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Flora and Fauna Assessment



All Saints Public School, Leacocks Lane, Casula

Prepared for Fulton Trotter Architects

16 June 2017

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Glossary and abbreviations

| Abbreviation | Description |
|--------------|---|
| AoS | Assessment of Significance |
| CEEC | Critically Endangered Ecological Community |
| DotE | Commonwealth Department of the Environment (now DotEE) |
| DotEE | Commonwealth Department of the Environment and Energy |
| EEC | Endangered Ecological Community |
| EP&A Act | NSW <i>Environmental Planning and Assessment Act 1979</i> |
| EPBC Act | Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> |
| FFA | Flora and Fauna Assessment |
| ha | hectares |
| MNES | Matters of National Environmental Significance |
| mm/cm/m/km | millimetres/centimetres/metres/kilometres |
| NW Act | NSW <i>Noxious Weeds Act 1993</i> |
| REF | Review of Environmental Factors |
| TSC Act | NSW <i>Threatened Species Conservation Act 1995</i> |
| WoNS | Weeds of National Significance |
| * | Denotes exotic and/or introduced non-remnant Australian native species |

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1 Introduction

1.1 Purpose of report and legislative context

This Flora and Fauna Assessment (FFA) has been undertaken to assess a proposal to upgrade and renovate selected buildings within the grounds of All Saints Catholic College. The proposal does not include beyond the current perimeter of the building and infrastructure footprint, therefore, does not alter current Asset Protection Zone requirements.

All Saints Catholic College is located on Leacocks Lane, Casula. The school buildings are located in the southern and western parts of the property, and remnant native vegetation occurs on the northern and eastern boundaries of the school grounds.

This report addresses the legislative context provided in **Table 1.1**.

Table 1.1: Legislative framework addressed in this report.

| INSTRUMENT | CONSIDERATIONS | CONTEXT |
|--|---|--|
| Commonwealth | | |
| <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) | Matters of National Environmental Significance | An action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance. |
| State (New South Wales) | | |
| <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act) | Section 5A | Assessment of the potential for an action or activity to have a significant effect on threatened species, populations or ecological communities, or their habitats. |
| <i>Noxious Weeds Act 1993</i> (NW Act) | Part 3 | Relates to the control of noxious weeds on land. |
| <i>Threatened Species Conservation Act 1995</i> (TSC Act) | Schedules 1, 1A, 2 and 3 | Lists threatened species, populations, ecological communities and key threatening processes to be considered under Section 5A EP&A Act. |
| Local (New South Wales) | | |
| <i>Liverpool LEP 2008</i> | Section 5.9 Preservation of trees or vegetation | The objective of the clause is to preserve amenity, which include biodiversity values. |

1.2 Site description

1.2.1 Subject site and study area

The **subject site** is defined as the area 'directly impacted upon by the proposal', and includes all vegetation proposed to be removed following approval of the development (DECC 2007) (**Figure 1.1**). The proposal will be located within the current extent of buildings and other infrastructure.

The **study area** includes the subject site and all areas that could be indirectly impacted upon by the proposal (DECC 2007) (**Figure 1.1**).

The vegetation in the study area comprises Cumberland Shale Plains Woodland (OEH 2013), which is located around the school on the northern and eastern boundaries, and is contiguous with the community offsite. However, vegetation characteristic of this community is not present within the subject site.

1.3 Description of the proposed development

The proposal consists of:

- Refurbishment and additions to join current Block A (administration) with current Block B2 (GLA) into a new Administration building
- Refurbish current Block B5 (Art) into a new canteen
- Construct a new Block B5 (Pavilion),
- Construct new covered walkways around northern perimeter of Block P (Library and Drama) and between Block P and Block N.
- Internal refurbishment of several buildings

The works are likely to include:

- Clearing garden plants composed of small trees, shrubs and ground cover
- Minor earthworks, stockpiles and lay-down areas.

The current school layout and proposed works are shown in **Figure 1.2** and **Figure 1.3**.

Previous bushfire and ecological assessments by BES (2004 and 2005, respectively) at the school included creating Asset Protection Zones (APZ) for new buildings. Ecoplanning understands that the current proposal will not require amendments to the approved APZ as the proposed works are all within the existing building line.

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Figure 1.1: Location of All Saints Catholic College, Casula.

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Figure 1.2: Existing buildings and infrastructure at All Saints Catholic College.



Figure 1.3: Proposed works at All Saints Catholic College.

2 Methods

2.1 Literature and database review

A site specific literature and database review was undertaken prior to undertaking field survey and the preparation of this report, which included the following sources:

- BioNet Atlas of NSW Wildlife (OEH 2017a)
- Vegetation mapping (Tozer et al 2006 and OEH 2013a)
- Protected Matters Search Tool (DotEE 2017)
- BES (2005) Flora and Fauna Assessment, Lot 2 DP 773140, Leacocks Lane, Casula, Liverpool Local Government Area (reference 04660). A report to the Catholic Education Office.
- BES (2004) Bushfire Protection Assessment: Proposed multi purpose hall and two classrooms, Lot 2 DP 773140, Leacocks Lane, Casula, Liverpool Local Government Area (reference 04463). A report for the Trustees of the Roman Catholic Church Archdiocese of Sydney.

Threatened species, populations and migratory species recorded during the literature and database review were consolidated and their likelihood of occurrence was considered by:

- review of available habitat within the study area and surrounding area
- review of the scientific literature pertaining to each species and population
- applying expert knowledge of each species

The potential for each threatened species, population and/or migratory species to occur was then considered. Following field surveys and review of available habitat within the subject site and study area, the potential for species to use the subject site and be affected directly or indirectly by the proposed action were considered as either:

- “Recent record” = species has been recorded in the study area within the past 5 years
- “High” = species has previously been recorded in the study area (>5 years) or in proximity (for mobile species), and/or habitat is present that is likely to be used by a local population
- “Moderate” = suitable habitat for a species is present onsite but no evidence of a species detected and relatively *high* number of recent records (5-20 years) in the locality or species is highly mobile
- “Low” = suitable habitat for a species is present onsite but limited or highly degraded, no evidence of a species detected and relatively *low* number of recent records in the locality
- “Not present” – suitable habitat for the species is not present onsite or adequate survey has determined species does not occur in the study area

2.2 Field survey

A field survey was undertaken across the study area for a period of two person hours by Bruce Mullins (Principal Ecologist) on 25 May 2017. Weather conditions on the day of survey were mild with approximately 7.6 mm of rain falling in the days leading up to the field survey in May (Table 2.1).

Table 2.1: Daily weather observation at Parramatta

| Date | Temp (°C) | | Rainfall (mm) | Max wind | |
|-----------|-----------|------|---------------|-----------|--------------|
| | Min | Max | | Direction | Speed (km/h) |
| 25/5/2017 | 7.1 | 20.4 | 0 | S | 15 |

2.2.1 Vegetation communities and flora

A field survey was conducted to validate vegetation community mapping, assess the structure and condition of vegetation in the study area and compile a list of visible flora species. Nomenclature follows the Flora of NSW (Harden 1993-2002) and updates provided in the PlantNET (RBGDT 2017).

2.2.2 Fauna and fauna habitat

Opportunistic observations of fauna were recorded during the survey, which included noting signs of indirect presence (i.e. scats, owl pellets, fur, bones, tracks, bark scratches, foliage chew marks and chewed capsules).

Fauna habitat searches were conducted for potential foraging, roosting, breeding or nesting habitat of nocturnal and diurnal species. This includes tree hollows, stags, bird nests, possum dreys, decorticating bark, mature / old growth trees, food trees (e.g. winter-flowering eucalypts), and refuge habitats of anthropogenic structures.

2.2.3 Survey limitations

The flora survey aimed to record as many species as possible. It is acknowledged that this is not a definitive list of the flora within the study area, more species would be recorded during a longer survey over various seasons. Nevertheless, the techniques used in this survey are adequate for gathering the data necessary to validate the location and extent of vegetation communities and condition onsite, and to detect any threatened flora with the potential to occur.

Full fauna surveys following *Threatened Species Survey and Assessment Guidelines* (OEH 2013b) were not undertaken as sufficient detail to determine the likelihood of occurrence of threatened and migratory species was achieved through habitat assessment. Therefore, further detailed fauna surveys were not considered necessary.

3 Results

3.1 Literature and database review

3.1.1 Threatened species, populations and migratory species

A search of the relevant databases and literature identified 23 threatened flora species and 50 threatened fauna species that have been recorded within a 5 km radius of the study area and/or are predicted to occur based on habitat (**Appendix A**).

The Atlas of NSW Wildlife showed records of *Pteropus poliocephalus* (Grey-headed Flying-fox), *Mormopterus norfolkensis* (Eastern Freetail-bat), *Scoteanax rueppellii* (Greater Broad-nosed Bat) and *Meridolum corneovirens* (Cumberland Plain Land Snail) within or adjacent to All Saints Catholic College.

Those species that have been recorded on or within proximity to the study area are presented in **Figure 3.1**. Native vegetation is mapped as Environmentally Significant Land in the Liverpool Local Environment Plan (LLEP).

3.1.2 Vegetation and threatened ecological communities

OEH (2013) mapping indicates that Cumberland Shale Plains Woodland occurs on the study area (**Figure 3.2**), while BES (2005) mapped disturbed Shale Hills Woodland on the study area. Both Cumberland Shale Plains Woodland and Shale Hills Woodland are components of the critically endangered ecological community Cumberland Plain Woodland (CPW) under the TSC Act and EPBC Act.

Native vegetation has been mapped around the northern and eastern boundaries of the school grounds, extending further into neighbouring properties to the north and south-east. CPW has not been mapped in the works area.

The TSC Act scientific determination of the community includes examples of the community in varying condition, from relatively intact remnants to remnant trees. The community has been subject to significant vegetation clearing and modification such that 6% of the community remains (NSWSC 2016).

The EPBC Act Conservation Advice (TSSC 2014) does not include significantly degraded remnants or scattered trees. A patch is considered to be in good condition and included as part of the community if:

- The vegetation has some characteristic components from all structural layers (canopy, midstorey, understorey)
- The tree canopy cover is greater than 10%, and
- The patch size is greater than 1 ha.

However, if the tree canopy cover is less than 10%, the patches can be considered part of the community if:

- The patch of the ecological community is greater than 1 ha, and
- It is part of a remnant of native vegetation that is 5 ha or greater in area

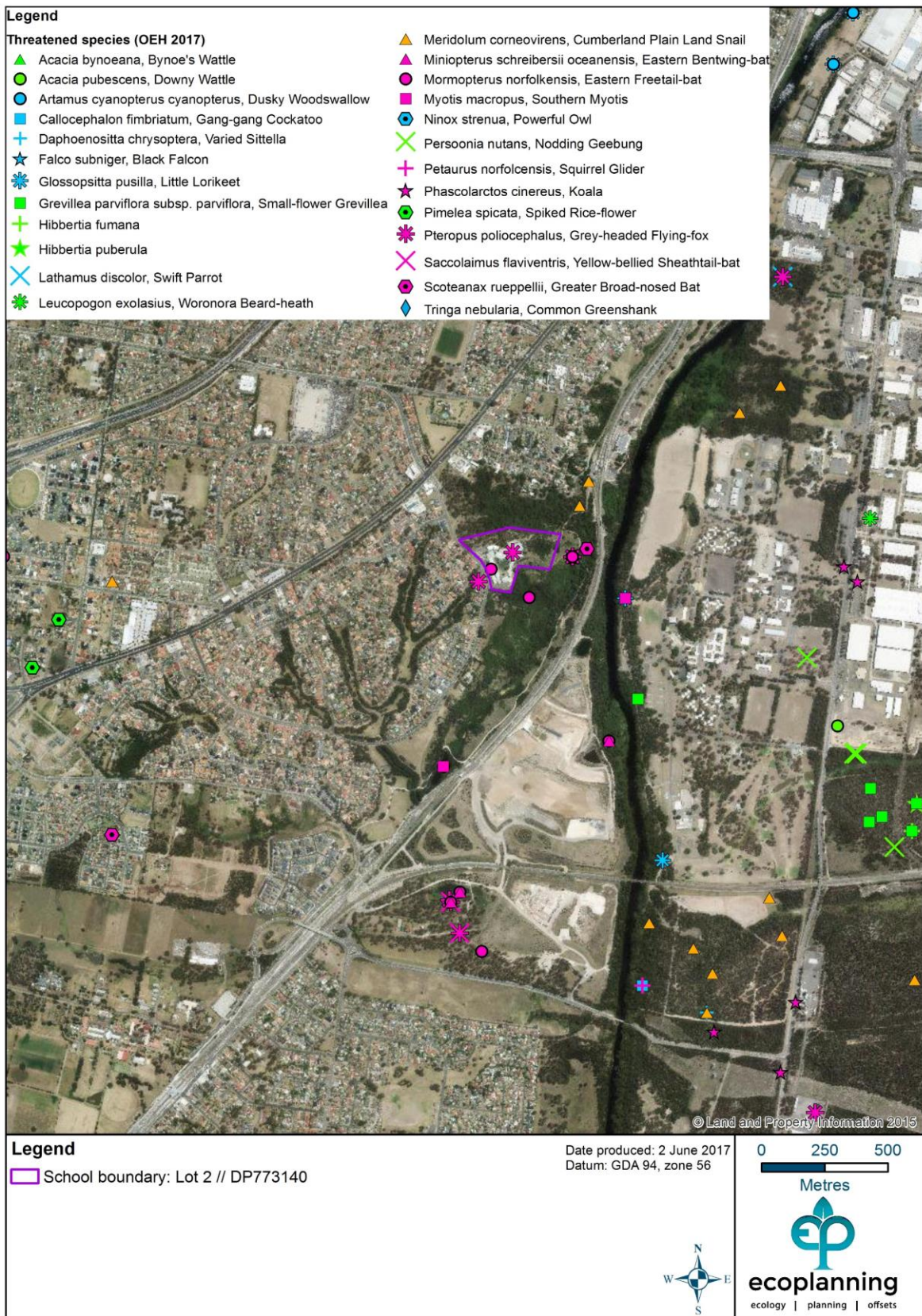


Figure 3.1: Threatened species records from the Atlas of NSW Wildlife surrounding the study area (OEH 2017).



Figure 3.2: Vegetation communities within the study area.

3.2 Field survey

3.2.1 Vegetation communities

The field survey focused on the works area within the school grounds and in the current APZ along the northern boundary.

Vegetation amongst the school buildings and infrastructure is limited to gardens and landscaping, which do not align to a native vegetation community (**Figure 3.3**). Garden plants include native species such as *Lomandra longifolia*, *Dianella caerulea*, *Acacia ulicifolia* (Prickly Moses), *Banksia spinulosa* (Hairpin Banksia), *Melaleuca armillaris*, *Banksia integrifolia* (Coastal Banksia), *Eucalyptus* spp. (saplings and juvenile trees), *Syncarpia glomulifera* (Turpentine) and *Cupaniopsis anacardioides* (Tuckeroo). Non-native species, or horticultural varieties of native species include *Callistemon* sp., *Grevillea* “Robyn Gordon”, *Syzygium* spp., *Gazania* sp., *Agapanthus* sp., and *Grevillea* sp.



Figure 3.3: Some of the gardens in All Saints Catholic College that will be removed for the Administration Building.

Vegetation in the APZ north of the school buildings was also inspected (**Figure 3.4**). The community confirms with BES (2005) as Shale Hills Woodland (named Cumberland Shale Hills Woodland in OEH 2013), which is a sub-community of the critically endangered ecological community CPW, listed under both the TSC Act and EPBC Act (**Figure 3.5**). OEH (2013) mapped the site as Cumberland Shale Plains Woodland, but the topography along the northern

boundary resembles Shale Hills Woodland more closely as mapped by BES. The extent of vegetation polygons for both reports is very similar.

Native species with this vegetation community were *Eucalyptus moluccana* (Grey Box), *Eucalyptus tereticornis* (Forest Red Gum), *Acacia filliformis*, *Acacia implexa* (Native Hickory), *Acacia parramattensis*, *Bursaria spinosa* (Blackthorn), *Dichondra repens* (Kidney Weed), *Rytidosperma racemosum*, *Glycine tabacina*, *Chloris ventricosa*, *Einadia hastata*, *Brunoniella pumilio*, *Glycine clandestina* and *Sigesbeckia orientalis*. Exotic species included *Bidens pilosa* (Cobbler's Peg), *Plantago lanceolata* (Plantain), *Cenchrus clandestinum* (Kikuyu), *Modiola caroliniana* (Red-flowered Mallow), *Lantana camara* (Lantana), *Ehrharta erecta*, *Verbena bonariensis* (Purple Top), *Conyza* sp. and *Senecio madagascariensis* (Fireweed).

CPW in the APZ meets the condition criteria under both the TSC Act and EPBC Act.



Figure 3.4: Approved Asset Protection Zone north of the school buildings containing CPW.



Figure 3.5: Validated vegetation type at All Saints Catholic College.

3.2.2 Flora species

A total of 46 flora species were identified within the study area during field survey, of which 17 are exotic species and three are native cultivars (**Appendix B**).

Four noxious weeds listed under the NSW *Noxious Weeds Act 1993* were recorded, two of which are Weeds of National Significance (WONS) (**Table 3.1**). All weeds were located in the CPW north of the school buildings.

Table 3.1: Noxious weeds and Weeds of National Significance (WONS)

| Common name | Scientific name | Class | WoNS ¹ | Requirement |
|-------------------|--|-------|-------------------|---|
| African Olive | <i>Olea europaea</i> subsp. <i>cuspidata</i> | 4 | | The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread and the plant must not be sold, propagated or knowingly distributed |
| Fireweed | <i>Senecio madagascariensis</i> | 4 | Y | The plant must not be sold, propagated or knowingly distributed |
| Lantana | <i>Lantana camara</i> | 4 | Y | The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread |
| Broad-leaf Privet | <i>Ligustrum lucidum</i> | 4 | | The growth of the plant must be managed in a manner that continuously inhibits the ability of the plant to spread |

¹ <http://www.weeds.org.au/WoNS/>

3.2.3 Fauna and fauna habitat

The site provides very little habitat for native fauna, however, the Atlas of NSW Wildlife shows that megachiropteran and microchiropteran bats have been recorded over the school. BES (2005) observed a Grey-headed Flying-fox flying over the site during their surveys, and it is likely that these bats fly over the site between areas of bushland located on either side of the school and beyond.

Some microbat species roost in built infrastructure, but there were no gaps observed in the existing buildings to indicate bats were roosting. Apart from Blocks A and B2, minor works and internal refurbishment is proposed.

Incidental observations of fauna are in **Appendix C**.

4 Impact assessment

4.1 Direct impacts

The proposal will require limited vegetation removal, and all of the vegetation to be removed are garden plantings. The proposal will not require increases to the already approved APZs for the current buildings, thereby retaining all existing CPW surrounding the school.

Vegetation within the garden beds is not representative of a native vegetation community.

It is not likely that the gardens provide foraging habitat for threatened native fauna. Records on the school grounds are more likely to be from fauna passing overhead, than from foraging or roosting in the school grounds given the height and maturity of the vegetation. The proposed works are not likely to affect flyways for bats species.

4.2 Indirect impacts

The proposal will increase the area of covered walkways and the rooves. However, the area of impervious surfaces will not increase in the school grounds. The proposed covered walkways and increase to the roof area will occur over parts of the grounds that are currently an impervious surface. This assessment assumes, on this basis, that there will be no increase to runoff or stormwater discharge.

4.3 Threatened species, populations, ecological communities and migratory species

Assessments of significance are undertaken for those species that are identified as requiring an assessment in **Appendix A**. Three species have been recorded on or immediately adjacent to the school grounds:

- *Pteropus poliocephalus* (Grey-headed Flying-fox)
- *Mormopterus norfolkensis* (Eastern Freetail-bat)
- *Scoteanax rueppellii* (Greater Broad-nosed Bat)

These species are likely to occur in the area, but the proposed works will only affect garden plantings which do not provide suitable foraging habitat. Each species may fly over the school between areas of suitable habitat, but the proposed works will not affect these flyways during construction or operation.

In addition, Cumberland Plain Woodland occurs around the northern perimeter of the school grounds, and is currently subject to ongoing management as an APZ. However, the proposed development will not alter the extent of the approved APZ.

The proposal is not likely to affect the habitat of any of these threatened species or threatened ecological community. Therefore, impact assessments are not required under section 5A of the EP&A Act or EPBC Act.

5 Conclusion and recommendations

The proposal to add to existing buildings, increase the area of covered walkways and construct a new building will occur within the current outer building line at All Saints Catholic College. The proposal will require some gardens and landscaped areas to be removed for the proposed works. None of the vegetation confirms to a threatened ecological community.

Cumberland Plain Woodland, a critically endangered ecological community, grows around the northern and eastern perimeter of the school, most of which is managed as an approved APZ. The proposal will not require an increase to the APZ to manage bushfire risk for the new infrastructure.

Threatened species have been recorded on or adjacent to the site. A survey of the site did not find any habitat suitable for these species, other than a flyway above the school grounds.

The proposal is not likely to affect the habitat of any threatened species or threatened ecological community. As a consequence, the Assessment of Significance and Significant Impact Criteria were not applied to any entity.

Where possible, landscape plantings should conform to Cumberland Plain Woodland, to enhance the biodiversity value of the area. A sediment and erosion control plan should be developed and implemented to control runoff into bushland around the perimeter of the school during the proposed works.

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Appendix A: Likelihood of threatened species occurrence

The potential for each threatened species, population and/or migratory species to occur was assessed and the necessity for targeted field surveys was determined. Following field surveys and review of available habitat within the subject site and study area, the potential for species to utilise the site and be affected directly or indirectly by the proposed action were considered as either:

- “Recent record” = species has been recorded in the study area within the past 5 years
- “High” = species has previously been recorded in the study area (>5 years) or in proximity (for mobile species), and/or habitat is present that is likely to be utilised by a local population
- “Moderate” = suitable habitat for a species is present onsite but no evidence of a species detected and relatively high number of recent records (5-20 years) in the locality or species is highly mobile
- “Low” = suitable habitat for a species is present onsite but limited or highly degraded, no evidence of a species detected and relatively low number of recent records in the locality
- “Not present” – suitable habitat for the species is not present onsite or adequate survey has determined species does not occur in the study area

Unless otherwise referenced, information on habitat and ecology of species have been derived from the Atlas of NSW Wildlife, NSW Threatened Species Website (OEH 2017), and/or determinations made by the NSW Scientific Committee or Commonwealth Threatened Species Scientific Committee for each relevant species.

| Scientific Name (Common Name) | Legal Status | Likelihood of occurrence | | Need for an Assessment of Significance |
|---|-------------------------------|--------------------------|--------------|--|
| | | Before survey | After survey | |
| Birds | | | | |
| <i>Actitis hypoleucos</i> (Common Sandpiper) | EPBC Act = C, J | Low | No | No – no suitable habitat |
| <i>Anthochaera phrygia</i> (Regent Honeyeater) | TSC Act = CE EPBC Act = CE | Low | Low | No – study area does not support habitat preferred by this species |
| <i>Apus pacificus</i> (Fork-tailed Swift) | EPBC Act = C, J, K | Low | Low | No – study area does not support habitat preferred by this species |
| <i>Ardea ibis</i> (Cattle Egret) | EPBC Act = C, J | Low | Low | No – no suitable habitat |
| <i>Artamus cyanopterus cyanopterus</i> (Dusky Woodswallow) | TSC Act = V | Low | Low | No – no impact to habitat |
| <i>Botaurus poiciloptilus</i> (Australasian Bittern) | TSC Act = E EPBC Act = E | Low | No | No – no suitable habitat |
| <i>Burhinus grallarius</i> (Bush Stone-curlew) | TSC Act = E | Low | No | No – no suitable habitat |
| <i>Calidris acuminata</i> (Sharp-tailed Sandpiper) | EPBC Act = C, J, K | Low | No | No – no suitable habitat |
| <i>Calidris ferruginea</i> (Curlew Sandpiper) | EPBC Act = CE, C, J, K | Low | No | No – no suitable habitat |
| <i>Calidris melanotos</i> (Pectoral Sandpiper) | EPBC Act = J, K | Low | No | No – no suitable habitat |
| <i>Callocephalon fimbriatum</i> (Gang-gang Cockatoo) | TSC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| <i>Calyptorhynchus lathamii</i> (Glossy-black Cockatoo) | TSC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| <i>Cuculus optatus</i> (Oriental Cuckoo) | EPBC Act = C | Low | Low | No – no impact to habitat |
| <i>Daphoenositta chrysoptera</i> (Varied Sittella) | TSC Act = V | Mod | Mod | No – study area does not support habitat preferred by this species |

| Scientific Name (Common Name) | Legal Status | Likelihood of occurrence | | Need for an Assessment of Significance |
|---|------------------------------|--------------------------|--------------|--|
| | | Before survey | After survey | |
| <i>Dasyornis brachypterus</i> (Eastern Bristlebird) | TSC Act = E EPBC Act = E | Low | Low | No – no suitable habitat |
| <i>Falco subniger</i> (Black Falcon) | TSC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| <i>Gallinago hardwickii</i> (Latham's Snipe) | EPBC Act = J, K | Low | No | No – no suitable habitat |
| <i>Glossopsitta pusilla</i> (Little Lorikeet) | TSC Act = V | Mod | Mod | No – no suitable habitat |
| <i>Grantiella picta</i> (Painted Honeyeater) | TSC Act = V EPBC Act = V | Low | Low | No – no suitable habitat |
| <i>Hieraaetus morphnoides</i> (Little Eagle) | TSC Act = V | Low | Low | No – no impact to habitat |
| <i>Hirundapus caudacutus</i> (White-throated Needletail) | EPBC Act = C, J, K | Low | Low | No – no impact to habitat |
| <i>Lathamus discolor</i> (Swift Parrot) | TSC Act = E EPBC Act = CE | Low | Low | No – no impact to habitat |
| <i>Motacilla flava</i> (Yellow Wagtail) | EPBC Act = C, J, K | Low | Low | No – no impact to habitat |
| <i>Ninox strenua</i> (Powerful Owl) | TSC Act = V | Low | Low | No – no impact to habitat |
| <i>Numenius madagascariensis</i> (Eastern Curlew) | EPBC Act = CE, C, J, K | Low | No | No – no suitable habitat |
| <i>Pandion haliaetus</i> (Osprey) | TSC Act = V | Low | Low | No – no suitable habitat |
| <i>Petroica boodang</i> (Scarlet Robin) | TSC Act = V | Low | Low | No – no impact to habitat |

| Scientific Name (Common Name) | Legal Status | Likelihood of occurrence | | Need for an Assessment of Significance |
|--|-----------------------------|--------------------------|--------------|--|
| | | Before survey | After survey | |
| <i>Rostratula australis</i> (Australian Painted Snipe) | TSC Act = E EPBC Act = E | Low | No | No – study area does not support habitat preferred by this species |
| <i>Tringa nebularia</i> (Common Greenshank) | EPBC Act = C, J, K | Low | Low | No – no impact to habitat |
| Mammals | | | | |
| <i>Chalinolobus dwyeri</i> (Large-eared Pied Bat) | TSC Act = V EPBC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| <i>Dasyurus maculatus</i> (Spotted-tailed Quoll) | TSC Act = V EPBC Act = E | Low | No | No – study area does not support habitat preferred by this species |
| <i>Falsistrellus tasmaniensis</i> (Eastern False Pipistrelle) | TSC Act = V | Low | Low | No – no impact to habitat |
| <i>Miniopterus schreibersii oceanensis</i> (Eastern Bentwing-bat) | TSC Act = V | Mod | Mod | No – no impact to habitat |
| <i>Mormopterus norfolkensis</i> (Eastern Freetail Bat) | TSC Act = V | High | Mod | No – no impact to habitat |
| <i>Myotis macropus</i> (Southern Myotis) | TSC Act = V | Mod | Low | No – no impact to habitat |
| <i>Petaurus norfolcensis</i> (Squirrel Glider) | TSC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| <i>Petaurus volans</i> (Greater Glider) | TSC Act = E EPBC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| <i>Petrogale penicillata</i> (Brush-tailed Rock Wallaby) | EPBC Act = V | Low | No | No – study area does not support habitat preferred by this species |

| Scientific Name (Common Name) | Legal Status | Likelihood of occurrence | | Need for an Assessment of Significance |
|---|-----------------------------|--------------------------|--------------|---|
| | | Before survey | After survey | |
| <i>Phascolarctos cinereus</i> (Koala) | TSC Act = V EPBC Act = V | Low | Low | No – no impact to habitat |
| <i>Pseudomys novaehollandiae</i> (New Holland Mouse) | EPBC Act = V | Low | Low | No – no impact to habitat |
| <i>Pteropus poliocephalus</i> (Grey-headed Flying-fox) | TSC Act = V EPBC Act = V | High | High | No – only recorded flying over the site. There is no habitat in the works area. |
| <i>Saccolaimus flaviventris</i> (Yellow-bellied Sheath-tail-bat) | TSC Act = V | Mod | No | No – study area does not support habitat preferred by this species |
| <i>Scoteanax rueppellii</i> (Greater Broad-nosed Bat) | TSC Act = V | High | Mod | No – no impact to habitat |
| Frogs | | | | |
| <i>Heleioporus australiacus</i> (Giant Burrowing Frog) | TSC Act = V EPBC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| <i>Litoria aurea</i> (Green and Golden Bell Frog) | TSC Act = E EPBC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| <i>Litoria littlejohni</i> (Littlejohn's Tree Frog) | TSC Act = V EPBC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| <i>Litoria raniformis</i> (Growling Grass Frog) | TSC Act = E EPBC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| <i>Pseudophryne australis</i> (Red-crowned Toadlet) | TSC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| Invertebrates | | | | |
| <i>Meridolum corneovirens</i> (Cumberland Plain Land Snail) | TSC Act = E | Mod | No | No – study area does not support habitat preferred by this species |

| Scientific Name (Common Name) | Legal Status | Likelihood of occurrence | | Need for an Assessment of Significance |
|--|-----------------------------|--------------------------|--------------|--|
| | | Before survey | After survey | |
| Reptiles | | | | |
| <i>Hoplocephalus bungaroides</i> (Broad-headed Snake) | TSC Act = E EPBC Act = V | Low | No | No – study area does not support habitat preferred by this species |
| Plants | | | | |
| <i>Acacia bynoeana</i> (Bynoe's Wattle) | TSC Act = E EPBC Act = V | Low | Not present | No |
| <i>Acacia pubescens</i> (Downy Wattle) | TSC Act = V EPBC Act = V | Mod | Not present | No |
| <i>Allocasuarina glareicola</i> | TSC Act = E EPBC Act = E | Low | Not present | No |
| <i>Asterolasia elegans</i> | TSC Act = E EPBC Act = E | Low | Not present | No |
| <i>Caladenia tessellata</i> | TSC Act = E EPBC Act = V | Low | Not present | No |
| <i>Cryptostylis hunteriana</i> (Leafless Tongue Orchid) | TSC Act = V EPBC Act = V | Low | Not present | No |
| <i>Genoplesium bauera</i> (Bauer's Midge Orchid) | TSC Act = E EPBC Act = E | Low | Not present | No |
| <i>Grevillea parviflora</i> subsp. <i>parviflora</i> (Small-flower Grevillea) | TSC Act = V EPBC Act = V | Mod | Not present | No |
| <i>Hibbertia fumana</i> | TSC Act = CE | Low | Not present | No |
| <i>Hibbertia puberula</i> | TSC Act = E | Low | Not present | No |
| <i>Leucopogon exolasius</i> (Woronora Beard-heath) | TSC Act = V EPBC Act = V | Low | Not present | No |

| Scientific Name (Common Name) | Legal Status | Likelihood of occurrence | | Need for an Assessment of Significance |
|--|-------------------------------|--------------------------|--------------|--|
| | | Before survey | After survey | |
| <i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> | TSC Act = V EPBC Act = V | Low | Not present | No |
| <i>Melaleuca deanei</i> (Deane's Paperbrk) | TSC Act = V EPBC Act = V | Low | Not present | No |
| <i>Pelargonium</i> sp. <i>Striatellum</i> | TSC Act = E EPBC Act = E | Low | Not present | No |
| <i>Persoonia nutans</i> (Nodding Geebung) | TSC Act = E EPBC Act = E | Mod | Not present | No |
| <i>Pimelea curviflora</i> var. <i>curviflora</i> | TSC Act = E EPBC Act = V | Low | Not present | No |
| <i>Pimelea spicata</i> (Spiked Rice-flower) | TSC Act = E EPBC Act = E | Low | Not present | No |
| <i>Pomaderris brunnea</i> (Brown Pomaderris) | TSC Act = E EPBC Act = V | Low | Not present | No |
| <i>Pterostylis gibbosa</i> (Illawarra Greenhood) | TSC Act = E EPBC Act = E | Low | Not present | No |
| <i>Pterostylis saxicola</i> (Sydney Plains Greenhood) | TSC Act = E EPBC Act = E | Low | Not present | No |
| <i>Pultenaea pedunculata</i> (Matted Bush-pea) | TSC Act = E | Low | Not present | No |
| <i>Thelymitra kangaloonica</i> (Kangaloon Sun Orchid) | TSC Act = CE EPBC Act = CE | Low | Not present | No |
| <i>Thesium australe</i> (Austral Toadflax) | TSC Act = V EPBC Act = V | Low | Not present | No |
| Threatened Ecological Communities | | | | |
| Castlereagh Scribbly Gum and Agnes Banks Woodland | | Low | Not present | No |

| Scientific Name (Common Name) | Legal Status | Likelihood of occurrence | | Need for an Assessment of Significance |
|---|--------------|--------------------------|--------------|--|
| | | Before survey | After survey | |
| Coastal Upland Swamps | | Low | Not present | No |
| Cooks River/Castlereagh Ironbark Forest | | Low | Not present | No |
| Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest | | Low | Not present | No |
| Shale Sandstone Transition Forest | | Low | Not present | No |
| Upland Basalt Eucalypt Forests | | Low | Not present | No |
| Western Sydney Dry Rainforest and Moist Woodland on Shale | | Low | Not present | No |

Note: CE = critically endangered, E = endangered, V = vulnerable, C = CAMBA, J = JAMBA, K = ROKAMBA

Appendix B: Flora inventory

| Family | Scientific name | Common name | Native/ Exotic |
|---------------------------|---|---------------------|--------------------|
| Acanthaceae | <i>Brunoniella pumilio</i> | Dwarf Blue Trumpet | Native |
| Amaryllidaceae | <i>Agapanthus</i> sp. | Agapanthus | Exotic |
| Asteraceae | <i>Gazania</i> sp. | | Exotic |
| Asteraceae | <i>Bidens pilosa</i> | Cobblers Peg | Exotic |
| Asteraceae | <i>Conyza</i> sp. | | Exotic |
| Asteraceae | <i>Senecio madagascariensis</i> | Fireweed | Exotic |
| Asteraceae | <i>Sigesbeckia orientalis</i> | | Native |
| Asteraceae | <i>Sonchus oleraceus</i> | Common Sowthistle | Exotic |
| Asteraceae | <i>Senecio quadridentatus</i> | | Native |
| Casuarinaceae | <i>Allocasuarina littoralis</i> | Black She-oak | Native |
| Chenopodiaceae | <i>Einadia hastata</i> | | Native |
| Convolvulaceae | <i>Dichondra repens</i> | Kidney Weed | Native |
| Euphorbiaceae | <i>Euphorbia peplus</i> | Petty Spurge | Exotic |
| Fabaceae – Faboideae | <i>Glycine clandestina</i> | Twining Glycine | Native |
| Fabaceae – Faboideae | <i>Hardenbergia violacea</i> | | Native |
| Fabaceae – Faboideae | <i>Glycine tabacina</i> | | Native |
| Fabaceae - Mimosoideae | <i>Acacia ulicifolia</i> | Prickly Moses | Native |
| Fabaceae - Mimosoideae | <i>Acacia filiformis</i> | | Native |
| Fabaceae - Mimosoideae | <i>Acacia implexa</i> | Hickory Wattle | Native |
| Fabaceae - Mimosoideae | <i>Acacia parramattensis</i> | | Native |
| Lomandraceae | <i>Lomandra longifolia</i> | Spiny Mat-rush | Native |
| Malvaceae | <i>Modiola caroliniana</i> | Red-flowered Mallow | Exotic |
| Myrtaceae | <i>Callistemon</i> sp. | | Native |
| Myrtaceae | <i>Syzygium</i> sp. | | Native cultivar |
| Myrtaceae | <i>Melaleuca ericifolia</i> | | Native |
| Myrtaceae | <i>Eucalyptus</i> sp. | | Native |
| Myrtaceae | <i>Eucalyptus moluccana</i> | Grey Box | Native |
| Myrtaceae | <i>Eucalyptus tereticornis</i> | Forest Red Gum | Native |
| Oleaceae | <i>Ligustrum lucidum</i> | Large-leaved Privet | Exotic |
| Oleaceae | <i>Olea europaea</i> subsp. <i>cuspidata</i> | Olive | Exotic |
| Phormiaceae | <i>Dianella caerulea</i> | | Native |
| Pittosporaceae | <i>Bursaria spinosa</i> | Blackthorn | Native |
| Plantaginaceae | <i>Plantago lanceolata</i> | Plantain | Exotic |
| Poaceae | <i>Cenchrus clandestinus</i> | Kikuyu | Exotic |
| Poaceae | <i>Ehrharta erecta</i> | Erect Veldt Grass | Exotic |
| Poaceae | <i>Rytidosperma racemosum</i> | | Native |

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| Family | Scientific name | Common name | Native/ Exotic |
|-------------|----------------------------------|-----------------------|--------------------|
| Poaceae | <i>Chloris ventricosa</i> | | Native |
| Proteaceae | <i>Grevillea</i> "Robyn Gordon" | | Native cultivar |
| Proteaceae | <i>Banksia spinulosa</i> | Hairpin Banksia | Native |
| Proteaceae | <i>Grevillea</i> sp. | | Native cultivar |
| Proteaceae | <i>Banksia integrifolia</i> | Coastal Banksia | Native |
| Rutaceae | <i>Coleonema</i> sp. | Diosma | Exotic |
| Sapindaceae | <i>Cupaniopsis anacardioides</i> | Tuckeroo | Native |
| Solanaceae | <i>Solanum nigrum</i> | Blackberry Nightshade | Exotic |
| Verbenaceae | <i>Lantana camara</i> | Lantana | Exotic |
| Verbenaceae | <i>Verbena bonariensis</i> | Purple Top | Exotic |

Appendix C: Fauna inventory

| Scientific Name | Common Name |
|---------------------------------|------------------------|
| <i>Corvus coronoides</i> | Australian Raven |
| <i>Cracticus tibicen</i> | Australian Magpie |
| <i>Grallina cyanoleuca</i> | Australian Magpie-lark |
| <i>Manorina melanocephala</i> | Noisy Miner |
| <i>Manorina melanophrys</i> | Bell Miner |
| <i>Taeniopygia bichenovii</i> | Double barred Finch |
| <i>Trichoglossus moluccanus</i> | Rainbow Lorikeet |
| <i>Zosterops lateralis</i> | Silvereye |