



Kyeemagh Public School: Flora and Fauna Assessment

Prepared by AMBS Ecology & Heritage Pty Ltd
for NSW Department of Education

Final Report

January 2019

AMBS Reference: 18541

Document Information

Citation:	AMBS Ecology & Heritage (2018), <i>Kyeemagh Public School: Flora and Fauna Assessment</i> . Consultancy report to NSW Department of Education.
AMBS Ref:	18541
Versions:	Version 1: Draft Report issued 11 January 2019 Version 2: Final Report issued 16 January 2019
Recipient:	Ryan Southwell, Design Worldwide Partnership (DWP)
Authors:	Glenn Muir, Belinda Pellow, Mark Semeniuk
Approved by:	Glenn Muir, Director Ecology, AMBS Ecology & Heritage

Executive Summary

AMBS Ecology and Heritage Pty Ltd was commissioned by Design Worldwide Partnership (DWP) to prepare a biodiversity assessment in relation to a proposed development at Kyeemagh Infants School. The site contains an existing school, including buildings and playgrounds. The proposed development will involve the establishment of new school facilities, allowing an increase in the capacity of the existing school for up to 500 students, and its re-classification from an Infants School to a Primary School. The development is a State Significant Development. The requirements for the EIS include a Biodiversity Assessment, as follows:

“Identify and address the requirements of the *Biodiversity Conservation Act 2016* relevant to the State Significant Development Application.

- Where a Biodiversity Development Assessment Report is not required, engage a suitably qualified person to assess and document the flora and fauna impacts related to the proposal.
- If the site is within an area to which a Biodiversity Certification Order has been issued, evidence of this Order is to be provided.
- Where the land is subject to a Biodiversity Certification Order, evidence of this Order and the terms is to be provided.”

The site is not located within an area to which a Biodiversity Certification Order has been issued. The *Biodiversity Conservation Act 2016* (BC Act) requires that an application for State Significant Development is accompanied by a Biodiversity Development Assessment Report (BDAR), unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values.

The methodology for this study included a review of existing information regarding the biodiversity of the study area and the locality and a field survey to examine the flora of the study area and fauna habitat. The likely significance of potential impacts on such threatened species, populations and/or ecological communities was tested by application of the five criteria detailed in section 7.3 of the BC Act.

The flora survey found that the vegetated parts of the site consisted primarily of mown lawn under planted trees and shrubs and garden beds. The vegetation is planted and landscaped and does not represent a native Plant Community Type. This assessment is consistent with existing vegetation mapping, which shows a small area mapped as “Urban Exotic/Native” occurring north-east of the study area and no other plant communities on the site or in the immediate vicinity. No threatened plant species or threatened ecological communities were recorded in the study area and none are considered likely to occur.

Fauna habitat in the site was highly modified. No hollow-bearing trees were recorded. Two trees contained artificial nest boxes which may be suitable for animals such as ringtail possums or small parrots. A small constructed pond observed in the central part of the site was considered unlikely to provide breeding habitat for any threatened species. Some of the trees and shrubs could provide forage for animals such as the Grey-headed Flying-fox (*Pteropus poliocephalus*), which is a threatened species that forages throughout the locality and is likely to occur on the site at night during periods when food plants are flowering or fruiting. A test of significance as detailed in section 7.3 of the BC Act 2016 was applied in relation to this species. Our conclusion following application of the test was that the proposed development is unlikely to have a significant impact on the Grey-headed Flying-fox.

The study area is not located on or adjacent to an area mapped on the Biodiversity Values map. The threshold area specified by the BC Act for the amount of native vegetation cleared for the site is 0.25 ha, which is greater than the area covered by the development footprint.

The conclusion of the study was therefore that the proposed development is not likely to have any significant impact on biodiversity values. A consideration of the biodiversity values listed in clause 1.5 of the BC Act and clauses 1.4 and 6.1 of the *Biodiversity Conservation Regulation 2017* is presented in Section 5 of this report.

Our recommendations are:

1. that a BDAR not be required;
2. to retain the trees with nest boxes if possible, or engage a suitably experienced ecologist to relocate or replace the nest boxes, and manage any fauna utilising them;
3. to retain the small pond and landscaped area if possible, or replace them with similar features.

Contents

Executive Summary	III
1 Introduction.....	1
1.1 Background	1
1.2 Proposed Development	1
1.3 Objectives and Scope.....	2
1.4 Authorship and Acknowledgements.....	2
2 Methodology	5
2.1 Study Area.....	5
2.2 Information Review	5
2.3 Field Assessment.....	5
2.4 Significance Assessment	5
3 Results.....	6
3.1 Information Review	6
3.2 Field Assessment.....	8
3.3 Significance Assessment	12
4 Potential Impacts and Recommendations.....	12
5 Conclusions.....	12
References	16
Appendix A: Test of Significance	17

Figures

Figure 1.1 Location of the study area.	3
Figure 1.2 Concept design of the proposed development.....	4
Figure 3.1 The study area in relation to the original alignment of Cooks River (1943 imagery).	6
Figure 3.2: Existing vegetation mapping of the study area and locality.	7
Figure 3.3: Vegetation types within the study area.....	9

1 Introduction

1.1 Background

AMBS Ecology and Heritage (AMBS) was commissioned by Design Worldwide Partnership (DWP) on behalf of School Infrastructure NSW (SINSW) to prepare a biodiversity assessment in relation to a proposed development at Kyeemagh Infants School, Kyeemagh, NSW. The proposed development has been declared a State Significant Development (SSD 9391) under Part 4, Division 4.1 of the *Environmental Planning & Assessment Act 1979* (EP&A Act). The Secretary's Environmental Assessment Requirements (SEARs) set out the requirements for the Environmental Impact Statement (EIS) for the development and include the requirement for a Biodiversity Assessment, as follows:

"18. Biodiversity Assessment

Identify and address the requirements of the *Biodiversity Conservation Act 2016* relevant to the State Significant Development Application.

- Where a Biodiversity Development Assessment Report is not required, engage a suitably qualified person to assess and document the flora and fauna impacts related to the proposal.
- If the site is within an area to which a Biodiversity Certification Order has been issued, evidence of this Order is to be provided.
- Where the land is subject to a Biodiversity Certification Order, evidence of this Order and the terms is to be provided.

Note: The Biodiversity Conservation Act 2016 requires that State Significant Development Applications be accompanied by a Biodiversity Development Assessment Report unless otherwise prescribed."

The site is not located within an area to which a Biodiversity Certification Order has been issued (OEH 2018a).

The *Biodiversity Conservation Act 2016* (BC Act) requires that any application for development consent under Part 4 of the EP&A Act for State Significant Development is to be accompanied by a Biodiversity Development Assessment Report (BDAR), unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values.

This report presents the methods, results and conclusions of the Biodiversity Assessment undertaken by AMBS. The conclusion of the study is that the proposed development is not likely to have any significant impact on biodiversity values. Therefore, it is our recommendation that a BDAR not be required and that the Biodiversity Assessment assess and document the flora and fauna impacts related to the proposal consistent with the first dot point in Section 18 of the SEARs.

1.2 Proposed Development

The proposed development site is located at 30A Jacobson Avenue, Kyeemagh, approximately 10km south west of Sydney CBD within the Bayside Local Government Area (LGA), and comprises Lot 1 DP 120095 (Figure 1.1). The site contains an existing school, including buildings and playgrounds. The proposed development will involve the establishment of new school facilities, allowing an increase in the capacity of the existing school for up to 500 students, and its re-classification from an Infants School to a Primary School.

The concept design for the proposed development is shown on Figure 1.2. The works will include:

- demolition of all existing buildings;
- addition of up to 22 new teaching spaces (19 new and 3 replacement);
- construction of a new communal hall, covered outdoor learning area (COLA), canteen, library, administration, staff facilities and student facilities; and
- landscaping and establishment of recreation spaces.

1.3 Objectives and Scope

The purpose of this study was to assess the potential direct and indirect impacts of the proposed development on terrestrial flora and fauna, and estuarine and marine biodiversity, of the site, immediate surrounds and locality, especially in relation to threatened species, populations and ecological communities. Specific tasks were to:

- Assess the potential for threatened species, populations and ecological communities (or their habitats) listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) to occur;
- Assess the presence or potential for threatened ecological communities, populations, species and / or their habitat listed under the NSW *Fisheries Management Act 1994* (FM Act) to occur on the site and within the locality;
- Assess the presence or potential presence of mangroves and ‘certain other marine vegetation’ as described by the FM Act;
- Assess the potential for any relevant Matters of National Environmental Significance listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to occur;
- Consider the potential impacts of the proposed works on biodiversity, especially in relation to the BC Act, FM Act and EPBC Act;
- Prepare recommendations for the avoidance of impacts and management or mitigation options; and
- Assess the significance of the potential impacts of the proposed works on threatened species, populations and ecological communities.

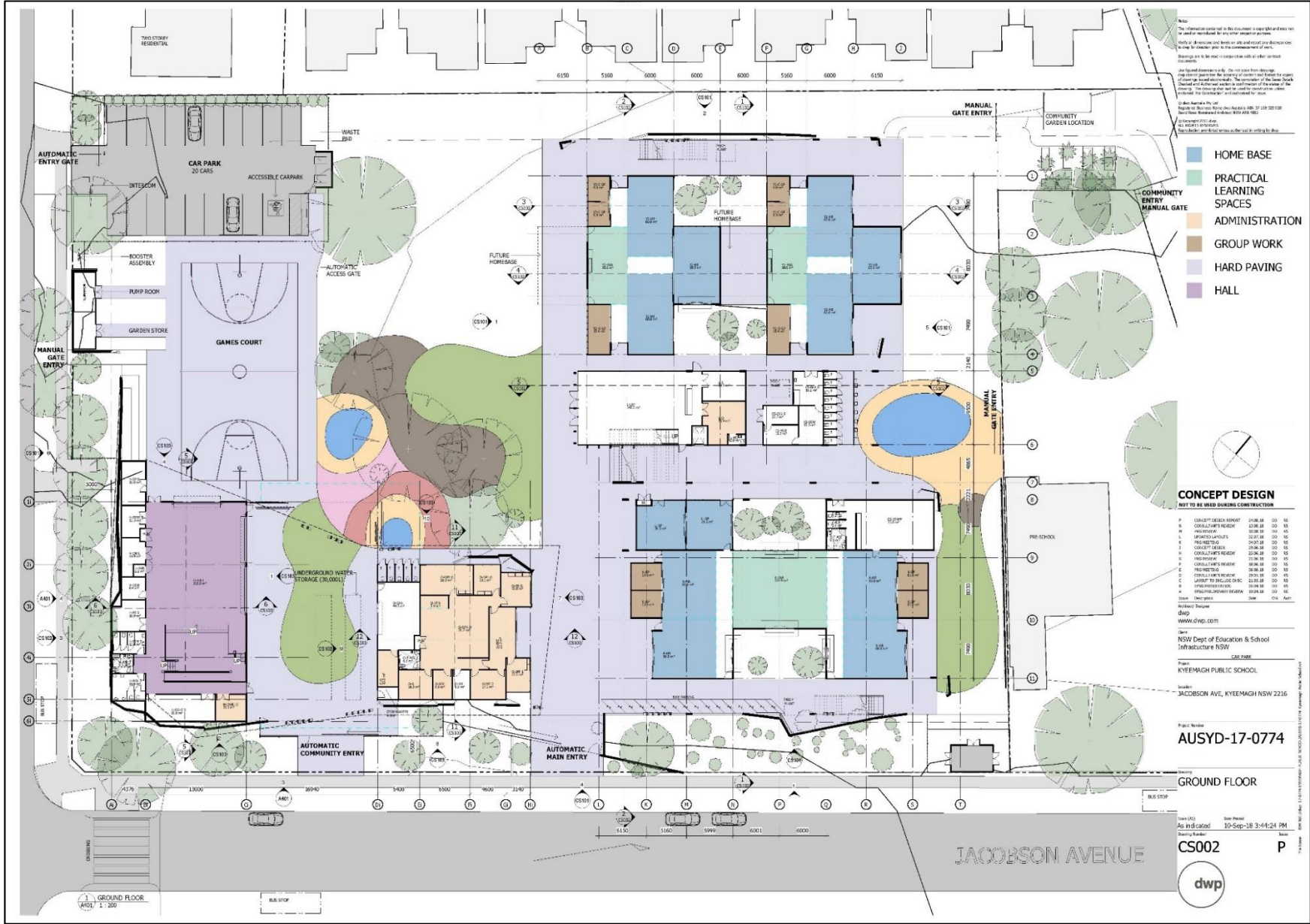
This report is focussed on biodiversity and does not address heritage, acid sulphate soils, flooding, zoning or contamination.

1.4 Authorship and Acknowledgements

Field surveys of the site were undertaken by Belinda Pellow and Mark Semeniuk, who also provided input into the report. “Desktop” information (database searches, checking of maps etc.) was compiled by Ruby Stephens. The Concept Design and information regarding the proposed development was provided by DWP. AMBS mapping was prepared by Ulrike Kloecker and Belinda Pellow. This report was prepared by Glenn Muir. Belinda, Mark and Glenn are accredited assessors under the *Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017*.



Figure 1.1 Location of the study area.



2 Methodology

2.1 Study Area

The study area is located between Tancred Avenue, Jacobson Avenue and Beehag Street (Figure 1.1). Kyeemagh Infants School (the study area) occupies the majority of the block and North Brighton Pre-school occupies the north-eastern corner. The block is surrounded by residential development on all sides.

The foreshores of Botany Bay have undergone significant modification since European contact (Attenbrow 2010). The topography of the Kyeemagh area has been significantly altered to allow for residential development (Barber 1996). The original natural topography of the area would have consisted of gently undulating plains and rolling undulating rises of broad, level to very gently inclined, swales and dunes (Chapman and Murphy 1989). The study area may have once been covered by sand dunes, but the landform has since been levelled and altered to allow for the development of the school and surrounding roads. Originally the Kyeemagh area was highly prone to localised flooding, but the significant historic modification, realignment and formalisation of both Cooks River and Muddy Creek channel has lessened the possibility of severe flooding in the area (Rockdale Council 2009).

2.2 Information Review

A review of existing information regarding the biodiversity of the study area and the locality was undertaken. This included:

- a search of the BioNet Atlas database for records of threatened fauna and flora in the locality (5 km radius) (OEH 2018b);
- a search of the Protected Matters database for records of Matters of National Environmental Significance in the locality (5 km radius) (DotEE 2018);
- examination of vegetation mapping of the study area and surrounds (OEH 2016);
- examination of the NSW Government Biodiversity Values Map and Threshold Tool (DPE 2018);
- examination of the State Environment Planning Policy (Coastal Management) 2018 maps (DPE 2019);
- examination of Bayside Council's mapping of Environmentally Sensitive Land, Biodiversity and Wetlands (Rockdale Council 2011a, 2011b, 2011c and 2011d);
- examination of satellite imagery of the study area and surrounds (available on Google Earth Pro);
- examination of historic aerial photography of the locality.

2.3 Field Assessment

A field survey of the study area was undertaken by AMBS botanist Belinda Pellow and AMBS fauna ecologist Mark Semeniuk on 11 December 2018. The study area was traversed to examine the type and condition of the vegetation present and to record the plant species present. The structure of the vegetation, its location within the landscape and the substrate on which it occurred were noted. The survey included an assessment of the fauna habitat present and a search was made for tree hollows and other habitat features that might be used by threatened species. Any fauna detected during the survey were recorded.

2.4 Significance Assessment

Following the desktop and field assessments described above, the data were reviewed to assess threatened species, populations and/or ecological communities considered likely to occur within

the study area and potentially be affected by the proposed development. The likely significance of potential impacts on such threatened species, populations and/or ecological communities was tested by application of the five criteria detailed in section 7.3 of the BC Act.

3 Results

3.1 Information Review

Historic aerial imagery shows no treed vegetation on the study area in 1943 and a number of unsealed tracks in the vicinity (Figure 3.1). Since 1943, further work associated with the construction of the existing school buildings, grounds and landscaping has been undertaken.



Figure 3.1 The study area in relation to the original alignment of Cooks River (1943 imagery).

Existing vegetation mapping (OEH 2016) shows a small patch of vegetation classified as “Urban Exotic / Native” in the north-east corner of the block of land situated between Tancred Avenue, Jacobson Avenue and Beehag Street (Figure 3.2), which corresponds with an area of treed vegetation at the rear of the North Brighton Pre-school that can be seen in Figure 1.1. No other vegetated areas have been mapped on the study area or within adjacent residences. The closest area of mapped native vegetation is located approximately 200m from the study area, on the other side of General Holmes Drive (Figure 3.2).

The study area is not located on or adjacent to an area mapped on the Biodiversity Values map and the “Area Threshold” (the threshold area specified by the BC Act for the amount of native vegetation cleared) for the site is 0.25 ha (DPE 2018).

The study area does not contain any areas mapped as Environmentally Sensitive Land, Biodiversity or Wetlands on Bayside Council’s mapping. In relation to the Coastal Management SEPP, the study area does not include any areas mapped as Coastal Wetlands, Proximity Area for Coastal Wetlands,

Littoral Rainforests, Proximity Area for Littoral Rainforests, and is not located within the Coastal Environment Area or Coastal Use Area (DPE 2019).



Figure 3.2: Existing vegetation mapping of the study area and locality.

The database search results include numerous threatened species, populations and ecological communities that are known from locality; for example, the Protected Matters search (DotEE) returned 73 threatened species, 74 listed migratory species, and nine threatened ecological communities that have been recorded in (or habitat occurs in) the locality. These results are influenced by the presence of nearby areas such as the Towra Point Nature Reserve, which occurs approximately 6 km to the south, Penhryn Bay to the east, and sites such as Barton Park and the Eve Street Wetlands to the west.

3.2 Field Assessment

The field assessment found that the study area mainly buildings and paved areas in the south-western part of the site, playing fields and mown lawns in the north-eastern part of the site and a small area containing a landscaped garden and pond in the middle of the site (Figure 3.3).

The vegetation present consisted primarily of mown lawn under planted trees and shrubs, and garden beds. The majority of the planted trees and shrubs were native species such as *Eucalyptus botryoides*, *Eucalyptus saligna*, *Melaleuca quinquenervia*, *Casuarina cunninghamii*, *Allocasuarina littoralis*, *Banksia serrata*, *Banksia integrifolia*, *Agonis flexuosa*, *Syzygium* sp. and *Lophostemon confertus*. Planted shrubs included *Grevillea* species, *Callistemon* species and *Lomandra longifolia*. The mown lawn consisted of species such as *Cynodon dactylon*, *Paronychia brasiliensis*, *Trifolium repens*, *Trifolium arvense*, *Hypochaeris radicata*, *Plantago lanceolata*, *Arctotheca calendulacea* and *Modiola caroliniana*. Two native herbs were observed, *Wahlenbergia gracilis* and *Portulaca oleracea*.

Fauna habitats within the study area were highly modified and simplified. Opportunities for almost all native fauna were considered to be extremely limited, given that a large part of the site comprised mown lawn that is regularly occupied by groups of active children. Small areas of planted trees and shrubs did occur as part of landscaping / gardens, and in some locations dense stands of *Lomandra* sp. would provide some shelter habitat for ground-dwelling fauna. No significant logs, rocky outcrops or caves occurred in the study area.

No hollow-bearing trees were recorded. Two trees contained artificial nest boxes, which may be suitable for common species such as ringtail possums or small parrots. It is considered unlikely that any threatened fauna would utilise these nest boxes. One artificial pond was observed, which did not contain free water at the time of the survey, despite recent rain. School staff indicated the pond rarely contains water due to a leak. Striped Marsh Frogs (*Limnodynastes peronii*) were heard calling from the pond during rainfall prior to the site survey (School staff pers comm.). The site was considered unlikely to provide breeding habitat for the Green and Golden Bell Frog (*Litoria aurea*), which is known to occur in other parts of the locality (mainly in and around the Kogarah Golf Course).

The Bangalay trees and Banksia shrubs were considered to have potential to provided sporadic foraging resources for a range of nomadic nectarivorous species.

Fauna recorded during the survey included the following:

- Welcome Swallow
- Noisy Miner
- Crested Pigeon
- Spotted Turtle-dove
- Rainbow Lorikeet
- Grey Butcherbird.

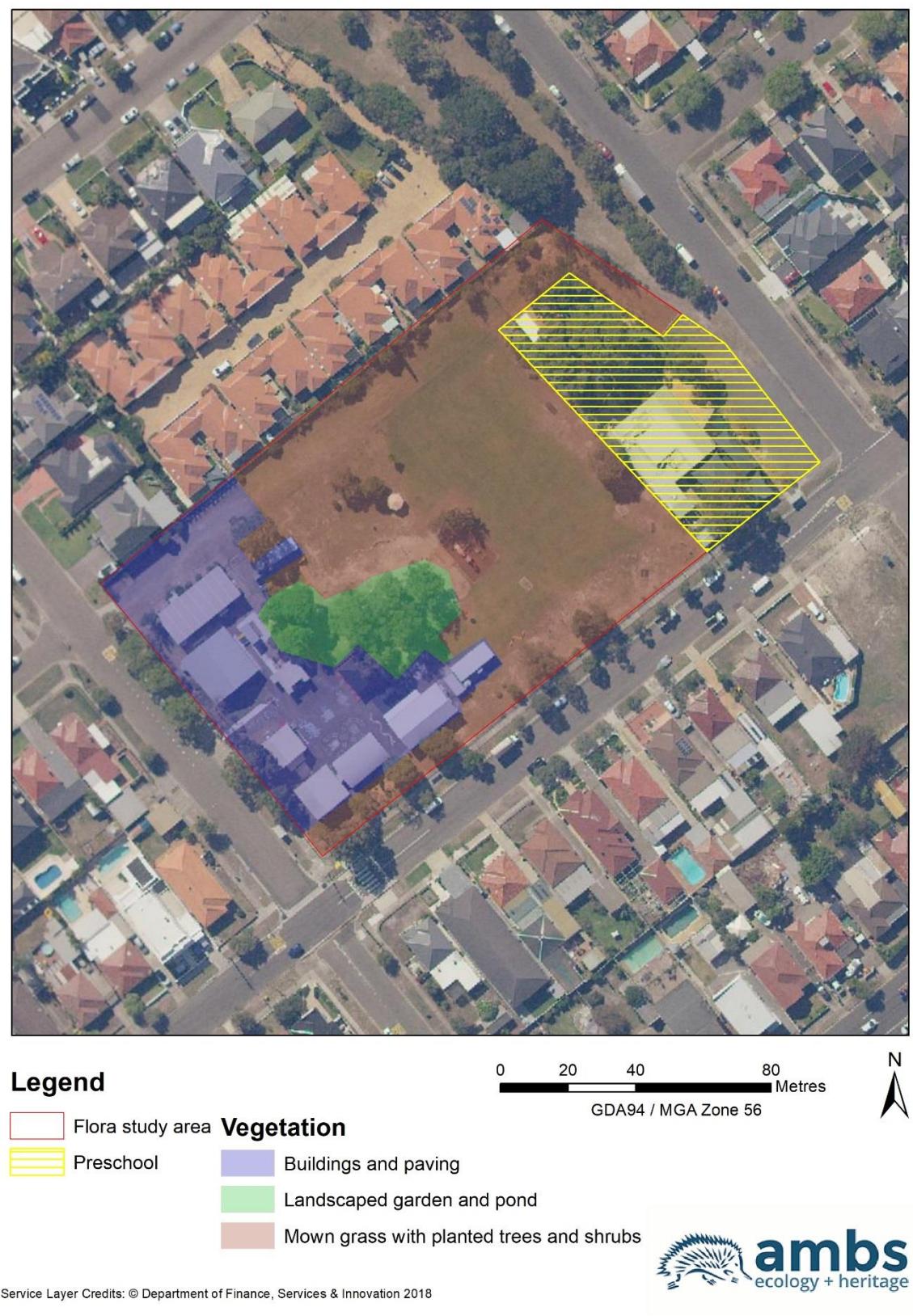


Figure 3.3: Vegetation types within the study area.



Plate 3-1: Planted trees in playground area.



Plate 3-2: Trees in mown lawn area.



Plate 3-3: Nest box.



Plate 3-4: Pond area.

3.3 Significance Assessment

While native trees and shrubs occur, the vegetation is planted and landscaped and does not represent a native Plant Community Type (PCT). No threatened plants or ecological communities were recorded and none are considered likely to occur within the study area.

A review of the database search results indicates that habitat for most of the threatened fauna known from the locality is either absent or very poor within the study area. Given the general lack of fauna habitat features, it was considered the potential for most threatened fauna to occur within the study area is low. The fauna that were observed within the study area are all common and widespread in Sydney's suburban areas and include species such as the Spotted Turtle-dove, which is introduced, and Noisy Miner, an aggressive honeyeater known to attack other birds.

Notwithstanding the above, the study area does contain small patches of vegetation that could provide a foraging resource, including for wide-ranging species such as the Grey-headed Flying-fox (*Pteropus poliocephalus*). A camp containing thousands of individuals of this species occurs at nearby Wolli Creek and the species forages across much of the locality at night. It is highly likely that the species would forage in the study area when feed trees are fruiting or flowering.

A test of significance as detailed in section 7.3 of the BC Act 2016 was applied in relation to this species (Appendix A). Our conclusion following application of the test was that the proposed development is unlikely to have a significant impact on the Grey-headed Flying-fox.

4 Potential Impacts and Recommendations

The proposed development involves the demolition of existing structures and construction of new buildings, facilities and activity areas on a site that currently contains existing buildings and paved areas, cleared playing fields and lawns and some landscaped areas containing planted trees and shrubs and a constructed pond. The site contains no native plant communities and limited fauna habitat. Therefore, impacts on local flora and fauna are likely to be limited and there are not likely to be any significant impacts on any threatened species, populations or ecological communities.

Nonetheless, there will be some potential impacts on local flora and fauna if the proposed development involves the removal of vegetation, the trees containing the nest boxes and/or the small pond area. Our recommendations to mitigate these impacts are:

1. If possible, retain the trees with nest boxes, or if not possible, engage a suitably experienced ecologist to relocate or replace the nest boxes, and manage any fauna utilising them;
2. If possible, retain the small pond and landscaped area, or replace them with similar features.

5 Conclusions

The three main "triggers" for a consent authority to consider in relation to the NSW Biodiversity Offset Scheme are:

1. Whether the impacts occur on an area mapped on the OEH Biodiversity Values map;
2. Whether the amount of native vegetation being cleared exceeds a threshold area;
3. Whether a local development is likely to significantly affect threatened species.

In relation to the above:

1. The impacts do not occur on an area mapped on the OEH Biodiversity Values map;
2. The entire development footprint is less than the threshold area, which is 0.25 ha;
3. Examination of data and vegetation maps and the results of a field assessment indicate that it is unlikely that any threatened species, populations or ecological communities or their habitats would be significantly affected by the proposal.

Section 1.5 of the BC Act lists the following as biodiversity values for the purposes of the Act:

- (a) vegetation integrity—being the degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state,

The vegetation of the study area and surrounding landscape is highly modified. There is no vegetation within the study area that represents a native PCT.

- (b) habitat suitability—being the degree to which the habitat needs of threatened species are present at a particular site,

No threatened plants or ecological communities were recorded and none are considered likely to occur within the study area. Habitat for most of the threatened fauna known from the locality is either absent or very poor within the study area. A very small area of foraging habitat for the Grey-headed Flying-fox may be affected by the proposed development. A test of significance as detailed in section 7.3 of the BC Act 2016 was applied in relation to this species and the conclusion was that the proposed development is unlikely to have a significant impact on the species.

- (c) biodiversity values, or biodiversity-related values, prescribed by the regulations.

Section 1.4 of the *Biodiversity Conservation Regulation 2017* sets out the following additional biodiversity values for the purposes of the Act:

- (a) threatened species abundance—being the occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site,

No threatened plants or ecological communities were recorded and none are considered likely to occur within the study area. Habitat for most of the threatened fauna known from the locality is either absent or very poor within the study area. A very small area of foraging habitat for the Grey-headed Flying-fox may be affected by the proposed development. A test of significance as detailed in section 7.3 of the BC Act 2016 was applied in relation to this species and the conclusion was that the proposed development is unlikely to have a significant impact on the species.

- (b) vegetation abundance—being the occurrence and abundance of vegetation at a particular site,

The study area contains mainly buildings and paved areas in the south-western part of the site, playing fields and mown lawns in the north-eastern part of the site and a small area containing a landscaped garden and pond in the middle of the site.

- (c) habitat connectivity—being the degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range,

The study area does not appear to connect such areas of habitat of threatened species. The block on which the study area occurs is surrounded by residential development on all sides.

- (d) threatened species movement—being the degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle,

The site does not appear to contribute significantly to the movement of any threatened species. The block on which the study area occurs is surrounded by residential development on all sides.

- (e) flight path integrity—being the degree to which the flight paths of protected animals over a particular site are free from interference,

The proposed development is 1 – 2 stories in height and situated in an area of residential development. It is unlikely to interfere significantly with the flight paths of protected animals.

- (f) water sustainability—being the degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.

The site contains a single, small, constructed pond, which does not appear to sustain any threatened species or ecological communities.

Clause 6.1 of the *Biodiversity Conservation Regulation 2017* sets out the following prescribed biodiversity impacts.

- (a) the impacts of development on the following habitat of threatened species or ecological communities:
 - (i) karst, caves, crevices, cliffs and other geological features of significance,
 - (ii) rocks,
 - (iii) human made structures,
 - (iv) non-native vegetation,

The study area does not contain karst, caves, crevices, cliffs and other geological features of significance, any surface cover such as rocks is limited, the human-made structures comprise existing school buildings that are currently in use and the non-native vegetation comprises playing fields, mown lawns and small landscaped gardens. A very small area of foraging habitat for the Grey-headed Flying-fox may be affected by the proposed development. A test of significance as detailed in section 7.3 of the BC Act 2016 was applied in relation to this species and the conclusion was that the proposed development is unlikely to have a significant impact on the species.

- (b) the impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range,

The study area does not appear to connect such areas of habitat of threatened species. The block on which the study area occurs is surrounded by residential development on all sides.

- (c) the impacts of development on movement of threatened species that maintains their lifecycle,

The site does not appear to contribute significantly to the movement of any threatened species. The block on which the study area occurs is surrounded by residential development on all sides.

- (d) the impacts of development on water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities (including from subsidence or upsidence resulting from underground mining or other development),

The site contains a single, small, constructed pond, which does not appear to sustain any threatened species or ecological communities.

- (e) the impacts of wind turbine strikes on protected animals,

The proposed development does not involve the construction of wind turbines.

- (f) the impacts of vehicle strikes on threatened species of animals or on animals that are part of a threatened ecological community.

The proposed development involves the construction of new buildings at an existing school and is not likely to increase vehicle strikes on threatened species. The only threatened species likely to utilise the study area regularly is the Grey-headed Flying-fox, which is nocturnal and forages outside of normal school hours.

References

Attenbrow V (2010). *Sydney's Aboriginal Past*, 2nd edition. University of New South Wales Press Ltd, Sydney.

Barber M (1996) *Archaeological Survey of Proposed Optus Communications GSM Tower Site*. Report to Optus Communications. William Barber Archaeological Services. Kyeemagh Sydney.

Chapman G.A & C.L. Murphy. (1989) *Soil Landscapes of Sydney 1:100 000 sheet*. Soil Conservation Service of N.S.W., Sydney.

DPE (2018). Biodiversity Values Map and Threshold Tool. New South Wales Department of Planning and Environment www.imbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap. Search and BOSET report generated September 2018.

DPE (2019). State Environment Planning Policy (Coastal Management) 2018 – maps. New South Wales Department of Planning and Environment webmap.environment.nsw.gov.au/PlanningHtml5Viewer/?viewer=SEPP_CoastalManagement. Search undertaken January 2019.

DotEE (2018). EPBC Act Protected Matters Report. Report generated from search of the Australian Government Department of the Environment and Energy Protected Matters Search Tool, www.environment.gov.au/epbc/protected-matters-search-tool, December 2018.

OEH (2016). The Native Vegetation of the Sydney Metropolitan Area V3.0. New South Wales Office of Environment and Heritage.

OEH (2018a). Register of orders for biodiversity certification. Gazetted. New South Wales Office of Environment and Heritage, www.environment.nsw.gov.au/biocertification/notcert.htm, page last updated 24 September 2018.

OEH (2018b). BioNet database. New South Wales Office of Environment and Heritage, www.bionet.nsw.gov.au, search for threatened species undertaken December 2018.

Rockdale Council (2009). *Rockdale City Local Flood Plan: A subplan of the St George Area Local Disaster Plan (Displan)*.

Rockdale Council (2011a). Rockdale Local Environmental Plan 2011. Natural Resource - Biodiversity Map - Sheet NRB_008. Environmentally Sensitive Land – Biodiversity.

Rockdale Council (2011b). Rockdale Local Environmental Plan 2011. Natural Resource - Wetlands Map - Sheet NRW_008. Environmentally Sensitive Land – Wetlands.

Rockdale Council (2011c). Rockdale Local Environmental Plan 2011. Terrestrial Biodiversity Map - Sheet BIO_008.

Rockdale Council (2011d). Rockdale Local Environmental Plan 2011. Wetlands Map - Sheet WET_008.

Appendix A: Test of Significance

Section 7.3 of the Biodiversity Conservation Act 2016 contains the following test for determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

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

- a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,**

The study area does not contain a breeding site (camp) for this species and contains only limited foraging habitat. The foraging habitat that is present comprises only a few trees in and around an existing school playground that would be utilised occasionally when flowering or fruiting. Most of these trees will not be removed by the proposed development. It is highly unlikely that the proposed development would place a population of the species at risk of extinction.

- b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:**
- (i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
 - (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

This section of the test is not applicable to a threatened species.

- c) in relation to the habitat of a threatened species or ecological community:**
- (i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and**
 - (ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and**
 - (iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,**

The study area does not contain a breeding site (camp) for this species and contains only limited foraging habitat. The foraging habitat that is present comprises only a few trees in and around an existing school playground that would be utilised occasionally when flowering or fruiting. Most of these trees will not be removed by the proposed development.

Potential foraging habitat for this species includes many species of trees occurring in bushland reserves, suburban parks and residential gardens throughout the locality. The habitat present within the study area represents a small proportion of the habitat present in the immediate vicinity of the study area and a tiny proportion of the habitat present in the locality.

The Grey-headed Flying-fox is a highly mobile species. The proposed development will not fragment or isolate an area of habitat from other areas of habitat for this species.

The long-term survival of the species in the locality is highly unlikely to be significantly influenced by the removal of a few trees within the study area.

- d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),**

The proposed development is not likely to have an adverse effect on any declared area of outstanding biodiversity value.

- e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.**

The proposed development is not part of a key threatening process or likely to increase the impact of a key threatening process.