Sturt and Acacia Park Upgrades Flora and Fauna Assessment

City of Parramatta

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Template 2.8.1

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Abbreviations

Abbreviation	Description
BC Act	*Biodiversity Conservation Act 2016*
BC Regulation	*Biodiversity Conservation Regulation 2017*
BOS	Biodiversity Offset Scheme
CAA	Controlled Activity Approval
CEEC	Critically Endangered Ecological Community
CoP	City of Parramatta
ELA	Eco Logical Australia
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FM Act	*Fisheries Management Act 1994*
GIS	Geographic Information System
GPS	Global Positioning System
KFH	Key Fish Habitat
MNES	Matters of National Environmental Significance
NRAR	Natural Resources Access Regulator
REF	Review of Environmental Factors
TEC	Threatened Ecological Community

Executive Summary

Eco Logical Australia (ELA) was commissioned by City of Parramatta to undertake a Flora and Fauna Assessment (FFA) as part of a Review of Environmental Factors (REF) for proposed major upgrades to Acacia and Sturt Park in the suburb of Telopea. (Lot E, DP36692and Lot 13, DP524335 respectively) (the study areas).

This document reports on the ecological values identified within the study area and considers both the direct and indirect impacts from the proposed major upgrade works in relation to current environmental planning legislation.

Blue Gum High Forest the Sydney Basin Bioregion is a threatened ecological community (TEC) and was identified within Sturt Park in the form of both remnant and planted canopy trees. This TEC is listed as a critically endangered ecological community (CEEC) under the NSW *Biodiversity Conservation Act 2016* (BC Act) and if particular condition criteria are met, it may also be listed as a CEEC under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Blue Gum High Forest on site meets the criteria for its listing under the EPBC Act.

No threatened flora or threatened flora habitat was identified within the proposed impact areas. A number of hollow-bearing trees and stags were recorded on site which provide suitable roosting habitat for threatened fauna species.

This assessment prepared by ELA concluded that the planted and remnant Blue Gum High Forest canopy trees mapped in the study area will not be impacted by the proposed development. Although no impact is anticipated, a Test of Significance under section 7.3 of the BC Act was still applied to *Blue Gum High Forest the Sydney Basin Bioregion* and it confirmed there would be no significant impact on the TEC as a result of the proposed development. It is understood that the remnant canopy trees within the study is consistent with the definition of *Blue Gum High Forest the Sydney Basin Bioregion* under the Commonwealth EPBC Act due to the small patch size. Therefore, a Significance Assessment was applied under the EPBC Act.

Significant impacts to threatened ecological communities and species is considered unlikely. Therefore, further assessment in the form of a Biodiversity Development Assessment Report (State BC Act) or Referral (Commonwealth EPBC Act) is not recommended.

Mitigation measures are provided to reduce impacts to threatened entities and have been provided in Section 6.

1. Introduction

Eco Logical Australia Pty Ltd (ELA) was commissioned by City of Parramatta (CoP) to prepare this Flora and Fauna Assessment (FFA) for Acacia and Sturt Park, Telopea. The suburb of Telopea, in the Local Government area of the CoP, has been identified as a priority growth area for urban renewal, with Acacia Park being one of the most significant open spaces in the precinct. To keep up with the demand of the present population as well as future population growth, The CoP are proposing major upgrades to the park. This technical study has been prepared to support a Review of Environmental Factors (REF) for the proposed upgrade works to Sturt Park and Acacia Park.

This report describes impacts on native vegetation, threatened species, populations and communities listed under the NSW *Biodiversity Conservation Act* 2016 (BC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as a result of the proposed upgrade works. The impact assessment in this report is based on information gathered from data searches and field investigations. The report sets out the legislative context, methods used, impacts to the environment and recommendations to minimise these impacts.

1.1 Project Location and Context

Acacia Park is located at 42A Evans Road, Telopea, NSW on the boundary of Telopea and Dundas Valley. The park is approximately 23 km to the north west of Sydney's Central Business District (CBD) and 5.3 km to the north east of Parramatta. The site is bounded by Evans Road to the north, Lord Avenue to the east, Tilley Street to the south and Osborne Avenue to the west. Sturt Park is located at 12 Sturt St, Telopea, NSW. The site is bound by Telopea Public School to the north, Sturt Road to the east, Kissing Point Road to the south and residential properties to the west. The location of both study areas is shown in Figure 1.

1.2 Proposed Works

The upgrades to Acacia Park include:

- Proposed access pathway connections from Evans Road to park and boundary fencing with park signage to Evans Road.
- Re-line mark car parking spaces and provide two new central disabled parking spaces with shared zone and new kerb ramp.
- Remove existing play space and upgrade in generally the same location. Includes new play equipment, soft fall safety surfacing, seating, fencing between plays pace and Lord Avenue and irrigated garden beds planted with native grasses.
- Proposed 280 m long main concrete circuit pathway with painted walking distance track markers, mature native tree planting, seating and possible solar lighting.
- Retain and protect existing trees on site.
- Proposed tree-planted forest grove with crushed sandstone informal discovery pathways.
- Proposed amenities building (1 x ambulant and 1 x disabled cubicle) and irrigation control
- System.
- Proposed furniture installations including shelters and picnic settings, bins, drinking stations and seating opportunities.

- Proposed compliant accessible 3.3m high viewing mound providing uninterrupted views of Parramatta CBD skyline. Includes circular concrete viewing platform with seating, accessible concrete ramps, irrigated garden beds mass planted with native plants and children's sandstone block rock-climb.
- Regraded lawn area south of new mound to provide flat, turfed open space for informal play.
- Mulch under existing trees and remove all deadwood. Crown raise canopies to minimum of 3 m to improve visual surveillance, safety and park identity.

The upgrades to Sturt Park include:

- Park frontage and entry signage upgrades to improve passive surveillance into park and provide improved park identity.
- New amphitheatre terracing with informal hardstand space (stage) for possible performances, tai-chi, fitness, yoga etc.
- Expansion of existing skate park facility.
- Recreational pedestrian circuit pathway with sheltered rest stops.
- Pedestrian pathway lighting.
- Turfed open space for informal play.
- New playground for young children.
- New playground for older children.
- Communal family picnic settings, BBQ and shelters.
- Picnic settings and shelters dispersed throughout park.
- Demolition of existing amenities building and construction of a new amenities building.
- Extension of existing basketball court and transformation into new multi-use facility.
- Formalisation of 'The Ponds Walk' trail including bush regeneration along Ponds Creek to remove weed and extend planting edge on northern side sensitive to park ecology and heritage. The bushland regeneration works will be undertaken in two stages:
    - Stage One: Restoration of creek line along northern bank at walking track entrance, including the following:
        - Removal of all exotic trees.
        - Installation of mulch.
        - Installation of sandstone boulders as part of armouring the creek banks
        - Revegetation with locally indigenous species utilising grasses, sedges and other low growing tubestock at 5/m^2 and some trees (ensuring sightlines across the park are maintained for passive surveillance).
    - Stage Two: Restoration of the entire length of the creek riparian zone within the reserve, including the following:
        - Removal of all exotic trees within 3 m of creek banks.
        - Installation of mulch.
        - Revegetation with locally indigenous species utilising grasses, sedges and other low growing tubestock at 5/m^2 and some trees (ensuring sightlines across the park are maintained for passive surveillance).

- Future 'The Ponds Walk' crossing over Sturt Street to connect trail from Sturt Park to Ponds Creek Reserve North open space and Moffatts Drive.
- Retention of existing mature significant trees.
- New tree planting, feature trees, low-lying shrubs and groundcovers.

1.3 Key Terms

The following terminology has been used for this report and is consistent with the NSW Government Threatened Species Test of Significance Guidelines Office of Environment and Heritage (Now Department of Planning Industry and Environment) 2018:

- Study area - means the study area and any additional areas, which are likely to be affected by the proposal, either directly or indirectly. For the purpose of this report the study area includes everything within Acacia Park and Sturt Park, Telopea.
- Proposal / proposed works - means vegetation clearance / modification (i.e. trimming of vegetation as described in Section 1.2.
- Locality - the same meaning as ascribed to local population of a species or local occurrence of an ecological community. For the purposes of this report, the locality is a 5 km radius around Sturt Park and Acacia Park.
- Local occurrence - the ecological community that occurs within the study area. However, the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of that ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.

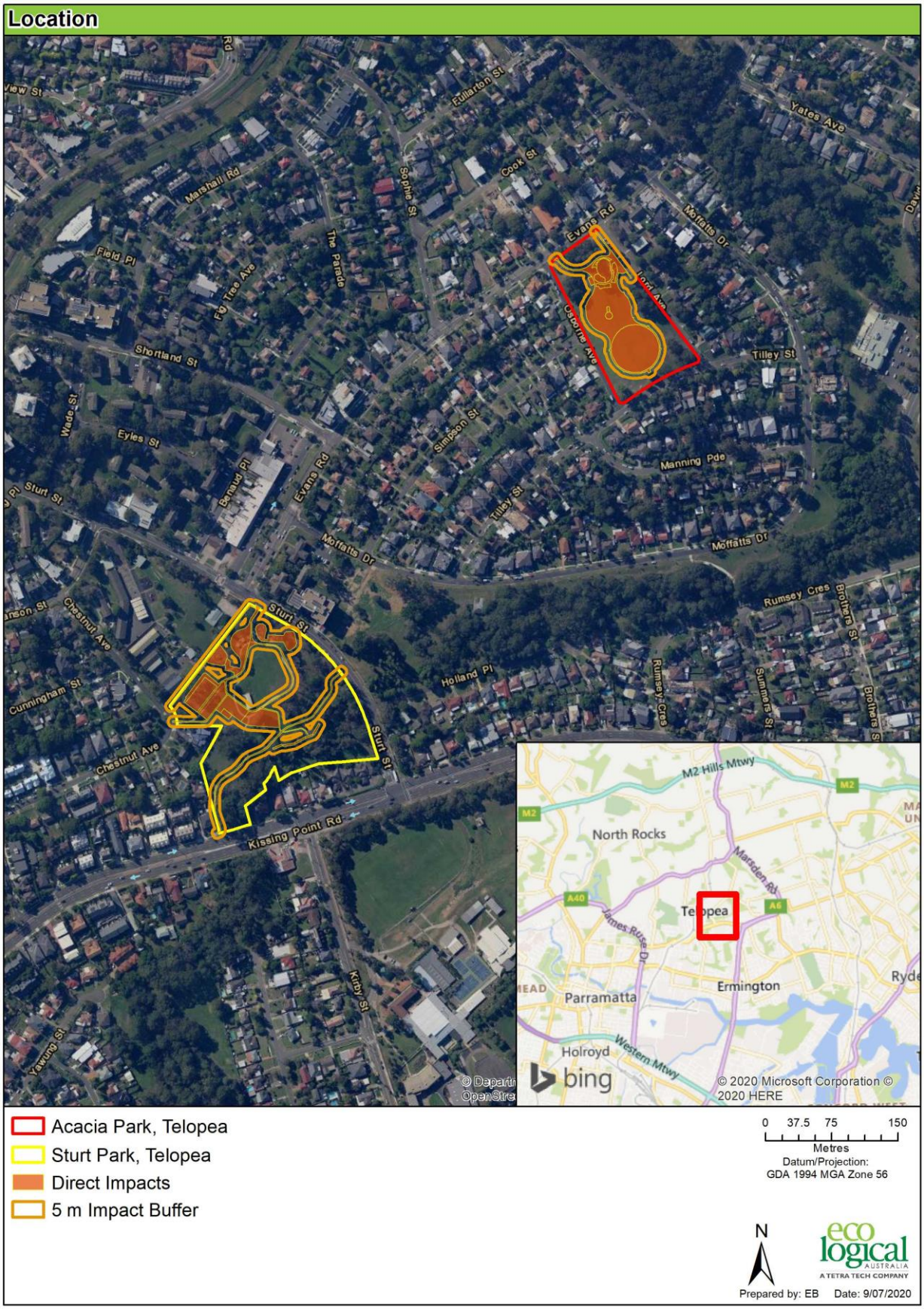

Figure 1: Location of the study areas

2. Legislative Context

Table 1: Legislation relevant to the proposal

Name	Relevance to the project
	Commonwealth
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act protects matters of National Environmental Significance (NES), such as threatened species and ecological communities, migratory species (protected under international agreements), and National Heritage places (among others). Any actions that will or are likely to have a significant impact on the matters of NES require referral and approval from the Australian Government Environment Minister. Significant impacts are defined by the Commonwealth (reference http://www.environment.gov.au/epbc/guidelines-policies.html) for matters of NES. No matters of NES were identified within or near the site. *Pteropus poliocephalus* (Grey-headed Flying Fox) was identified as having potential to occur within the site, however an assessment of significance was not required for as the proposed works would only impact a small amount of non-canopy species.
	State
Environmental Planning and Assessment Act 1979 (EP&A Act)	The EP&A Act is the principal planning legislation for NSW. It provides a framework for the overall environmental planning and assessment of proposals. As the CoP is the proponent, the works are to be assessed as 'development permissible without consent' under Part 5 of the EP&A Act. Accordingly, the CoP must satisfy Sections 5.5 and 5.6 of that Act by examining, and taking into account to the fullest extent possible, all matters which are likely to affect the environment. This FFA is intended to assist, and ensure compliance, with the EP&A Act including Sections 5.5 and 5.6, for inclusion into a REF at a later stage.
Biodiversity Conservation Act 2016 (BC Act)	The BC Act seeks to conserve biological diversity at bioregional and State scales; to maintain the diversity and quality of ecosystems and enhance their capacity to adapt to change and provide for the needs of future generations; to assess the extinction risk of species and ecological communities and identify key threatening processes through an independent and rigorous scientific process; and to establish a framework to avoid, minimise and offset the impacts of proposed development and land use change on biodiversity. Section 7.3 of the Act requires proponents of activities subject to Part 5 of the EP&A Act to determine whether they will have a significant impact on threatened species. The test for significant impact is described in section 7.3 of the Act. A significant impact also occurs if the activity is carried out in an area of outstanding biodiversity value. If a significant impact is likely to occur, the proponent of the activity must prepare a Species Impact Statement (SIS) in accordance with section 7.20 or a Biodiversity Development Assessment Report (BDAR). A Test of Significance was undertaken for *Blue Gum High Forest in the Sydney Basin Bioregion.* The assessment concluded that a significant impact is not likely to result and therefore the preparation of a SIS or BDAR is not recommended.
Biosecurity Act 2015	The Biosecurity Act repealed the *Noxious Weeds Act 1993* and provides a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers. Part 3 of the Biosecurity Act applies a general biosecurity duty for any person who deals with a biosecurity matter or a carrier to prevent, eliminate or minimise any biosecurity risk they may pose. Under section 23 of the Act, a person who fails to discharge a biosecurity duty is guilty of an offence. Whilst the Act provides for all biosecurity risks, implementation of the Act for weeds is supported by Regional Strategic Weed Management Plans (RSWMP) developed for each region in NSW. Appendix 1 of each RSWMP identifies the priority weeds for control at a regional scale. However, landowners and managers must take appropriate actions to reduce the impact of problem weed species regardless of

Name	Relevance to the project
	whether they are listed in Appendix 1 of the RSWMP or not as the general biosecurity duty applies to these species. A number of priority weeds, as identified within the Greater Sydney RSWMP, were present within the study area and will require management by City of Parramatta.
Fisheries Management Act 1994 (FM Act)	The FM Act provides for the protection, conservation and recovery of threatened species defined under the Act. It also makes provisions for the management of threats to threatened species, populations and ecological communities defined under the Act, as well as the protection of fish and fish habitat in general. Threatened aquatic species, populations and communities are listed under Schedules 4, 4A and 5 of the FM Act, while key threatening processes are listed under Schedule 6. The study area is not mapped as Key Fish Habitat (KFH) by NSW Fisheries. Therefore, the CoP does not require a Part 7 permit under the FM Act for the works. However, works should be conducted in accordance with NSW Fisheries' '*Policy and guidelines for fish habitat conservation and management*' (Fairfull, 2013) to minimise harm to the aquatic environment of The Ponds Creek.
Water Management Act 2000 (WM Act)	The WM Act aims to provide for the sustainable and integrated management of water resources for NSW. The Act requires developments on waterfront land to be ecologically sustainable and recognises the benefits of aquatic ecosystems to agriculture, fisheries, and recreation. The WM Act is administered by the Natural Resources Access Regulator (NRAR) and establishes an approval regime for activities within waterfront land, defined as the land 40 m from the highest bank of a river, lake or estuary. A Controlled Activity Approval (CAA) is typically required for work within waterfront land. Section 91E of the Act creates an offence for carrying out a controlled activity within waterfront land without approval. According to Section 41 of the *Water Management (General) Regulation 2018,* a public authority is exempt from Section 91E (1) of the Act. Therefore, the CoP does not need to obtain a CAA from the NRAR as part of these works. However, works should be designed and constructed as per the NRAR's *'Controlled Activities on Waterfront Land: Guidelines for watercourse crossings on waterfront land'* (DPI Water, 2012).
State Environmental Planning Policy (Koala Habitat Protection) 2019	The Koala Habitat Protection SEPP does not apply to the Parramatta LGA.
	Planning Instruments
Parramatta Local Environmental Plan 2011 (Parramatta LEP 2011)	In accordance with the Parramatta LEP 2011, the study areas are zoned as the following: <u>Acacia Park</u> • RE1 (Public Recreation) <u>Sturt Park</u> • RE1 (Public Recreation) • W1 (Natural Waterway) **Terrestrial Biodiversity** Acacia and Sturt Park do not have land identified as Biodiversity on the Natural Resources – Biodiversity Map under the Parramatta LEP 2011.

3. Methods

The following information and databases were reviewed prior to the field survey:

- Previous vegetation mapping (SMCA, 2016)
- BioNet/ Atlas of NSW Wildlife database (Department of Industry Planning and Environment (DPIE 2019)
- BioNet Vegetation Classification
- Aerial photographs
- EPBC Act Protected Matters Search Tool (DoEE 2019)
- Parramatta Local Environmental Plan (LEP) 2011

A search of BioNet (DPIE 2019) was performed on 5 June 2020 and a search of the EPBC Act Protected Matters Search Tool on 16 June 2020, using a radius of 5 km around the coordinates -33.79566 151.04696

3.1 3.2 Field Survey

3.1.1 Vegetation Validation

The study area was surveyed by ELA ecologist Stacey Wilson on 17 June 2020. The vegetation mapping prepared by Sydney Management Catchment Authority 2016 was validated and changes to the vegetation mapping was undertaken as required and modified using hard copy maps. During the field survey habitat features, potential ecological constraints and opportunistic fauna sightings within the study areas were noted.

3.1.2 Survey Limitations - Flora

The floristic survey undertaken provides a comprehensive but not definitive species list for the study area. The total species list of an area is usually much greater than can be detected in such a short time and it can be influenced by factors such as: size of the property, fire history, time since disturbance, life cycle stage/dormancy (particularly orchids and annuals), and presence of reproductive material (DEC 2004).

Nevertheless, the techniques used in this investigation are considered adequate and relevant to gather the data necessary to identify impacts of the proposal on threatened flora and their habitat; and the identified limitations are managed by objectively considering the potential for species to occur when suitable habitat, connectivity and local records occur, as per DEC (2004).

4. Results

4.1 Database Searches and Literature Review

4.1.1 Threatened Ecological Communities, Flora, Fauna and Migratory Species

A review of the BioNet Atlas and EPBC Act protected matters search tool identified eight threatened ecological communities, 27 threatened flora and 56 threatened fauna (including migratory species) either known or considered likely to occur within 5 km to Acacia and Sturt Park. Atlas records which have been recorded in close proximity to the parks is displayed in Figure 2.

Many of the threatened flora and fauna species excluded from further consideration are purely marine (e.g. fish and marine mammals) or estuarine to shoreline (e.g. waders) species that are not capable of utilising the site or study area, and thus are not likely to be affected by the proposed works. The likelihood of the remaining species to occur is reviewed in Appendix A. Threatened ecological communities either known or considered likely to occur within 5 km of the study are also provided in Appendix A.

4.1.2 Vegetation Validation

A review of the available Sydney Metropolitan Catchment Management Authority vegetation mapping (SMCMA, 2016) indicated that Urban Exotic/Native vegetation has been mapped within Acacia Park and Sydney Turpentine Ironbark Forest and Urban Exotic/Naive vegetation has been mapped within Sturt Park (Figure 3).

4.1.3 Watercourses

The Ponds Creek, a second order stream in accordance with the Strahler classification System, is located in the southern portion of Sturt Park (Figure 4). The Ponds Creek is not mapped as Key Fish Habitat.

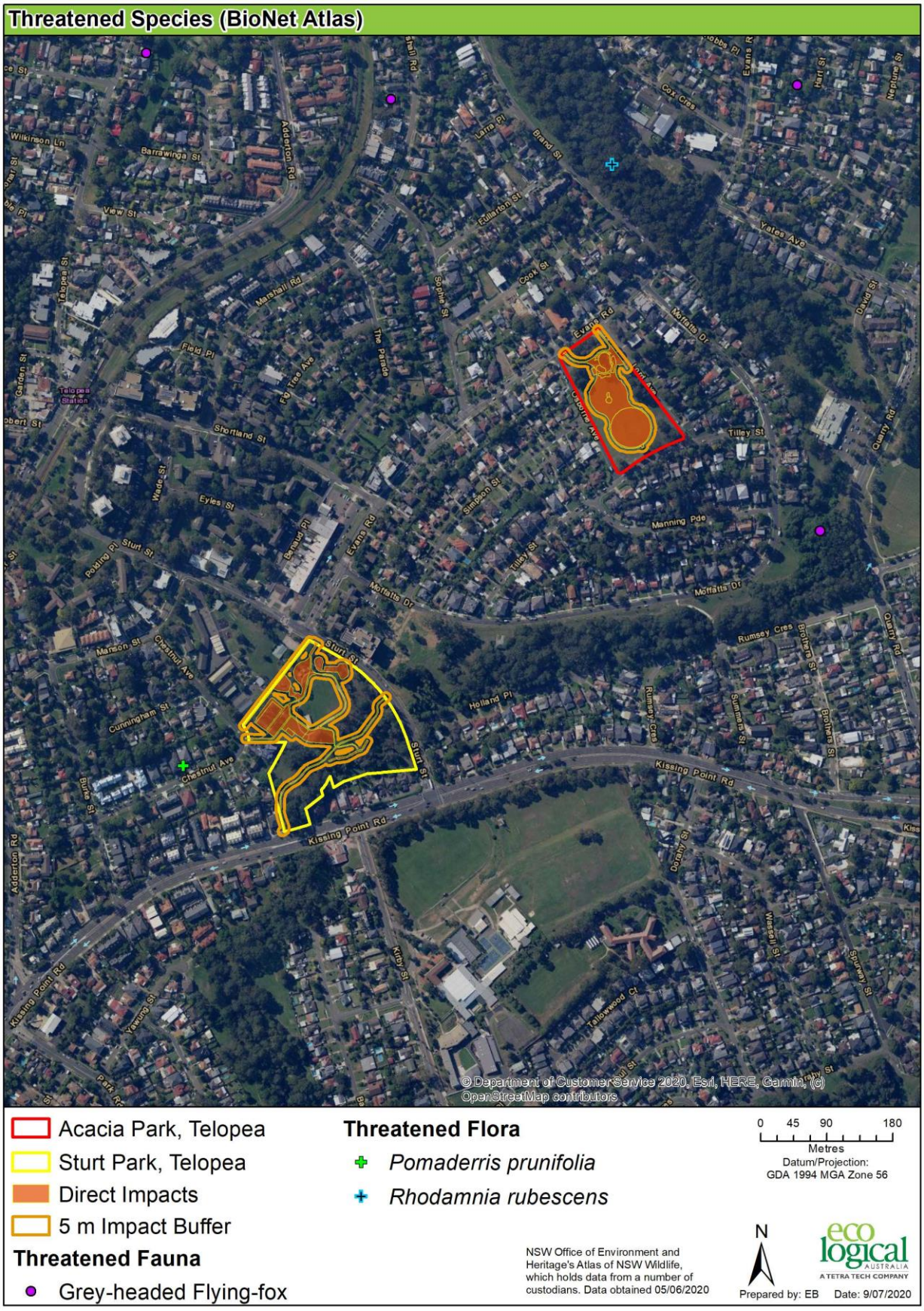

Figure 2: Threatened flora and fauna BioNet Atlas records in proximity to the study areas.

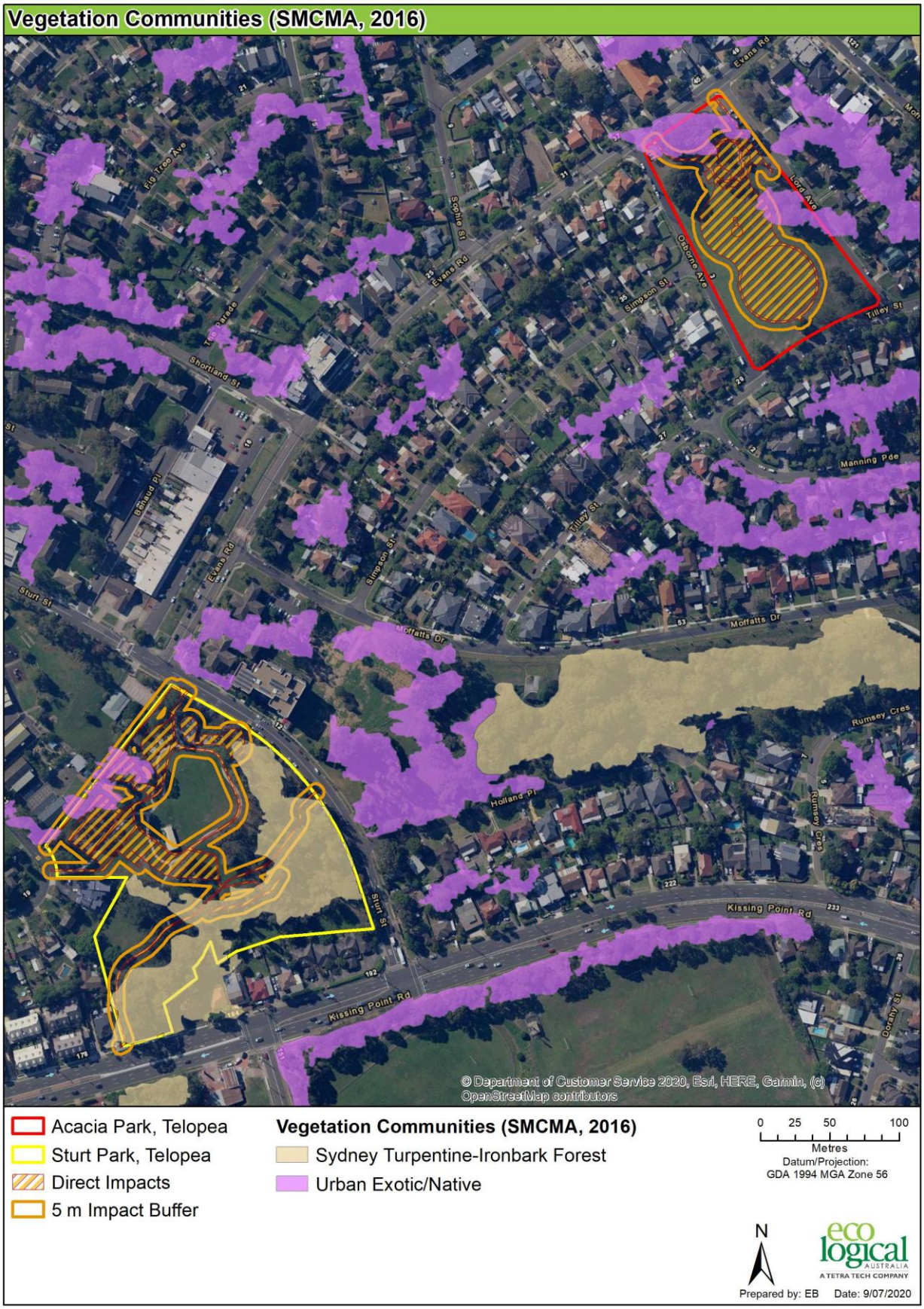

Figure 3: Previous vegetation mapping of the study areas.

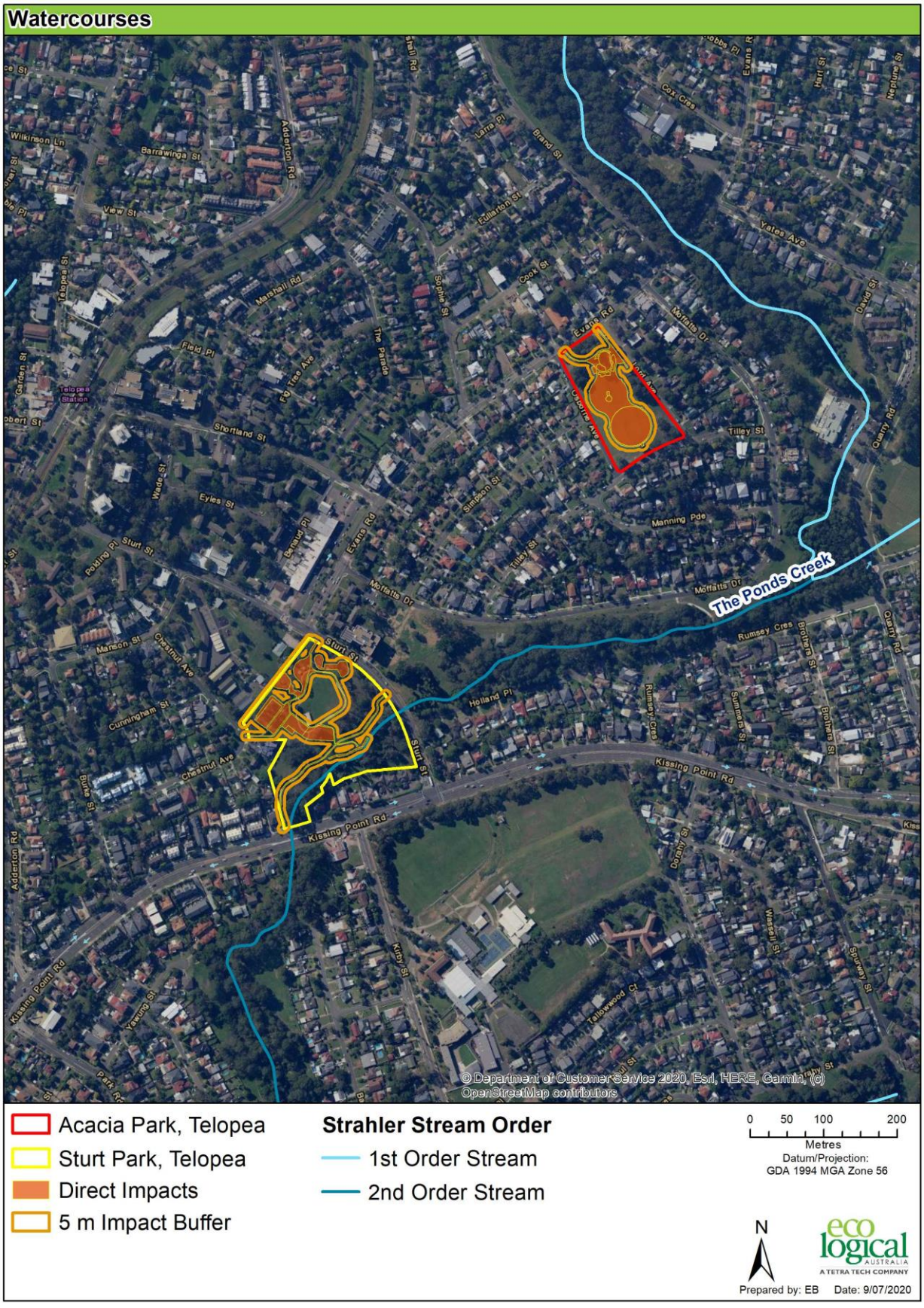

Figure 4: Mapped watercourses within the study areas

4.2 Field Survey

4.2.1 Vegetation Validation

4.2.1.1 Acacia Park

A map of validated vegetation within Acacia Park is shown in Figure 5.

A description of the validated vegetation communities is described below, and a summary shown in Table 2.

Table 2: Vegetation communities within Acacia park

Vegetation community	Condition	BC Act	EPBC Act	Area (ha)
Native Planted (exotic understorey)	Poor	N/A	N/A	0.45
Exotic	N/A	N/A	N/A	1.14
			TOTAL	**1.59**

PLANTED NATIVE (EXOTIC UNDERSTOREY)

Native and exotic trees and shrubs exist as planted stands around Acacia Park and includes *Eucalyptus microcorys* (Tallowwood), *Corymbia maculata* (Spotted Gum), *Grevillea* sp., *Lomandra longifolia* (Spiny-headed Mat-rush), *Melia azedarach* (White cedar), *Plumeria* sp., (Frangipani), *Grevillea robusta* (Silky oak) which a mulched understorey (Photo 1).

EXOTIC

The majority of the site is a mown, grassed oval which contains exotic grass and weeds including *Cynodon dactylon* (Couch), *Modiola caroliniana* (Red-flowered Mallow), *Hypochaeris radicata* (Catsear), *Sonchus oleraceus* (Common Sowthistle), *Solanum nigrum* (Black-berry Nightshade), *Plantago lanceolata* (Lamb's Tongues), and *Lysimachia arvensis* (Scarlet Pimpernel) (Photo 2).

Photo 1: Planted *Corymbia maculata* (Spotted Gum) and *Eucalyptus microcorys* (Tallowwood), Acacia Park.

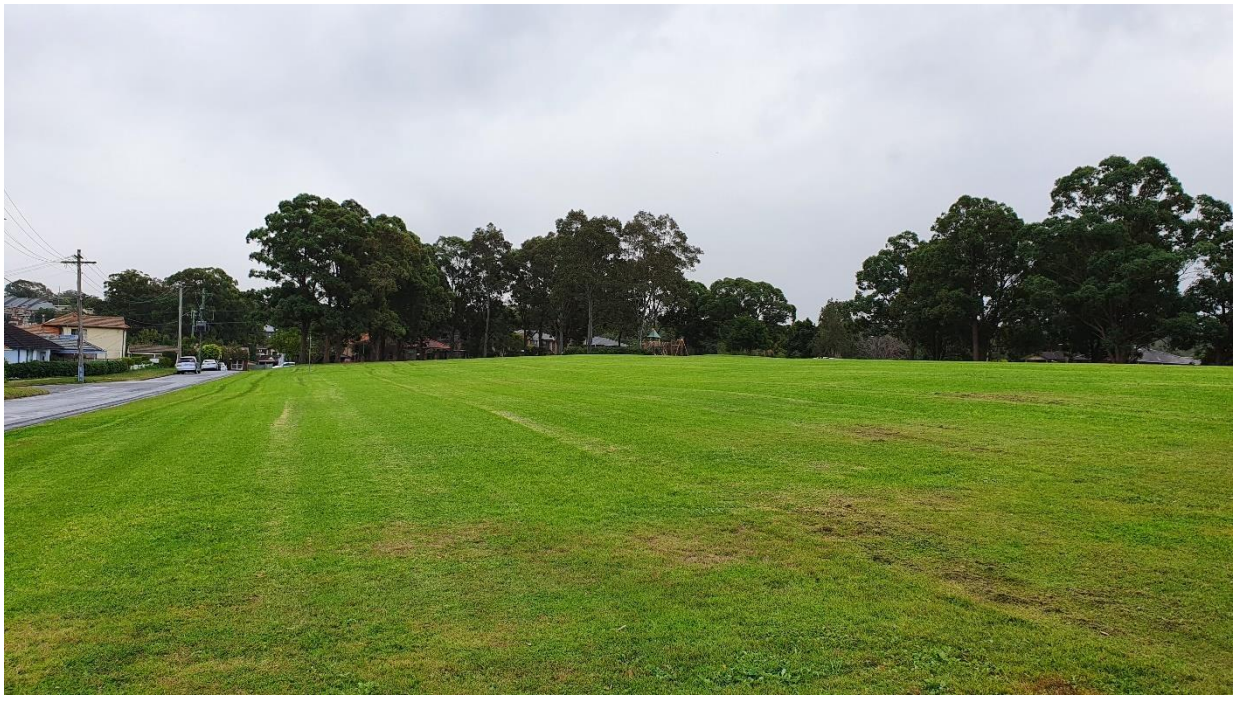

Photo 2: Exotic grasses, Acacia Park.

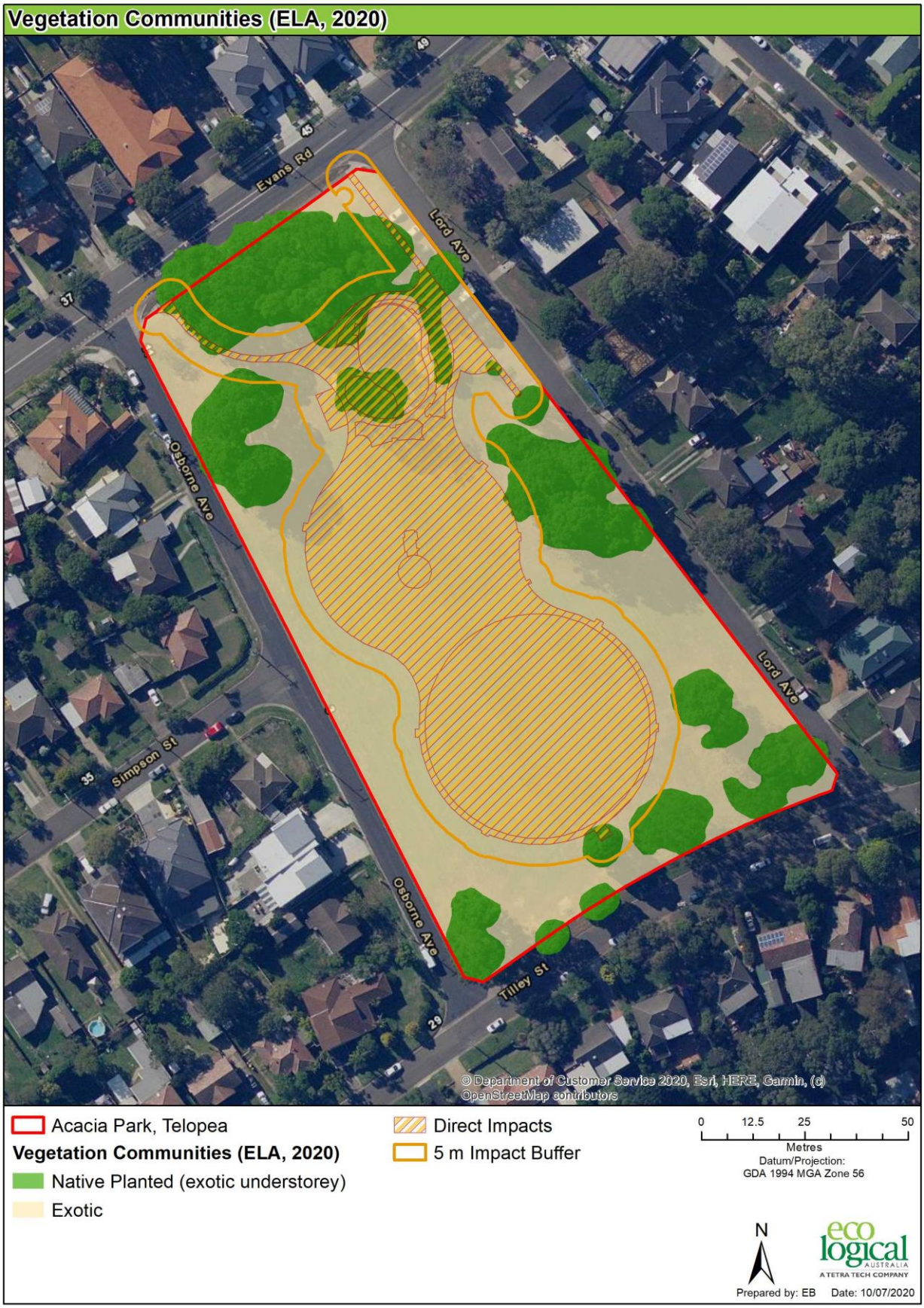

Figure 5: ELA validated vegetation communities Acacia Park

4.2.1.2 Sturt Park

A map of validated vegetation within the study area shown in Figure 6.

A description of the validated vegetation communities is described below, and a summary shown in Table 3. A description of the vegetation within the study area is provided in the sections below.

Table 3: Vegetation communities within Sturt Park

Vegetation community	Condition	BC Act	EPBC Act	Area (ha)
Blue Gum High Forest	Planted, exotic understorey	CEEC[1]	CEEC	1.0[2]
Planted Native	Exotic understorey	N/A	N/A	0.65
			Subtotal native vegetation	**1.65**
Exotic	N/A	N/A	N/A	0.10
Exotic Grassland	N/A	N/A	N/A	1.16
			TOTAL AREA	**2.91**

BLUE GUM HIGH FOREST IN THE SYDNEY BASIN BIOREGION (PLANTED WITH EXOTIC UNDERSTOREY)

Broadscale vegetation mapping produced by the Sydney Metro Catchment Management Authority in 2016 (SMCMA 2016) identified *Sydney Turpentine Ironbark Forest* in the south and east portion of Sturt Park and Urban Exotic/Native to the north. The site has been historically cleared and modified and as such the majority of the vegetation on site has been re-planted with native species. The Sydney Turpentine Ironbark Forest originally mapped within the site was validated as Blue Gum High Forest with an exotic understorey along the riparian corridor and as larger, mature *Eucalyptus saligna* (Sydney Blue Gum) in the north and west portion of the site.

Stands of large remnant *E. saligna* exist in the west portion of Sturt Park and contain large hollows for fauna. Stands of remnant, isolated *E. saligna* have no midstorey and an exotic grass understorey. The Blue Gum High Forest identified along the riparian corridor of the site consists of *Eucalyptus saligna* (Sydney Blue Gum), *Angophora costata* (Smooth-barked Apple), *Ficus* sp., *Eucalyptus grandis* (Flooded Gum), *Eucalyptus punctata* (Grey Gum), and *Eucalyptus pilularis* (Blackbutt), *Syncarpia glomulifera* (Turpentine) and *Lophostemon confertus* (Brush Box). A native midstorey is sparse, however contained *Acacia implexa* (Hickory Wattle), *Acacia decurrens* and *Melia azedarach* (White Cedar). Along the riparian corridor *Melaleuca armillaris* (Bracelet Honey-myrtle) and *Allocasuarina torulosa* (Forest Oak), become more dominant (Photo 4). The understorey at the base of trees contains exotic species. Exotics in the groundcover includes *Ehrharta erecta*, (Panic Veldtgrass), *Tradescantia fluminensis* (Trad), *Plantago lanceolata* (Lamb's Tongues), and *Cenchrus clandestinus* (Kikuyu Grass). The groundcover is managed and mowed and, in some areas, closer to the riparian corridor the soil is bare or contains evidence of old mulch.

Blue Gum High Forest is a critically endangered ecological community (CEEC) listed under the NSW BC Act and the Commonwealth EPBC Act. The definition under the BC Act is very broad and includes

[1] CEEC= Critically Endangered Ecological Community

[2] Area of Blue Gum High Forest is 0.999 ha and for the purpose of this report has been rounded up to 1ha.

remnant trees, but the definition under the EPBC Act is much narrower and vegetation must meet minimum condition and patch size thresholds to meet the EPBC Act definition. The criteria is as follows:

The patch size must be greater than one hectare in size and:

- have a canopy cover greater than 10%; or
- have a canopy cover less than 10% and occur in areas of native vegetation in excess of five hectares.

The Blue Gum High Forest within the study area has a canopy cover of 10% and is just below the 1 ha threshold for its listing under the EPBC Act. Taking a conservative approach Blue Gum High Forest on site and is considered to meet the EPBC Act definition. Therefore, any impacts to this community will be assessed under the EPBC Act.

NATIVE PLANTED (EXOTIC UNDERSTOREY)

The remainder of the native vegetation on site has been mapped as native planted vegetation and consists of planted *Eucalyptus sideroxylon* (Red Ironbark), *Eucalyptus microcorys* (Tallowwood), *Angophora bakeri* (Narrow-leaved Apple), *Melaleuca* spp., *Lomandra longifolia* (Spiny-headed Mat Rush) and *Corymbia maculata* (Spotted Gum) (Photo 3).

EXOTIC

Exotic species such as *Privet* spp. *Senna pendula* (Senna), *Salix* sp. (Willow) also exist along riparian corridor along with planted *Allocasuarina* sp. and *Melaleuca* spp.

EXOTIC GRASSLAND

The cleared, mown areas of the park include exotic grass and weeds including *Cynodon dactylon (*Couch), *Pennisetum clandestinum* (Kikuyu grass), *Modiola caroliniana* (Red-flowered Mallow), Hypochaeris radicata (Catsear), *Plantago lanceolata* (Lamb's Tongues), and *Lysimachia arvensis* (Scarlet Pimpernel).

CLEARED/BUILT

The remainder of the site has been mapped as cleared/built and is made up of the existing pathways, buildings, skate ramp and play equipment.

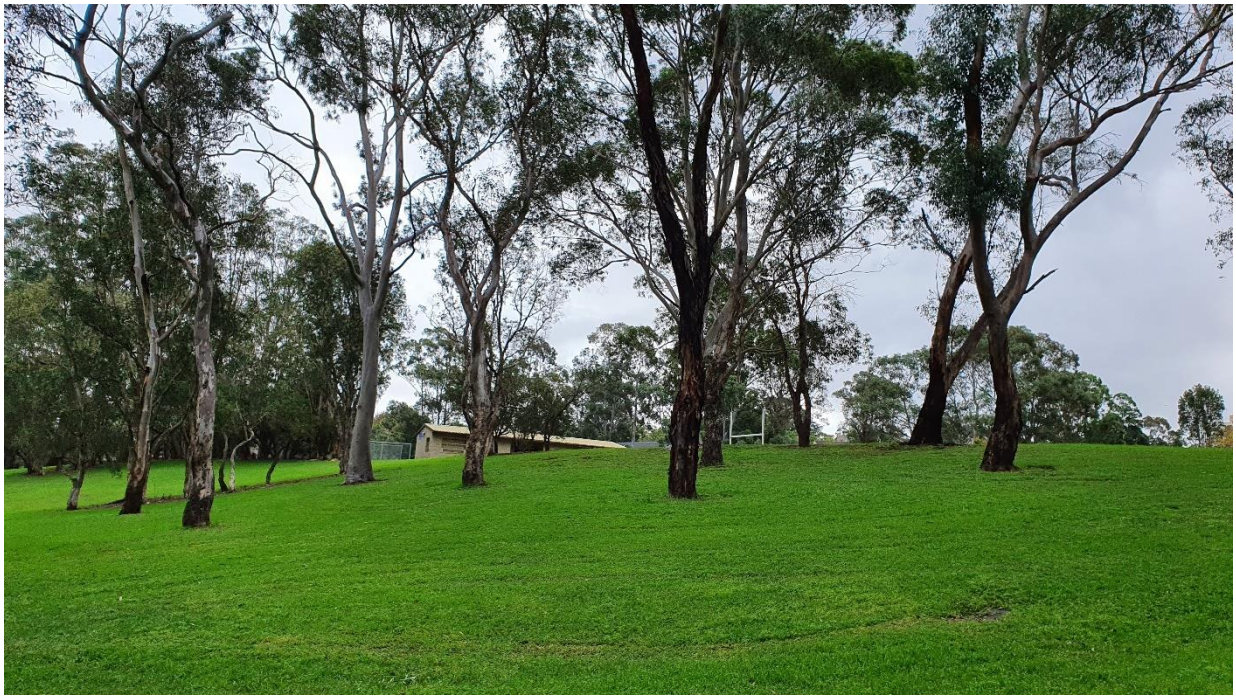

Photo 3: Planted native vegetation with mown, exotic understorey, Sturt Park.

Photo 4: Blue Gum High Forest along the riparian corridor of The Ponds Creek.

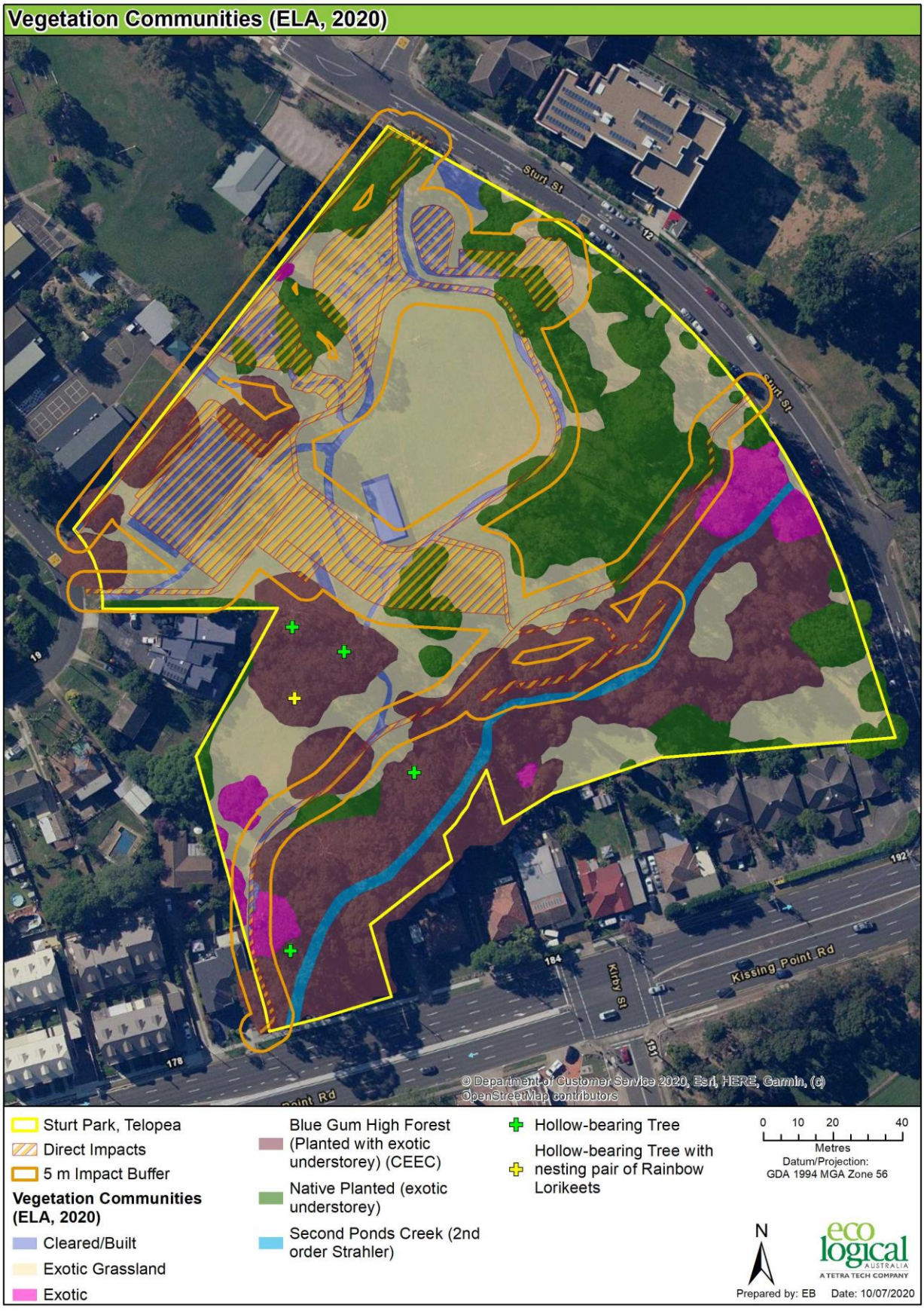

Figure 6: ELA validated vegetation communities Sturt Park

4.2.2 Threatened Flora

No threatened flora species were recorded within the proposed impact areas at Acacia and Sturt Park. Additionally, no habitat was identified for threatened flora species within the proposed impact areas.

4.2.3 Priority Weeds

One Priority Weed listed under the NSW *Biosecurity Act 2015*, and six weeds of regional concern outlined in the Greater Sydney Regional Strategic Weed Management Plan 2017 - 2022 (LLS 2017) were identified in the study area, which includes one Weed of National Significance (WoNS). The priority weeds present, their management class and their status as a WoNS is provided in Table 4

Table 4: Priority weeds and WoNS recorded at Acacia and Sturt Park

Scientific Name	Common Name	WoNS	Priority Weed Objective or Asset at Risk
State Priority Weeds			
Asparagus asparagoides	Bridal Creeper	Yes	Asset protection[1]
Weeds of Regional Concern			
Araujia sericifera	Moth Vine	No	Environment[2]
Cenchrus clandestinus	Kikuyu	No	Environment[2]
Eragrostis curvula	African Lovegrass	No	Environment[2]
Ligustrum lucidum	Broad-leaf Privet	No	Environment, Human Health[2]
Ligustrum sinense	Small-leaf Privet	No	Environment, Human Health[2]
Tradescantia fluminensis	Trad	No	Environment[2]

[1] Mandatory measure (Whole of NSW)

[2] Regional Strategic Response

4.2.4 Threatened Fauna

No threatened fauna species were identified within the study area. Vegetation within the study area is likely to provide suitable habitat for a number of common peri-urban species and potential habitat for threatened fauna species. The habitat features relevant to each guild of fauna species are identified in Table 5.

Table 5: Habitat features and associated fauna groups (guilds) recorded within the study area

Habitat Features	Guild	Acacia Park	Sturt Park
Remnant vegetation	Birds, microchiropteran bats (microbats), megachiropteran bats (fruit bats), arboreal mammals, reptiles	Absent	Present
Winter flowering species	Winter migratory birds, arboreal mammals and megachiropteran bats (fruit bats)	Limited	Present
Hollow-bearing trees (HBT)	Birds and arboreal mammals (gliders and microbats)	Absent	Present
Stags	Birds, particularly birds of prey, reptiles, amphibians, micro bats	Absent	Absent
Leaf Litter	Reptiles, amphibians, invertebrates	Absent	Limited
Coarse woody debris	Terrestrial mammals, reptiles, invertebrates	Absent	Limited
Drainage lines and Dams	Amphibians, reptiles, water birds and microbats	Absent	Present –Ponds Creek

Habitat Features	Guild	Acacia Park	Sturt Park
Rocks/ Rocky Outcrops	Reptiles, invertebrates, terrestrial mammals	Absent	Absent
Vegetative corridor	Birds, reptiles, arboreal and small mammals	Limited	Present, connected along Ponds Creek riparian corridor
Mistletoe	Birds and arboreal mammals	Absent	Absent
Native/ Exotic grassland	Migratory wetland birds (Egrets), predator bird species (Little Eagle) and microbats	Present	Present

HOLLOW-BEARING TREES

A total of five hollow-bearing trees were recorded within Sturt Park. The locations of HBTs and stags within the study area is provided in Figure 6. The HBTs contained several small pipe hollows and medium-sized hollows that could potentially provide habitat for a number of threatened fauna. Two *Trichoglossus moluccanus* (Rainbow Lorikeets) were observed nesting within one of the hollow-bearing trees. No hollow-bearing trees or stags were recorded at Acacia park.

BIRDS

Remnant trees typically provide foraging, roosting and perching habitat for a number of larger bird species. Stags and HBT's provide roosting habitat for hollow-dependant bird species and are often in limited supply in fragmented habitats. As mentioned above, Hollow-bearing trees were present within the study area.

MAMMALS

There is some habitat available for native terrestrial and arboreal mammals within the study area. Possum and glider species rely on an abundance of eucalypt species for foraging and require HBT for roosting. HBT's with variable size entrances are present within the study area and within the adjoining native vegetation and provide suitable habitat for a variety of arboreal fauna species. One medium sized HBT that could support these species was identified within Sturt Park.

BATS

Small hollows may provide roosting habitats for microchiropteran bat species (microbats), including a number of threatened species. Southern Myotis are also known to occasionally roost in hollow-bearing trees outside of the breeding season. Roosting habitat for threatened and non-threatened cave roosting species including: Large-eared Pied Bat, Southern Myotis and Large Bent-winged Bat have not been recorded within the study area. However, all species have the potential to utilise the study area as foraging habitat.

Although there are a number of threatened microbat species recorded within 5 km of the study area. Habitat for these species is likely to occur outside of the impact area and in the wider locality.

Additionally, the remnant trees across the study area may attract megachiropteran (fruit bats) into the study area such as *Pteropus poliocephalus* (Grey-headed Flying-fox).

The nearest Grey-headed Flying-fox to the study area is the Nationally Important camp at Parramatta Park, located within 5 km of west of the study areas and the Nationally Important camp at Gordon,

located approximately 11 km to the north east of the study areas. There are also Grey-headed Flying-fox camps located along Duck River in the suburb of Clyde, approximately 7 km to the south of the study areas and a camp at Gladesville, approximately 10 km to the south-east of the study areas. Grey-headed Flying-fox individuals from both Nationally Important camps and other, smaller camps are likely to use both study areas to intermittently to forage (DWAE 2020)

AMPHIBIANS

There were no standing or flowing water bodies recorded within Acacia Park, as such no habitat for amphibian species was recorded.

Ponds Creek, a 2nd order stream flows through the southern boundary of Sturt Park. The riparian corridor along Ponds Creek is degraded, the banks of the stream are eroded and contain exotic species such as *Privet* spp. and *Senna pendula*. There is a lack of native instream vegetation. It is likely that common frog species such as *Crinia signifera* (Common Eastern Froglet) and *Limnodynastes peronii* (Striped Marsh Frog) would use Ponds Creek as habitat, however, it is unlikely that this stream supports habitat for any threatened amphibians due to the highly degraded nature of the stream.

INVERTEBRATES

Pommerhelix duralensis (Dural Land Snail) has been recorded within a 5 km radius of Acacia and Sturt Park. Dural Land Snails favours sheltering under rocks or inside curled-up bark and will also shelter beneath leaves, rocks and light woody debris (DPIE, 2019). Habitat for Dural Land Snail does not exist within Acacia Park, as the bases of the trees are mulched and there is a lack of leaf litter and rock cover. Marginal habitat for Dural Land Snail exists within Sturt Park, with low coverage of rocks, some defoliating bark and leaf litter around the base of some larger remnant trees towards the riparian corridor. The bases of trees with leaf litter were searches during the field survey. No Dural Land Snails were found. It is unlikely that the Dural Land Snail occurs within Sturt Park as a result of the modified nature of the site.

4.2.4.1 Site Connectivity

Local corridors provide connections between remnant patches of habitat and landscape features. Due to their relatively small area and width (they may be <50 m), these corridors are subject to edge effects (Scotts 2002, Lindenmayer and Fisher 2006). Habitat links are evaluated in this report as links from habitat on-site directly to similar habitat on adjacent land. These would be used by fauna, which depend solely or at least partially on the site for all of their lifecycle requirements, and/or dispersal (Lindenmayer and Fisher 2006). Native vegetation is present to the south and east of Sturt Park, this vegetation extends past the boundaries of the study area and aerial imagery suggests that that this vegetation is further connected to vegetation along Ponds Creek riparian corridor in the wider locality.

4.2.5 Watercourses

4.2.5.1 Aquatic Habitat

The reach of Ponds Creek within Sturt Park was observed to be in moderate to poor condition during the field survey. The banks of the eastern extent of the creek were relatively flat and the channel was approximately 1.5 m wide. At the downstream end of The Ponds Creek within the study area, near where it flowed under Kissing Point Road, the banks of the channel were steeper at an approximately 45-degree angle. Evidence of algae on the surface of the channel was noted and the water appeared

stagnant in areas where the grade of the channel was quite low. The channel was partially shaded at the time of inspection and the riparian vegetation was limited in most areas to a few canopy species and very little, if any, groundcovers. Some large woody debris was observed within the channel (Figure 7), which would provide habitat to any aquatic fauna. Areas of bank erosion were also noted where the proposed bank stabilisation works are to take place.

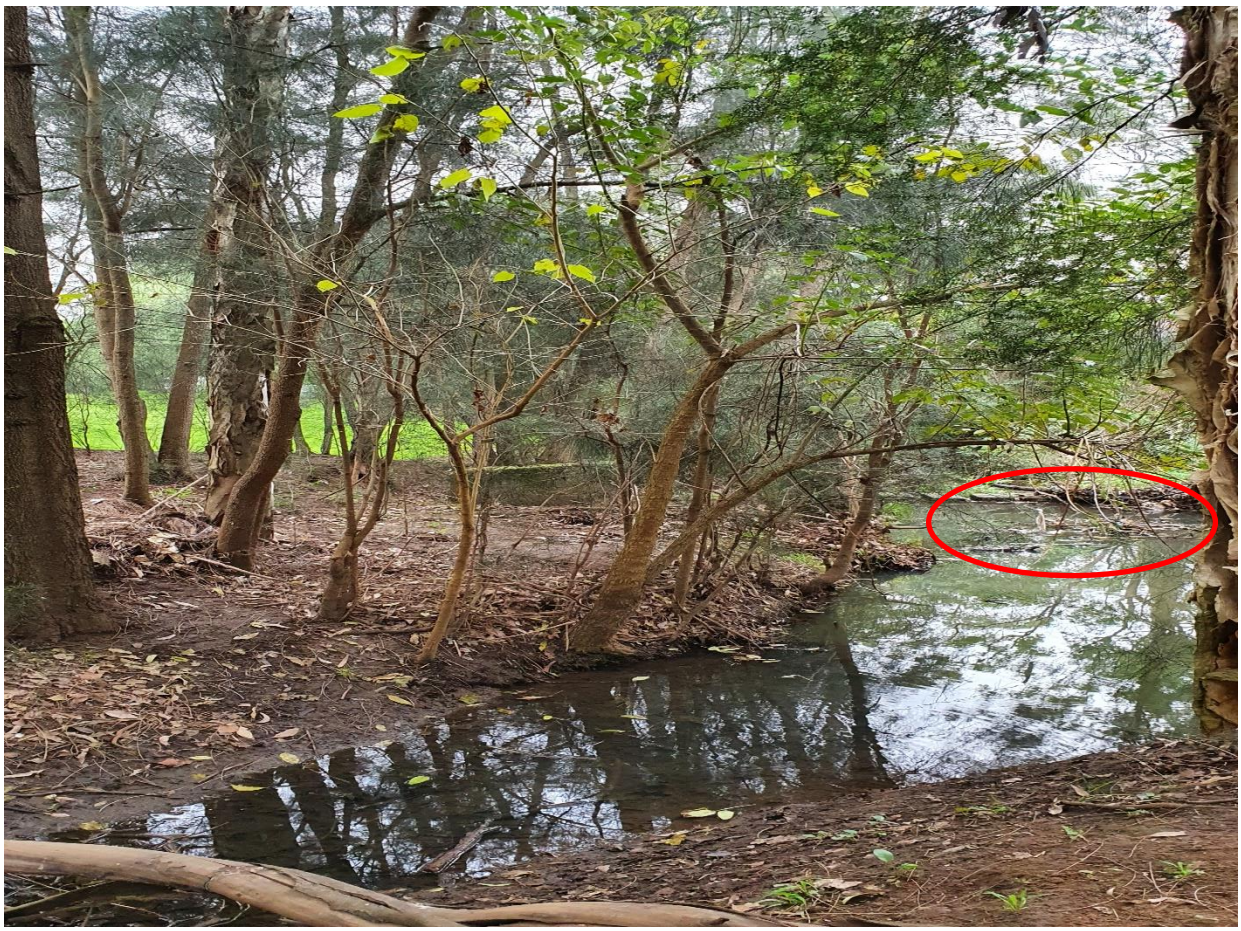

Figure 7: Example of large woody debris within Ponds Creek (circled in red)

5. Impact Assessment

Both direct and indirect impacts for the immediate clearing for major upgrade works and on-going maintenance of the groundcover in the long term have been considered in the impact assessment below.

5.1 Direct Impacts

Direct impacts are those impacts that directly affect habitat and individuals. Direct impacts considered for this assessment are vegetation and habitat removal and reshaping and reconstruction of a length of the southern bank of Ponds Creek within Sturt Park (as shown in Figure 9). The proposed works are likely to result in the removal of groundcover / mid-storey species through under scrubbing vegetation as well as the trimming of canopy species.

5.1.1 Removal of Native Vegetation

The works will result in the removal of 0.06 ha of Blue Gum High Forest with an exotic understorey, 0.12 ha of Native Planted vegetation with an exotic understorey and 0.8 ha of exotic vegetation from the study areas (Table 6).

Removal of vegetation to allow for installation of sandstone boulders/logs on the creek bank may increase the susceptibility of the creek bank to erosion. Vegetation (including exotic species) can act as stabilisers of creek banks as the roots of this vegetation act as soil binders. This could lead to sedimentation within the waterbody, as bank stability is reduced. This may increase the turbidity of the water within the creek line and limit the amount of sunlight reaching the water and any aquatic fauna and flora.

Table 6: Impact areas

Vegetation Community	Condition	BC Act	EPBC Act	Area (ha)	Impact area (ha)	Local occurrence (ha)	Removal of local occurrence [3](%)
Acacia Park							
Native Planted (exotic understorey)	N/A	N/A	N/A	0.45	0.04	N/A	N/A
Exotic	N/A	N/A	N/A	1.14	0.57	N/A	N/A
			TOTAL	**1.59**	**0.61**	-	-
Sturt Park							
Blue Gum High Forest in the Sydney Basin Bioregion	Planted, exotic understorey	CEEC[4]	CEEC	1.0	0.06	13.2	0.4%
Planted Native (exotic understorey)	N/A	N/A	N/A	0.65	0.08	N/A	N/A
Exotic	N/A	N/A	N/A	0.10	0.001	N/A	N/A
Exotic Grassland	N/A	N/A	N/A	1.16	0.27	N/A	N/A
			TOTAL	**2.91**	**0.41**		
			TOTAL NATIVE VEGETATION	**3.24**	**0.18**		
			GRAND TOTAL	**4.5**	**1.02**		

[3] local occurrence has been determined by a 1500m buffer to Sturt Park and includes those areas of vegetation where the exchange of genetic material is possible by the movement of highly mobile vectors such as birds and bats.

[4] CEEC = Critically Endangered Ecological Community

5.1.2 Impact to Threatened Entities

In terms of threatened fauna habitat, the vegetation in the study area to be impacted comprises of highly modified landscaped garden vegetation impacted by past disturbance, and represents only occasional, marginal seasonal foraging habitat for highly mobile threatened fauna species such as Grey-headed Flying-fox. As the Grey-headed Flying-fox is a highly mobile species, and the impact to foraging habitat for this species is marginal in comparison to the foraging habitat available in the wider locality further assessment under the BC and EPBC Act was required.

5.1.3 Landscaping and Construction

If landscaping is proposed, it is recommended that landscaping comprises native species known to occur within Blue Gum High Forest vegetation. This recommendation will result in an improvement in condition of the remnant Blue Gum High Forest adjacent to the study area.

There is a low potential for general disturbance to remnant Blue Gum High Forest trees during construction. This will can be managed to a low probability of occurrence with recommended mitigation measures such as fencing outlined below.

Where armouring of the creek bank is proposed within Sturt Park, excavation within the creek line is likely to be required to allow for sandstone bricks to be keyed into the toe to ensure ongoing stability of this area. The use of an excavator within the creek line can cause future erosion and sedimentation of the waterway if areas of creek bed and bank instability are created and not stabilised at the completion of the works and degradation of the water quality if sediment is mobilised during these works.

Excavation of the creek bed and banks could potentially impact areas of aquatic habitat within the channel, however it is likely that this impact would be minor, as an inspection of the creek line identified poor aquatic habitat within The Ponds Creek.

As part of the installation of the sandstone bricks, there would be the need to ensure that the immediate works area is dry to allow machinery to move freely within the area as well as to prevent waste material and dust entering the water. This would require dewatering of a section of Ponds Creek, which would temporarily block fish passage through the watercourse.

The installation of the sandstone bricks on the creek edge have the potential to narrow the width of the existing channel if they are not installed appropriately or consideration of bank full flows is not incorporated into proposed works.

5.2 Indirect Impacts

An assessment of indirect impacts has been included as part of the impact assessment. Potential indirect impacts may include:

- Increase in surface water runoff, sedimentation and nutrients during and following construction
- Increase in noise and disturbance to fauna inhabitants in adjacent vegetation
- Damage to native vegetation adjacent to the subject site.

Impacts associated with changed water runoff, increased sedimentation and increased nutrients during and following construction should be mitigated through preparation and implementation of an Erosion and Sediment Control Plan and appropriate controls on storage of chemicals.

Increases in noise and disturbance during construction to potential fauna inhabitants in adjacent vegetation is likely to be minimal, given the urban environment in which the study area is located and the availability of suitable habitat adjacent to the study area.

Vegetation within a 5 m construction buffer may be indirectly impacted through trampling, spoil placement and other activities associated with the construction.

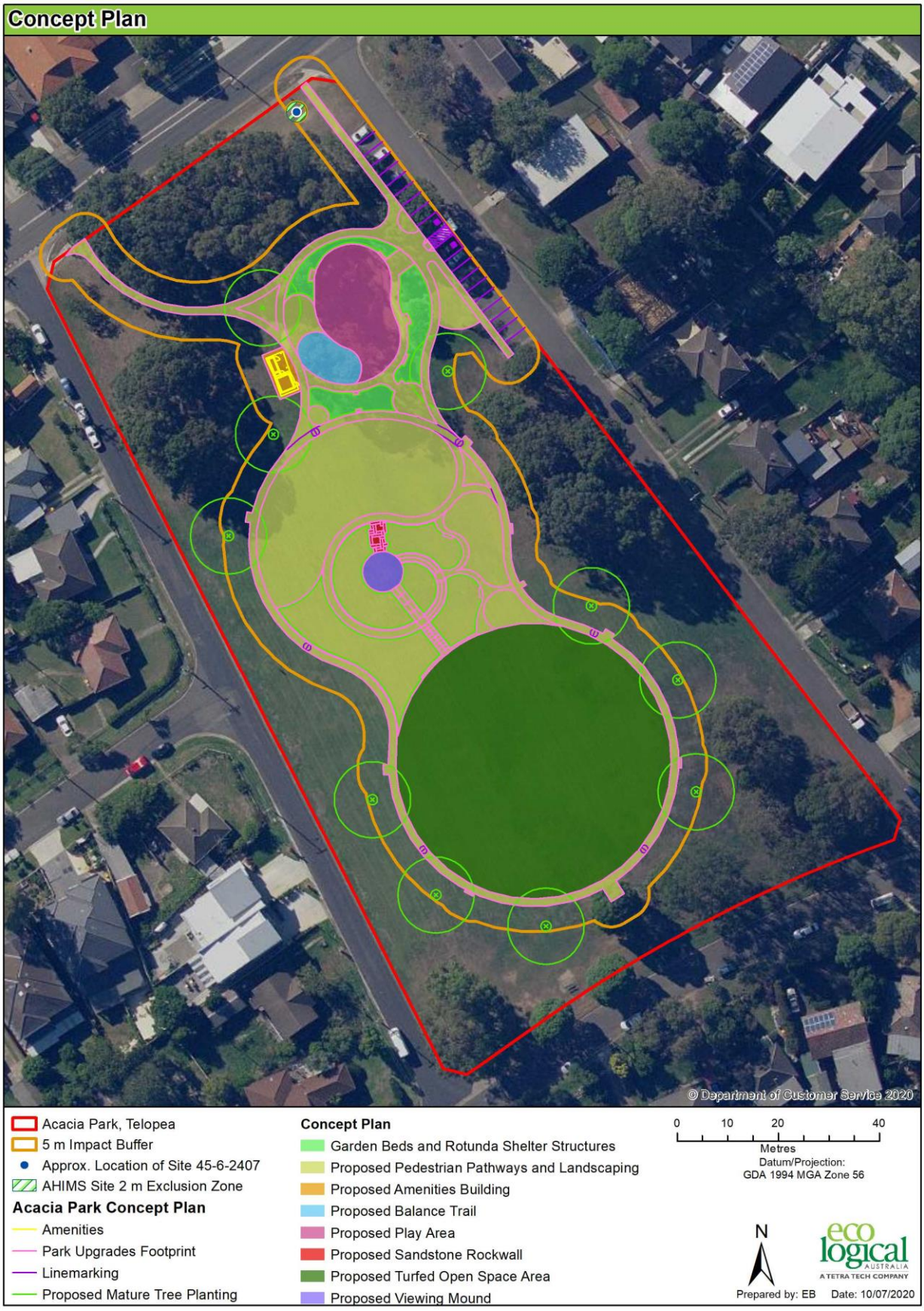

Figure 8: Concept Plan of direct and indirect impacts at Acacia Park

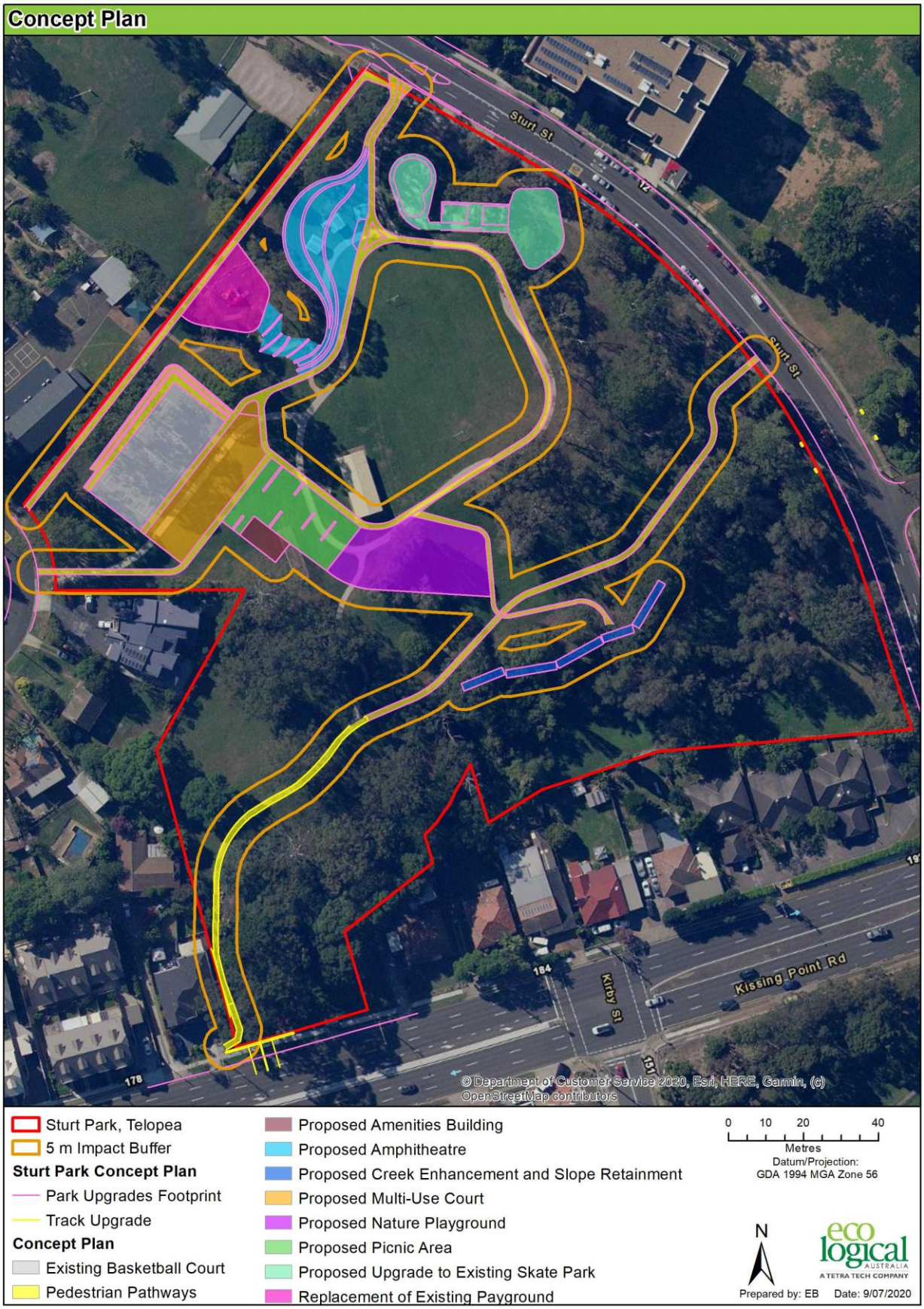

Figure 9: Concept Plan of direct and indirect impacts at Sturt Park

5.3 Biodiversity Conservation Act 2016

5.3.1 Test of Significance

5.3.1.1 Threatened Ecological communities

One threatened ecological community (TEC), *Blue Gum High Forest in the Sydney Basin Bioregion* and was present within Sturt Park. There will be some impacts to understorey vegetation of this TEC as part of the proposed major upgrade works. Therefore, a Test of Significance under the BC was undertaken. The assessment is provided in Appendix B.

5.3.1.2 Threatened flora

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

5.3.1.3 Threatened fauna

No threatened fauna species were recorded during field surveys. It is noted that some threatened fauna species may utilise the site intermittently as marginal foraging habitat. However, these species are highly mobile and the amount of habitat to be impacted is negligible in comparison to the availability of similar habitat in the adjacent landscape and locality. Hence no further assessment is required under Section 7.3 of the BC Act for threatened fauna species.

5.4 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act establishes a process for assessing the environmental impact of activities and developments where 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 Department of Agriculture, Water and the Environment (DAWE) which is responsible for administering the EPBC Act.

No threatened flora or fauna species listed under the EPBC Act were recorded during the field surveys and based on habitat assessments are unlikely to occur within the study area or, are unlikely to be adversely impacted by the proposal. It is noted that some threatened fauna species may utilise the site intermittently as marginal foraging habitat. However, these species are highly mobile and the amount of habitat to be impacted is negligible in comparison to the availability of similar habitat in the adjacent landscape and locality.

One threatened ecological community *Blue Gum High Forest in the Sydney Basin Bioregion* listed as critically endangered under the EPBC act was identified within Sturt Park. An Assessment of Significance was undertaken for this ecological community and is provided in Appendix C.

6. Mitigation Measures

The following measures are designed to minimise potential impacts from works associated with clearing native vegetation. The ameliorative measures have been designed in consideration of relevant legislation and guidelines.

- Develop and implement an Erosion and Sediment Control Plan for the proposed works, in accordance with the Blue Book (Landcom, 2004). The Erosion and Sediment Control Plan should control sediment and stormwater runoff within the work site and prevent detrimental impacts from occurring in the area of adjoining Blue Gum High Forest. The Erosion and Sediment Control Plan should also identify locations for any stockpiles, and vehicle areas, and appropriate controls for these and have the aim of achieving an outcome of 'no visible turbid plumes migrating through the waterway'. The Plan must include, but not be limited to:
    - Locations and type of instream sediment controls to be erected downstream of the bank stabilisation works. These can be constructed from hay bales or sandbags and lined with geofabric; however, they must be secured in the channel to ensure they do not mobilise.
    - Prior to forecast heavy rain, work in the creek is to cease, accumulated material is to be removed from within the instream sediment controls and then these are to be removed from the waterway to prevent them from being mobilised and causing a flood hazard or other environmental damage downstream.
    - Works area within the stream should be dewatered prior to works commencing to reduce likelihood of sediment entering the waterway.
- Inspect erosion controls regularly (daily during workdays) and after rainfall. Fix damaged controls immediately. Remove accumulated sediment or waste material from within the sediment controls regularly and dispose of at a licensed waste facility.
- Leave erosion and sediment controls in place until after the works are completed, including revegetation of any bare surfaces.
- Schedule the works outside of predicted heavy rain periods.
- Stop work within and adjacent to the creekline during heavy rainfall to reduce risk of mobilising sediment.
- Any areas within or alongside the creek that are disturbed in any way (vegetation removal, soil disturbance) must be rehabilitated through revegetation and installation of jute mesh to restore disturbed areas and prevent future erosion of creek bed and banks and sedimentation of the waterway and downstream environments.
- Installation of sandstone bricks on creek banks are to ensure natural geomorphic processes through the creek are maintained i.e. ensuring the movement of sediment and woody debris through the channel is not inhibited and do not increase scour and erosion of the bed or banks in any storm events.
- Woody debris within Ponds Creek to be left in-situ, where feasible, to maintain habitat for aquatic species.
- Clearly identify/demarcate the construction footprint area to staff undertaking the works to ensure minimal impact to Blue Gum High Forest canopy species and that direct impacts to vegetation are confined to the assessed footprint.

- Installation of temporary protection fencing around the Tree Protection Zone of the isolated remnant trees during construction in order to protect these trees, compliant with AS4970 – Protection of trees on development sites.
- Treatment of weeds within and adjacent to the mapped threatened ecological communities should be undertaken if required.
- It is recommended that landscaping comprises native species known to occur within Blue Gum High Forest vegetation.

7. Conclusion

Eco Logical Australia was contracted by CoP to prepare this FFA to support a REF for major upgrade works to Acacia Park and Sturt Park in the suburb of Telopea within the Parramatta Local Government Area (Lot E, DP36692 and Lot 13, DP524335).

Field survey confirmed that one threatened ecological community occurs within Sturt Park; *Blue Gum High Forest in the Sydney Basin.* Blue Gum High Forest within Sturt Park occurs as mostly as planted canopy with a predominately exotic understorey. Some remnant Blue Guy High Forest Canopy was also identified within the study area. Blue Gum High Forest is listed as a critically endangered ecological community under the BC Act and EPBC Act.

No threatened flora were recorded within Acacia or Sturt Park. The study areas do not contain suitable habitat for threatened species due to the highly modified and disturbed nature of the sites. 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.

No threatened fauna were observed during the field survey. However, the site at Sturt Park contains suitable habitat resources such as flowering native vegetation and hollow-bearing trees which are considered foraging, roosting and/or nesting habitat for a number of threatened fauna. However, as no canopy species or hollow-bearing trees will be removed as part of the proposed works it is considered that impact to threatened fauna species habitat is marginal and as such no further assessment for threatened fauna is required under the BC Act.

As a worst-case scenario the works will result in the removal of 0.06 ha of Blue Gum High Forest with an exotic understorey, 0.12 ha of Native Planted vegetation with an exotic understorey and 0.8 ha of exotic vegetation from the study areas.

Taking a conservative approach, a Test of Significance were undertaken for the threatened ecological community *Blue Gum High Forest in the Sydney Basin Bioregion* which may be impacted by the works. The assessments are provided in Appendix B and concluded that it is unlikely that the proposal would significantly impact any ecological values listed under the BC Act.

Blue Gum High Forest under the EPBC Act was also identified within Sturt Park. Taking a conservative approach an Assessment of Significance for Blue Gum High Forest of the Sydney Basin Bioregion was also undertaken and is provided in Appendix C and concluded that it is unlikely that the proposal would significantly impact any ecological values listed under the EPBC Act.

Mitigation measures have been provided to ameliorate impacts to native vegetation and threatened ecological communities within the study areas.

8. References

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Appendix A : 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 were not recorded during the site visit. 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 7: Likelihood of occurrence for threatened ecological communities

Scientific Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Likelihood of Occurrence	Impact Assessment Required
Blue Gum High Forest of the Sydney Basin Bioregion	**CE**	**CE**	**Remnants mainly occur in the Lane Cove, Willoughby, Ku-ring-gai, Hornsby, Baulkham Hills, Ryde and Parramatta local government areas. A moist, tall open forest community, with dominant canopy trees of *Eucalyptus saligna* (Sydney Blue Gum) and *E. pilularis* (Blackbutt). *Allocasuarina torulosa* (Forest Oak) and *Angophora costata* (Sydney Red Gum) also occur. Species adapted to moist habitat such as *Acmena smithii* (Lilly Pilly), *Ficus coronata* (Sandpaper Fig), *Calochlaena dubia* (Rainbow Fern) and *Adiantum* (Common Maidenhair) may also occur.**	**Yes - this TEC was recorded within the study area during survey.**	**Yes. See Appendix B.**
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	V / CE	E	Typically, a low woodland, with canopy species reaching an average 15 m in height. The canopy is often dominated by one or more of *Angophora bakeri* (narrow leaved apple), *Eucalyptus racemosa* (narrow-leaved scribbly gum) and *E. parramattensis* subsp. *parramattensis* (Parramatta red gum). Melaleuca species including *M. decora* (paperbark) may also be prominent in the canopy and/or mid layer. The understorey has a prominent and diverse mid-layer of sclerophyll shrubs, sometimes dominated by either Banksia or Melaleuca species. It typically has a patchy ground cover of sedges and grasses.	No - this TEC was not recorded within the study area during survey.	No
Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community	E	E	This community is found on the coastal floodplains of NSW. It has a dense to sparse tree layer – tree diversity decreases with latitude. *Casuarina glauca* is the dominant species northwards from Bermagui. Other trees including *Acmena smithii*, *Glochidion* spp. and *Melaleuca* spp. may be present as subordinate species and are found most frequently in stands of the community northwards from Gosford.	No - this TEC was not recorded within the study area during survey.	No

Scientific Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Likelihood of Occurrence	Impact Assessment Required
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 plateau) to the Robertson district in the south (n the Woronora plateau). 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.	No - this TEC does not occur within the study area.	No
Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion	E	CE	Occurs in western Sydney, and the extent of intact remnants is now reduced to 1011 hectares, with the most extensive stands occurring in the Castlereagh and Holsworthy areas. Smaller remnants occur in the Kemps Creek area and in the eastern section of the Cumberland Plain. Good examples can be seen at the Castlereagh and Windsor Downs Nature Reserves. Has a very restricted natural distribution and mainly occurs on clay soils derived from the deposits of ancient river systems (alluvium), or on shale soils of the Wianamatta Shales.	No - this TEC does not occur within the study area.	No
Shale Sandstone Transition Forest of the Sydney Basin Bioregion	CE	CE	Occurs in the intergrade between clay soils from the shale rock and earthy and sandy soils from sandstone, or where shale caps overlay sandstone. The main tree species include *Eucalyptus tereticornis* (Forest Red Gum), *E. punctata* (Grey Gum), stringybarks (*E. globoidea*, *E. eugenioides*) and ironbarks (*E. fibrosa and E. crebra*). Areas of low sandstone influence (more clay-loam soil texture) have an understorey that is closer to Cumberland Plain Woodland.	No - this TEC does not occur within the study area.	No
Turpentine-Ironbark Forest in the Sydney Basin Bioregion	E	CE	Restricted to areas with clay soil derived from Wianamatta Shale in an area that generally has an annual rainfall of more than 950 mm. A medium-height open forest with a lower tree layer, an open low shrub layer and a prominent ground layer.	This ecological community has been previously mapped within Sturt Park. However, following the field survey, this community was validated as Blue Gum High Forest and as such Turpentine Ironbark	No

Scientific Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Likelihood of Occurrence	Impact Assessment Required
			Western outliers of the community in wetter habitats may have a tall open forest structure.	Forest in the Sydney Basin Bioregion does not occur within Sturt Park.	
Western Sydney Dry Rainforest and Moist Woodland on Shale	E	CE	A closed canopy often associated with humid conditions and supports epiphytes, vines and mesic shrubs although this varies according to topography and landform. It is found on shale soil in the Cumberland Plain Sub-region of the Sydney Basin Bioregion in elevations below 300m with a mean annual rainfall between 700-900mm.	No - this TEC does not occur within the study area.	No

BC Act key: E = endangered, CE = critically endangered, V = vulnerable.

EPBC Act Key: E = endangered, CE = critically endangered, V = vulnerable.

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5km of study area	Likelihood of Occurrence	Impact Assessment Required
Acacia clunies-rossiae	Kanangra Wattle	V	-	In NSW, occurs in Kowmung and Coxs River areas entirely within Kanangra-Boyd and Blue Mountains National Parks. Dry sclerophyll forest on skeletal soils on rocky slopes, or on alluvium along creeks.	1	No - suitable habitat not recorded within the study area.	No
Acacia bynoeana	Bynoe's Wattle	E1	V	Found in central eastern NSW, from the Hunter District (Morisset) south to the Southern Highlands and west to the Blue Mountains. Found on heath or dry sclerophyll forest on sandy soils.	0	No - suitable habitat not recorded within the study area.	No
Acacia pubescens	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.	7	No - suitable habitat not recorded within the study area.	No
Allocasuarina glareicola	-	E1	E	*Allocasuarina glareicola* is primarily restricted to the Richmond district on the north-west Cumberland Plain, with an outlier population found at Voyager Point. It grows in Castlereagh woodland on lateritic soil (DECC 2007).	0	No - suitable habitat not recorded within the study area.	No
Asterolasia elegans	-	E1	E	Occurs north of Sydney, in the Baulkham Hills, Hawkesbury and Hornsby local government areas. Also likely to occur in the western part of Gosford local government area. Found in Hawkesbury sandstone in sheltered forests on mid- to lower slopes and valleys.	0	No - suitable habitat not recorded within the study area.	No
Caladenia tessellata	Thick Lip Spider Orchid	E1	V	Currently known from two disjunct areas; one population near Braidwood on the Southern Tablelands and three populations in the Wyong area on the Central Coast. Grassy sclerophyll woodland on clay loam or sandy soils, or low woodland with stony soil.	0	No - suitable habitat not recorded within the study area.	No
Callistemon linearifolius	Netted Bottle Brush	V	-	Georges River to Hawkesbury River in the Sydney area (limited to the Hornsby Plateau area), and north to the	3	No - suitable habitat not recorded within the study area.	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5km of study area	Likelihood of Occurrence	Impact Assessment Required
				Nelson Bay area of NSW. Also Coalcliff in the northern Illawarra. Dry sclerophyll forest.			
Cryptostylis hunteriana	Leafless Tongue Orchid	V	V	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. Coastal heathlands, margins of coastal swamps and sedgelands, coastal forest, dry woodland, and lowland forest.	0	No - suitable habitat not recorded within the study area.	No
Darwinia biflora	-	V	V	Recorded in Ku-ring-gai, Hornsby, Baulkham Hills and Ryde local government areas, in an area bounded by Maroota, North Ryde, Cowan and Kellyville. Transition from Castlereagh Ironbark Forest to Castlereagh Scribbly Gum Woodland.	0	No - suitable habitat not recorded within the study area.	No
Dillwynia tenuifolia	-	V	-	Scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest, transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland, and disturbed escarpment woodland on Narrabeen sandstone.	2	No - suitable habitat not recorded within the study area.	No
Epacris purpurascens var. *purpurascens*	-	V	-	Recorded from Gosford in the north, to Narrabeen in the east, Silverdale in the west and Avon Dam vicinity in the South. Sclerophyll forest, scrubs and swamps. Most habitats have a strong shale soil influence.	435	No - suitable habitat not recorded within the study area.	No
Eucalyptus camfieldii	Camfield's Stringybark	V	V	Narrow band from the Raymond Terrace area south to Waterfall. Coastal heath on shallow sandy soils overlying Hawkesbury sandstone, mostly on exposed sandy ridges.	0	No - suitable habitat not recorded within the study area.	No
Genoplesium baueri	Bauer's Midge Orchid	E1	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. Heath and shrubby woodland to open forest on sandy or light clay soils usually over thin shales.	4	No - suitable habitat not recorded within the study area.	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5km of study area	Likelihood of Occurrence	Impact Assessment Required
Grammitis stenophylla	Narrow-leaf Finger Fern	E1	-	In NSW it has been found on the south, central and north coasts and as far west as Mount Kaputar National Park near Narrabri. Rainforest and moist eucalypt forest, usually near streams, on rocks or in trees.	1	No - suitable habitat not recorded within the study area.	No
Hibbertia spanantha	Julian's Hibbertia	E4A	CE	Endemic to NSW where it is restricted to three locations. Currently only known from around Sydney. Grows in forest with canopy species including *Eucalyptus pilularis, E. resinifera, Corymbia gummifera* and *Angophora costata*. The understorey is open with species of Poaceae, Orchidaceae, Fabaceae and Liliaceae. Flowering in October and November, but with an odd flower throughout the year. The soil is identified as a light clay occuring on a shale sandstone soil transition."	4	No - suitable habitat not recorded within the study area.	No
Leptospermum deanei	-	V	V	Hornsby, Warringah, Ku-ring-gai and Ryde LGAs in the Sydney region.	0	No - suitable habitat not recorded within the study area.	No
Melaleuca biconvexa	Biconvex Paperbark	V	V	Only found in NSW, populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north. Damp places, often near streams or low-lying areas on alluvial soils.	1	No - suitable habitat not recorded within the study area.	No
Melaleuca deanei	Deane's Paperbark	V	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.	1	No - suitable habitat not recorded within the study area.	No
Persicaria elatior	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	0	No - suitable habitat not recorded within the study area.	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5km of study area	Likelihood of Occurrence	Impact Assessment Required
				Gibberagee State Forests). Found beside streams and lakes, swamp forest or disturbed areas.			
Persoonia hirsuta	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.	4	No - suitable habitat not recorded within the study area.	No
Pimelea curviflora var. *curviflora*	-	V	V	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. Woodland, mostly on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes.	3	No - suitable habitat not recorded within the study area.	No
Pimelea spicata	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.	0	No - suitable habitat not recorded within the study area.	No
Pomaderris prunifolia	*P. prunifolia* in the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas	E2	-	Population is known from only three sites: at Rydalmere, within Rookwood Cemetery and at The Crest of Bankstown. At Rydalmere it occurs among grass species on sandstone near a creek. At Rookwood Cemetery it occurs in a small gully of degraded Cooks River / Castlereagh Ironbark Forest on shale soils.	8	Potential – this species has been recorded in proximity to Ponds Creek.	No – This species was not identified within the study area at Sturt Park nor was potential habitat identified.

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5km of study area	Likelihood of Occurrence	Impact Assessment Required
Pterostylis saxicola	Sydney Plains Greenhood	E1	E	Restricted to western Sydney between Freemans Reach in the north and Picton in the south. Small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines, adjacent to sclerophyll forest or woodland on shale/sandstone transition soils or shale soils.	2	No - suitable habitat not recorded within the study area.	No
Rhodamnia rubescens	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 *R. rubescens* typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m above sea level in areas with rainfall of 1,000-1,600 mm Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	6	No - suitable habitat not recorded within the study area.	No
Syzygium paniculatum	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.	7	No - suitable habitat not recorded within the study area.	No
Tetratheca glandulosa	-	V	-	Found from Sampons Pass (Yengo NP) in the north to West Pymble (Lane Cove NP) in the south. The eastern limit is at Ingleside (Pittwater LGA) and the western limit is at East Kurrajong (Wollemi NP). Heath, scrub, woodlands and open forest on upper-slopes and mid-slope sandstone benches. Soils generally shallow, consisting of a yellow, clayey/sandy loam.	1	No - suitable habitat not recorded within the study area.	No
Tetratheca juncea	Black-eyed Susan	V	V	Confined to the northern Sydney Basin bioregion and the southern North Coast bioregion in the local government areas of Wyong, Lake Macquarie, Newcastle, Port Stephens, Great Lakes and Cessnock. Low open forest/woodland, heathland and moist forest, mainly on low nutrient soils associated with the Awaba Soil Landscape.	2	No - suitable habitat not recorded within the study area.	No

Scientific Name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Records within 5km of study area	Likelihood of Occurrence	Impact Assessment Required
Triplarina imbricata	Creek Triplarina	E1	E	Along watercourses in low open forest with *Tristaniopsis laurina* (Water Gum).	4	No – not recorded within study area	No
Thesium australe	Austral Toadflax	V	V	In eastern NSW it is found in very small populations scattered along the coast, and from the Northern to Southern Tablelands.	0	No - suitable habitat not recorded within the study area.	No
Wilsonia backhousei	Narrow-leafed Wilsonia	V	-	Margins of salt marshes and lakes.	86	No - suitable habitat not recorded within the study area.	No

BC Act key: E1 = endangered, E2= endangered population, E4 = Extinct, E4A = critically endangered, V = vulnerable.

EPBC Act Key: M = migratory, Mar = marine CE = critically endangered, E = endangered, V = vulnerable, X = extinct.

Table 8: Likelihood of occurrence of threatened fauna species within 5 km of the study area

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
Actitis hypoleucos	Common Sandpiper	-	M	Summer migrant. In NSW, widespread along coastline and also occurs in many areas inland. Coastal wetlands and some inland wetlands, especially muddy margins or rocky shores. Also, estuaries and deltas, lakes, pools, billabongs, reservoirs, dams and claypans, mangroves.	54	Unlikely - lack of suitable habitat for this species within the study area.	No
Anthochaera phrygia	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 *Casuarina cunninghamiana* (River Oak).	4	Unlikely - lack of suitable habitat for this species within the study area.	No
Apus pacificus	Fork-tailed Swift	-	M	Recorded in all regions of NSW. Riparian woodland., swamps, low scrub, heathland, saltmarsh, grassland, Spinifex sandplains, open farmland and inland and coastal sand-dunes.	7	Unlikely - lack of suitable habitat for this species within the study area.	No
Ardea alba	Great Egret		Marine	Widespread, occurring across all states/territories. Also a vagrant on Lord Howe and Norfolk Island. Swamps and marshes, grasslands, margins of rivers and lakes, salt pans, estuarine mudflats and other wetland habitats.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Ardea ibis	Cattle Egret	-	Marine	Widespread and common across NSW. Grasslands, wooded lands and terrestrial wetlands. Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse	51	Unlikely – lack of suitable aquatic flora that represent required	No. Impact to foraging habitat is marginal for this

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				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.		habitat for this species in the study area.	highly mobile species.
Botaurus poiciloptilus	Australasian Bittern	E1	E	Found over most of NSW except for the far north-west. Permanent freshwater wetlands with tall, dense vegetation, particularly *Typha* spp. (bullrushes) and *Eleocharis* spp. (spikerushes).	3	Unlikely - lack of suitable habitat for this species within the study area.	No
Calidris canutus	Red Knot		E, M	Summer migrant to Australia. In NSW, widespread in suitable habitat along the coast. Occasionally recorded inland in all regions. Intertidal mudflats, sandflats sheltered sandy beaches, estuaries, bays, inlets, lagoons, harbours, sandy ocean beaches, rock platforms, coral reefs, terrestrial saline wetlands near the coast, sewage ponds and saltworks. Rarely inland lakes or swamps.	1	Unlikely - lack of suitable habitat for this species within the study area.	No
Calidris ferruginea	Curlew Sandpiper	E1	CE, M	Occurs along the entire coast of NSW, and sometimes in freshwater wetlands in the Murray-Darling Basin. Littoral and estuarine habitats, including intertidal mudflats, non-tidal swamps, lakes and lagoons on the coast and sometimes inland.	55	Unlikely - lack of suitable habitat for this species within the study area.	No
Calidris melanotos	Pectoral Sandpiper	-	M	Summer migrant to Australia. Widespread but scattered in NSW. East of the Great Divide, recorded from Casino and Ballina, south to Ulladulla. West of the Great Divide, widespread in the Riverina and Lower Western regions. Shallow fresh to saline wetlands, including coastal lagoons, estuaries, bays, swamps,	0	Unlikely - lack of suitable habitat for this species within the study area.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.			
Callocephalon fimbriatum	Gang-gang Cockatoo	V		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. Tall mountain forests and woodlands in summer; in winter, may occur at lower altitudes in open eucalypt forests and woodlands, and urban areas.	17	Unlikely - lack of suitable habitat for this species within the study area.	No. No hollow-bearing trees will be impacted for the proposed works and impact to foraging habitat is marginal for this highly mobile species.
Calyptorhynchus lathami	Glossy Black-Cockatoo	V		In NSW, widespread along coast and inland to the southern tablelands and central western plains, with a small population in the Riverina. Open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur.	3	Unlikely - lack of favoured feed trees that represent suitable foraging habitat for this species within the study area.	No. No hollow-bearing trees will be impacted for the proposed works and impact to foraging habitat is marginal for this highly mobile species.
Chalinolobus dwyeri	Large-eared Pied Bat	V	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.	2	Unlikely - lack of suitable habitat for this species within the study area.	No. No hollow-bearing trees will be impacted for the proposed works and impact to foraging habitat is marginal for this highly mobile species.

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
Daphoenositta chrysoptera	Varied Sittella	V	-	Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, mallee and Acacia woodland.	7	Unlikely - lack of suitable habitat for this species within the study area.	No
Dasyornis brachypterus	Eastern Bristlebird	E1	E	Central and southern populations inhabit heath and open woodland with a heathy understorey. In northern NSW, habitat comprises open forest with dense tussocky grass understorey.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Dasyurus maculatus (SE mainland population)	Spotted-tailed Quoll	V	E	Found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Qld. Rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.	3	Unlikely - lack of suitable habitat for this species within the study area.	No
Falsistrellus tasmaniensis	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 20 m) moist habitats.	7	Potential – hollow bearing trees, which represent roosting habitat for this species, were identified within the subject site.	No. No hollow-bearing trees will be impacted for the proposed works and impact to foraging habitat is marginal for this highly mobile species.
Gallinago hardwickii	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.	882	Unlikely - lack of suitable habitat for this species within the study area.	No
Glossopsitta pusilla	Little Lorikeet	V	-	In NSW, found from the coast westward as far as Dubbo and Albury. Dry, open eucalypt forests and	44	Potential –*Eucalyptus*, *Angophora* and *Melaleuca* species	No, no trees which represents foraging habitat will be

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				woodlands, including remnant woodland patches and roadside vegetation.		which comprise primary foraging habitat for this species was identified in Sturt Park.	removed under the proposed works. The shrub and groundcover removal under the proposed works is marginal.
Grantiella picta	Painted Honeyeater	V	V	Widely distributed in NSW, predominantly on the inland side of the Great Dividing Range but avoiding arid areas. Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	Marine	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.	337	Potential – this highly mobile species may occasionally fly over the study area on feeding forays. However, more suitable habitat is available for this species beyond the study area.	No. Impact to foraging habitat is marginal for this highly mobile species.
Heleioporus australiacus	Giant Burrowing Frog	V	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.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Hieraaetus morphnoides	Little Eagle	V	-	Throughout the Australian mainland, with the exception of the most densely forested parts of the Dividing Range escarpment. Open eucalypt forest, woodland or open woodland, including sheoak or	5	Unlikely - lack of suitable habitat for this	No. Impact to foraging habitat is marginal for this

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				Acacia woodlands and riparian woodlands of interior NSW.		species within the study area.	highly mobile species.
Hirundapus caudacutus	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.	354	Unlikely - lack of suitable habitat for this species in the study area.	No
Hoplocephalus bungaroides	Broad-headed Snake	E1	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 - lack of suitable habitat for this species within the study area.	No
Hydroprogne caspia	Caspian Tern		M	Widespread in coastal and inland NSW. Coastal offshore waters, beaches, mudflats, estuaries, rivers, lakes.	5	Unlikely - lack of suitable habitat for this species within the study area.	No
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	E1	E	Found in south-eastern NSW, east of the Great Dividing Range south from the Hawkesbury River. Heath or open forest with a heathy understorey on sandy or friable soils.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Lathamus discolor	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.	45	Unlikely - lack of favoured feed trees which represent suitable foraging habitat for this species in the study area.	No. Impact to foraging habitat is marginal for this highly mobile species.
Limosa lapponica	Bar-tailed Godwit		M	Summer migrant to Australia. Widespread along the coast of NSW, including the offshore islands. Also numerous scattered inland records. Intertidal sandflats, banks, mudflats, estuaries, inlets, harbours,	73	Unlikely - lack of suitable habitat for this species within the study area.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				coastal lagoons, bays, seagrass beds, saltmarsh, sewage farms and saltworks, saltlakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. Rarely inland wetlands, paddocks and airstrips.			
Litoria aurea	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 *Typha* spp. (bullrushes) or *Eleocharis* spp. (spikerushes). Some populations occur in highly disturbed areas.	17556	Unlikely - lack of suitable habitat for this species within the study area.	No
Merops ornatus	Rainbow Bee-eater		Mar	Distributed across much of mainland Australia, including NSW. Open forests and woodlands, shrublands, farmland, areas of human habitation, inland and coastal sand dune systems, heathland, sedgeland, vine forest and vine thicket.	3	Unlikely - lack of suitable habitat for this species within the study area.	No
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-	Most records of this species are from dry eucalypt forest and woodland east of the Great Dividing Range (Churchill 1998). Individuals have, however, been recorded flying low over a rocky river in rainforest and wet sclerophyll forest and foraging in clearings at forest edges (Environment Australia 2000; Allison & Hoye 1998). Primarily roosts in hollows or behind loose bark in mature eucalypts, but have been observed roosting in the roof of a hut (Environment Australia 2000; Allison & Hoye 1998).	6	Potential – hollow bearing trees, which represent roosting habitat for this species, were identified within the subject site.	No. No hollow-bearing trees will be impacted for the proposed works and impact to foraging habitat is marginal for this highly mobile species.

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
Miniopterus australis	Little Bent-winged Bat	V	-	East coast and ranges south to Wollongong in NSW. Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub.	1	Potential – hollow bearing trees, which represent roosting habitat for this species, were identified within the subject site.	No. Impact to foraging habitat is marginal for this highly mobile species.
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	In NSW it occurs on both sides of the Great Dividing Range, from the coast inland to Moree, Dubbo and Wagga Wagga. Rainforest, wet and dry sclerophyll forest, monsoon forest, open woodland, paperbark forests and open grassland.	529	Unlikely – no caves or derelict man-made structures, which represent the primary roosting habitat for this species, were identified within the study area.	No. Impact to vegetation is marginal for this highly mobile species.
Mixophyes balbus	Stuttering Frog	E1	V	Along the east coast of Australia from southern Qld to north-eastern Victoria. Rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Monarcha melanopsis	Black-faced Monarch	-	M	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. 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 - lack of suitable habitat for this species within the study area.	No
Monarcha trivirgatus	Spectacled Monarch	-	M, Mar	Coastal eastern Australia south to Port Stephens in NSW. Mountain / lowland rainforest, wooded gullies, riparian vegetation including mangroves.	0	Unlikely - lack of suitable habitat for this species within the study area.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
Motacilla flava	Yellow Wagtail	-	M	Regular summer migrant to mostly coastal Australia. In NSW recorded Sydney to Newcastle, the Hawkesbury and inland in the Bogan LGA. Swamp margins, sewage ponds, saltmarshes, playing fields, airfields, ploughed land, lawns.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Myiagra cyanoleuca	Satin Flycatcher	-	M	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. Eucalypt-dominated forests, especially near wetlands watercourses, and heavily vegetated gullies.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Myotis macropus	Southern Myotis	V	-	In NSW, found in the coastal band. It is rarely found more than 100 km inland, except along major rivers. Foraging habitat is waterbodies (including streams, or lakes or reservoirs) and fringing areas of vegetation up to 20 m.	45	Potential – hollow bearing trees, which represent roosting habitat for this species, were identified within the subject site.	No. No hollow-bearing trees will be impacted for the proposed works.
Ninox connivens	Barking Owl	V	-	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. Woodland and open forest, including fragmented remnants and partly cleared farmland, wetland and riverine forest.	6	Unlikely - lack of suitable habitat for this species within the study area.	No. Impact to vegetation is marginal for this highly mobile species.
Ninox strenua	Powerful Owl	V	-	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. Woodland, open sclerophyll forest, tall open wet forest and rainforest.	179	Potential – foraging habitat available within Sturt Park and species is known to occur within the locality	No. Impact to habitat is marginal in comparison to available habitat in the locality and no breeding habitat will be affected as

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
							part of the proposed works.
Numenius madagascariensis	Eastern Curlew	-	CE, M	Summer migrant to Australia. Primarily coastal distribution in NSW, with some scattered inland records. 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.	26	Unlikely - lack of suitable habitat for this species within the study area.	No
Numenius phaeopus	Whimbrel		M	Summer migrant to Australia. Found along almost the entire coast of NSW; scattered inland records. Estuaries, mangroves, tidal flats, coral cays, exposed reefs, flooded paddocks, sewage ponds, grasslands, sports fields, lawns.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Petauroides volans	Greater Glider	-	V	In Eastern Australia, it is found from the Windsor Tableland in north Queensland through to central Victoria (Wombat State Forest). Eucalypt forests and woodlands. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Petaurus norfolcensis	Squirrel Glider	V	-	Widely though sparsely distributed on both sides of the Great Dividing Range in eastern Australia, from northern Qld to western Victoria.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Petrogale penicillata	Brush-tailed Rock-wallaby	E1	V	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. Rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges.	0	Unlikely - lack of suitable habitat for this species within the study area.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
Petroica boodang	Scarlet Robin	V		In NSW, it occurs from the coast to the inland slopes. Dry eucalypt forests and woodlands, and occasionally in mallee, wet forest, wetlands and tea-tree swamps.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Petroica phoenicea	Flame Robin	V		In NSW, breeds in upland areas, and in winter many birds move to the inland slopes and plains, or occasionally to coastal areas. Likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. Breeds in upland tall moist eucalypt forests and woodlands. In winter uses dry forests, open woodlands, heathlands, pastures and native grasslands. Occasionally occurs in temperate rainforest, herb fields, heathlands, shrublands and sedgelands at high altitudes.	1	Unlikely - lack of suitable habitat for this species within the study area.	No
Pseudomys novaehollandiae	New Holland Mouse	-	V	Fragmented distribution across eastern NSW. Open heathlands, woodlands and forests with a heathland understorey, vegetated sand dunes.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Arenaria interpres	Ruddy Turnstone	-	M	Tidal reefs and pools; pebbly, shelly and sandy shores; mudflats; inland shallow waters; sewage ponds, saltfields; ploughed ground.	4	Unlikely - lack of suitable habitat for this species within the study area.	No
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	-	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	140	Unlikely – however marginal foraging habitat exists for this species within Sturt Park.	No. impact to habitat is marginal in comparison to available habitat in the locality

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.			
Calidris ruficollis	Red-necked Stint	-	M	Tidal mudflats, saltmarshes, sandy and shelly beaches, saline and freshwater wetlands, saltfields, sewage ponds.	51	Unlikely - lack of suitable habitat for this species within the study area.	No
Pseudophryne australis	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.	4	Unlikely - lack of suitable habitat for this species within the study area.	No
Tringa nebularia	Common Greenshank	-	M	Terrestrial wetlands (swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans, saltflats, sewage farms and saltworks dams, inundated rice crops and bores) and sheltered coastal habitats (mudflats, saltmarsh, mangroves, embayments, harbours, river estuaries, deltas, lagoons, tidal pools, rock-flats and rock platforms).	393	Unlikely - lack of suitable habitat for this species within the study area.	No
Ixobrychus flavicollis	Black Bittern	V	-	Terrestrial and estuarine wetlands. Also flooded grassland, forest, woodland, rainforest and mangroves where permanent water is present.	2	Unlikely - lack of suitable habitat for this species within the study area.	No
Pandion cristatus	Eastern Osprey	V	-	Rocky shorelines, islands, reefs, mouths of large rivers, lagoons and lakes.	27	Unlikely - lack of suitable habitat for this species within the study area.	No
Pluvialis fulva	Pacific Golden Plover	-	M	Estuaries, mudflats, saltmarshes, mangroves, rocky reefs, inland swamps, ocean shores, paddocks, sewage ponds, ploughed land, airfields, playing fields.	23	Unlikely – however some foraging habitat exists in the form of	No. impact to habitat is marginal in comparison to

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
						open grassed playing fields	available habitat in the locality
Tringa stagnatilis	Marsh Sandpiper	-	M	Swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, intertidal mudflats, sewage farms and saltworks, reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes.	22	Unlikely - lack of suitable habitat for this species within the study area.	No
Sterna hirundo	Common Tern	-	M	Offshore waters, ocean beaches, estuaries, large lakes. Less commonly freshwater swamps, floodwaters, sewage farms and brackish and saline lakes.	4	Unlikely - lack of suitable habitat for this species within the study area.	No
Sternula albifrons	Little Tern	E1	M	Sheltered coastal environments, harbours, inlets and rivers.	1	Unlikely - lack of suitable habitat for this species within the study area.	No
Pommerhelix duralensis	Dural Land Snail	E	E	The species has a strong affinity for communities in the interface region between shale-derived and sandstone-derived soils, with forested habitats that have good native cover and woody debris. It favours sheltering under rocks or inside curled-up bark. It does not burrow nor climb. The species has also been observed resting in exposed areas, such as on exposed rock or leaf litter, however it will also shelter beneath leaves, rocks and light woody debris.	85	Unlikely - lack of suitable habitat for this species in the form of large woody debris or leaf litter cover is largely absent within Acacia or Sturt Park. .	No. Species not found during field survey.
Limosa limosa	Black-tailed Godwit	V	M	Usually sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. Further inland, it can also be found around muddy lakes and swamps.	1	Unlikely - lack of suitable habitat for this species within the study area.	No

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
Epthianura albifrons	White-fronted Chat	V	-	Saltmarsh vegetation, open grasslands and sometimes low shrubs bordering wetland areas.	2068	Unlikely – however some foraging habitat exists in the form of open grassed playing fields	No. impact to habitat is marginal in comparison to available habitat in the locality
Pteropus poliocephalus	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.	220,505	Potential – suitable foraging habitat for this species was identified within the subject site.	No, area to be impacted is minimal for this highly mobile species
Ptilinopus superbus	Superb Fruit-Dove	V		Principally from north-eastern Qld to north-eastern NSW. Further south, it is confined to pockets of suitable habitat, and occurs as far south as Moruya. Rainforest and closed forests. May also forage in eucalypt or acacia woodland where there are fruit-bearing trees.	2	Unlikely - lack of suitable habitat for this species within the study area.	No
Rhipidura rufifrons	Rufous Fantail	-	M	Coastal and near coastal districts of northern and eastern Australia, including on and east of the Great Divide in NSW. Wet sclerophyll forests, subtropical and temperate rainforests. Sometimes drier sclerophyll forests and woodlands.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Rostratula australis	Australian Painted Snipe	E1	E	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. Swamps, dams and nearby marshy areas.	0	Unlikely - lack of suitable habitat for this species within the study area.	No
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	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. Almost all habitats, including wet and dry	9	Potential – hollow bearing trees, which represent roosting habitat for this species,	No. No hollow-bearing trees will be impacted for the proposed works.

Scientific name	Common Name	BC Act Status	EPBC Act Status	Distribution and Habitat	Number of Records within 5 km	Likelihood of Occurrence	Impact Assessment Required
				sclerophyll forest, open woodland, open country, mallee, rainforests, heathland and waterbodies.		were identified within the subject site.	
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	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. Woodland, moist and dry eucalypt forest and rainforest.	6	Potential – hollow bearing trees, which represent roosting habitat for this species, were identified within the subject site.	No. No hollow-bearing trees will be impacted for the proposed works.
Tyto novaehollandiae	Masked Owl	V	-	Recorded over approximately 90% of NSW, excluding the most arid north-western corner. Most abundant on the coast but extends to the western plains. Dry eucalypt forests and woodlands from sea level to 1100 m.	3	Unlikely - lack of suitable habitat for this species in the subject site.	No

BC Act key: E1 = endangered, E2= endangered population, E4 = Extinct, E4A = critically endangered, V = vulnerable.

EPBC Act Key: M = migratory, Mar = marine CE = critically endangered, E = endangered, V = vulnerable, X = extinct.

Appendix B : Test of Significance: Blue Gum High Forest in the Sydney Basin Bioregion

Blue Gum High Forest in the Sydney Basin Bioregion is the name given to the critically endangered ecological community with a tall canopy of eucalypts dominated by either *Eucalyptus pilularis* (Blackbutt) or *Eucalyptus saligna* (Sydney Blue Gum). *Angophora costata* (Smooth-barked Apple), *Angophora floribunda* (Rough-barked Apple) and *Eucalyptus paniculata* (Grey Ironbark) also occur depending on slope and soil characteristics (NSW Scientific Committee 2011). The mid-storey comprises mesophyllous shrubs and small trees and the ground stratum is often dense containing a mixture of herbs, grass and fern species (NSW Scientific Committee, 2011).

Blue Gum High Forest is found on the north shore and northern suburbs of Sydney and has a highly restricted and fragmented geographic distribution comprising a series of small remnant patches. Highly modified relics persist as small clumps of trees without a native understorey or which have an understorey largely replaced by woody exotic species or by increased abundance of native and exotic grasses (NSW Scientific Committee, 2011). Small scale clearing, the influx of stormwater and dispersal of weed propagules from nearby urban areas pose significant ongoing threats to the survival of Blue Gum High Forest (NSW Scientific Committee, 2011).

No canopy species will be removed under the proposed major upgrade works. Any impacts to this community would occur to the understorey only. The understorey of the Blue Gum High Forest contained exotic grasses. Therefore, the impact to Blue High Forest will not damage the structural integrity of the tree and therefore in terms of the functioning Blue Gum High Forest remnant canopy this is considered to be a negligible impact.

Blue Gum High Forest was found to be present as a planted stands of trees to south of Sturt Park. In addition to what has been mapped within the study area, it is estimated that Blue Gum High Forest occurs in the wider locality as 13.2 ha within a 1500m radius of the study area.

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	Not applicable. Blue Gum High Forest is a listed CEEC and is not a threatened species.
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	1.0 ha of Blue Gum High Forest has been mapped as occurring within the study area (SMCMA 2016). In addition to what has been mapped within the study area, it is estimated that approximately 13.2 ha of Blue Gum High Forest occurs within the local occurrence. This is represented by the small fragmented patch to the south of the study area. A desktop analysis measured the extent of Blue Gum High Forest in the wider locality as 13.2 ha within a 1500m radius of the study area.

BC Act	Question	Response
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.	The proposed development will not result in the direct removal of any Blue Gum High Forest canopy species and will consist of a small amount of exotic understorey. The works will not result in the removal of any trees and no pruning or branch removal is proposed. Therefore, the proposed development is unlikely to have an adverse effect on the extent of Blue Gum High Forest and is unlikely to substantially and adversely modify such that its local occurrence is likely to be placed at risk of extinction.
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	The proposed development will result in the removal of 0.06 ha of exotic understorey of Blue Gum High Forest
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	The proposed development will not result in an increase in the direct or indirect fragmentation or isolation of any areas of Blue Gum High Forest.
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 proposed development will result in the removal of 0.06 ha of exotic understorey of Blue Gum High Forest. The exotic understorey to be removed is unlikely to be important to the long-term survival of this community.
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 proposal will not impact on a declared area of outstanding biodiversity value, therefore the proposed development is unlikely to have an adverse effect on any declared area of outstanding biodiversity value, either directly or indirectly.
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.	In its current form, the proposed development will not directly, or indirectly impact the mapped BGHF in the locality. Therefore the proposed development is not, and does not form part of a key threatening process, or is unlikely to increase the impact of a key threatening process.
Conclusion	**Is there likely to be a significant impact?**	**No**

Appendix C : *Environment Protection and Biodiversity Conservation Act 1999 Assessment of Significance:* Blue Gum High Forest

CRITICALLY ENDANGERED AND ENDANGERED ECOLOGICAL COMMUNITIES

Criterion	Question	Response
An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:		
1)	reduce the extent of an ecological community	The proposed development will result in the reduction of 0.06 ha of exotic understorey of Blue Gum High Forest
2)	fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines	The proposed development will not result in an increase in the direct or indirect fragmentation or isolation of any areas of Blue Gum High Forest.
3)	adversely affect habitat critical to the survival of an ecological community	The proposed development will result in the reduction of 0.06 ha of exotic understorey of Blue Gum High Forest. The exotic understorey is not considered to be habitat critical to survival of this threatened ecological community
4)	modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns	The proposed development will result in the reduction of 0.06 ha of exotic understorey of Blue Gum High Forest. The small reduction of exotic understorey is will not modify abiotic factors necessary to the survival of this threatened ecological community.
5)	cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting	No. the removal of 0.06 ha of exotic understorey of Blue Gum High Forest will not change the composition of this threatened ecological community such that it would cause a loss or decline of this community.
6) i	cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: assisting invasive species, that are harmful to the listed ecological community, to become established, or	The site currently contains exotic species. Therefore, the proposed works will not cause the occurrence of invasive species to this community.
6) ii	cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community, or	The Blue Gum High Forest on site exists in a degraded condition and the proposed works will not reduce the quality or integrity of this community.
7)	interfere with the recovery of an ecological community.	The proposed works will not interfere with the recovery of this community.
Conclusion	**Is there likely to be a significant impact?**	No.

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