BROOKVALE OVAL REDEVELOPMENT

Centre of Excellence and Grandstand
Flora and Fauna Assessment Report

Prepared for:

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Urbis Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

DOCUMENT CONTROL

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CONTENTS

1 INTRODUCTION 5
1.1 Background 5
1.2 Legislative Context and Scope 5
1.3 Proposed Development 7
1.4 Methodology 8
1.5 Staff Qualifications and Roles 8
2 SITE DESCRIPTION 9
2.1 Flora and Vegetation 11
2.2 Fauna Habitat 14
2.3 Threatened Species and Communities 15
3 IMPACT ASSESSMENT 16
3.1 General 16
3.2 EPBC Act Matters 16
3.3 Application of the BC Act 16
3.3.1 BOS Thresholds 16
3.3.2 Test of Significance 17
3.4 Local Environmental Planning Instruments 18
3.4.1 Warringah Local Environmental Plan 2011 18
3.4.2 Warringah Development Control Plan 2011 18
4 MITIGATION MEASURES 19
5 CONCLUSION 20
REFERENCES 21

DOCUMENT REFERENCES

TABLES

Table 1 Staff Roles and Qualifications 8
Table 2 Test of Significant Effect on Threatened Biota and Habitats 17

FIGURES

Figure 1 Site Location 6
Figure 2 Extract of Site Plan (Hassell 2019a) 7
Figure 3 Extract of Existing Conditions Site Plan (Hassell 2019b) 9
Figure 4 Historical Aerial Imagery (1943 SixMaps) 10
Figure 5 Sydney Metro Vegetation Mapping (OEH 2016) 13

PHOTOS

Photo 1 Planted Brush Box and Lomandra spp. at the proposed building footprint 12
Photo 2 Planted trees and lawn in proximity to the proposed carpark footprint 12
Photo 3 Potential micro-bat habitat within existing building cavities 14

APPENDICES

Appendix A Flora Species List
Appendix B BioNet Atlas Threatened Species
Appendix C BOSET Report

1 INTRODUCTION

1.1 Background

SLR Consulting Australia Pty Ltd (SLR) has been engaged by Urbis Pty Ltd (Urbis) to prepare a flora and fauna assessment to accompany the Development Application (DA) for a Proposed Centre of Excellence and Grandstand at Brookvale Oval on Pittwater Road, Brookvale. For the purposes of the proposed development the Manly Warringah Sea Eagles are the proponent and the Northern Beaches Council is the consent authority under Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

Brookvale Oval is located on Pittwater Road, Brookvale and lies approximately 13 km north-east of the Sydney Central Business District (see Figure 1). The site is approximately 4.3 hectares in area and includes the following four lots: Lot 1 DP 784268, Lot 1 DP 114027, Lot B DP 966128 and Lot 6 DP 785409. The site is bordered by Pittwater Road, Alfred Road, Pine Avenue and Brookvale Northern Park. Surrounding areas comprise a mix of commercial and residential properties, as well as St Augustine's College Sydney to the site's immediate west and Brookvale Public School to the south west.

The portion of the site that is relevant to this project includes the footprint of the proposed Centre of Excellence and Grandstand along the site's northern boundary, as well as the footprint of a proposed carpark extension along the sites western boundary. These areas comprise a mixture of lawn, garden and hardstand surfaces.

1.2 Legislative Context and Scope

The Biodiversity Conservation Act 2016 (BC Act) commenced on the 25th of August 2017 and includes the Biodiversity Offset Scheme (BOS), which provides for biodiversity assessment and offsetting of a range of developments in NSW according to the Biodiversity Assessment Method (BAM). The BOS applies to:

- Local development assessed under Part 4 of the EP&A Act that is likely to significantly affect threatened species or communities listed under Schedules 1 and 2 of the BC Act, as determined by application of a five-part-test of significance in accordance with Section 7.3 of the BC Act.
- State significant development and state significant infrastructure projects, unless the Secretary of the Department of Primary Industry and the Environment and the Minister for Energy and the Environment determine that the project is not likely to have a significant impact.
- Development activities that have the potential to impact Areas of Outstanding Biodiversity Value (AOBV) as listed under Part 3 of the BC Act.
- Development activities that have the potential to impact areas mapped as having 'high biodiversity value' as indicated by the Biodiversity Values Map.
- Development activities that involve clearing of native vegetation that exceeds the BOS thresholds as determined by the Biodiversity Conservation Regulation 2017.

In relation to the proposed development this assessment aims to address the above triggers for the BOS, including application of a five-part-test of significance. Consideration of Local Environmental Planning Instruments (Warringah Council Local Environmental Plan 2011) and the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) are also provided. There are no other biodiversity-related policies or plans (such as State Environmental Planning Policies or Regional Environmental Plans) considered relevant to the project.

Source: Nearmap (September 2019)

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Site Location

FIGURE 1

1.3 Proposed Development

The proposal seeks development consent for a Centre of Excellence, a state-of-the-art facility to be used by professional sportsmen and women in conjunction with the community, and 3,000 covered seats to deliver an improved experience for spectators attending the site. The proposal will support the operations of the Manly Warringah Sea Eagles (MWSE) and ensure its viability into the future. The Project represents a significant investment into rugby league in the region, and is being jointly funded by the Federal Government, New South Wales State Government and the MWSE. Once completed, the project will:

- Consolidate the Manly Warringah Sea Eagles (MWSE) training and administration bases at one location.
- Provide improved training facilities for all players (from community to elite levels) to develop their skills as well as for professional players to have access to high performance training facilities.
- Provide spectators with additional covered seating that delivers the highest quality viewing and entertainment experience possible at MWSE home games.
- The proposed Centre of Excellence will have a footprint of approximately 1,800sqm, and span over 2 levels.
- A cantilevered roof will extend over the seating area.

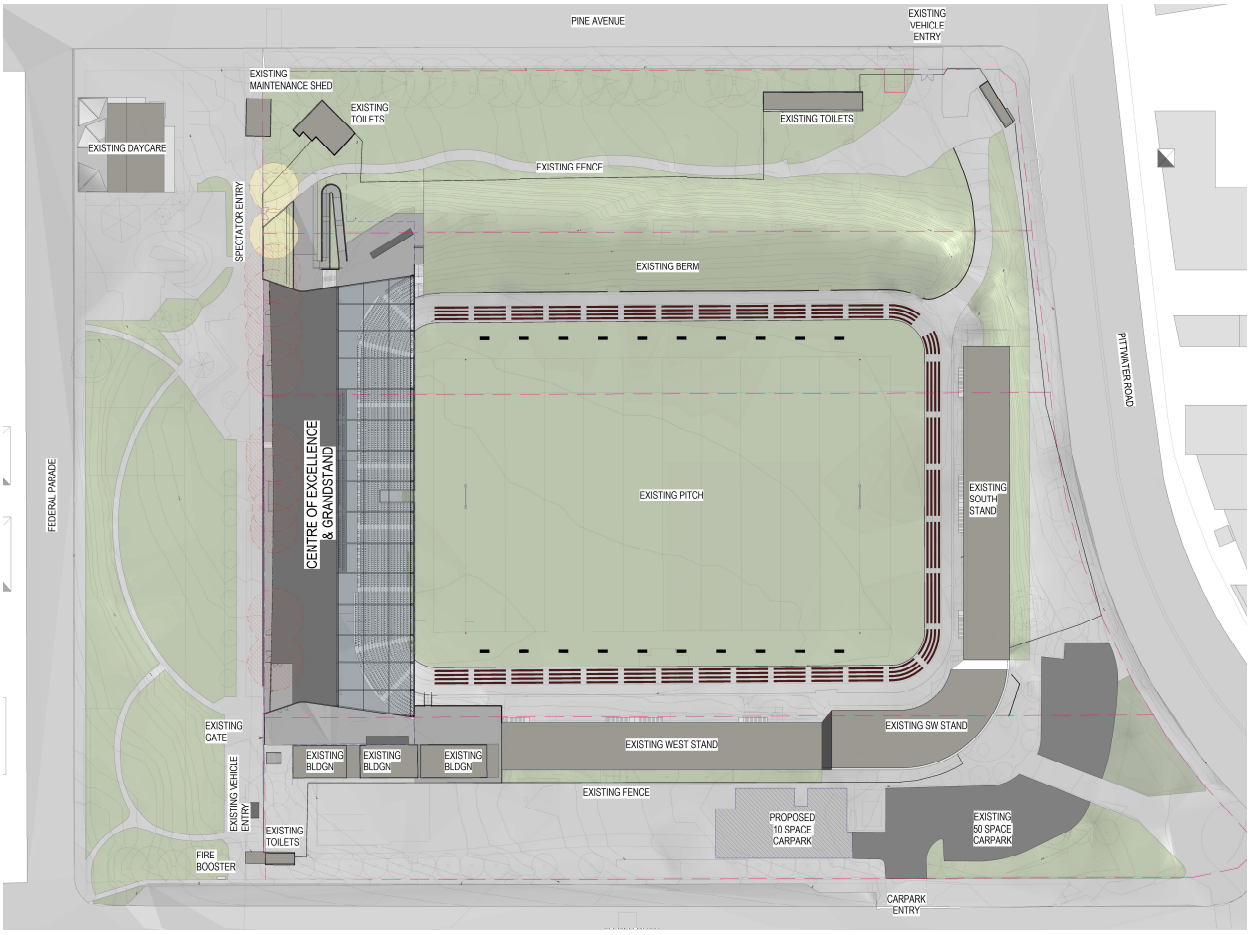

Figure 2 Extract of Site Plan (Hassell 2019a)

1.4 Methodology

This assessment is based on a review of available mapping, reports, literature and data, including:

- Sydney Metro Vegetation Mapping VIS_ID 4489 (OEH 2016);
- BioNet Atlas of NSW (OEH 2019a); and
- NSW OEH Biodiversity Values Map (OEH 2019b).

A site inspection was completed by SLR Ecologists in fine sunny weather, on the 28th of August 2019 involving:

- identification of trees and vegetation to be removed and searches for any areas of native vegetation;
- general fauna habitat assessment including searches for evidence of fauna habitation; and
- identification of potential habitats and resources for threatened species.

The design of the current ecological survey was based on site conditions and the context of the proposal. Given the minor scale of direct impacts, and the developed landscape, the survey was designed to provide an overall assessment of ecological values within the site. Based on the duration and timing of the field survey, it is likely that some of the species that may occur, either permanently, seasonally or transiently, were not detected. It was beyond the scope of the survey to carry out detailed fauna surveys such as fauna trapping. Site conditions, including the presence of threatened species, may change after the date of this report.

SLR holds a Scientific Licence pursuant to the NSW National Parks & Wildlife Act 1974 to pick, kill or harm native flora and fauna for scientific purposes (licence number SL100176), as well as Animal Research Authority, which authorises field staff to trap, capture, harm, hold and release animals protected under the BC Act.

1.5 Staff Qualifications and Roles

The roles and qualifications of all staff responsible for preparation of this assessment are listed in Table 1.

Table 1 Staff Roles and Qualifications

Personnel	Qualifications and Training	Role
Fiona Iolini Associate Ecologist	Bachelor of Environmental Science and Management, University of Newcastle 2007 Cert III Conservation and Land Management, TAFE NSW 2015 Biodiversity Assessment Method accredited assessor (#BAAS19042)	Field investigation and report preparation
Jeremy Pepper Principal Ecologist	Bachelor of Science (Hons Class 1) University of NSW 1996 Cert II Bushland Regeneration, TAFE NSW Cert III Horticulture (Arboriculture), TAFE NSW Biodiversity Assessment Method accredited assessor (#BAAS17104)	Project management and report review
David Martin Project Ecologist	Bachelor of Environmental Science and Management, University of Newcastle 2014 Master of Science (Biosciences), The University of Melbourne 2018	Field investigation and report preparation
Emily Mitchell CAD/GIS Technical Officer	Bachelor of Development Studies, University of Newcastle 2008 Cert IV Spatial Information Services, TAFE NSW	GIS data management and figure preparation

2 SITE DESCRIPTION

The site is within the Sydney Basin Region and Pittwater Sub-region of the Interim Biogeographic Regionalisation for Australia (IBRA). The site lies within the suburb of Brookvale, within the Northern Beaches Local Government Area (LGA). Brookvale Oval is generally surrounded by highly urbanised environs that are predominately residential, infrastructure and commercial land uses (refer Figure 1). There are no watercourses or other special features representing items of biodiversity value present within or on land adjoining the oval.

The site currently comprises the oval and associated structures including grandstands, carparks, batting cages, score boards and out buildings (restrooms and café), as well as landscaped areas, as depicted in Figure 3. Brookvale Oval was officially opened as Brookvale Park at its current location in 1911 (Warringah Council 2002). Historic aerial imagery as depicted in Figure 4 (DFSI 2019) shows the site in 1943 complete with oval and associated infrastructure. At this time the site was already predominantly cleared, with only planted trees along the northern, eastern and western boundaries. Adjoining properties also appear mostly cleared.

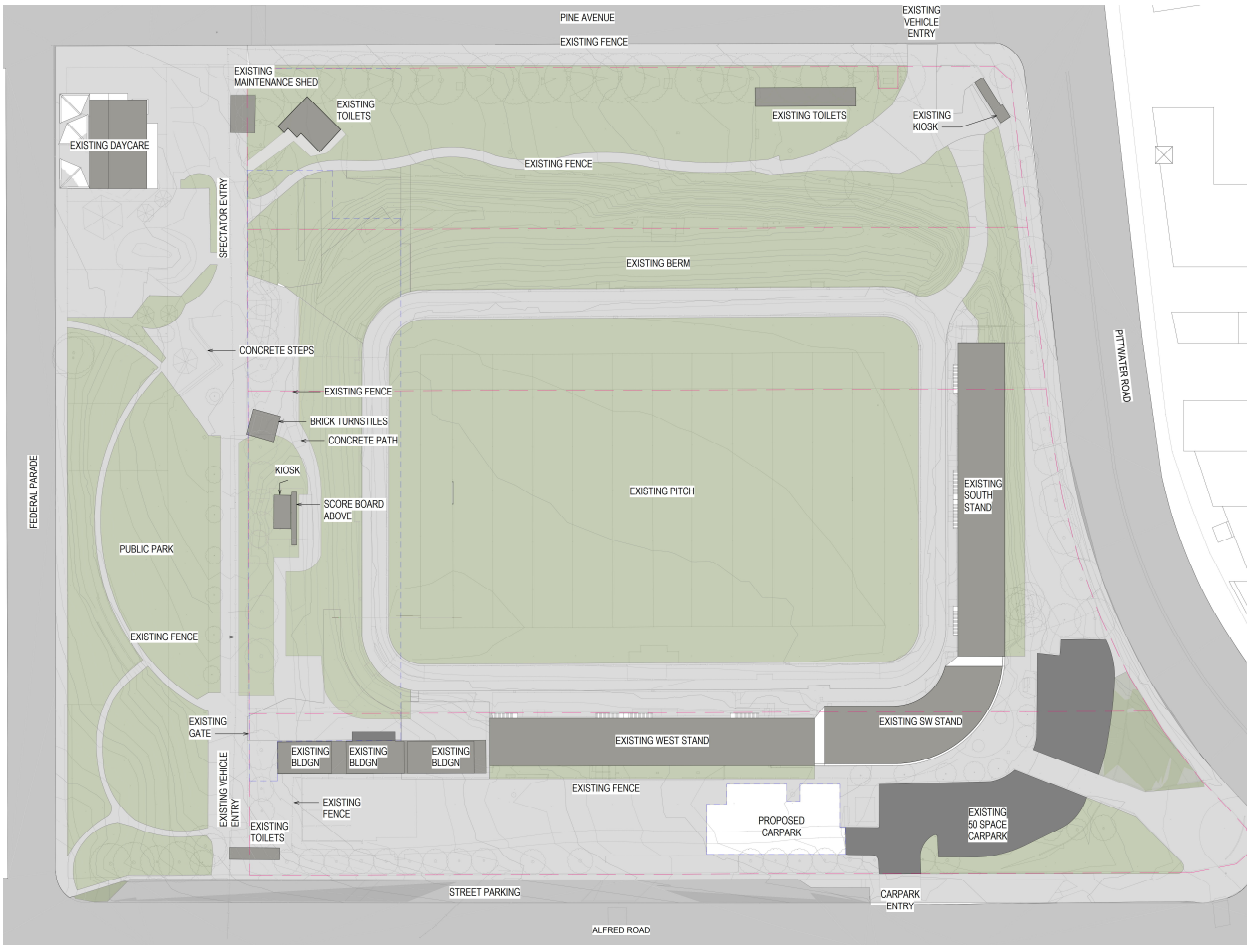

Figure 3 Extract of Existing Conditions Site Plan (Hassell 2019b)

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Historical Aerial Imagery (1943 SixMaps)

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FIGURE 4

2.1 Flora and Vegetation

According to available regional scale vegetation mapping data (OEH 2016), the site is not mapped as containing native vegetation, with vegetated areas described as 'Urban Exotic/Native' (see Figure 5). Areas of native vegetation mapped nearby occur to the west on steeper sites and riparian gullies and include the following PCTs:

- PCT 1250 Sydney peppermint – Smooth-barked Apple – Red Bloodwood open forest on slopes of moist sandstone gullies.
- PCT 1783 Red Bloodwood – Scribbly Gum / Old-man Banksia open forest on sandstone ridges.
- PCT 1828 Coachwood – Lilly Pilly – Water Gum gallery rainforest in sandstone gullies.

Much of the lower-lying areas, with similar topography to Brookvale Oval, are cleared and developed. There are a few patches of 'PCT 1776 Smooth-barked Apple – Red Bloodwood open forest on enriched sandstone slopes' and some narrow bands of 'PCT 1232 Swamp Oak floodplain swamp forest' to the east.

The majority of the site is composed of landscaped areas including gardens, grandstands, carpark, buildings and paved areas. The vegetation recorded on the site comprises planted trees and ground-cover along the site boundaries and surrounding existing built features. Planted trees are primarily exotic including Camphor Laurel Cinnamomum camphora, Lombardy Poplar Populus nigra and Liquidambar Liquidambar styraciflua, with some planted native species, including a single Swamp Mahogany Eucalyptus robusta and two Spotted Gums Corymbia maculata.

Several Brush Box Lophostemon confertus trees have also been planted along the perimeter of the oval. Whilst they are native to NSW, they do not occur naturally in the Sydney region hence do not constitute native vegetation. A few Smooth-barked Apple Angophora costata specimens situated within the parkland at the site's north may have regrown naturally. However, since they are isolated and exist without any natural middle or ground layers, they do not constitute native vegetation.

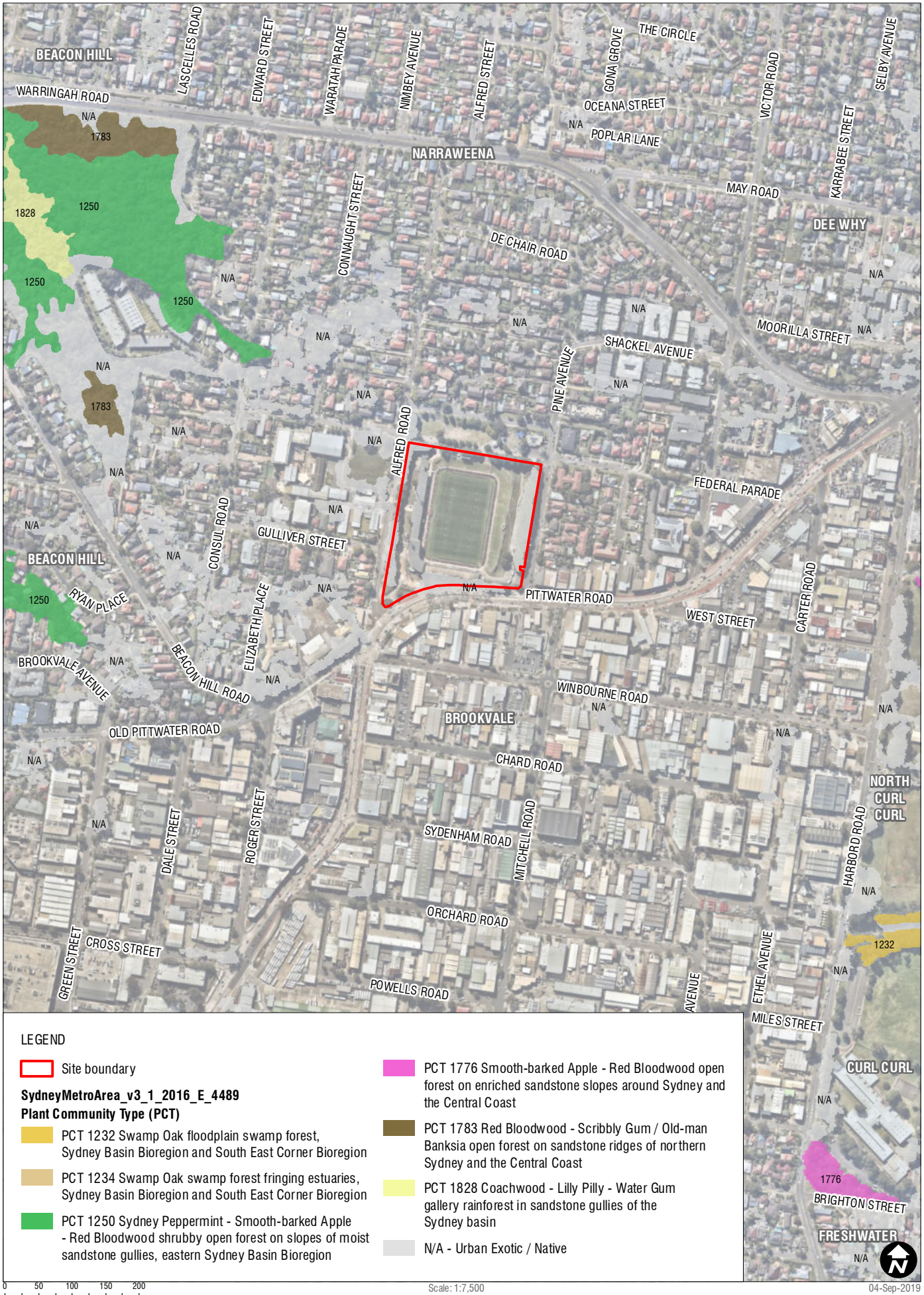
Trees that will be impacted to facilitate the construction of the Centre of Excellence and Grandstand along the northern boundary of the site include a number of mature specimens of Brush Box Lophostemon confertus. These are positioned along the fence line (see Photo 1), with a ground layer comprising mulch and planted groundcovers (such as Spiny-headed Mat-rush Lomandra longifolia and related cultivar Lomandra longifolia var. 'tanika'). The proposed carpark expansion along the western boundary will not impact any trees and will impact an area of maintained exotic lawn of predominately Winter Grass Poa annua, Kikuyu Cenchrus clandestinus and Onion Grass Romulea rosea (see Photo 2).

Other exotic plants observed within gardens, lawns and landscaped areas include African Lily Agapanthus praecox subsp. orientalis, Lombardy Poplar Populus nigra, Indian Hawthorn Rhaphiolepis indica, Murraya Murraya paniculata, English Ivy Hendra helix, White Clover Trifolium repens, Dandelion Taraxacum officinale, Mouse-ear Chickweed Cerastium glomeratum and Purple Cudweed Gamochaeta purpurea.

A complete flora species list (comprising almost entirely planted specimens) within and adjoining the site is included in Appendix A.

Photo 1 Planted Brush Box and Lomandra spp. at the proposed building footprint

Photo 2 Planted trees and lawn in proximity to the proposed carpark footprint



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Source: Nearmap (September 2019)

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Sydney Metro Vegetation Mapping (OEH 2016)

FIGURE 5

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2.2 Fauna Habitat

There is no native vegetation within the project site or adjoining land and natural habitat features (such as aquatic habitat, complex vegetation structure, caves, hollows or ground logs), which are important for occupancy of native fauna species, are absent. Much of the surrounding area is heavily urbanised and the artificial vegetation and habitat at the site are poorly connected through the landscape.

Artificial habitats may exist within the site, including the planted gardens and buildings. Building cavities, such as behind large signs, or within the roof space of existing buildings and sheds (see Photo 3), may represent roosting habitat for individuals of locally occurring microchiropteran (microbat) species, where present. The trees and shrubs may represent very limited foraging habitat or shelter for ground mammals, reptiles, bats and birds.

Six species of native birds were recorded during the site survey, including Sulphur-crested Cockatoo, Australian Magpie, Noisy Miner, Crested Pigeon, Welcome Swallow and Kookaburra. One introduced bird species, the Indian Myna, was also recorded during the site survey. No evidence of fauna habitation (such as scats, scratches or nests) was observed during the site inspection. Fauna species with the greatest potential to utilise the artificial habitats of the site are highly mobile species including bat and bird species. However, the site is not considered to be important to the long-term viability of any fauna species.

Photo 3 Potential micro-bat habitat within existing building cavities

2.3 Threatened Species and Communities

A search of the NSW Bionet Atlas (licenced search conducted on the 28th of August 2019) detected 126 threatened species previously recorded within a 10 km radius of the site, comprising 40 plants, 52 birds, 25 mammals, three amphibian, five reptiles and one insect. A list of the threatened species returned by the BioNet Atlas Search is included in Appendix C.

Very few of the previous records of threatened species are within a 2 km radius of the site, which can be attributed to the heavily developed nature of this part of Sydney. The records that do occur within 2 km of the site are centred on local reserves and areas of native vegetation and are primarily that of highly mobile threatened species, including the Grey-headed Flying-fox, Powerful Owl and Large Bent-winged Bat.

No threatened plants or animals were recorded during the site survey and given the disturbed nature of the site and surrounds and evidence of historical and ongoing maintenance and disturbance within the site it is unlikely that any threatened species occur. The site is highly modified therefore there are no areas of intact soil and thus no habitat for threatened plants.

The landscaped areas throughout the site provide some very marginal potential foraging habitat for highly mobile threatened species of bats and birds (such as Grey-headed Flying-fox, Powerful Owl and microbats), although these species are unlikely to occur on a regular basis. The buildings within the site provide marginal potential roosting habitat for threatened microbat species, although the likelihood that microbats would occur is probably reduced due to the ongoing noise and disturbance within and around the site.

Records of the Southern Brown Bandicoot Isoodon obesulus obesulus exist throughout the area, including one less than a kilometre from the Brookvale Oval within urban parkland. However, as the species is typically shy and does not stray far from preferred shelter of dense heath vegetation (DPIE 2019), it is unlikely that the species would utilise the limited artificial ground layer habitat within the site.

There are no other habitat features (such as hollows, caves or watercourses) suitable for threatened species of fauna, including those recorded by the NSW BioNet Atlas.

The site does not contain any areas of native vegetation or threatened ecological communities.

3 IMPACT ASSESSMENT

3.1 General

The proposed development is largely restricted to previously cleared and developed portions of the site. Tree removal represents removal of marginal potential foraging habitat for highly mobile threatened species (such as bats and birds). The demolition of buildings and sheds could also potentially involve the removal of marginal artificial roost sites for microbats (including Little Bent-winged and Large Bent-winged Bats).

3.2 EPBC Act Matters

The purpose of the EPBC Act is to ensure that actions likely to cause a significant impact on 'matters of national environmental significance' undergo an assessment and approval process. Under the EPBC Act, an action includes a proposal, a development, an undertaking, an activity or a series of activities, or an alteration of any of these things. An action that 'has, will have or is likely to have a significant impact on a matter of national environmental significance' is deemed to be a 'controlled action' and may not be undertaken without prior approval from the Australian Minister for the Environment.

A search of the Protected Matters Search Tool reveals that a total of 92 threatened species, 59 migratory species (and/or their habitats) and 10 threatened ecological communities listed in the EPBC Act are predicted to occur within a 10 kilometer radius of the site. No other EPBC Act matters are of relevance to the biodiversity of the site.

Brookvale Oval provides only very marginal potential foraging habitat for highly mobile threatened and migratory species of bat and birds. Based on the results of the current investigation, it is not likely that the proposed development will have a significant impact on any matters of national environmental significance listed under the EPBC Act. Referral of the development application to the Commonwealth Department of the Environment and Energy is not warranted.

3.3 Application of the BC Act

3.3.1 BOS Thresholds

For local developments the BC Regulation sets out threshold levels for when the BOS will be triggered. The threshold has two elements:

- whether the amount of native vegetation being cleared exceeds a threshold area; or
- whether the impacts occur on an area mapped on the Biodiversity Values map published by Environmental Agency Head.

The Biodiversity Offset Scheme Entry Threshold (BOSET) Report (see Appendix D) for the site indicates that a clearing threshold of 0.25 hectares is applicable to the site. The BOSET Report also provides a print of the Biodiversity Values (BV) map showing the site contains no areas of 'high biodiversity value'. The proposed development would not involve any clearing of native vegetation and therefore does not involve clearing that would exceed the above listed BOS thresholds and trigger application of the BAM.

3.3.2 Test of Significance

Proponents are required to carry out a 'test of significance', pursuant to Section 7.3 of the BC Act, for all local development proposals that do not exceed the BOS thresholds. The five factors are addressed in Table 2.

Table 2 Test of Significant Effect on Threatened Biota and Habitats

No	Test of Significance	Taking into Account the Test of Significance
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	Based on the lack of native vegetation and suitable habitat values, the site is not likely to support a viable local population of a threatened species; hence the proposed development is not likely to render any such population occurring in the locality at risk of extinction.
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	The site does not contain an endangered ecological community or a critically endangered ecological community.
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 site does not contain an endangered ecological community or a critically endangered ecological community.
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 not remove any areas of native vegetation or habitat. In relation to the very marginal artificial habitat for highly mobile species, only a very small extent of isolated habitat would be removed.
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.	In relation to the habitat of a threatened species, the proposal is not likely to remove or modify any important or known habitat and is not likely to cause an area of habitat to become fragmented or isolated.
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 or ecological community in the locality	The very marginal artificial habitat for threatened species which is to be removed is highly modified and isolated and is of low habitat suitability. The potential habitat for threatened species, including building roof spaces and landscaping, to be removed from the site is of low importance with respect to the long-term survival of threatened species in the locality.
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 site does not contain 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 will not form part of any key threatening processes listed under the BC Act.

3.4 Local Environmental Planning Instruments

3.4.1 Warringah Local Environmental Plan 2011

The Warringah Local Environmental Plan 2011 (WLEP) controls development throughout Warringah LGA (now part of the Northern Beaches Council) through zoning and development controls. A review of Council's online map viewer (Northern Beaches Council 2019) identified the following with regard to biodiversity matters under the LEP:

- The site is zoned as 'RE1 Public Recreation' under the WLEP and there are no areas within the site boundaries, or nearby, that are zoned either 'E2 Environmental Conservation' or 'E3 Environmental Management'.
- The trees along the western, northern and eastern boundaries are mapped as heritage item I 132 under the WLEP. This item details the "Brush Box and Camphor Laurel trees surrounding Brookvale Park" (WLEP 2011).

The proposed development will not directly impact areas of biodiversity according to the WLEP. The mitigation measures section of this report identifies relevant means to avoid or reduce any indirect impacts on biodiversity values associated with the proposed development. The proposed development does not contravene the objectives of the WLEP in respect to biodiversity conservation.

3.4.2 Warringah Development Control Plan 2011

The Warringah Development Control Plan 2011 (WDCP) provides detailed guidelines to guide the design and assessment of development applications for land covered by the Warringah LEP 2011. A review of Council's online map viewer (Northern Beaches Council 2019) identified the following with regard to biodiversity matters under the WDCP:

- No areas of 'Threatened and High Conservation Habitat' are mapped within the site boundaries with the nearest patch being over one kilometre to the site's north-west.
- No 'Wildlife Corridors' were mapped within the site boundaries.
- No areas of 'Native Vegetation' are mapped within the site boundaries.
- The site is mapped as being within the Greendale Creek, Curl Curl catchment; however no 'Waterways and Riparian Lands' have been mapped within the site boundaries, with the nearest area mapped being approximately 200 metres to the west of the site.
- No 'Biodiversity Certified Land' is mapped on the site.

The proposed development will not contravene the aims of the WDCP with respect to biodiversity matters as listed above.

4 MITIGATION MEASURES

The proposed development is relatively small scale but will involve the removal of some large mature planted trees and areas of grass and groundcover plantings. A number of existing structures will be demolished, including out buildings, demountables and the score board. These features represent potential artificial foraging and roosting habitat to local fauna, including several threatened micro-bats. Despite the relatively minor nature of impacts on flora and fauna and their habitats the following measures are recommended:

- A Project Ecologist should undertake a pre-clearance inspection to identify any micro-bat roosting prior to demolition. If micro-bats are found during demolition works, works are to stop and the Project Ecologist or wildlife carer should be contacted to undertake relocation.
- If any injured fauna species are found during the construction period, construction must stop immediately so that the injured animal can be taken to a vet or wildlife carer. All handling of fauna species should be conducted by a Project Ecologist or wildlife carer.
- During vegetation clearing, any animals that are displaced are to be captured (by a licenced wildlife carer or ecologist) and relocated to nearby bushland prior to felling or the tree or structure shall be sectioned and dismantled under the supervision of a Project Ecologist before relocating the animals.

Demolition and construction work involved in this development also has the potential to exacerbate localised soil erosion and lead to the introduction of priority weeds. Therefore, we recommend that ongoing weed management and erosion control is undertaken where possible during, and after the completion of construction works on site, including:

- Installation of erosion and sediment control measures prior to any works, followed by regular inspection and maintenance during construction.
- All vehicles, equipment, footwear and clothing should be clean and free of weed propagules prior to entering the site and any weeds that are removed during the construction phase should be disposed of appropriately.

5 CONCLUSION

The site at Brookvale Oval and much of the surrounding land have been historically cleared and developed for several decades. Consequently, there is no native vegetation or natural habitat for flora and fauna within or adjoining the site. The site does not contain any threatened species or communities as listed under the BC Act or EPBC Act. Additionally, there are no potential habitats for threatened species or communities, aside from some very marginal potential habitat for mobile species, such as bats and birds.

The proposed development will remove an area of exotic lawn along the western boundary, as well as a number of planted Brush Box Lophostemon confertus trees, exotic lawn and planted groundcover cultivars along the northern boundary of the site. These areas of landscaped garden do not constitute native vegetation and do not form part of an endangered ecological community. None of the site or adjoining land is mapped as having high biodiversity value either by the Biodiversity Values Map, the Warringah LEP or the Warringah DCP.

The proposed development will not trigger the application of the BOS by virtue of the clearing of native vegetation that exceeds the BOS entry thresholds and will not result in a significant impact to threatened species and communities. Thus, the proposed development does not trigger the application of the BOS and does not require the preparation of a Biodiversity Development Assessment Report (BDAR). Several construction management measures are recommended to mitigate any potential impacts on fauna, as well as reduce the likelihood of erosion and weed incursion.

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APPENDIX A

Flora Species List

Table A1 Flora Species List for the Site

Species Name	Common Name	Status
Alliaceae		
Agapanthus praecox subsp. orientalis	African Lily	Introduced
Altingiaceae		
Liquidambar styraciflua	Liquidambar	Introduced
Araliaceae		
Hedera helix	English Ivy	Introduced
Arecaceae		
Livistona australis	Cabbage Tree Palm	Native
Asteraceae		
Gamochaeta purpurea	Purple Cudweed	Introduced
Taraxacum officinale	Dandelion	Introduced
Caryophyllaceae		
Cerastium glomeratum	Mouse-ear Chickweed	Introduced
Fabaceae - Faboideae		
Trifolium repens	White Clover	Introduced
Iridaceae		
Romulea rosea	Onion Grass	Introduced
Lauraceae		
Cinnamomum camphora	Camphor laurel	Introduced
Lomandraceae		
Lomandra longifolia	Spiny-headed Mat-rush	Native
Lomandra longifolia var. tanika	Tanika	-
Myrtaceae		
Acmena smithii	Lilly Pilly	Native
Angophora costata	Smooth-barked Apple	Native
Corymbia maculata	Spotted Gum	Native
Eucalyptus robusta	Swamp Mahogany	Native
Lophostemon confertus	Brush Box	Native and Introduced
Phormiaceae		
Dianella caerulea	Blue Flax Lily	Native
Poaceae		
Cenchrus clandestinus	Kikuyu Grass	Introduced
Cynodon dactylon	Couch	Native
Poa annua	Winter Grass	Introduced
Proteaceae		
Buckinghamia celsissima	Ivory Curl	Native and Introduced
Rosaceae		
Rhaphiolepis indica	Indian Hawthorn	Introduced
Rutaceae		
Murraya paniculata	Murraya	Introduced
Salicaceae		
Populus nigra	Lombardy Poplar	Introduced

Status and nomenclature according to PlantNet (RBGTD 2019) where available

APPENDIX B

BioNet Atlas Threatened Species

Table B1 Threatened Species of Flora recorded by the BioNet Atlas 10 km Search

Species Name	Common Name
Asteraceae	
Senecio spathulatus	Coast Groundsel
Campanulaceae	
Isotoma fluviatilis subsp. fluviatilis	-
Casuarinaceae	
Allocasuarina portuensis	Nielsen Park She-oak
Dilleniaceae	
Hibbertia puberula	-
Hibbertia superans	-
Elaeocarpaceae	
Tetratheca glandulosa	-
Tetratheca juncea	Black-eyed Susan
Ericaceae	
Epacris purpurascens var. purpurascens	-
Euphorbiaceae	
Chamaesyce psammogeton	Sand Spurge
Fabaceae - Mimosoideae	
Acacia bynoeana	Bynoe's Wattle
Acacia terminalis subsp. terminalis	Sunshine Wattle
Grammitidaceae	
Grammitis stenophylla	Narrow-leaf Finger Fern
Haloragaceae	
Haloragodendron lucasii	-
Lamiaceae	
Prostanthera densa	Villous Mint-bush
Prostanthera junonis	Somersby Mintbush
Prostanthera marifolia	Seaforth Mintbush
Malvaceae	
Lasiopetalum joyceae	-
Myrtaceae	
Callistemon linearifolius	Netted Bottle Brush
Darwinia biflora	-
Eucalyptus camfieldii	Camfield's Stringybark
Eucalyptus nicholii	Narrow-leaved Black Peppermint
Eucalyptus scoparia	Wallangarra White Gum
Kunzea rupestris	-
Leptospermum deanei	-
Melaleuca biconvexa	Biconvex Paperbark
Melaleuca deanei	Deane's Paperbark
Rhodamnia rubescens	Scrub Turpentine
Syzygium paniculatum	Magenta Lilly Pilly
Triplarina imbricata	Creek Triplarina
Orchidaceae	
Caladenia tessellata	Thick Lip Spider Orchid
Diuris bracteata	-
Genoplesium baueri	Bauer's Midge Orchid
Microtis angusii	Angus's Onion Orchid
Prasophyllum fuscum	Slaty Leek Orchid
Sarcochilus hartmannii	Hartman's Sarcochilus
Proteaceae	
Grevillea caleyi	Caley's Grevillea
Persoonia hirsuta	Hairy Geebung

Species Name	Common Name
Rutaceae	
Asterolasia buxifolia	-
Santalaceae	
Thesium australe	Austral Toadflax
Thymelaeaceae	
Pimelea curviflora var. curviflora	-

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Table B2 Threatened Species of Fauna recorded by the BioNet Atlas 10 km Search

Species Name	Common Name
AMPHIBIA	
Myobatrachidae	
Heleioporus australiacus	Giant Burrowing Frog
Pseudophryne australis	Red-crowned Toadlet
Hylidae	
Litoria aurea	Green and Golden Bell Frog
REPTILIA	
Cheloniidae	
Caretta caretta	Loggerhead Turtle
Chelonia mydas	Green Turtle
Eretmochelys imbricata	Hawksbill Turtle
Dermochelyidae	
Dermochelys coriacea	Leatherback Turtle
Varanidae	
Varanus rosenbergi	Rosenberg's Goanna
AVES	
Anseranatidae	
Anseranas semipalmata	Magpie Goose
Columbidae	
Ptilinopus magnificus	Wompoo Fruit-Dove
Ptilinopus regina	Rose-crowned Fruit-Dove
Ptilinopus superbus	Superb Fruit-Dove
Diomedeidae	
Diomedea exulans	Wandering Albatross
Phoebetria fusca	Sooty Albatross
Thalassarche cauta	Shy Albatross
Thalassarche chrysostoma	Grey-headed Albatross
Thalassarche melanophris	Black-browed Albatross
Procellariidae	
Ardenna carneipes	Flesh-footed Shearwater
Macronectes giganteus	Southern Giant Petrel
Macronectes halli	Northern Giant-Petrel
Pterodroma leucoptera leucoptera	Gould's Petrel
Puffinus assimilis	Little Shearwater
Ardeidae	
Botaurus poiciloptilus	Australasian Bittern
Ixobrychus flavicollis	Black Bittern
Accipitridae	
Haliaeetus leucogaster	White-bellied Sea-Eagle
Hieraaetus morphnoides	Little Eagle
Lophoictinia isura	Square-tailed Kite
Pandion cristatus	Eastern Osprey

Species Name	Common Name
Burhinidae	
Burhinus grallarius	Bush Stone-curlew
Esacus magnirostris	Beach Stone-curlew
Haematopodidae	
Haematopus fuliginosus	Sooty Oystercatcher
Haematopus longirostris	Pied Oystercatcher
Charadriidae	
Charadrius leschenaultii	Greater Sand-plover
Charadrius mongolus	Lesser Sand-plover
Rostratulidae	
Rostratula australis	Australian Painted Snipe
Scolopacidae	
Calidris alba	Sanderling
Calidris canutus	Red Knot
Calidris ferruginea	Curlew Sandpiper
Calidris tenuirostris	Great Knot
Numenius madagascariensis	Eastern Curlew
Xenus cinereus	Terek Sandpiper
Laridae	
Gygis alba	White Tern
Onychoprion fuscata	Sooty Tern
Sternula albifrons	Little Tern
Cacatuidae	
Callocephalon fimbriatum	Gang-gang Cockatoo
Calyptorhynchus lathami	Glossy Black-Cockatoo
Psittacidae	
Glossopsitta pusilla	Little Lorikeet
Lathamus discolor	Swift Parrot
Neophema pulchella	Turquoise Parrot
Strigidae	
Ninox connivens	Barking Owl
Ninox strenua	Powerful Owl
Tytonidae	
Tyto novaehollandiae	Masked Owl
Tyto tenebricosa	Sooty Owl
Meliphagidae	
Anthochaera phrygia	Regent Honeyeater
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)
Neosittidae	
Daphoenositta chrysoptera	Varied Sittella
Artamidae	
Artamus cyanopterus cyanopterus	Dusky Woodswallow
Petroicidae	
Petroica boodang	Scarlet Robin
Estrildidae	
Stagonopleura guttata	Diamond Firetail
MAMMALIA	
Dasyuridae	
Dasyurus maculatus	Spotted-tailed Quoll
Peramelidae	
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)
Phascolarctidae	
Phascolarctos cinereus	Koala

Species Name	Common Name
Burramyidae	
Cercartetus nanus	Eastern Pygmy-possum
Petauridae	
Petaurus norfolcensis	Squirrel Glider
Macropodidae	
Macropus parma	Parma Wallaby
Pteropodidae	
Pteropus poliocephalus	Grey-headed Flying-fox
Emballonuridae	
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat
Molossidae	
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat
Vespertilionidae	
Chalinolobus dwyeri	Large-eared Pied Bat
Falsistrellus tasmaniensis	Eastern False Pipistrelle
Myotis macropus	Southern Myotis
Scoteanax rueppellii	Greater Broad-nosed Bat
Vespadelus troughtoni	Eastern Cave Bat
Muridae	
Pseudomys novaehollandiae	New Holland Mouse
Dugongidae	
Dugong dugon	Dugong
Otariidae	
Arctocephalus forsteri	New Zealand Fur-seal
Arctocephalus pusillus doriferus	Australian Fur-seal
Balaenidae	
Eubalaena australis	Southern Right Whale
Balaenopteridae	
Megaptera novaeangliae	Humpback Whale
Physeteridae	
Physeter macrocephalus	Sperm Whale
Miniopteridae	
Miniopterus australis	Little Bent-winged Bat
Miniopterus orianae oceanensis	Large Bent-winged Bat
INSECTA	
Petaluridae	
Petalura gigantea	Giant Dragonfly
THREATENED POPULATIONS	
AVES	
Spheniscidae	
Eudyptula minor	Little Penguin in the Manly Point Area (being the area on and near the shoreline from Cannae Point generally northward to the point near the intersection of Stuart Street and Oyama Cove Avenue and extending 100 metres offshore from that shoreline)
MAMMALIA	
Peramelidae	
Perameles nasuta	Long-nosed Bandicoot, North Head
Phascolarctidae	
Phascolarctos cinereus	Koala in the Pittwater Local Government Area

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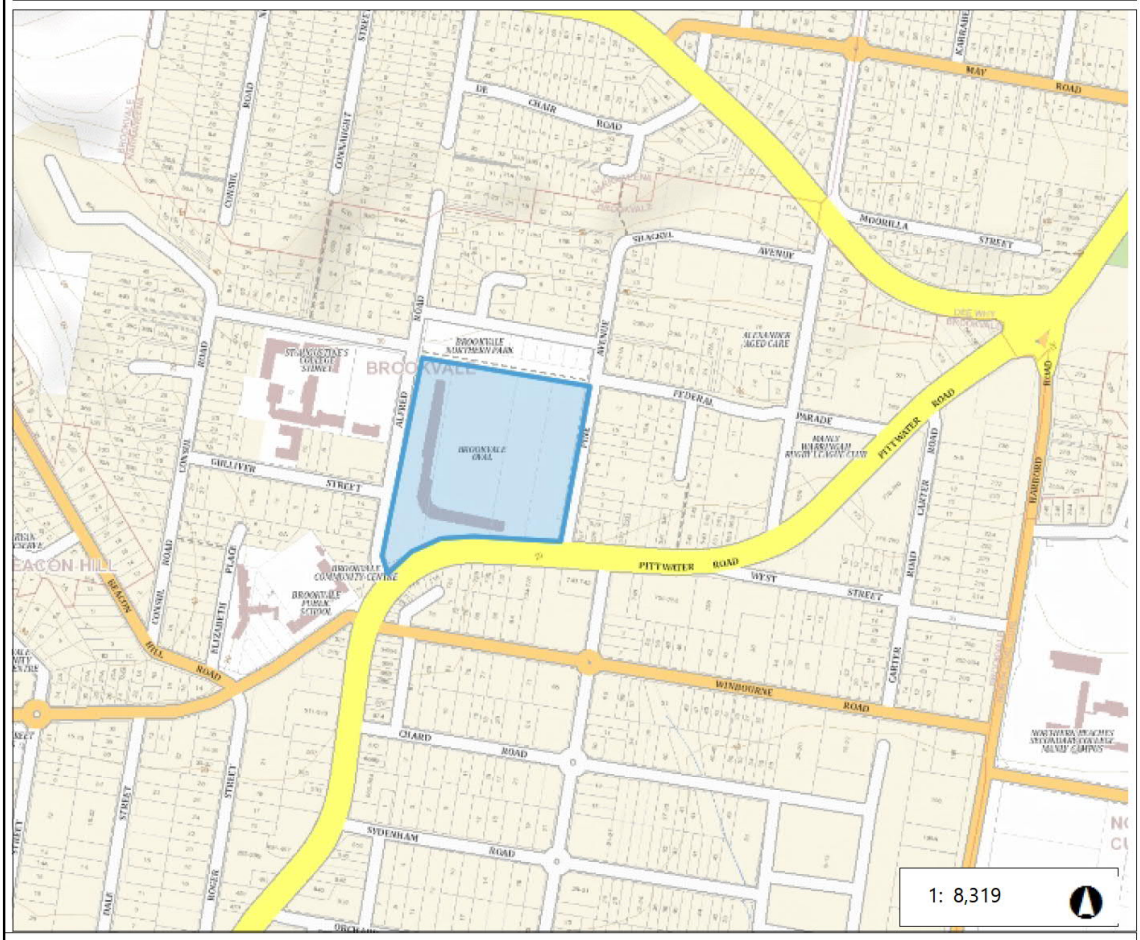
APPENDIX C

BOSET Report

NSW GOVERNMENT

Biodiversity Offset Scheme (BOS) Entry Threshold Map



422.6 0 211.30 422.6 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

NSW GOVERNMENT

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	16/09/2019 5:12 PM		**BDAR Required***
Total Digitised Area	4.3	ha	
Minimum Lot Size Method	Lot size		
Minimum Lot Size	0.4	ha	
Area Clearing Threshold	0.25	ha	
Area clearing trigger Area of native vegetation cleared	Unknown #		Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	no		no
Date of the 90 day Expiry	N/A		

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is '"likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BOSET user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Office of Environment and Heritage and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016.*

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature_____ Date: 16/09/2019 05:12 PM

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