this TEC was not recorded within the study area.	No
Eastern Banksia Scrub	Suburbs in the Sydney Basin Bioregion	E	E	Predominantly a sclerophyllous heath or scrub community although, depending on site topography and hydrology, some remnants contain small patches of woodland, low forest or limited wetter areas. Common species include <i>Banksia aemula</i> , <i>B. ericifolia</i> , <i>B. serrata</i> , <i>Eriostemon australasius</i> , <i>Lepidosperma laterale</i> , <i>Leptospermum laevigatum</i> , <i>Monotoca elliptica</i> and <i>Xanthorrhoea resinifera</i> . Associated with disjunct patches of nutrient poor aeolian (wind blown) dune sand.	Unlikely – this TEC was not recorded within the study area.	No
River-flat Forest	Eucalypt	EEC	-	The structure of the community may vary from tall open forests (>40m) to woodlands. The most widespread and abundant dominant trees include <i>Eucalyptus tereticornis</i> (forest red gum), <i>E. amplifolia</i> (cabbage gum), <i>Angophora floribunda</i> (rough-barked apple) and <i>A. subvelutina</i> (broad-leaved apple). Associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains.	Unlikely – this TEC was not recorded within the study area.	No
Shale/Sandstone Transition Forest		CEEC	CEEC	Occurs at the edges of the Cumberland Plain, where clay soils from the shale rock intergrade with earthy and sandy soils from sandstone, or where shale caps overlay sandstone. The boundaries are indistinct, and the species composition varies depending on the soil influences. It typically occurs in moderately wet sites, with an annual rainfall of 800-1100mm per year, and on clay soils derived from Wianamatta shale. The tree canopy is dominated by Turpentine and a variety of eucalypt species. Its distribution is mainly on the Cumberland Plain of the Sydney region. Was not recorded during the site inspection s.	Unlikely – this TEC was not recorded within the study area.	No
Subtropical Temperate Saltmarsh	and Coastal	EEC	V	Characteristic plants include <i>Baumea juncea</i> , <i>Juncus kraussii</i> subsp. <i>australiensis</i> (Sea Rush), <i>Sarcocornia quinqueflora</i> subsp. <i>quinqueflora</i> (Samphire), <i>Sporobolus virginicus</i> (Marine Couch), <i>Triglochin striata</i> (Streaked Arrowgrass), <i>Ficinia nodosa</i> (Knobby Club-rush), <i>Samolus repens</i> (Creeping Brookweed), <i>Selliera radicans</i> (Swamp Weed), <i>Suaeda australis</i> (Seablite) and <i>Zoysia macrantha</i> (Prickly Couch).	Unlikely – this TEC was not recorded within the study area.	No

Name	BC Act	EPBC Act	Habitat Associations	Likelihood of Occurrence	Assessment of Significance required
Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion	EEC	CEEC	Open forest, with dominant canopy trees including <i>Syncarpia glomulifera</i> (Turpentine), <i>Eucalyptus punctata</i> (Grey Gum), <i>Eucalyptus paniculata</i> (Grey Ironbark) and <i>E. eugenioides</i> (Thin-leaved Stringybark). In areas of high rainfall (over 1050 mm per annum) <i>E. saligna</i> (Sydney Blue Gum) is more dominant. The shrub stratum is usually sparse and may contain mesic species such as <i>Pittosporum undulatum</i> (Sweet Pittosporum) and <i>Polyscias sambucifolia</i> (Elderberry Panax). Occurs close to the Shale/Sandstone boundary on the more fertile shale influenced soils, in higher rainfall areas on the higher altitude margins of the Cumberland Plain, and on the shale ridge caps of sandstone plateaux. A transitional community, between Cumberland Plain Woodland in drier areas and Blue Gum High Forest on adjacent higher rainfall ridges.	Unlikely – this TEC was not recorded within the study area.	No
Western Sydney Dry Rainforest and Moist Woodland on Shale	EEC	CEEC	A dry vine scrub community of the Cumberland Plain, western Sydney. Canopy trees include Prickly Paperbark (<i>Melaleuca styphelioides</i>), Hickory Wattle (<i>Acacia implexa</i>) and Native Quince (<i>Alectryon subcinereus</i>). Many rainforest species occur in the shrub layer, such as Mock Olive (<i>Notelaea longifolia</i>), Hairy Clerodendrum (<i>Clerodendrum tomentosum</i>) and Yellow Pittosporum (<i>Pittosporum revolutum</i>). The shrub layer combines with vines, such as Gum Vine (<i>Aphanopetalum resinosum</i>), Wonga Vine (<i>Pandorea pandorana</i>) and Slender Grape (<i>Cayratia clematidea</i>) to form dense thickets in sheltered locations.	Unlikely – this TEC was not recorded within the study area.	No

EEC= Endangered Ecological Community, CEEC = Critically Endangered Ecological Community.

Table 7: Threatened species likelihood table

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
FAUNA							
<i>Anthochaera phrygia</i>	Regent Honeyeater	E4A	CE	Inland slopes of south-east Australia, and less frequently in coastal areas. In NSW, most records are from the North-West Plains, North-West and South-West Slopes, Northern Tablelands, Central Tablelands and Southern Tablelands regions; also recorded in the Central Coast and Hunter Valley regions. Eucalypt woodland and open forest, wooded farmland and urban areas with mature eucalypts, and riparian forests of <i>Casuarina cunninghamiana</i> (River Oak).	1	Unlikely - suitable habitat not identified within the site.	No
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V		Widespread in NSW from coast to inland including the western slopes of the Great Dividing Range and farther west. Species have also been recorded in southern and southwestern Australia. Woodlands and dry open sclerophyll forest, usually eucalypts and mallee associations.	81	Unlikely - suitable habitat not identified within the site.	No
<i>Botaurus poiciloptilus</i>	Australasian Bittern		E	Found over most of NSW except for the far north-west. Permanent freshwater wetlands with tall, dense vegetation, particularly <i>Typha</i> spp. (bullrushes) and <i>Eleocharis</i> spp. (spikerushes).	0	Unlikely - suitable habitat not identified within the site.	No
<i>Calidris ferruginea</i>	Curlew Sandpiper	E1	CE, M	Littoral and estuarine habitats, including intertidal mudflats, non-tidal swamps, lakes and lagoons on the coast and sometimes inland. Occurs along the entire coast of NSW, and sometimes in freshwater wetlands in the Murray-Darling Basin.	0	Unlikely - suitable habitat not identified within the site.	No
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	E2,V		Tall mountain forests and woodlands in summer; in winter, may occur at lower altitudes in open eucalypt forests and woodlands, and urban areas.	5	Unlikely - suitable habitat not identified within the site.	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
				In NSW, distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. Isolated records known from as far north as Coffs Harbour and as far west as Mudgee.			
<i>Calyptrorhynchus lathamii</i>	Glossy Black-Cockatoo	V		Open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur.	2	Potential – foraging habitat features associated with this species (<i>Casurina glauca</i>) were adjacent to the development site.	No – potential foraging habitat not being impacted
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V		Rainforest, sclerophyll forest (including Box-Ironbark), woodland and heath. In NSW it extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes.	2	Unlikely - suitable habitat not identified within the site.	No
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat		V	Recorded from Rockhampton in Qld south to Ulladulla in NSW. Largest concentrations of populations occur in the sandstone escarpments of the Sydney basin and the NSW north-west slopes. Wet and dry sclerophyll forests, Cyprus Pine dominated forest, woodland, sub-alpine woodland, edges of rainforests and sandstone outcrop country.	0	Unlikely – suitable foraging habitat for this species was not identified within the development site, no local records.	No
<i>Cuculus optatus</i>	Oriental Cuckoo, Horsfield's Cuckoo		M	Non-breeding habitat: monsoonal rainforest, vine thickets, wet sclerophyll forest or open Casuarina, Acacia or Eucalyptus woodland. Northern and eastern Australia, records mainly coastal in NSW south to Bega area.	0	Unlikely – habitat on site is fragmented and highly degraded, no local records.	No – potential habitat trees will not be impacted
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V		Inhabits eucalypt forests and woodlands, mallee and <i>Acacia</i> woodland. Distribution in NSW is nearly continuous from the coast to the far west.	21	Unlikely – habitat on site is fragmented and highly degraded.	No – potential habitat trees

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
							will not be impacted
<i>Dasyurus maculatus maculatus</i>	Spotted-tailed Quoll	V	E	Rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Qld.	0	Unlikely – suitable foraging habitat for this species was not identified within the development site, no local records.	No
<i>Falco hypoleucos</i>	Grey Falcon	E1		Shrubland, grassland and wooded watercourses, occasionally in open woodlands near the coast, and near wetlands. Arid and semi-arid zones. In NSW, found chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range.	0	Unlikely – suitable foraging habitat for this species was not identified within the development site, no local records.	No
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V		South-east coast and ranges of Australia, from southern Qld to Victoria and Tasmania. In NSW, records extend to the western slopes of the Great Dividing Range. Tall (greater than 20m) moist habitats.	3	Unlikely – suitable foraging habitat for this species was not identified within the development site.	No
<i>Gallinago hardwickii</i>	Latham's Snipe		M	Migrant to east coast of Australia, extending inland west of the Great Dividing Range in NSW. Freshwater, saline or brackish wetlands up to 2000 m above sea-level; usually freshwater swamps, flooded grasslands or heathlands.	17	Unlikely - suitable habitat not identified within the site.	No
<i>Glossopsitta pusilla</i>	Little Lorikeet	V		In NSW, found from the coast westward as far as Dubbo and Albury. Dry, open eucalypt forests and woodlands, including remnant woodland patches and roadside vegetation.	50	Potential – foraging habitat features associated with this species were in development site.	No – potential habitat not being impacted

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
<i>Grantiella picta</i>	Painted Honeyeater	V	V	Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. Widely distributed in NSW, predominantly on the inland side of the Great Dividing Range but avoiding arid areas.	0	Unlikely - suitable habitat not identified within the site, no local records.	No
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V		Distributed along the coastline of mainland Australia and Tasmania, extending inland along some of the larger waterways, especially in eastern Australia. Freshwater swamps, rivers, lakes, reservoirs, billabongs, saltmarsh and sewage ponds and coastal waters. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest and urban areas.	2	Unlikely - suitable habitat not identified within the site.	No
<i>Heleioporus australiacus</i>	Giant Burrowing Frog		V	South eastern NSW and Victoria, in two distinct populations: a northern population in the sandstone geology of the Sydney Basin as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria. Heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based.	4	Unlikely - suitable habitat not identified within the site.	No
<i>Hirundapus caudacutus</i>	White-throated Needletail		M	All coastal regions of NSW, inland to the western slopes and inland plains of the Great Divide. Occur most often over open forest and rainforest, as well as heathland, and remnant vegetation in farmland.	2	Unlikely - suitable habitat not identified within the site.	No
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake		V	Largely confined to Triassic and Permian sandstones within the coast and ranges in an area within approximately 250 km of Sydney. Dry and wet sclerophyll forests, riverine forests, coastal heath swamps, rocky outcrops, heaths, grassy woodlands.	0	Unlikely - suitable habitat not identified within the site, no local records.	No
<i>Isoodon obesulus obesulus</i>	Southern Brown	E1	E	Heath or open forest with a heathy understorey on sandy or friable soils.	0	Unlikely - suitable habitat not identified within the site, no local records.	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
	Bandicoot (eastern)			Found in south-eastern NSW, east of the Great Dividing Range south from the Hawkesbury River.			
<i>Lathamus discolor</i>	Swift Parrot	E1	CE	Migrates from Tasmania to mainland in Autumn-Winter. In NSW, the species mostly occurs on the coast and south west slopes. Box-ironbark forests and woodlands.	3575	Potential – foraging habitat features associated with this species were on the development site.	No – associated foraging habitat will not be impacted
<i>Litoria aurea</i>	Green and Golden Bell Frog	E1	V	Since 1990, recorded from ~50 scattered sites within its former range in NSW, from the north coast near Brunswick Heads, south along the coast to Victoria. Records exist west to Bathurst, Tumut and the ACT region. Marshes, dams and stream-sides, particularly those containing <i>Typha</i> spp. (bullrushes) or <i>Eleocharis</i> spp. (spikerushes). Some populations occur in highly disturbed areas.	3	Unlikely - suitable habitat not identified within the site.	No
<i>Litoria littlejohni</i>	Littlejohn's Tree Frog	V	V	Breeding habitat is the upper reaches of permanent streams and perched swamps. Non-breeding habitat is heath-based forests and woodlands Plateaus and eastern slopes of the Great Dividing Range from Watagan State Forest south to Buchan in Victoria. The species has not been recorded in southern NSW within the last decade.	0	Unlikely - suitable habitat not identified within the site, no local records.	No
<i>Litoria raniformis</i>	Southern Bell Frog	E1	V	Permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. Also found in irrigated rice crops. In NSW, only known to exist in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. A few recent unconfirmed records have also been made in the Murray Irrigation Area.	0	Unlikely - suitable habitat not identified within the site, no local records.	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
<i>Lophoictinia isura</i>	Square-tailed Kite	V		In NSW, it 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.	1	Unlikely - suitable habitat not identified within the site.	No
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	E1		Areas of 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.	130	Potential – foraging habitat features associated with this species were on the development site.	No – associated foraging habitat will not be impacted
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V		Found along the east coast from south Qld to southern NSW.	8	Potential roosting habitat (hollow-bearing trees) identified within the study area and nearby local records	Yes – two hollow-bearing trees to be removed
<i>Miniopterus australis</i>	Little Bentwing-bat	V		Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. East coast and ranges south to Wollongong in NSW.	1	Unlikely - suitable habitat not identified within the site.	No
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V		Rainforest, wet and dry sclerophyll forest, monsoon forest, open woodland, paperbark forests and open grassland.	12	Unlikely - suitable habitat not identified within the site.	No
<i>Mixophyes balbus</i>	Stuttering Frog	E1	V	Rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Along the east coast of Australia from southern Qld to north-eastern Victoria.	0	Unlikely - suitable habitat not identified within the site, no local records.	No
<i>Monarcha melanopsis</i>	Black-faced Monarch		M	Rainforest, open eucalypt forests, dry sclerophyll forests and woodlands, gullies in mountain areas or coastal foothills, Brigalow scrub, coastal scrub, mangroves, parks and gardens.	0	Unlikely - suitable habitat not identified within the site, no local records.=	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
				In NSW, occurs around the eastern slopes and tablelands of the Great Divide, inland to Coutts Crossing, Armidale, Widden Valley, Wollemi National Park and Wombeyan Caves. It is rarely recorded farther inland.			
<i>Motacilla flava</i>	Yellow Wagtail		M	Swamp margins, sewage ponds, saltmarshes, playing fields, airfields, ploughed land, lawns. Regular summer migrant to mostly coastal Australia. In NSW recorded Sydney to Newcastle, the Hawkesbury and inland in the Bogan LGA.	0	Unlikely - suitable habitat not identified within the site, no local records.	No
<i>Myiagra cyanoleuca</i>	Satin Flycatcher		M	Eucalypt-dominated forests, especially near wetlands, watercourses, and heavily vegetated gullies. In NSW, widespread on and east of the Great Divide and sparsely scattered on the western slopes, with very occasional records on the western plains.	0	Unlikely - suitable habitat not identified within the site, no local records.	No
<i>Myotis macropus</i>	Southern Myotis	V		Foraging habitat is waterbodies (including streams, or lakes or reservoirs) and fringing areas of vegetation up to 20m.	14	Unlikely - suitable habitat not identified within the site.	No
<i>Ninox connivens</i>	Barking Owl	V		Woodland and open forest, including fragmented remnants and partly cleared farmland, wetland and riverine forest. Wide but sparse distribution in NSW, avoiding the most central arid regions. Core populations exist on the western slopes and plains and in some northeast coastal and escarpment forests.	1	Unlikely – suitable foraging and breeding habitat is not present within the study area.	No
<i>Ninox strenua</i>	Powerful Owl	V		Woodland, open sclerophyll forest, tall open wet forest and rainforest. In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains.	16	Unlikely – suitable foraging and breeding habitat is not present within the study area.	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
<i>Numenius madagascariensis</i>	Eastern Curlew		CE, M	Estuaries, bays, harbours, inlets and coastal lagoons, intertidal mudflats or sandflats, ocean beaches, coral reefs, rock platforms, saltmarsh, mangroves, freshwater/brackish lakes, saltworks and sewage farms. Summer migrant to Australia. Primarily coastal distribution in NSW, with some scattered inland records.	0	Unlikely - suitable habitat not identified within the site, no local records.	No
<i>Petauroides volans</i>	Greater Glider	E2	V	This population on the south coast of NSW is bounded by the Moruya River to the north, Coila Lake to the south and the Princes Highway and cleared land exceeding 700 m in width to the west. Eucalypt forests and woodlands.	1	Unlikely - habitat present is substantially degraded such that this species is unlikely to utilise the site for foraging or breeding.	No
<i>Petroica boodang</i>	Scarlet Robin	V		Dry eucalypt forests and woodlands, and occasionally in mallee, wet forest, wetlands and tea-tree swamps. In NSW, it occurs from the coast to the inland slopes.	7	Unlikely - habitat present is substantially degraded such that this species is unlikely to utilise the site for foraging or breeding.	No
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	E1	V	Rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges. In NSW they occur from the Qld border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit.	0	Unlikely - suitable habitat not identified within the site, no local records.	No
<i>Phascolarctos cinereus</i>	Koala		V	In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. There are sparse and possibly disjunct populations in the Bega District, and at several sites on the southern tablelands. Eucalypt woodlands and forests.	1048	Unlikely - Habitat present is on the development site is substantially degraded such that this species is unlikely to utilise the site for foraging or breeding.	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
<i>Pluvialis squatarola</i>	Grey Plover		M	Winter migrant in coastal areas throughout the world and to Australia from southern Japan south via coastal southern Asia. Forage for food on beaches and tidal flats,	1	Unlikely – suitable habitat not identified within the site	No
<i>Pseudomys novaehollandiae</i>	New Holland Mouse		V	Open heathlands, woodlands and forests with a heathland understorey, vegetated sand dunes. Fragmented distribution across eastern NSW.	0	Unlikely – suitable habitat not identified within the site, no local records	No
<i>Pseudophryne australis</i>	Red-crowned Toadlet	V		Open forests, mostly on Hawkesbury and Narrabeen Sandstones. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. Confined to the Sydney Basin, from Pokolbin in the north, the Nowra area to the south, and west to Mt Victoria in the Blue Mountains.	1	Unlikely – suitable habitat not identified within the site	No
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	V	Along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria. Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	120	Unlikely – suitable habitat not identified within the site.	No
<i>Rhipidura rufifrons</i>	Rufous Fantail		M	Wet sclerophyll forests, subtropical and temperate rainforests. Sometimes drier sclerophyll forests and woodlands. Coastal and near coastal districts of northern and eastern Australia, including on and east of the Great Divide in NSW.	0	Unlikely – suitable habitat not identified within the site, no local records	No
<i>Rostratula australis</i>	Australian Painted Snipe	E1	E	Swamps, dams and nearby marshy areas. In NSW most records are from the Murray-Darling Basin. Other recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys.	0	Unlikely – suitable habitat not identified within the site, no local records	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V		Almost all habitats, including wet and dry sclerophyll forest, open woodland, open country, mallee, rainforests, heathland and waterbodies. There are scattered records of this species across the New England Tablelands and North West Slopes. Rare visitor in late summer and autumn to south-western NSW.	2	Potential roosting habitat (hollow-bearing trees) identified within the study area and nearby local records	Yes – two hollow-bearing trees to be removed
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V		Woodland, moist and dry eucalypt forest and rainforest. Both sides of the great divide, from the Atherton Tableland in Qld to north-eastern Victoria, mainly along river systems and gullies. In NSW it is widespread on the New England Tablelands.	8	Unlikely – suitable habitat not identified within the site	No
<i>Stictonetta naevosa</i>	Freckled Duck	V		Freshwater swamps and creeks, lakes, reservoirs, farm dams and sewage ponds. Inland river systems, occurring as far as coastal NSW in times of drought.	11	Unlikely – suitable habitat not identified within the site	No
<i>Thinornis cucullatus cucullatus</i>	Hooded Plover	CE	V	Its natural habitats are freshwater lakes, freshwater marshes, coastal saline lagoons, and sandy beaches. Heavy populations are found on beaches with seaweed and dunes.	0	Unlikely – suitable habitat not identified within the site, no local records	No
<i>Tyto novaehollandiae</i>	Masked Owl	V		Dry eucalypt forests and woodlands from sea level to 1100 m. Recorded over approximately 90% of NSW, excluding the most arid north-western corner. Most abundant on the coast but extends to the western plains.	1	Unlikely – suitable foraging and breeding habitat is not present within the study area.	No
FLORA							
<i>Acacia bynoeana</i>	Bynoe's Wattle	E1	V	Heath or dry sclerophyll forest on sandy soils. Found in central eastern NSW, from the Hunter District (Morisset) south to the Southern Highlands and west to the Blue Mountains.	0	Unlikely – suitable habitat not identified within the	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
						site, habitat is sustainably degraded, no local records	
<i>Acacia pubescens</i>	Downy Wattle	V	V	Restricted to the Sydney region around the Bankstown-Fairfield-Rookwood and Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon. Open woodland and forest, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland. Occurs on alluviums, shales and at the intergrade between shales and sandstones.	1	Unlikely - suitable habitat not identified within the site and habitat is sustainably degraded.	No
<i>Allocasuarina glareicola</i>		E1	E	Castlereagh woodland on lateritic soil. Found in open woodland with <i>Eucalyptus parramattensis</i> , <i>Eucalyptus fibrosa</i> , <i>Angophora bakeri</i> , <i>Eucalyptus sclerophylla</i> and <i>Melaleuca decora</i> . Primarily restricted to the Richmond (NW Cumberland Plain) district, but with an outlier population found at Voyager Point, Liverpool.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	V	V	Coastal heathlands, margins of coastal swamps and sedgeland, coastal forest, dry woodland, and lowland forest. In NSW, recorded mainly on coastal and near coastal ranges north from Victoria to near Forster, with two isolated occurrences inland north-west of Grafton.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Cynanchum elegans</i>	White-flowered Wax Plant	E1	E	Dry rainforest; littoral rainforest; <i>Leptospermum laevigatum</i> - <i>Banksia integrifolia</i> subsp. <i>integrifolia</i> (Coastal Tea-tree– Coastal Banksia) coastal scrub; <i>Eucalyptus tereticornis</i> (Forest Red Gum) or <i>Corymbia maculata</i> (Spotted Gum) open forest and woodland; and <i>Melaleuca armillaris</i> (Bracelet Honey myrtle) scrub.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Eucalyptus scoparia</i>	Wallangarra White Gum	E1	V	Originates from the elevated areas of the Wallangarra area in northern New South Wales.	1	Unlikely - suitable habitat not identified within the	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
						site and habitat is sustainably degraded.	
<i>Genoplesium baueri</i>	Bauer's Midge Orchid		E	Has been recorded from locations between Nowra and Pittwater and may occur as far north as Port Stephens. Dry sclerophyll forest and moss gardens over sandstone.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Small-flower Grevillea	V	V	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. Grows in sandy or light clay soils usually over thin shales, often with lateritic ironstone gravels and nodules.	27	Unlikely - suitable habitat not identified within the site and habitat is sustainably degraded.	No
<i>Haloragis exalata</i> subsp. <i>exalata</i>	Square Raspwort	V	V	Protected and shaded damp situations in riparian habitats. Disjunct distribution in the Central Coast, South Coast and North Western Slopes botanical subdivisions of NSW.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Hibbertia puberula</i>		E1		Low heath, dry sclerophyll woodland, upland swamps, on sandy soils or clay.	41	Unlikely – suitable habitat not identified within the site and habitat is sustainably degraded.	No
<i>Leucopogon exolasius</i>	Woronora Beard-heath		V	Found along the upper Georges River area and in Heathcote National Park. Occurs in woodland on sandstone.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i>		E2		Vine thickets and open shale woodland.	54	Unlikely - suitable habitat not identified within the site and habitat is sustainably degraded.	No
<i>Melaleuca deanei</i>	Deane's Paperbark		V	Ku-ring-gai/Berowra area, Holsworthy/Wedderburn area, Springwood (in the Blue Mountains), Wollemi National Park, Yalwal (west of Nowra) and Central Coast (Hawkesbury River) areas. Heath on sandstone.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Pericaria elatior</i>	Tall Knotweed	V	V	In south-eastern NSW recorded from Mt Dromedary, Moruya State Forest near Turlinjah, the Upper Avon River catchment north of Robertson, Bermagui, and Picton Lakes. In northern NSW known from Raymond Terrace (near Newcastle) and the Grafton area (Cherry Tree and Gibberagee State Forests).	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Persoonia bargoensis</i>	Bargo Geebung	E1	V	Woodland or dry sclerophyll forest on sandstone and on heavier, well drained, loamy, gravelly soils of the Wianamatta Shale and Hawkesbury Sandstone. Restricted to a small area south-west of Sydney on the western edge of the Woronora Plateau and the northern edge of the Southern Highlands.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Persoonia hirsuta</i>	Hairy Geebung	E1	E	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. Sandy soils in dry sclerophyll open forest, woodland and heath on sandstone.	1	Unlikely - suitable habitat not identified within the site and habitat is sustainably degraded.	No
<i>Persoonia nutans</i>	Nodding Geebung	E1	E	Restricted to the Cumberland Plain in western Sydney, between Richmond in the north and Macquarie Fields in the south.	0	Unlikely – suitable habitat not identified within the	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
						site, habitat is sustainably degraded, no local records	
<i>Pimelea curviflora</i> var. <i>curviflora</i>		V	V	Woodland, mostly on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes. Confined to the coastal area of the Sydney and Illawarra regions between northern Sydney and Maroota in the north-west and Croom Reserve near Albion Park in the south.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Pimelea spicata</i>	Spiked Rice-flower	E1	E	Two disjunct areas; the Cumberland Plain (Marayong and Prospect Reservoir south to Narellan and Douglas Park) and the Illawarra (Landsdowne to Shellharbour to northern Kiama). Well-structured clay soils. Eucalyptus moluccana (Grey Box) communities and in areas of ironbark on the Cumberland Plain. Coast Banksia open woodland or coastal grassland in the Illawarra.	790	Unlikely - suitable habitat not identified within the site and habitat is sustainably degraded.	No
<i>Pomaderris brunnea</i>	Brown Pomaderris	E1	V	Found in a very limited area around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area and near Camden. It also occurs near Walcha on the New England tablelands and in far eastern Gippsland in Victoria. Brown Pomaderris grows in moist woodland or forest on clay and alluvial soils of flood plains and creek lines.	4	Unlikely - suitable habitat not identified within the site and habitat is sustainably degraded.	No
<i>Pomaderris cotoneaster</i>	Cotoneaster Pomaderris	E1	E	Generally dry sclerophyll forest, often on skeletal soil. Recorded in NSW from the Nungatta area, northern Kosciuszko National Park (near Tumut), the Tantawangalo area in South-East Forests National Park and adjoining freehold land, Badgery's Lookout near Tallong, the Yerranderie area, the Canyonleigh area and Ettrema Gorge in Morton National Park.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood		E	Restricted to western Sydney between Freemans Reach in the north and Picton in the south. There are very few known populations and they are all very small and isolated. Two populations occur within a	0	Unlikely – suitable habitat not identified within the	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of records within 5km	Likelihood of occurrence on site	Impact Assessment Required
				conservation reserve (Georges River National Park; Scheyville NP). Most commonly found growing in small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines. The vegetation communities above the shelves where <i>Pterostylis saxicola</i> occurs are sclerophyll forest or woodland on shale/sandstone transition soils or shale soils.		site, habitat is sustainably degraded, no local records	
<i>Rhizanthella slateri</i>	Eastern Australian Underground Orchid	V	E	Sclerophyll forest in shallow to deep loams. In NSW, currently known from fewer than 10 locations, including near Bulahdelah, the Watagan Mountains, the Blue Mountains, Wiseman's Ferry area, Agnes Banks and near Nowra.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Rhodamnia rubescens</i>	Scrub Turpentine	CE		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.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	E1	V	Only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. Subtropical and littoral rainforest on gravels, sands, silts and clays.	3	Unlikely - suitable habitat not identified within the site and habitat is sustainably degraded.	No
<i>Thelymitra kangaloonica</i>	Kangaloon Sun Orchid	E4A	CE	Swamps in sedgelands over grey silty grey loam soils. Only known to occur on the southern tablelands of NSW in the Moss Vale / Kangaloon / Fitzroy Falls area at 550-700 m above sea level.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No
<i>Thesium australe</i>	Austral Toadflax		V	In eastern NSW it is found in very small populations scattered along the coast, and from the Northern to Southern Tablelands. Grassland on coastal headlands or grassland and grassy woodland away from the coast.	0	Unlikely – suitable habitat not identified within the site, habitat is sustainably degraded, no local records	No

BC Act: V= Vulnerable; E1= Endangered, E2 = Endangered Population, C4A = Critically Endangered

EPBC Act: V= Vulnerable; E= Endangered, CE = Critically Endangered Act, M = Migratory:

Appendix C : NSW Biodiversity Conservation Act 2016 Tests of Significance

The 'Test of significance' (5-part test) is applied to species, populations and ecological communities listed on Schedules 1 and 2 of the BC Act and Schedules 4, 4A and 5 of the FM Act. The assessment sets out 5 factors, which when considered, allow proponents to undertake a qualitative analysis of the likely impacts of an action and to determine whether a significant impact is likely. All factors must be considered, and an overall conclusion made based on all factors in combination.

C1 : Microbat species

Due to similar foraging habitat requirements, a single test was undertaken for the following species, which are all listed as vulnerable under the BC Act:

- *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat)
- *Saccolaimus flaviventris* (Yellow-bellied Sheathtail-bat)

The description and habitat associations of each of the above-listed threatened species are presented in Appendix B. None of these threatened species were observed during field survey, however two hollow bearing trees, which represents potential roosting habitat for these species, is proposed for removal.

Table 8: Microbat species tests of significance question and response

BC Act	Question	Response
7.3.1 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 proposed works will result in the removal of two hollow bearing trees. It is considered unlikely that the proposed works will place a viable local population of any of these potentially affected species at risk of extinction given that suitable habitat is available within the large tracts of connective vegetation within the locality and these species are highly mobile.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or	Not applicable
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.	Not applicable

BC Act	Question	Response
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	Two hollow bearing trees with small and medium hollows will be removed under the proposed works.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	Habitat for these species is very limited within study area and consists of two hollow-bearing trees. The works proposed for Stage 1 of the Healthcare facility will remove the two trees containing hollows from the site, therefore, the proposed works will not isolate or fragment the habitat for this species as the potential roosting habitat will be removed.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.	The hollow-bearing trees to be removed are unlikely to be important breeding habitat for this species due to its position within a highly fragmented landscape and is more likely to be used as marginal roosting habitat. There is likely to be hollow-bearing trees within native vegetation in the locality. Native vegetation outside of the study area is assumed to be retained and is likely of more importance to the long-term survival of this species.
7.3.1 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 proposed works will not impact any declared area of outstanding biodiversity value.
7.3.1 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.	One key threatening process, the removal of native vegetation and the loss of hollow-bearing trees, is relevant to this proposal. The proposed works are unlikely to contribute significantly to this KTP as there is likely to be native vegetation outside of the study area containing hollow-bearing trees.
Conclusion	Is there likely to be a significant impact?	No. The proposed activity is unlikely to have a significant impact on Eastern Coastal Free-tailed Bat and Yellow-bellied Sheath-tail-bat for the following reasons: <ul style="list-style-type: none"> Two hollow bearing trees are proposed to be removed. More suitable roosting habitat is likely to be available in the native vegetation surrounding the study area.

