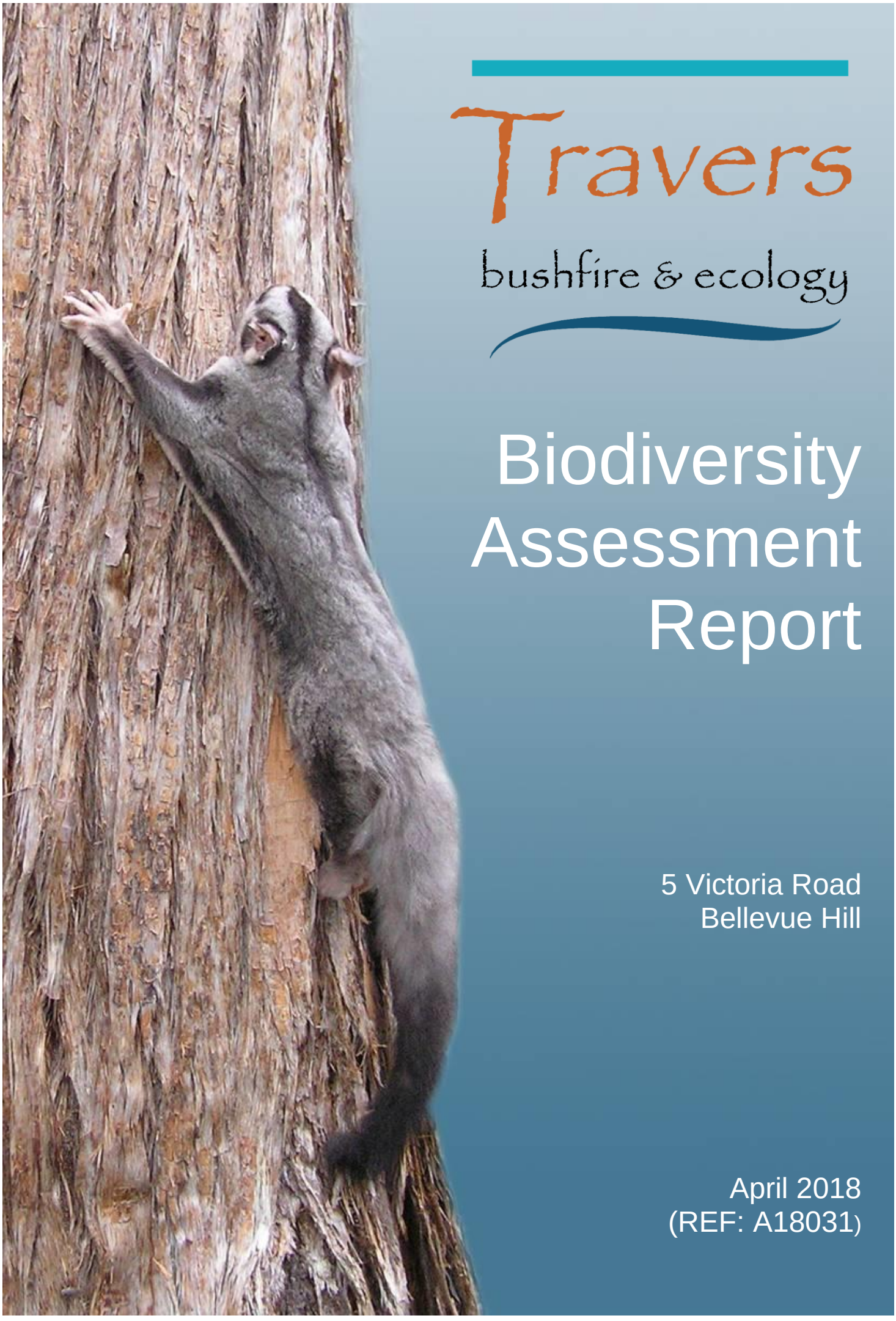

Travers

bushfire & ecology

Biodiversity Assessment Report

5 Victoria Road
Bellevue Hill

April 2018
(REF: A18031)

Biodiversity Assessment Report

5 Victoria Road
Bellevue Hill

APRIL 2018

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File:	A18031

Disclaimer:

This report has been prepared to provide advice to the client on matters pertaining to the particular and specific development proposal as advised by the client and / or their authorised representatives. This report can be used by the client only for its intended purpose and for that purpose only. Should any other use of the advice be made by any person including the client then this firm advises that the advice should not be relied upon. The report and its attachments should be read as a whole and no individual part of the report or its attachments should be interpreted without reference to the entire report.

Survey effort has been reduced to provide an indication of the insitu vegetation and fauna habitat present. The significance of impact test is based on this survey data and further survey may result in the observation of threatened species not considered in this assessment. Consequently, further target threatened species survey may be required by the determining authority. The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy. Consequently, the location of all mapped features is to be confirmed by a registered surveyor.

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List of abbreviations

APZ	asset protection zone
BC Act	*Biodiversity Conservation Act (2016)*
BCR	*Biodiversity Conservation Regulation (2017)*
BPA	bushfire protection assessment
CLUMP	conservation land use management plan
DCP	Development Control Plan
DEC	NSW Department of Environment and Conservation (superseded by DECC from April 2007)
DECC	NSW Department of Environment and Climate Change (superseded by DECCW from October 2009)
DECCW	NSW Department of Environment, Climate Change and Water (superseded by OEH from April 2011)
DEWHA	Commonwealth Department of Environment, Water, Heritage & the Arts (superseded by SEWPAC)
DOEE	Commonwealth Department of Environment and Energy
EEC	endangered ecological community
EPA	Environmental Protection Agency
EP&A Act	*Environmental Planning and Assessment Act (1979)*
EPBC Act	*Environment Protection and Biodiversity Conservation Act (1999)*
ESMP	ecological site management plan
FF	flora and fauna assessment
FM Act	*Fisheries Management Act*
FMP	fuel management plan
HTA	habitat tree assessment
IPA	inner protection area
LEP	Local Environment Plan
LGA	local government area
NES	national environmental significance
NPWS	NSW National Parks and Wildlife Service
NSW DPI	NSW Department of Primary Industries
OEH	Office of Environment and Heritage (Part of the NSW Department of Premier and Cabinet)
OPA	outer protection area
PBP	*Planning for bushfire protection 2006*
POM	plan of management
RF Act	*Rural Fires Act (1997)*
RFS	NSW Rural Fire Service
ROTAP	rare or threatened Australian plants
SEPP 44	*State Environmental Protection Policy No 44 – Koala Habitat Protection*
SEWPAC	Commonwealth Dept. of Sustainability, Environment, Water, Population & Communities (superseded by DOEE)
SIS	species impact statement
SULE	safe useful life expectancy
TPO	tree preservation order
TPZ	tree preservation zone
TSC Act	*Threatened Species Conservation Act (1995), superseded by BC Act at varying stages dependent upon LGA*
TRRP	tree retention and removal plan
VMP	vegetation management plan

Biodiversity Assessment

Travers bushfire & ecology has been engaged to undertake a biodiversity assessment within Lot 1 DP6636303 and Lots 9–18 DP9005 at 5 Victoria Road, Bellevue Hill, within the Woollahra local government area (LGA). These lots are subject to a proposed development application and will hereafter be referred to as the 'study area'.

1.0 Proposed development

The proposal is to remove two existing school buildings to build a larger school building. The proposal will also construct an aquatic and fitness centre and carpark under the existing playing field and will include a new maintenance facility incorporating cooling towers and plant exhaust as shown in Figure 1. All areas subject to direct impacts on the landscape as part of the proposed works will hereafter be referred to as the 'subject site'.

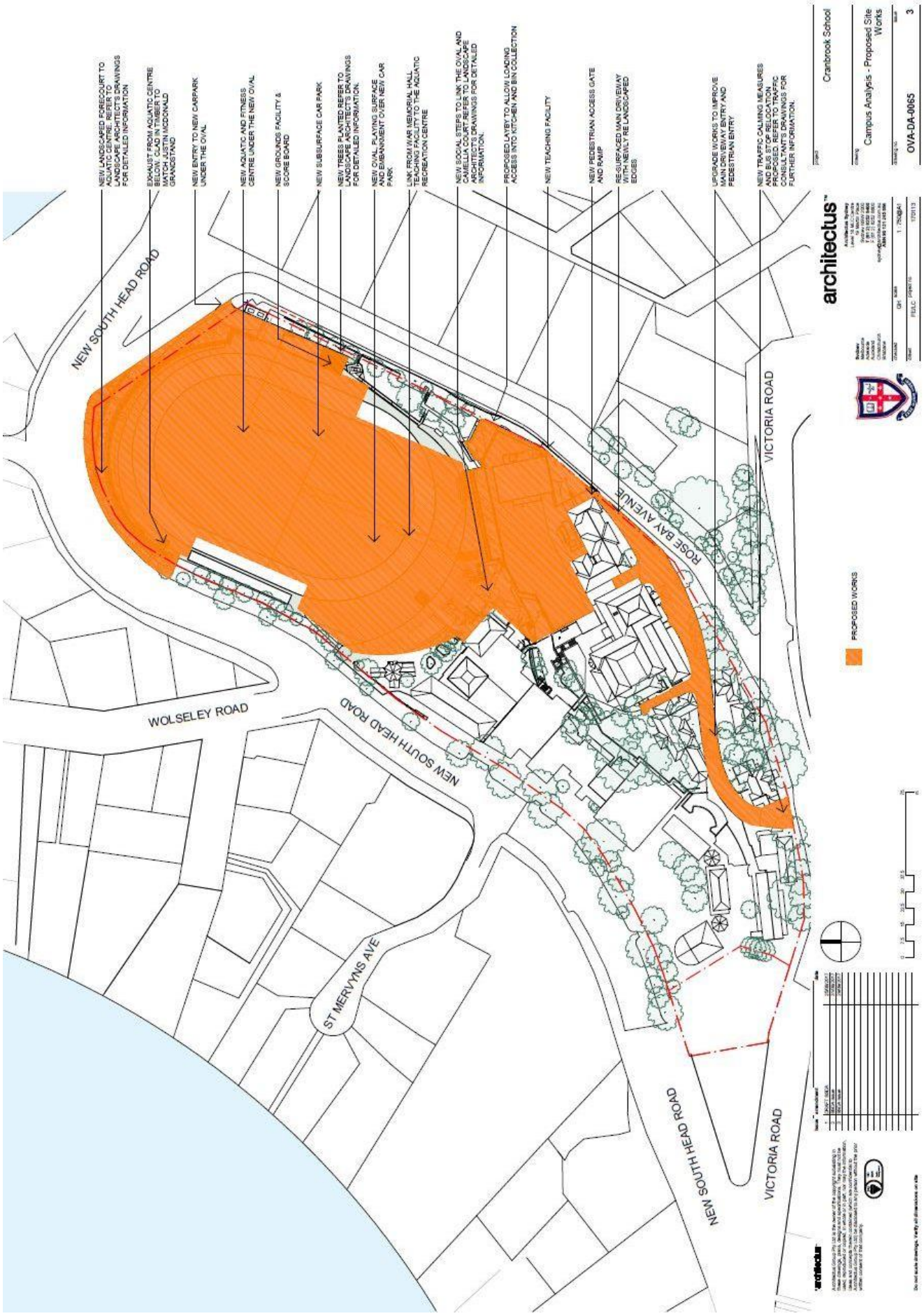

Figure 1 – Proposed development

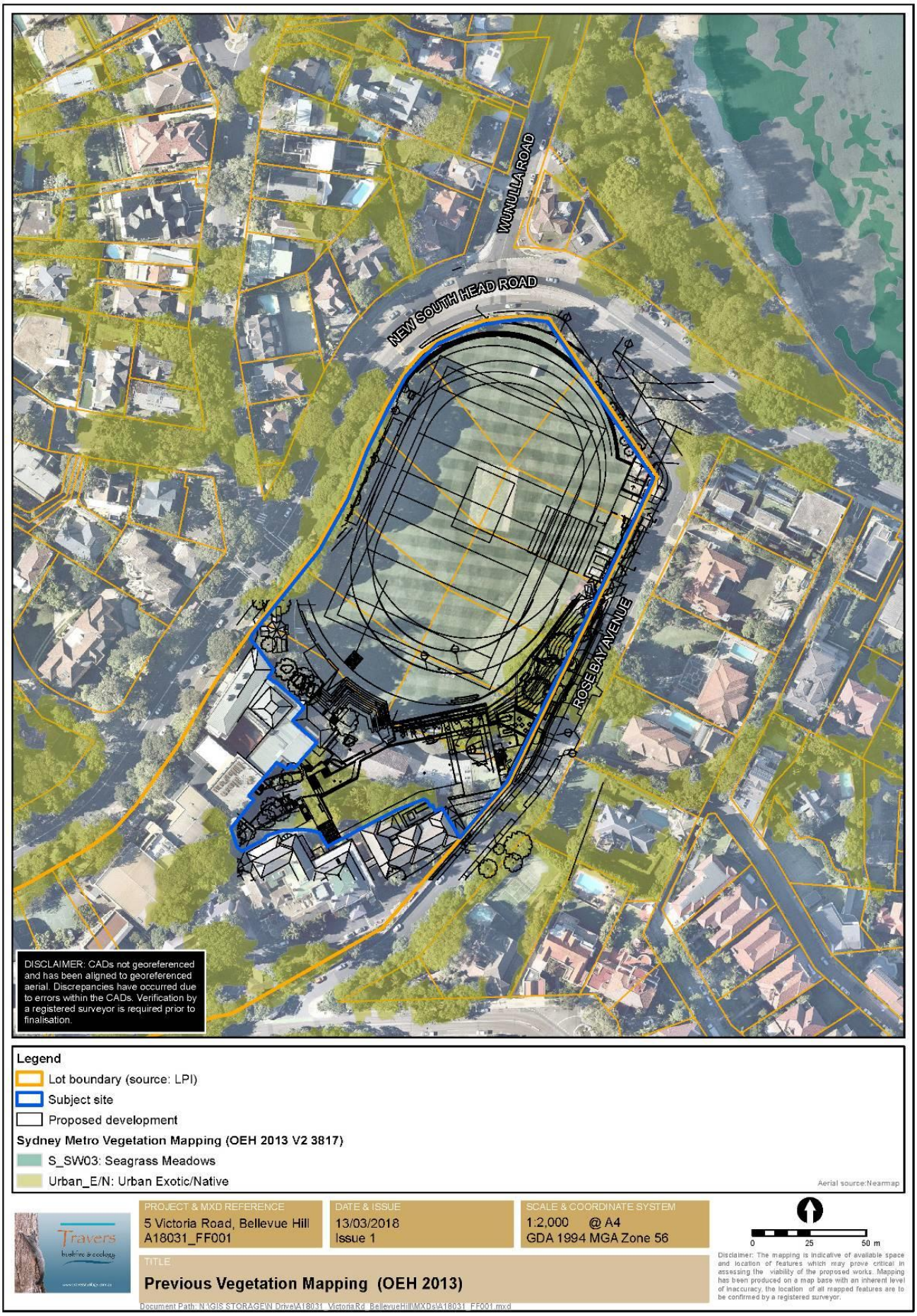

Figure 2 – Previous vegetation mapping (OEH 2013) with proposed development

2.0 Survey

Botanical survey was undertaken within the proposed development area / subject site on the 9th of March 2018 over a time frame of approximately 2.5 hrs.

Botanical survey included a random meander in accordance with *Cropper* (1993) to gain a full species list of the plants within the site, a review of the *Atlas of NSW Wildlife* / Bionet (OEH 2018) was undertaken prior to the site visit to determine threatened species previously recorded within 10km of the subject site. Searches were also undertaken on the DOEE – 'protected matters search tool' website to generate a report that will help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in the area of interest. The protected matters search was broadened to a 10km radius like the Bionet search. These two searches combined, enabled the preparation of a list of threatened flora and fauna species that could potentially occur within the habitats found on the site.

Flora species were identified to species level wherever possible, however the presence of a diverse and large number of exotic, cultivar or planted species made this task difficult. All flora species observed are tabulated in Appendix 1.

A fauna habitat assessment was undertaken during the botanical survey to identify the habitat types available, the quality and any specific or important features. A habitat tree assessment was undertaken at this time. Section 5 of the report describes the habitat values present.

3.0 Site description

Table 1 provides a summary of the planning, cadastral, topographical, and disturbance details of the subject site.

Table 1 – Site features

Location	Lot 1 DP6636303 and Lots 9–18 DP9005 at 5 Victoria Road Bellevue Hill
Size	Approximately 4.329 ha
Local government area	Woollahra
Grid reference	338288E 62506640N
Elevation	Approximately 14-40m AHD
Topography	Situated on a north to north-east aspect with highly modified terrain to form garden terraces, embankments and a level playing field
Geology and soils	The site is located on Triassic medium to coarse grained quartz sandstone, very minor shale and laminate lenses, and Quaternary medium to fine-grained marine sand with podsols. The soil landscapes present within the site are the Hawkesbury, Newport and Tuggerah Soil Landscapes.
Catchment and drainage	There are no creek lines or drainages within the site. Overland runoff from the study area would generally drain via stormwater infrastructure into either Double Bay or Rose Bay within Sydney Harbour.
Vegetation	Managed Landscape: All vegetation on site is planted and managed with a highly diverse mix of mostly exotic species with a few endemic native and non-endemic (planted) Australian species. No naturally occurring vegetation communities are present.
Existing land use	There is an existing school on the property. The site is zoned SP2 - Infrastructure
Clearing	All of the original native vegetation has been previously cleared and replaced with landscaped gardens and lawn / turf.

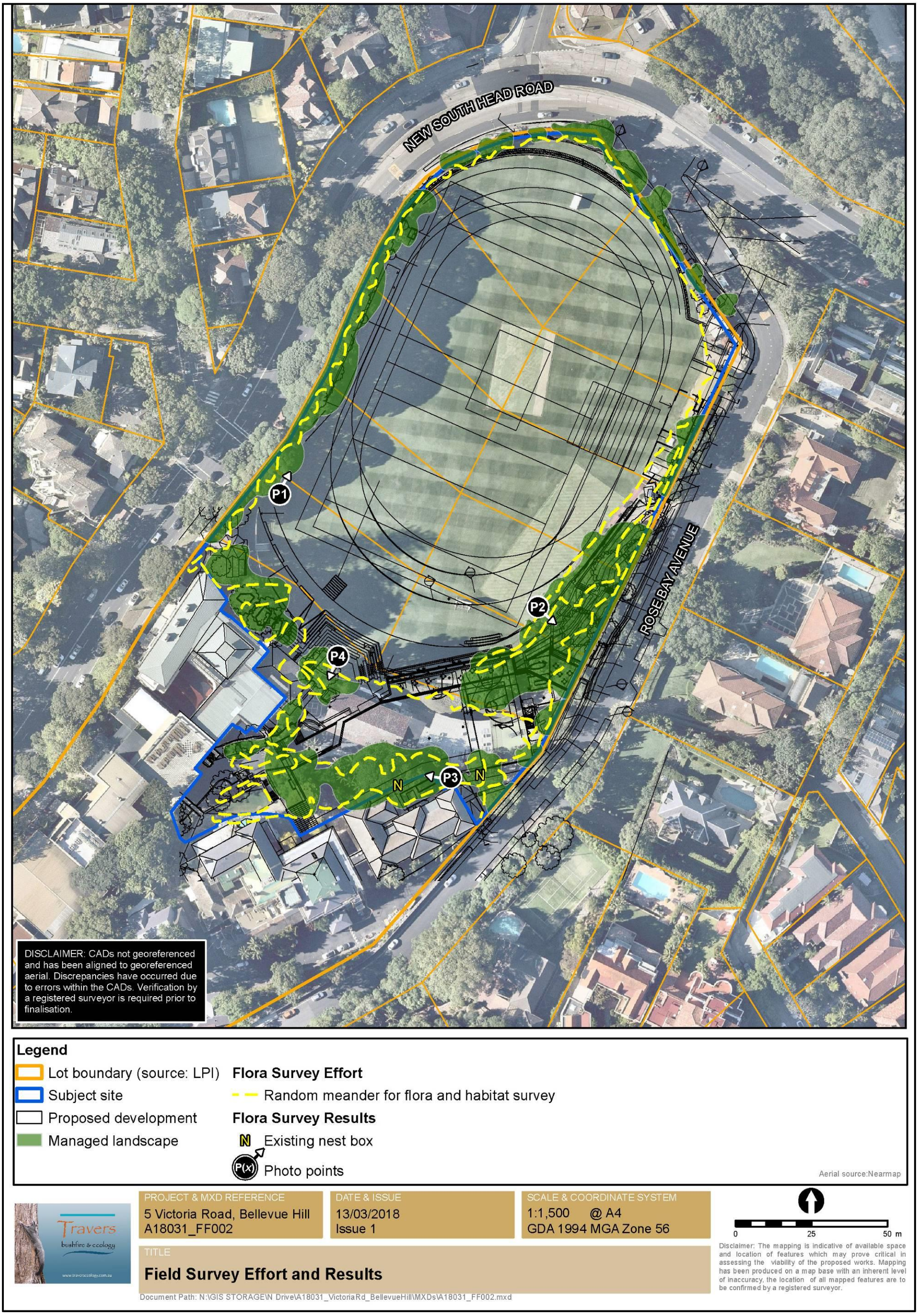

Figure 3 – Field survey effort and results

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4.0 Biodiversity Offsets Scheme (BOS)

The new Biodiversity Offsets Scheme (BOS) and Biodiversity Assessment Method (2017) came into force under the Biodiversity Conservation Act (2016) and the Regulations (2017) on the 25th of August, 2017.

4.1 Key elements of the BOS

Section 6.2 of the BA Act (2016) identifies that the biodiversity offsets scheme under this Act and related legislation has the following key elements:

(a) The establishment of biodiversity stewardship sites on land by means of biodiversity stewardship agreements entered into between the Minister and the owners of the land concerned. Management actions will be required to be carried out on the sites by the owners under those agreements and will be funded from the Biodiversity Stewardship Payments Fund.

(b) The creation of biodiversity credits in respect of those management actions to be held initially by the owners of those sites following a report by an accredited person on the biodiversity value of those management actions.

(c) A system for those biodiversity credits to be traded (and thereby enable them to be acquired by developers or other persons who have an obligation to retire biodiversity credits under the scheme). When those credits are first transferred (or retired by the owners of the sites without being first transferred), the Biodiversity Stewardship Payments Fund is to be reimbursed for the payments to be made in future to fund the required management actions on the site that enabled the creation of those credits.

(d) In relation to proposed development above a threshold prescribed by the regulations under this Act or proposed clearing of native vegetation not authorised without approval—biodiversity assessment and reports by accredited persons about the biodiversity values of the land concerned and the impacts on those values of the proposed development or clearing, and of the biodiversity conservation measures (including the retirement of biodiversity credits) proposed to offset the residual impact on biodiversity values after action that is required to be taken to avoid or minimise that impact. Those biodiversity assessment reports are to be taken into consideration in the determination under relevant legislation of the grant of (and biodiversity conservations actions required under) planning approvals for the proposed development or vegetation clearing approvals for the proposed clearing.

(e) In relation to environmental impact assessment of proposed activities under Section 4.2 of the *Environmental Planning and Assessment Act 1979* - the option for proponents of those activities to use those biodiversity assessment reports and offsetting measures to comply with their obligations under that Part.

(f) In relation to future development in an area - biodiversity assessment and reports by accredited persons about the area and biodiversity certification of that part of the area where future development may be carried out without further biodiversity impact assessment. The impact on biodiversity values of the clearing of native vegetation and the loss of habitat in the area of future development is to be offset by the retirement of biodiversity credits or other conservation measures in connection with the remainder of the area or other areas (or both).

(g) As an alternative to any requirement under the scheme to retire biodiversity credits - the payment into the Biodiversity Conservation Fund of an amount equivalent to the cost of acquiring those credits determined in accordance with an offsets payment calculator. The Biodiversity Conservation Trust will be under an obligation to later secure biodiversity offsets from the money paid into the Fund.

(h) The establishment of a biodiversity assessment method for use by accredited persons in biodiversity assessment and reports under the scheme.

(i) The determination in accordance with principles prescribed by the regulations under this Act of serious and irreversible impacts on biodiversity values. The

determination of such an impact by the relevant decision-maker will prevent the grant of planning approval for proposed development, but the determination will only be required to be taken into consideration in the case of State significant development or infrastructure, in the case of environmental impact assessment of certain proposed activities or in the case of proposals for the biodiversity certification of land.

Section 6.3 of the Biodiversity Conservation Act identifies the impacts on biodiversity values to which biodiversity offsets scheme applies. The impacts of actions on biodiversity values that are subject to assessment and offset under the biodiversity offsets scheme are as follows:

(a) the impacts of the clearing of native vegetation and the loss of habitat,
(b) the impacts of action that are prescribed by the regulations.

4.2 Threshold assessment

The BOS includes two (2) elements to the threshold test – a Sensitive Biodiversity Values Land Map trigger and an area trigger. If clearing exceeds either trigger, the Biodiversity Offset Scheme applies to the proposed clearing.

4.2.1 Sensitive Biodiversity Values Land

The study area is not located on lands mapped as Sensitive Biodiversity Values Land – an offset is not required.

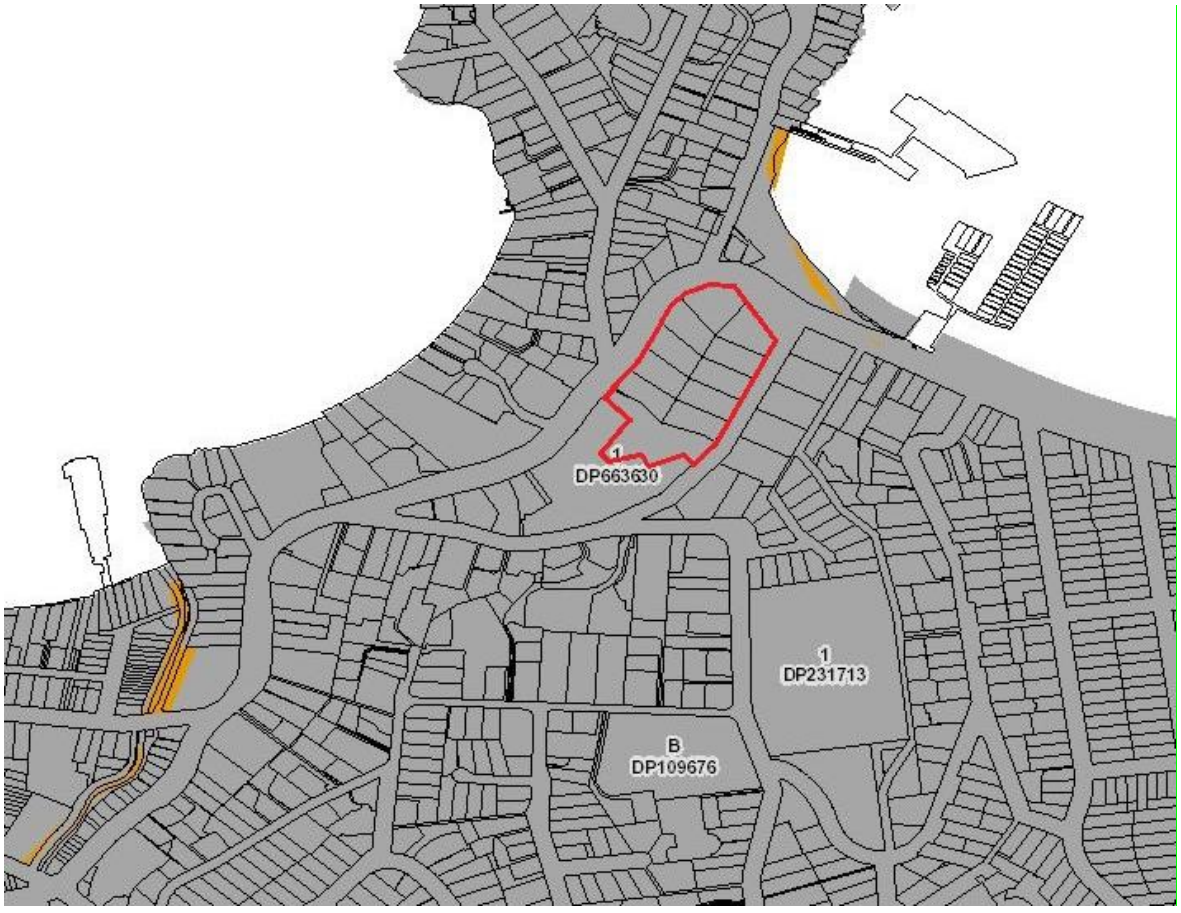


Figure 4 – Sensitive biodiversity land map

(source: https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap)
sensitive areas shown in Orange; approx. study area / development shown in red

4.2.2 Area clearing threshold

The area threshold varies depending on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan (LEP)), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP).

The area threshold applies to all proposed **native vegetation** clearing associated with a development proposal – for example in the case of a subdivision; all future clearing across the lots subject to the subdivision, must be considered.

Table 2 – Area of clearing thresholds

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40 ha to less than 1,000 ha	1 ha or more
1,000 ha or more	2 ha or more

The proposed works will not require any naturally occurring native vegetation community removal within the subject site. However, it is expected that some exotic vegetation containing a large proportion of exotic species as well as some planted endemic native and non-endemic Australian species will require removal in order to undertake the proposed development works.

The Woollahra LEP does not show the study area as having any minimum lot size. The lot sizes for Lots 9-18 DP 9005 are between approximately 0.19 and 0.26 ha in size and therefore are less than 1 ha in size as shown in Table 2. Lot 1 DP 663630 where the proposed demolition and construction of a new school building is located has an area of approximately 1.9 ha. The smallest lot size within the subject site is approximately 0.2 ha which means that the clearing threshold area is 0.25 ha. No **native vegetation** will be impacted by the proposal, therefore offsetting is not required.

Conclusion

The Development proposal does not require the removal of native vegetation and offsets are not required.

4.3 Biodiversity conservation measures

For the purposes of the biodiversity offsets scheme, the biodiversity conservation measures to offset or compensate for impacts on biodiversity values after any steps taken to avoid or minimise those impacts are as follows:

(a) the retirement of biodiversity credits,
(b) other actions that benefit the biodiversity values of the impacted land or other biodiversity values.

The regulations make provision with respect to the following (*offset rules*):

(a) the class of biodiversity credits to be retired,
(b) the other actions that qualify or do not qualify as biodiversity conservation measures,
(c) the circumstances in which biodiversity conservation measures may include a combination of the retirement of biodiversity credits and other actions.

The other actions that benefit biodiversity values include:

(a) actions to conserve or enhance biodiversity (including threatened species and ecological communities), and
(b) actions for the purposes of research or education in relation to biodiversity, and
(c) actions under the Biodiversity Conservation Program under Part 4 or other government programs or policies for the conservation or enhancement of biodiversity.

The Regulations (2017) set out the circumstances in which the ordinary rules for the determination of the number and class of biodiversity credits required as biodiversity offsets may be varied.

4.4 Serious and irreversible impacts on biodiversity values

The determination of serious and irreversible impacts on biodiversity values for the purposes of the biodiversity offsets scheme is to be made in accordance with principles prescribed section 6.7 of the BC Regulation (2017).

The principles have been designed to capture those impacts which are likely to contribute significantly to the risk of extinction of a threatened species or ecological community in New South Wales. These are impacts that:

- will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline, or
- will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size, or
- impact on the habitat of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution, or
- impact on a species or ecological community that is unlikely to respond to measures to improve habitat and vegetation integrity and is therefore irreplaceable.

The first three principles broadly align with the IUCN (2017) (see also Bland et al. (2016)) criteria used to identify entities at the greatest risk of extinction (i.e. critically endangered entities) and the fourth principle captures impacts on entities that cannot be offset.

Conclusion
The proposed development does not trigger biodiversity offsets and is not likely to cause a serious or irreversible impact upon threatened species, endangered populations or endangered ecological communities.

5.0 Flora

5.1 Vegetation communities

The Native Vegetation of the Sydney Metropolitan Area (OEH 2013) have mapped all vegetation within or in proximity to the site as Urban Exotic/Native.

Field verification of the subject site found the following vegetation community:

- Managed Landscape

Managed Landscape

The vegetation within the subject site is comprised of wholly planted gardens containing a large variety of mostly exotic species with some scattered individually planted endemic native

or non-endemic Australian species. Large areas within the study area have undergone large-scale earthworks to create embankments, terraced garden beds and a turfed playing field.

Canopy – The most common tree species are *Lophostemon confertus* (Brush Box) and *Castanospermum australe* (Black Bean) with a large variety of other planted trees such as *Acmena smithii* (Lilly Pilly), *Brachychiton acerifolius* (Illawarra Flame Tree), *Cinnamomum camphora* (Camphor Laurel), *Jacaranda mimosifolia* (Jacaranda), *Lagerstroemia indica* (Crepe Myrtle), *Olea europea* subsp. *europea* (Common Olive Tree), *Schefflera actinophylla* (Umbrella Tree), *phoenix canariensis* (Canary Island Date Palm), *Livistona australis* (Cabbage Palm), *Archontophoenix cunninghamiana* (Bangalow Palm) and sparse or individual specimens of *Agathis robusta* (Queensland Kauri), *Araucaria heterophylla* (Norfolk Island Pine), *Dypsis lutescens* (Golden Cane Palm), *Eriobotrya japonica* (Loquat), *Fraxinus* sp., and *Macadamia integrifolia* (Macadamia Tree). Trees were generally mature and of a height between 10-28m tall. The projected foliage cover for each polygon of vegetation was variable between 10 and 30%.

Shrubs – Common species were *Callistemon viminalis* (Weeping Bottlebrush), *Camellia japonica* (Camellia), *Geranium* sp., *Hibiscus* sp., *Monstera deliciosa* (Fruit Salad Plant), *Murraya paniculata* (Orange Jessamine), *Ochna serrulata* (Mickey Mouse Plant), *Philodendron* sp., *Photinia glabra* (Japanese Photinia) and *Podocarpus elatus* (Plum Pine). Shrubs were generally sparse with 5 to 10% cover, but there were some areas where shrubs were between 10 and 25% cover. Shrub heights were between 3 and 6 metres.

Ground layer – The ground layer is heavily disturbed and contains mostly planted exotic species such as *Agapanthus africanus* (Agapanthus), *Arum* sp. (Arum Lily), *Canna* sp. (Canna Lily), *Chlorophytum comosum* (Spider Plant), *Commelina cyanea* (Scurvy Weed), *Dianella caerulea* (Blue Flax Lily), *Doryanthes excelsa* (Gymea Lily), *Hedychium gardnerianum* (Ginger Lily), *Nephrolepis cordifolia* (Fishbone Fern), *Strelitzia juncea* (Bird-of-Paradise), *Tradescantia pallida* (Purple Queen) and *Hedera helix* (English Ivy).

Classification - This vegetation does not correspond to any native vegetation community known to occur in the locality. Therefore, this vegetation community is not commensurate with any Threatened Ecological Community (TEC) listed within the NSW *BC Act* (2016) or the Commonwealth *EPBC Act* (1999).

The following photographs and the direction of view have been shown in Figure 3.

Photo 1 – Planted Brush Box trees along the North-west boundary

Photo 2 – Planted landscaped vegetation on terraces to the south-east of the playing field

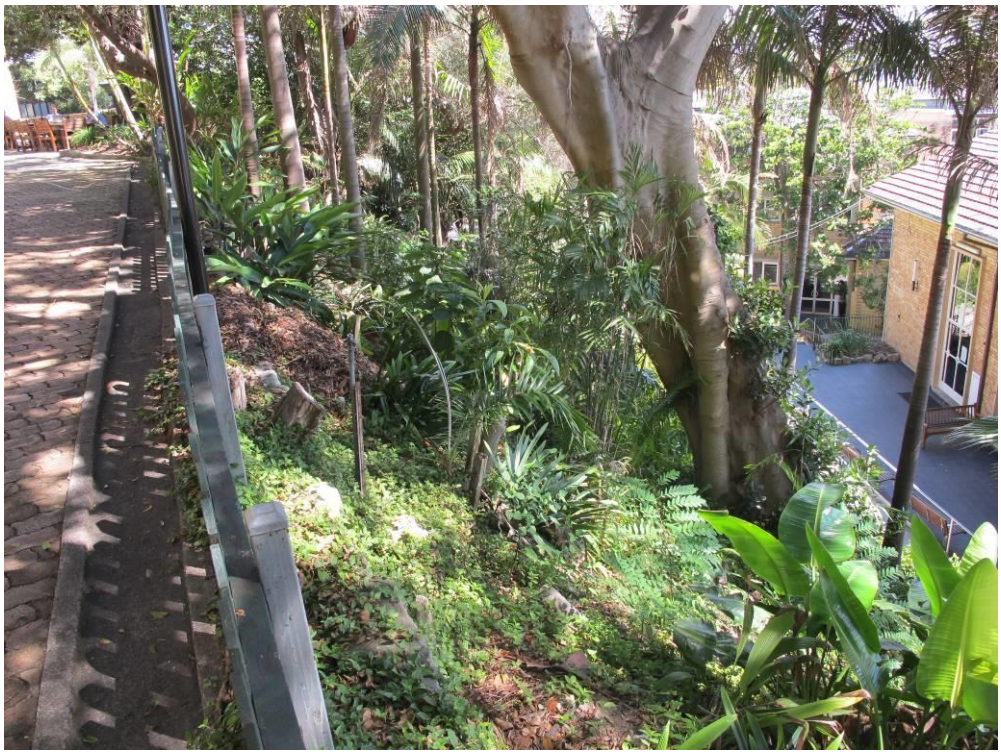


Photo 3 – Planted landscaped vegetation on embankment at the location of the proposed new building

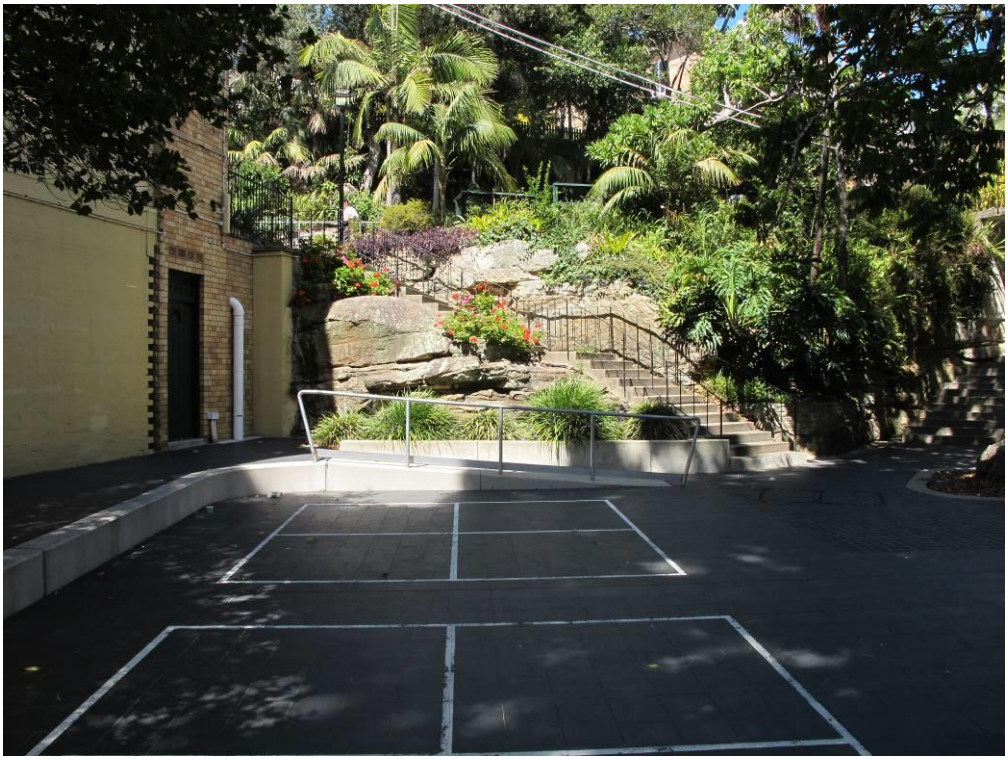


Photo 4 – Planted landscaped vegetation on terraces

5.2 Threatened flora species

Biodiversity Conservation Act (BC Act) – A search of the *Atlas of NSW Wildlife* (OEH, 2018) indicated a list of species that have been recorded within a 10 km radius of the subject site. These species are listed in Appendix 2 Table A2.1 and are considered for potential habitat within the subject site.

Environmental Protection and Biodiversity Conservation Act (EPBC Act) – A review of the schedules of the *EPBC Act* indicated the potential for habitat suitable for a list of threatened flora species to occur within a 10km radius of the subject site. These species have also been listed in Appendix 2 Table A2.1 for consideration of potential to occur.

Based on the habitat assessment within Table A2.1 it is considered that the subject site provides no potential habitat for any threatened flora species listed within the NSW *BC Act* (2016) or the Commonwealth *EPBC Act* (1999). Subsequently, no threatened flora species will be considered for assessment within the Significance of Impact Test within Appendix 3.

All threatened species in both the Bionet (NSW) and EPBC coordinate search (National) were considered to have no potential suitable habitat within the study area because of previous clearing and landscaping works, past and ongoing land management practices, unsuitable soils / geology, unsuitable previous vegetation type or large distance to known specimens.

5.3 Endangered flora populations

No endangered flora populations are known to occur within the Woollahra LGA.

No specimens of any known endangered population were observed within the subject site during the survey. Therefore, it is considered that no endangered populations occur within the subject site.

5.4 Endangered ecological communities

The site contains no Threatened Ecological Communities (TECs) as listed under the NSW *BC Act* (2016) or the Commonwealth *EPBC Act* (1999).

5.5 Endangered wetland communities

A number of wetland communities have been listed as an 'endangered ecological community' under the NSW BC Act. We note that ‘wetlands’ are included in the definition of ‘waterfront lands’ in accordance with the Water Management Act 2000 due to their inclusion in the definition of a ‘lake’ under the same act.

Impacts on wetland communities must be assessed under the BC Act and if present the management of wetland communities must be given due consideration in accordance with the objectives and principles of management as contained within the NSW Wetlands Policy (2010), and appropriate management as determined by NSW DPI - Office of Water in their general terms of approval (GTA’s). This may include but not limited to the provision of buffers, management of stormwater runoff and maintenance of natural inflows or runoff into those wetland communities.

- Artesian springs ecological community - endangered ecological community listing
- Castlereagh swamp woodland community - endangered ecological community listing
- Coastal saltmarsh in the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological community listing
- Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological community listing
- Kurri sand swamp woodland in the Sydney Basin Bioregion - endangered ecological community listing
- Lagunaria swamp forest on Lord Howe Island - endangered ecological community listing
- Maroota Sands swamp forest - endangered ecological community listing
- Newnes Plateau Shrub Swamp in the Sydney Basin Bioregion - endangered ecological community listing

- Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological community listing
- Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions - endangered ecological listing
- Sydney Freshwater Wetlands in the Sydney Basin Bioregion - endangered ecological community listing
- The shorebird community occurring on the relict tidal delta sands at Taren Point - endangered ecological community listing
- Upland wetlands of the drainage divide of the New England Tableland Bioregion - endangered ecological community listing
- Wingecarribee Swamps

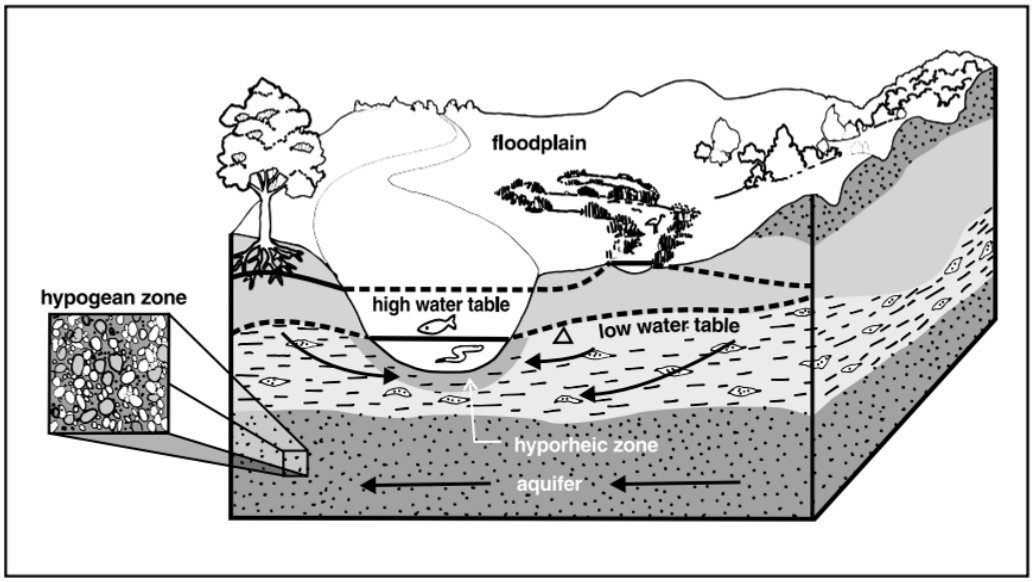
In accordance with the NSW DPI - Office of Water - Guidelines for Controlled Activities, these communities are treated in a similar manner to a lake and are subject to the implementation of "Waterfront Land" as defined by NSW DPI – WaterNSW (formerly NSW Office of Water). Where they are mostly cleared, highly fragmented or highly disturbed, consolidation and management in accordance with a Vegetation Management Plan is recommended. Setbacks required are to be considered in the landscape context. Setbacks will be determined in consultation with NSW DPI – WaterNSW are to be undertaken to confirm the appropriateness and width of setbacks. This will require a referral of the project to the NSW DPI – WaterNSW.

No endangered wetland communities were present within the subject site.

5.6 Groundwater dependent ecosystems (GDEs)

Groundwater dependent ecosystems are communities of plants, animals and other organisms whose extent and life processes are dependent on groundwater. Some examples of ecosystems which depend on groundwater are:

- wetlands;
- red gum forests, vegetation on coastal sand dunes and other terrestrial vegetation;
- ecosystems in streams fed by groundwater;
- limestone cave systems;
- springs; and
- hanging valleys and swamps.



Alluvial groundwater system discharging into a river

Groundwater dependent ecosystems are therefore ecosystems which have their species composition and their natural ecological processes determined by groundwater (NSW State Groundwater Dependent Ecosystems Policy April 2002).

No Groundwater Dependent Ecosystems (GDEs) were present within the subject site.

5.7 State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017

The *State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017* (Vegetation SEPP) was one of a suite of Land Management and Biodiversity Conservation (LMBC) reforms that commenced in New South Wales on 25 August 2017. The Vegetation SEPP (the SEPP) works together with the *Biodiversity Conservation Act 2016* and the *Local Land Services Amendment Act 2016* to create a framework for the regulation of clearing of native vegetation in NSW.

The SEPP will ensure the biodiversity offset scheme (established under the Land Management and Biodiversity reforms) will apply to all clearing of native vegetation that exceeds the offset thresholds in urban areas and environmental conservation zones that does not require development consent.

Vegetation SEPP applies to the following local government areas:

Bayside, City of Blacktown, Burwood, Camden, City of Campbelltown, Canterbury-Bankstown, Canada Bay, Cumberland, City of Fairfield, Georges River, City of Hawkesbury, Hornsby, Hunter's Hill, Georges River, Inner West, Ku-ring-gai, Lane Cove, City of Liverpool, Mosman, Newcastle, North Sydney, Northern Beaches, City of Parramatta, City of Penrith, City of Randwick, City of Ryde, Strathfield, Sutherland Shire, City of Sydney, The Hills Shire, Waverley, City of Willoughby, Woollahra.

The Vegetation SEPP also applies to land within a variety of zones as set out in the legislation 'Land to which the policy applies'.

5.7.1 Is an authority to clear vegetation required

As 'development consent' is required for the proposed works and the vegetation within the proposed development area is not native, the Vegetation SEPP does not apply.

6.0 Fauna

6.1 Habitat assessment

The fauna assessment is based on desktop analysis, threatened species records (OEH 2018) and habitat attributes identified during the flora survey. Particular note was taken to search for the following potential threatened fauna species habitat:

- Observations for presence of potential *Allocasuarina* trees for foraging by Glossy Black-Cockatoo.
- A count of tree species present to determine 'Potential Koala Habitat' according to the definitions of SEPP 44.
- Hollow-bearing trees present.
- Presence of any raptor nests.
- Terrestrial shelters, burrows and/or hollows.
- Connectivity potential to and from the site.
- Presence of drainages for frog species habitat.

The following habitat was present:

- No hollow-bearing trees were observed within the subject site. Two (2) nest boxes were observed in trees located within the footprint of the proposed new building.
- Nectar producing tree species, principally planted exotic species
- One fruit producing tree (Small-leaved Fig Tree)
- Some small sandstone outcrops providing low quality shelter opportunity
- No seed producing *Allocasuarina* trees
- No ground hollows
- No native ground cover or terrestrial shelter opportunity
- No permanent water such as dams or creeks
- No drainage lines

6.2 Threatened fauna species

BC Act – A search of the Bionet / *Atlas of NSW Wildlife* database (OEH, 2018) provided a list of threatened fauna species previously recorded within a 10km radius of the subject site. These species are listed in Appendix Table A2.2 and are considered for potential habitat within the subject site.

Fisheries Management Act (FM Act) – No habitats suitable for threatened aquatic species were observed within the subject site and as such the provisions of this act do not require any further consideration.

EPBC Act – A review of the schedules of the *EPBC Act* identified a list of threatened fauna species or species habitat likely to occur within a 10km radius of the subject site. These species have also been listed in Appendix Table A2.2.

In accordance with Table A2.2 the following state and nationally listed threatened fauna species are considered to have suitable habitat with varying potential to occur within the subject site. The state listed species will be considered in the seven-part test (Appendix 3):

Table 3 – Threatened fauna species with suitable habitat present

Common name	BC Act	EPBC Act	Potential to occur
Grey-headed Flying-fox	V	V	Foraging only

Additionally, protected migratory species listed under the *EPBC Act* are considered for habitat potential in Table A2.3.

It is concluded that there will be no likely serious or irreversible impact any state or nationally listed threatened fauna species with considered potential to occur.

6.3 Endangered fauna populations

There are no endangered fauna populations within Woollahra LGA.

6.4 Connectivity

The study area does not contribute to any important connectivity values in the local or regional scale. The trees that are present within the study area are located within the southern fringes and these are adjacent to more extensive mostly exotic vegetation across Edwards Road. This adjacent opportunity may increase potential for use of these trees by local birds however such use is likely limited anyway by the dominance of aggressive birds such as the Noisy Miner that exists in these fringing landscapes. Thus the limited arboreal

connectivity is not of any likely value to threatened fauna species and tree retention along the fringes of the subject site will retain much of this existing opportunity.

7.0 Conclusions

Ecological survey and biodiversity assessment has been undertaken for a proposed development within Lot 1 DP6636303 and Lots 9–18 DP9005 at 5 Victoria Road, Bellevue Hill. Assessment has been undertaken in consideration to the *BC Act* through the relevant process outlined by the *EP&A Act*. A 'Significance of Impact Test' is provided in Appendix 3. The schedules and assessment criteria under the *EPBC Act* and the *FM Act* have also been considered for the proposal.

No threatened flora species have been observed or considered likely to occur in a natural state.

Whilst fauna survey has not been undertaken, a detailed habitat assessment was undertaken and it is considered that the habitat attributes within the subject site do not provide any significant or unique habitat of breeding importance for any threatened fauna species. Managed Landscape vegetation consisting of mostly exotic species with some (planted) non-endemic Australian species and even fewer (planted) endemic native species may provide low key foraging value.

The vegetation present within the subject site is a Managed Landscape consisting of multiple garden beds on embankments and terraces that consist mostly of exotic or cultivar species with a much smaller number of planted non-endemic and endemic native Australian species. This Managed Landscape vegetation is not attributable to any remnant of native vegetation and is not commensurate with any Endangered Ecological Community (EEC) listed within the NSW *BC Act* (2016) or within the Commonwealth *EPBC Act* (1999).

The direct impacts of the proposal are considered to include the following:

- Removal of approximately 0.14 ha of highly disturbed mostly exotic vegetation for the construction of the proposed new building,
- Removal of two (2) nest boxes located in trees within the proposed new building footprint,
- Removal of approximately 0.14 ha of seasonal flowering vegetation suitable for foraging by birds and flying-foxes.

The indirect impacts of the proposal are considered to include the following:

- Lighting and noise spillover effects onto fauna utilising the retained trees for seasonal foraging.

These impacts are not considered to be serious and irreversible impacts (SAII). When not required, all field lighting should be switched off.

7.1 Biodiversity Conservation Act

The new Biodiversity Offsets Scheme (BOS) and The Regulation (2017) and Biodiversity Assessment Methodology (2017) came into force under the *BC Act* on the 25th of August, 2017. There are two (2) elements to the threshold test – an area trigger and a Sensitive Biodiversity Values Land Map trigger. If clearing exceeds either trigger, the Biodiversity Offset Scheme applies to the proposed clearing.

- The study area is not located on lands mapped as Sensitive Biodiversity Values Land.

- The Managed Landscape vegetation within the subject site is not native vegetation and is not derived from any remnant native vegetation. The smallest lot size within the subject site is approximately 0.2 ha which means that the clearing threshold is 1 ha. As the vegetation present has been determined as being planted, or not part of a native vegetation community, thresholds will not be exceeded and no offsetting is required.

In accordance with the Significance of Impact Test (refer to Appendix 3) of the *BC Act* the proposed development does not trigger biodiversity offsets and is not likely to cause a serious or irreversible impact upon threatened species, endangered populations or endangered ecological communities.

The proposal is unlikely to have a significant impact on threatened or migratory fauna species listed as matters of national environmental significance under the *EPBC Act*. As such, a referral to the Commonwealth Department of Environment and Energy (DOEE) is not required.

7.2 Recommendations

To minimise adverse ecological impacts, the following mitigation measures are proposed:

1. Replacement landscaping should keep in context with the existing character of the property.

2. Construction sediment and erosion control measures are to be installed and maintained in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) to minimise impact of possible construction sedimentation to local drainage and Sydney Harbour.

3. Control and eradication of noxious and other invasive ecological weeds should be undertaken to prevent further invasion by these species. Invasive ecological weed species such as Camphor Laurel, Common Olive, Chilean Cestrum, Small-leaved Privet, Mickey Mouse Plant, Senna, Asparagus Fern, Fish-bone Fern, and Madiera Vine were observed within the subject site.

4. A weed control plan be produced and enacted by the groundskeepers to control or eradicate noxious and environmental weeds as listed in Item 3 which are required to be controlled in accordance with the NSW *Biosecurity Act* (2015).

5. As field activities may be ongoing until approximately 8pm, lighting on the field is required. Lighting should be turned off at other times to limit disturbances to on-site boarders, neighbours and fauna that may utilise the existing vegetation.

6. Two (2) nest boxes currently located within the new building footprint are to be moved to nearby retained trees, or new nest boxes installed as replacements nearby.

Appendix 1
Flora Species List

Table A1.1 – Flora species recorded

Family	Scientific name	Common name
TREES		
Myrtaceae	*Acmena smithii*	Lillypilly
Araucariaceae	*Agathis robusta*[NE]	Queensland Kauri
Araucariaceae	*Araucaria heterophylla**	Norfolk Island Pine
Arecaceae	*Archontophoenix cunninghamiana*	Bangalow Palm
Proteaceae	*Banksia integrifolia*	Coast Banksia
Sterculiaceae	*Brachychiton acerifolius*[NE]	Illawarra Flame Tree
Cupressaceae	*Callitris sp.*	-
Fabaceae/faboideae	*Castanospermum australe*[NE]	Black Bean
Lauraceae	*Cinnamomum camphora**	Camphor Laurel
Sapindaceae	*Cupaniopsis anacardioides*	Tuckeroo
Arecaceae	*Dypsis lutescens**	Golden Cane Palm
Malaceae	*Eriobotrya japonica**	Loquat
Moraceae	*Ficus obliqua*	Small-leaved Fig
Oleaceae	*Fraxinus excelsior**	-
Bignoniaceae	*Jacaranda mimosifolia**	Jacaranda
Lythraceae	*Lagerstroemia indica* (cultivar)*	Crepe Myrtle
Arecaceae	*Livistona australis*	Cabbage Tree Palm
Myrtaceae	*Lophostemon confertus*[NE]	Brush Box
Proteaceae	*Macadamia integrifolia*[NE]	Macadamia Nut
Oleaceae	*Olea europaea subsp. europaea**	Common Olive Tree
Arecaceae	*Phoenix canariensis**	Canary Island Date Palm
Araliaceae	*Schefflera actinophylla**	Umbrella Tree
SHRUBS		
Haemodoraceae	*Anigozanthos flavidus**	Tall Kangaroo Paw
Myrtaceae	*Callistemon citrinus*	Crimson Bottlebrush
Myrtaceae	*Callistemon salignus*	Willow Bottlebrush
Myrtaceae	*Callistemon viminalis*	Weeping Bottlebrush
Theaceae	*Camellia japonica**	Camellia
Ulmaceae	*Celtis sp.* (cultivar)*	-
Solanaceae	*Cestrum parqui**	Chilean Cestrum
Asteliaceae	*Cordyline australis* (cultivar)*	Cabbage Tree
Euphorbiaceae	*Euphorbia sp.**	-
Geraniaceae	*Geranium sp.**	-
Malvaceae	*Hibiscus* sp. (cultivar)*	Hibiscus
Arecaceae	*Howea forsteriana* (cultivar)*	Kentia Palm
Oleaceae	*Ligustrum sinense**	Small-leaved Privet
Araceae	*Monstera deliciosa**	Fruit Salad Plant
Rutaceae	*Murraya paniculata**	Orange Jessamine
Ochnaceae	*Ochna serrulata**	Mickey Mouse Plant
Araceae	*Philodendron* sp. (cultivar)*	-
Malaceae	*Photinia glabra* (cultivar)*	Japanese Photinia
Podocarpaceae	*Podocarpus elatus*	Plum Pine
Cesalpinioideae	*Senna pendula var. glabrata**	-
GROUNDCOVERS		
Alliaceae	*Agapanthus africanus**	Lily of the Nile

Family	Scientific name	Common name
Araceae	*Arum spp.**	Arum Lily
Asparagaceae	*Asparagus aethiopicus**	Asparagus Fern
Aspleniaceae	*Asplenium australasicum*	Birds Nest Fern
Poaceae	*Axonopus fissifolius**	Narrow-leaved Carpet Grass
Asteraceae	*Bidens pilosa**	Cobbler's Pegs
Cannaceae	*Canna spp.**	-
Liliaceae	*Chlorophytum comosum**	Spider Plant
Asteraceae	*Cirsium vulgare**	Spear Thistle
Amaryllidaceae	*Clivia miniaata* (cultivar)*	Clivia
Commelinaceae	*Commelina cyanea*	Scurvy Weed, Native Wandering Jew
Poaceae	*Cynodon dactylon*	Common Couch
Phormiaceae	*Dianella caerulea*	Blue Flax-lily
Blechnaceae	*Doodia aspera*	Prickly Rasp Fern
Doryanthaceae	*Doryanthes excelsa*	Gymea Lily
Ericaceae	*Dracophyllum* sp. (cultivar)*	-
Asteraceae	*Erigeron spp.**	-
Zingiberaceae	*Hedychium gardnerianum**	Ginger Lily
Asteraceae	*Hypochaeris radicata**	Flatweed
Geryoniidae	*liriopes verde**	Liriopes
Lomandraceae	*Lomandra longifolia*	Spiky-headed Mat-rush
Lomandraceae	*Lomandra multiflora subsp. multiflora*	Many-flowered Mat-rush
Davalliaceae	*Nephrolepis cordifolia**	Fish-bone Fern
Poaceae	*Paspalum dilatatum**	Paspalum
Geraniaceae	*Pelargonium* sp. (cultivar)*	-
Poaceae	*Pennisetum clandestinum**	Kikuyu, Kikuyu Grass
Euphorbiaceae	*Phyllanthus tenellus**	Hen and Chicken
Poaceae	*Poa annua**	Winter Grass
Portulacaceae	*Portulaca spp.**	-
Solanaceae	*Solanum nigrum**	Black Nightshade, Black-berry Nightshade
Asteraceae	*Sonchus oleraceus**	Common Sow-thistle
Strelitzeaceae	*Strelitzia juncea* (cultivar)*	Bird of Paradise
Commelinaceae	*Tradescantia pallida**	Purple Queen
Agavaceae	*Yucca sp.**	-
VINES		
Basellaceae	*Anredera cordifolia**	Madiera Vine
Araliaceae	*Hedera helix**	English Ivy
* denotes exotic species	NE denotes Non-endemic planted Australian species	

It should be noted that not all garden, cultivar or landscape species have been identified as part of this assessment.

Appendix 2

Threatened Flora and Fauna Species Habitat Assessment

Table A2.1 – Threatened flora species habitat assessment

Scientific name DATABASE SOURCE	***BC Act***	***EPBC Act***	**Growth form and habitat requirements**	**Recorded on site (✓)**	**If not recorded onsite**				**Considered in Significance of Impact Test (✓) Refer to Appendix 3**
					Suitable habitat present (✓)	**Nearby and / or high number of record(s) (✓)** *Notes 1,2 & 3*	**Record(s) from recent years (✓)** *Notes 1,2 & 3*	**Potential to occur**	
Acacia bynoeana OEH EPBC	E1	V	Erect or spreading shrub to 0.3m high growing in heath and dry sclerophyll Open Forest on sandy soils. Often associated with disturbed areas such as roadsides. Distribution limits N-Newcastle S-Berrima.	x	x	-	-	-	x
Acacia gordonii OEH EPBC	E1	E	Erect or spreading shrub 0.5-1.5m high growing in heath and dry sclerophyll forest on sandstone outcrops. Distribution limits N-Bilpin S-Faulconbridge.	x	x	-	-	-	x
Acacia pubescens OEH EPBC	V	V	Spreading shrub 1-4m high open sclerophyll growing in open forest and woodlands on clay soils. Distribution limits N-Bilpin S-Georges River.	x	x	-	-	-	x
Acacia terminalis subsp. *terminalis* OEH EPBC	E1	E	Erect shrub to 2m tall, flowers from March to July. Occurs in eucalypt woodland or forest, usually in sandy soil on creek banks, hillslopes or in shallow soil in rock crevices and sandstone platforms on cliffs. Typically restricted to the Port Jackson and eastern suburbs of Sydney.	x	x	-	-	-	x
Allocasuarina glareicola EPBC	E1	E	Small shrub 1-2m high growing in open sclerophyll forest on lateritic soils derived from tertiary alluviums. Distribution limits Castlereagh NR region.	x	x	-	-	-	x
Allocasuarina portuensis OEH EPBC	E1	E	A shrub of 3-5m tall, similar to other *Casuarinaceae* species. Grows in tall shrubland on sandstone headland at Nielsen Park, Vaucluse.	x	x	-	-	-	x

Scientific name DATABASE SOURCE	***BC Act***	***EPBC Act***	**Growth form and habitat requirements**	**Recorded on site (✓)**	**If not recorded onsite**				**Considered in Significance of Impact Test (✓) Refer to Appendix 3**
					Suitable habitat present (✓)	**Nearby and / or high number of record(s) (✓)** *Notes 1,2 & 3*	**Record(s) from recent years (✓)** *Notes 1,2 & 3*	**Potential to occur**	
Amperea xiphoclada var. pedicellata OEH	E4	Ext.	An erect shrub growing up to 60cm high, was previously widespread in heath, woodland and forest on low fertility and sandy soils and is now presumed extinct.	x	x	-	-	-	x
Asterolasia elegans EPBC	E1	E	Erect shrub 1-3m high growing in moist sclerophyll forests on Hawkesbury sandstone slopes hillsides. Distribution limits Maroota region.	x	x	-	-	-	x
Caladenia tessellata OEH EPBC	E1	V	Terrestrial orchid. Clay-loam or sandy soils. LHCCREMS guidelines suggest the species grows in Map Unit 34 – Coastal Sand Wallum Woodland - Heath. Flowers in September – November. Distribution limits N-Swansea S-south of Eden.	x	x	-	-	-	x
Callistemon linearifolius OEH	V	-	Shrub to 4m high. Dry sclerophyll forest on coast and adjacent ranges. Distribution limits N-Nelson Bay S-Georges River.	x	x	-	-	-	x
Camarophyllopsis kearneyi OEH	E1	-	Small gilled fungus Known only from Lane Cove Bushland Park in Sydney.	x	x	-	-	-	x
Chamaesyce psammogeton OEH	E1	-	Prostrate herb. Coastal dunes. Distribution limits N-Tweed Heads S-Jervis Bay.	x	x	-	-	-	x
Cryptostylis hunteriana EPBC	V	V	Saprophytic orchid. Grows in swamp heath on sandy soils. Distribution limits N-Gibraltar Range S-south of Eden.	x	x	-	-	-	x

Scientific name DATABASE SOURCE	***BC Act***	***EPBC Act***	**Growth form and habitat requirements**	**Recorded on site (✓)**	**If not recorded onsite**				**Considered in Significance of Impact Test (✓) Refer to Appendix 3**
					Suitable habitat present (✓)	**Nearby and / or high number of record(s) (✓)** *Notes 1,2 & 3*	**Record(s) from recent years (✓)** *Notes 1,2 & 3*	**Potential to occur**	
Darwinia biflora OEH	V	V	Erect or spreading shrub to 0.8m high. Grows in heath or understorey of woodland on or near shale-capped ridges underlain by Hawkesbury sandstone. Distribution limits N-Gosford S-Cheltenham.	x	x	-	-	-	x
Dichanthium setosum OEH	V	V	An erect perennial grass to <1m high. Flowers in summer. Grows in woodland and is associated with heavy basaltic black soils and stony red-brown hard-setting loam with clay subsoil. Known chiefly on the northern tablelands in the Saumarez area, west of Armidale, and 18-30 km east of Guyra. It is more rarely found on the north-western slopes, central western slopes and north-western plains of NSW	x	x	-	-	-	x
Diuris arenaria OEH	E1	-	Terrestrial orchid. Confined to Tomaree Peninsula where it grows in heathy dry sclerophyll forest on sandy soil.	x	x	-	-	-	x
Epacris purpurascens var. *purpurascens* OEH	V	-	Erect shrub to 1.5m high growing in sclerophyll forest and scrub and near creeks and swamps on Sandstone. Distribution limits N-Gosford S-Blue Mountains.	x	x	-	-	-	x
Eucalyptus camfieldii OEH EPBC	V	V	Stringybark to 10m high. Grows on coastal shrub heath and woodlands on sandy soils derived from alluviums and Hawkesbury sandstone. Distribution limits N-Norah Head S-Royal NP.	x	x	-	-	-	x

Scientific name DATABASE SOURCE	***BC Act***	***EPBC Act***	**Growth form and habitat requirements**	**Recorded on site (✓)**	**If not recorded onsite**				**Considered in Significance of Impact Test (✓) Refer to Appendix 3**
					Suitable habitat present (✓)	**Nearby and / or high number of record(s) (✓)** *Notes 1,2 & 3*	**Record(s) from recent years (✓)** *Notes 1,2 & 3*	**Potential to occur**	
Eucalyptus fracta OEH	V	-	Small tree or mallee to 8m tallwith grey-black ironbark to smaller branches which are smooth white bark. Confined largely to State Forest. Restricted to the northern Broken Back Range near Cessnock. The dominant tree in a narrow band along the upper edge of a sandstone escarpment. Occurs in dry eucalypt woodland in shallow soils in association with *Eucalyptus sparsifolia, E. punctata, Corymbia maculata* and *Angophora euryphylla.*	x	x	-	-	-	x
Eucalyptus nicholii OEH	V	-	This species is widely planted as an urban street tree and in gardens but is quite rare in the wild. It is confined to the New England Tablelands of NSW, where it occurs from Nundle to north of Tenterfield, largely on private property.	x	x	-	-	-	x
Eucalyptus pulverulenta OEH	V	V	A small tree, typically mallee-like on shallow soils in open forest, typically dominated by Brittle Gum (*Eucalyptus mannifera*), Red Stringybark (*E. macrorhyncha*), Broad-leafed Peppermint (*E. dives*), Silvertop Ash (*E. sieberi*) and Apple Box (*E. bridgesiana*). There are two main areas or occurrence including Lithgow to Bathurst, and Bredbo to Bombala.	x	x	-	-	-	x
Eucalyptus scoparia OEH	E1	V	Smooth-barked tree only known from vicinity of Bald Rock.	x	x	-	-	-	x

Scientific name DATABASE SOURCE	***BC Act***	***EPBC Act***	**Growth form and habitat requirements**	**Recorded on site (✓)**	**If not recorded onsite**				**Considered in Significance of Impact Test (✓) Refer to Appendix 3**
					Suitable habitat present (✓)	**Nearby and / or high number of record(s) (✓)** *Notes 1,2 & 3*	**Record(s) from recent years (✓)** *Notes 1,2 & 3*	**Potential to occur**	
Genoplesium baueri OEH EPBC	E1	E	A terrestrial orchid that grows in sparse sclerophyll forest and moss gardens over sandstone. Flowers Feb – Mar Distribution limits N – Hunter Valley S – Nowra	x	x	-	-	-	x
Grammitis stenophylla OEH	E1	-	A small lithophytic fern with fronds generally <5cm. Occurs in rainforest and wet sclerophyll forest in the coastal divisions of NSW. Usually grown on rocks.	x	x	-	-	-	x
Grevillea caleyi OEH	E1	E	Shrub mostly 1-3m high. Grows in laterite. Distribution limits Terrey Hills-Belrose area.	x	x	-	-	-	x
Hibbertia puberula OEH	E1	-	Shrublets with branches up to 30cm long. Not been seen for 40 years however early records are from Hawkesbury River area in Sydney and the Blue Mountains.	x	x	-	-	-	x
Lasiopetalum joyceae OEH	V	V	Erect shrub to 2m high. Grows in heath and open forest on Hawkesbury sandstone. Distribution limits Hornsby Plateau.	x	x	-	-	-	x
Leptospermum deanei OEH EPBC	V	V	Shrub to 5m high. Grows on forested slopes. Distribution limits Near watershed of Lane Cove River.	x	x	-	-	-	x
Melaleuca biconvexa OEH EPBC	V	V	Tall shrub. Grows in wetlands adjoining perennial streams and on the banks of those streams, generally within the geological series known as the Terrigal Formation. Distribution limits N-Port Macquarie S-Jervis Bay.	x	x	-	-	-	x

Scientific name DATABASE SOURCE	***BC Act***	***EPBC Act***	**Growth form and habitat requirements**	**Recorded on site (✓)**	**If not recorded onsite**				**Considered in Significance of Impact Test (✓) Refer to Appendix 3**
					Suitable habitat present (✓)	**Nearby and / or high number of record(s) (✓)** *Notes 1,2 & 3*	**Record(s) from recent years (✓)** *Notes 1,2 & 3*	**Potential to occur**	
Melaleuca deanei OEH	V	V	Shrub to 3m high. Grows in heath on sandstone. Distribution limits N-Gosford S-Nowra.	x	x	-	-	-	x
Microtis angusii OEH EPBC	E1	E	Terrestrial orchid which is known from one population at Ingleside. Associated with the Duffy's Forest vegetation community. Flowers May-Oct.	x	x	-	-	-	x
Pelargonium sp. *Striatellum* EPBC	E1	E	Herb to 90cm tall which grows in damp places especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance. Varied distribution from SE NSW to QLD.	x	x	-	-	-	x
Persoonia hirsuta OEH	E1	E	Erect to decumbent shrub. Grows in dry sclerophyll forest and woodland on Hawkesbury sandstone with infrequent fire histories. Distribution limits N-Glen Davis S-Hill Top.	x	x	-	-	-	x
Persoonia nutans OEH	E1	E	Erect to spreading shrub. Grows in dry sclerophyll forest and woodland on laterite and alluvial sands. Distribution limits Cumberland Plain.	x	x	-	-	-	x
Pimelea curviflora var. *curviflora* OEH EPBC	V	V	Woody herb or sub-shrub to 0.2-1.2m high. Grows on Hawkesbury sandstone near shale outcrops. Distribution Sydney.	x	x	-	-	-	x
Pimelea spicata OEH EPBC	E1	E	Decumbent or erect shrub to 0.5m high. Occurs principally in woodland on soils derived from Wianamatta Shales. Distribution limits N-Lansdowne S-Shellharbour.	x	x	-	-	-	x

Scientific name DATABASE SOURCE	***BC Act***	***EPBC Act***	**Growth form and habitat requirements**	**Recorded on site (✓)**	**If not recorded onsite**				**Considered in Significance of Impact Test (✓) Refer to Appendix 3**
					Suitable habitat present (✓)	**Nearby and / or high number of record(s) (✓)** *Notes 1,2 & 3*	**Record(s) from recent years (✓)** *Notes 1,2 & 3*	**Potential to occur**	
Prasophyllum fuscum OEH	E4A	V	Terrestrial orchid up to 45cm tall. Flowers from Oct-Dec and restricted in distribution to the Georges River and Wingecarribee Swamp near Burrawang at an altitude of 50-200m.	x	x	-	-	-	x
Prostanthera junonis OEH EPBC	E1	E	Small shrub. Grows in sclerophyll forest and heath in shallow soil on sandstone. Distribution limits Somersby region.	x	x	-	-	-	x
Prostanthera marifolia OEH EPBC	E4A	CE	Erect shrub to 0.3m high. Woodland dominated by Eucalyptus sieberi and Corymbia gummifera. In deeply weathered clay soil with ironstone nodules. Has been recorded previously in the Sydney Harbour region.	x	x	-	-	-	x
Pultenaea parviflora OEH	E1	V	Erect shrub. Grows in dry sclerophyll forest at the intergrade between Tertiary Alluviums and Wianamatta Shales. Distribution limits Cumberland Plain.	x	x	-	-	-	x
Sarcochilus hartmannii OEH	V	V	An orchid which grows on volcanic rocks, often in shallow soil in sclerophyll forest or exposed sites usually at an elevation above 500m. Distribution – north from the Richmond River in the far north of NSW.	x	x	-	-	-	x
Senecio spathulatus OEH	E1	-	A low growing daisy that prefers primary dunes. Known to occur at Cape Howe and between Kurnell north to Myall Lakes National Park. Also occurs in coastal locations in eastern Victoria.	x	x	-	-	-	x

Scientific name DATABASE SOURCE	***BC Act***	***EPBC Act***	**Growth form and habitat requirements**	**Recorded on site (✓)**	**If not recorded onsite**				**Considered in Significance of Impact Test (✓) Refer to Appendix 3**
					Suitable habitat present (✓)	**Nearby and / or high number of record(s) (✓)** *Notes 1,2 & 3*	**Record(s) from recent years (✓)** *Notes 1,2 & 3*	**Potential to occur**	
Syzygium paniculatum OEH EPBC	V	V	Small tree. Subtropical and littoral rainforest on sandy soil. Distribution limits N-Forster S-Jervis Bay.	x	x	-	-	-	x
Tetratheca glandulosa OEH	V	-	Spreading shrub to 0.2m high. Sandy or rocky heath or scrub. Distribution limits N-Mangrove Mountain S-Port Jackson.	x	x	-	-	-	x
Tetratheca juncea OEH	V	V	Prostrate shrub to 1m high. Dry sclerophyll forest and heath. Distribution limits N-Bulahdelah S-Port Jackson.	x	x	-	-	-	x
Thesium australe OEH EPBC	V	V	Erect herb to 0.4m high. Root parasite. Themeda grassland or woodland often damp. Distribution limits N-Tweed Heads S-south of Eden.	x	x	-	-	-	x
Triplarina imbricata OEH	E1	E	A shrub to 2.8m tall, flowers from Nov-Dec. Occurs in heath, often in damp places along creek lines; coast and adjacent ranges. Known from the Tabulum and Nymboida districts in NE NSW.	x	x	-	-	-	x

OEH	-	Denotes species listed within 10km of the subject site on the *Atlas of NSW Wildlife*
EPBC	-	Denotes species listed within 10km of the subject site in the *EPBC Act* habitat search
TBE	-	Denotes additional species considered by *Travers bushfire & ecology* to have potential habitat based on regional knowledge and other records
V	-	Denotes vulnerable listed species under the relevant Act
E or E1	-	Denotes endangered listed species under the relevant Act
E4	-	Denotes presumed extinct species under the relevant Act
E4A / CE	-	Denotes critically endangered listed species under the relevant Act

Scientific name DATABASE SOURCE	***BC Act***	***EPBC Act***	**Growth form and habitat requirements**	**Recorded on site (✓)**	**If not recorded onsite**				**Considered in Significance of Impact Test (✓) Refer to Appendix 3**
					Suitable habitat present (✓)	**Nearby and / or high number of record(s) (✓)** *Notes 1,2 & 3*	**Record(s) from recent years (✓)** *Notes 1,2 & 3*	**Potential to occur**	
NOTE:	1. This field is not considered if no suitable habitat is present within the subject site 2. 'records' refer to those provided by the *Atlas of NSW Wildlife* 3. 'nearby' or 'recent' records are species specific accounting for home range, dispersal ability and life cycle								

Table A2.2 – Threatened fauna species habitat assessment

Common name ***Scientific name*** DATABASE SOURCE	**BC Act**	**EPBC Act**	**Preferred habitat** ***Distribution limit***	**Recorded on site (✓)**	**If not recorded on site**				**Considered in Significance of Impact Test (✓) (Refer to Appendix 3)**
					Suitable habitat present (✓)	**Nearby and/or high number of record(s) (✓)** *Notes 1,2 & 3*	**Record(s) from recent years (✓)** *Notes 1,2 & 3*	**Potential to occur**	
Wallum Froglet *Crinia tinnula* OEH	V	-	Found in acidic paperbark swamps and wallum country with dense groundcover. Breeds in temporary and permanent pools and ponds of high acidity. *Distribution Limit: N-Tweed Heads S-Kurnell.*	x	x	-	-	x	x
Giant Burrowing Frog *Heleioporus australiacus* EPBC	V	V	Inhabits open forests and riparian forests along non-perennial streams, digging burrows into sandy creek banks. *Distribution Limit: N-Near Singleton S-South of Eden.*	x	x	-	-	x	x
Stuttering Frog *Mixophyes balbus* EPBC	E	V	Terrestrial inhabitant of rainforest and wet sclerophyll forests. *Distribution Limit: N-near Tenterfield S-South of Bombala*.	x	x	-	-	x	x
Red-crowned Toadlet *Pseudophryne australis* OEH	V	-	Prefers sandstone areas, breeds in grass and debris beside non-perennial creeks or gutters. Individuals can also be found under logs and rocks in non-breeding periods. *Distribution Limit: N-Pokolbin. S-near Wollongong.*	x	x	-	-	x	x
Green and Golden Bell Frog *Litoria aurea* OEH EPBC	E	V	Prefers the edges of permanent water, streams, swamps, creeks, lagoons, farm dams and ornamental ponds. Often found under debris. *Distribution Limit: N-Byron Bay S-South of Eden.*	x	x	-	-	x	x

Common name ***Scientific name*** DATABASE SOURCE	BC Act	EPBC Act	Preferred habitat ***Distribution limit***	Recorded on site (✓)	If not recorded on site				Considered in Significance of Impact Test (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Rosenberg's Goanna *Varanus rosenbergi* OEH	V	-	Hawkesbury sandstone outcrop specialist. Inhabits woodlands, dry open forests and heathland sheltering in burrows, hollow logs, rock crevices and outcrops. *Distribution Limit: N-Nr Broke. S-Nowra Located in scattered patches near Sydney, Nowra and Goulburn.*	x	x	-	-	x	x
Broad-headed Snake *Hoplocephalus bungaroides* OEH EPBC	E	V	Sandstone outcrops, exfoliated rock slabs and tree hollows in coastal and near coastal areas. *Distribution Limit: N-Mudgee Park. S-Nowra.*	x	x	-	-	x	x
Superb Fruit-dove *Ptilinopus superbus* OEH	V	-	Rainforests, adjacent mangroves, eucalypt forests, scrubland with native fruits. *Distribution Limit: N-Border Ranges National Park. S-Bateman's Bay.*	x	x	-	-	x	x
White-bellied Sea Eagle (*Haliaeetus leucogaster*) OEH	V	-	Occupies coasts, islands, estuaries, inlets, large rivers, inland lakes and reservoirs. *Sedentary; dispersive. N-Tweed Heads. S-South of Eden.*	x	x	-	-	x	x
Little Eagle *Hieraaetus morphnoides* OEH	V	-	Utilises plains, foothills, open forests, woodlands and scrublands; river red gums on watercourses and lakes. *Distribution Limit - N-Tweed Heads. S-South of Eden.*	x	x	-	-	x	x

Common name ***Scientific name*** DATABASE SOURCE	BC Act	EPBC Act	Preferred habitat ***Distribution limit***	Recorded on site (✓)	If not recorded on site				Considered in Significance of Impact Test (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Square-tailed Kite *Lophoictinia isura* OEH	V	-	Utilises mostly coastal and sub-coastal open forest, woodland or lightly timbered habitats and inland habitats along watercourses and mallee that are rich in passerine birds. *Distribution Limit: N-Goondiwindi. S-South of Eden.*	x	x	-	-	x	x
Eastern Osprey *Pandion cristatus* OEH	V	-	Utilises waterbodies including coastal waters, inlets, lakes, estuaries and offshore islands with a dead tree for perching and feeding. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	x	-	-	x	x
Glossy Black-Cockatoo *Calyptorhynchus lathami* OEH	V	-	Open forests with *Allocasuarina* species and hollows for nesting. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	x	-	-	x	x
Little Lorikeet *Glossopsitta pusilla* OEH	V	-	Inhabits forests, woodlands; large trees in open country; timbered watercourses, shelterbeds, and street trees. *Distribution Limit: N-Tweed Heads. S-South of Eden*.	x	x	-	-	x	x
Swift Parrot *Lathamus discolour* OEH EPBC	E	E	Inhabits eucalypt forests and woodlands with winter flowering eucalypts. *Distribution Limit: N-Border Ranges National Park. S-South of Eden*.	x	x	-	-	x	x

Common name *Scientific name* DATABASE SOURCE	BC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in Significance of Impact Test (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Eastern Ground Parrot *Pezoporus wallicus wallicus* OEH	V	-	Inhabits low heath, sedgeland and buttongrass plains with dense vegetation to provide suitable roosting cover. *Distribution Limit: N-North of Tweed Heads. S-South of Eden.*	x	x	-	-	x	x
Orange-bellied Parrot *Neophema chrysogaster* OEH EPBC	E	E	Favours small islands, peninsulas in coastal areas; with saltmarsh plants; coastal pastures, golf courses; crops of millet and sunflowers; dunes, beaches. *Distribution Limit: N-Southern Sydney coast. S-South of Eden.*	x	x	-	-	x	x
Barking Owl *Ninox connivens* OEH	V	-	Inhabits principally woodlands but also open forests and partially cleared land and utilises hollows for nesting. *Distribution Limits: N-Border Ranges National Park. S-Eden.*	x	x	-	-	x	x
Powerful Owl *Ninox strenua* OEH	V	-	Forests containing mature trees for shelter or breeding and densely vegetated gullies for roosting. *Distribution Limits: N-Border Ranges National Park. S-Eden.*	x	x	-	-	x	x
Sooty Owl *Tyto tenebricosa* OEH	V	-	Tall, dense, wet forests containing trees with very large hollows. *Distribution Limit: N-Border Ranges National Park. S-South of Eden.*	x	x	-	-	x	x
Regent Honeyeater *Xanthomyza Phrygia* OEH EPBC	E4A	CE	Found in temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts. *Distribution Limit: N-Urbanville. S-Eden.*	x	x	-	-	x	x

Common name ***Scientific name*** DATABASE SOURCE	**BC Act**	**EPBC Act**	**Preferred habitat** ***Distribution limit***	**Recorded on site (✓)**	**If not recorded on site**				**Considered in Significance of Impact Test (✓) (Refer to Appendix 3)**
					Suitable habitat present (✓)	**Nearby and/or high number of record(s) (✓)** *Notes 1,2 & 3*	**Record(s) from recent years (✓)** *Notes 1,2 & 3*	**Potential to occur**	
White-fronted Chat *Epithianura albifrons* OEH	V	-	Found in open damp ground, grass clumps, fencelines, heath, samphire saltmarshes, mangroves, dunes, saltbush plains. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	x	-	-	x	x
Painted Honeyeater *Grantiella picta* EPBC	V	V	A nomadic bird occurring in low densities within open forest, woodland and scrubland feeding on mistletoe fruits. Inhabits primarily Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. *Distribution Limit: N-Boggabilla. S-Albury with greatest occurrences on the inland slopes of the Great Dividing Range.*	x	x	-	-	x	x
Varied Sittella *Daphoenositta chrysoptera* OEH	V	-	Open eucalypt woodlands / forests (except heavier rainforests); mallee, inland acacia, coastal tea-tree scrubs; golf courses, shelterbelts, orchards, parks, scrubby gardens. *Distribution Limit: N-Border Ranges National Park. S-South of Eden*.	x	x	-	-	x	x

Common name *Scientific name* DATABASE SOURCE	BC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in Significance of Impact Test (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Dusky Woodswallow *Artamus cyanopterus cyanopterus* OEH	V	-	Found in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests; very occasionally in moist forests or rainforests. Prefers habitat with an open understorey. Often observed in farmland tree patches or roadside remnants. *Widespread in eastern, southern and southwestern Australia.*	x	x	-	-	x	x
Diamond Firetail *Stagonopleura guttata* OEH	V	-	Found in Eucalypt woodlands, forests and mallee where there is grassy understorey west of the Great Div. also drier coastal woodlands of the Cumberland Plain and Hunter Richmond and Clarence River Valleys. *Distribution Limit: N-Rockhampton Q. S-Eyre Pen Kangaroo Is. SA.*	x	x	-	-	x	x
Spotted-tailed Quoll *Dasyurus maculatus* OEH EPBC	V	E	Dry and moist open forests containing rock caves, hollow logs or trees. *Distribution Limit: N-Mt Warning National Park. S-South of Eden.*	x	x	-	-	x	x
Southern Brown Bandicoot *Isoodon obesulus* EPBC	E	E	Utilises a range of habitats containing thick ground cover - open forest, woodland, heath, cleared land, urbanised areas and regenerating bushland. *Distribution Limit: N-Kempsey. S-South of Eden.*	x	x	-	-	x	x

Common name *Scientific name* DATABASE SOURCE	BC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in Significance of Impact Test (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Koala *Phascolarctos cinereus* OEH EPBC	V	V	Inhabits both wet and dry eucalypt forest on high nutrient soils containing preferred feed trees. *Distribution Limit: N-Tweed Heads. S-South of Eden.*	x	x	-	-	x	x
Eastern Pygmy Possum *Cercatetus nanus* OEH	V	-	Found in a variety of habitats from rainforest through open forest to heath. Feeds on insects but also gathers pollen from banksias, eucalypts and bottlebrushes. Nests in banksias and myrtaceous shrubs. *Distribution Limit: N-Tweed Heads. S-Eden.*	x	x	-	-	x	x
Yellow-bellied Glider *Petaurus australis* OEH	V	-	Tall mature eucalypt forests with high nectar producing species and hollow bearing trees. *Distribution Limit- N-Border Ranges National Park. S-South of Eden*.	x	x	-	-	x	x
Squirrel Glider *Petaurus norfolcensis* OEH	V	-	Mixed aged stands of eucalypt forest & woodlands including gum barked & high nectar producing species & hollow bearing trees. *Distribution Limit: N-Tweed Heads. S-Albury.*	x	x	-	-	x	x

Common name ***Scientific name*** DATABASE SOURCE	BC Act	EPBC Act	Preferred habitat ***Distribution limit***	Recorded on site (✓)	If not recorded on site				Considered in Significance of Impact Test (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Greater Glider *Petauroides volans* EPBC	-	V	Favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species. Population density is optimal at elevation levels at 845 m above sea level. Prefer overstorey basal areas in old-growth tree stands. Highest abundance typically in taller, montane, moist eucalypt forests, with relatively old trees and abundant hollows *Distribution Limit: N-Border Ranges National Park. S- South of Eden.*	x	x	-	-	x	x
Rufous Bettong *Aepyprymnus rufescens* OEH	V	-	Generally found in dry, open woodland dominated by eucalypts preferring a virtual absence of scrub but with dense native grass cover. *Distribution Limit: N-Border Ranges National Park. S-Newcastle.*	x	x	-	-	x	x
Brush-tailed Rock-wallaby *Petrogale penicillata* EPBC	E	V	Found in rocky gorges with a vegetation of rainforest or open forests to isolated rocky outcrops in semi-arid woodland country. *Distribution Limit: N-North of Tenterfield. S-Bombala.*	x	x	-	-	x	x
Grey-headed Flying-fox *Pteropus poliocephalus* OEH EPBC	V	V	Found in a variety of habitats including rainforest, mangroves, paperbark swamp, wet and dry open forest and cultivated areas. Forms camps commonly found in gullies and in vegetation with a dense canopy. *Distribution Limit: N-Tweed Heads. S-Eden.*	x	One suitable feed tree (*Ficus obliqua*)	nearest record 2km, 517 within 10km	✓	High	✓

Common name ***Scientific name*** DATABASE SOURCE	BC Act	EPBC Act	Preferred habitat ***Distribution limit***	Recorded on site (✓)	If not recorded on site				Considered in Significance of Impact Test (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Yellow-bellied Sheathtail-bat *Saccolaimus flaviventris* OEH	V	-	Rainforests, sclerophyll forests and woodlands. *Distribution Limit: N-North of Walgett. S-Sydney.*	x	x	-	-	x	x
East-coast Freetail Bat *Micronomus norfolkensis* OEH	V	-	Inhabits open forests and woodlands foraging above the canopy and along the edge of forests. Roosts in tree hollows, under bark and buildings. *Distribution Limit: N-Woodenbong. S-Pambula.*	x	x	-	-	x	x
Large-eared Pied Bat *Chalinolobus dwyeri* EPBC	V	V	Warm-temperate to subtropical dry sclerophyll forest and woodland. Roosts in caves, tunnels and tree hollows in colonies of up to 30 animals. *Distribution Limit: N-Border Ranges National Park. S-Wollongong.*	x	x	-	-	x	x
Eastern Falsistrelle *Falsistrellus tasmaniensis* OEH	V	-	Recorded roosting in caves, old buildings and tree hollows. *Distribution Limit: N-Border Ranges National Park. S-Pambula.*	x	x	-	-	x	x
Little Bentwing-bat *Miniopterus australis* OEH	V	-	Roosts in caves, old buildings and structures in the higher rainfall forests along the south coast of Australia. *Distribution Limit: N-Border Ranges National Park. S-Sydney.*	x	x	-	-	x	x

Common name *Scientific name* DATABASE SOURCE	BC Act	EPBC Act	Preferred habitat *Distribution limit*	Recorded on site (✓)	If not recorded on site				Considered in Significance of Impact Test (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
Eastern Bentwing-bat *Miniopterus orianae oceanensis* OEH	V	-	Prefers areas where there are caves, old mines, old buildings, stormwater drains and well-timbered areas. *Distribution Limit: N-Border Ranges National Park. S-South of Eden.*	x	marginal	nearest record 2km, 111 within 10km	✓	Not Likely	x
Large-footed Myotis *Myotis macropus* OEH	V	-	Roosts in caves, mines, tunnels, buildings, tree hollows and under bridges. Forages over open water. *Distribution limits: N-Border Ranges National Park. S-South of Eden.*	x	x	-	-	x	x
New Holland Mouse *Pseudomys novaehollandiae* EPBC	-	V	Occurs in heathlands, woodlands, open forest and paperbark swamps and on sandy, loamy or rocky soils. Coastal populations have a marked preference for sandy substrates, a heathy understorey of leguminous shrubs less than 1m high and sparse ground litter. Recolonise of regenerating burnt areas. *Distribution Limit: N-Border Ranges National Park. S-South of Eden.*	x	x	-	-	x	x

OEH	-	Denotes species listed within 10km of the subject site on the *Atlas of NSW Wildlife*
EPBC	-	Denotes species listed within 10km of the subject site in the *EPBC Act* habitat search
TBE	-	Denotes additional species considered by *Travers bushfire & ecology* to have potential habitat based on regional knowledge and other records
V	-	Denotes vulnerable listed species under the relevant Act
E	-	Denotes endangered listed species under the relevant Act

Common name ***Scientific name*** DATABASE SOURCE	BC Act	EPBC Act	Preferred habitat ***Distribution limit***	Recorded on site (✓)	If not recorded on site				Considered in Significance of Impact Test (✓) (Refer to Appendix 3)
					Suitable habitat present (✓)	Nearby and/or high number of record(s) (✓) *Notes 1,2 & 3*	Record(s) from recent years (✓) *Notes 1,2 & 3*	Potential to occur	
E4A / CE	- Denotes critically endangered listed species under the relevant Act								
NOTE:	1. This field is not considered if no suitable habitat is present within the subject site 2. 'records' refer to those provided by the *Atlas of NSW Wildlife* 3. 'nearby' or 'recent' records are species specific accounting for home range, dispersal ability and life cycle								

A detailed assessment in accordance with Section 4.2 of the EP&A Act 1979 as amended in 2017 will be completed for these species in Appendix 3 of this report.

Table A2.3 provides an assessment of potential habitat within the subject site for nationally *protected* migratory fauna species recorded within 10km on the *EPBC Act* Protected Matters Tool. Nationally *threatened* migratory species are considered in Table A2.3.

Table A2.3 – Migratory fauna habitat assessment

Common name ***Scientific name***	**Preferred habitat** ***Migratory breeding***	**Suitable habitat present (✓)**	**Recorded on site (✓)**	**Comments**
Oriental Cuckoo (*Cuculus optatus*)	It mainly inhabits forests, occurring in coniferous, deciduous and mixed forest. It feeds mainly on insects and their larvae, foraging for them in trees and bushes as well as on the ground.	×	×	-
White-throated Needletail (*Hirundapus caudacutus*)	Airspace over forests, woodlands, farmlands, plains, lakes, coasts, towns; companies forage often along favoured hilltops and timbered ranges. *Breeds Siberia, Himalayas, east to Japan. Summer migrant to eastern Australia.*	marginal	×	No likely impact
Black-faced Monarch (*Monarcha melanopsis*)	Rainforests, eucalypt woodlands; coastal scrubs; damp gullies in rainforest, eucalypt forest; more open woodland when migrating. *Summer breeding migrant to coastal south east Australia, otherwise uncommon*.	×	×	-
Spectacled Monarch (*Monarcha trivirgatus*)	Understorey of mountain / lowland rainforest, thickly wooded gullies, waterside vegetation, mostly well below canopy. *Summer breeding migrant to south-east Qld and north-east NSW down to Port Stephens from Sept/Oct to May. Uncommon in southern part of range.*	×	×	-
Satin Flycatcher (*Myiagra cyanoleuca*)	Heavily vegetated gullies in forests, taller woodlands, usually above shrub-layer; during migration, coastal forests, woodlands, mangroves, trees in open country, gardens. *Breeds mostly south east Australia and Tasmania over warmer months, winters in north east Qld.*	×	×	-
Rufous Fantail (*Rhipidura rufifrons*)	Undergrowth of rainforests / wetter eucalypt forests / gullies; monsoon forests, paperbarks, sub-inland and coastal scrubs; mangroves, watercourses; parks, gardens. On migration, farms, streets buildings. *Breeding migrant to south east Australia over warmer months. Altitudinal migrant in north east NSW in mountain forests during warmer months.*	×	×	-
Yellow Wagtail (*Motacilla flava*)	The yellow wagtail typically forages in damp grassland and on relatively bare open ground at edges of rivers, lakes and wetlands, but also feeds in dry grassland and in fields of cereal crops.	×	×	-

Appendix 3
Significance of Impact Test

Appendix 3 - Significance of Impact Test

Section 7.2 of the BC Act 2016 requires a determination as to whether a development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. Henceforth this is referred to as the 'Significance of Impact Test'.

For the purposes of this Part, development or an activity is likely to significantly affect threatened species if:

(a) it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3, or
(b) the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or
(c) it is carried out in a declared area of outstanding biodiversity value.

Section 7.3 of the BC Act 2016 provides the terms of the test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats

The following significance of impact test relies on the biodiversity assessment provided in this report and should be read making reference to the relevant discussion on each threatened species or their habitats, endangered population and ecological community.

Flora investigations and fauna habitat assessments of the study area have resulted in the identification of suitable habitat for the following threatened species, populations or ecological communities with varying potential to occur. Species recorded or with a considered potential to occur have been noted. The potential for any direct or indirect impacts on these species has also been considered.

Threatened flora

No threatened flora species were observed, or were considered likely to have potential habitat, within the subject site.

Endangered ecological communities

No Endangered Ecological Communities (EECs) were observed, or considered likely to occur, within the subject site.

Threatened fauna

Common name	BC Act	Potential to occur	Potential impact
Grey-headed Flying-fox	V	✓	Direct – on a single potential foraging tree (*Ficus obliqua*) that is outside of the proposed development footprint and is to likely be retained

Endangered populations

No Endangered flora or fauna populations were observed, or considered to have potential habitat, within the subject site.

BIODIVERSITY CONSERVATION ACT 2016 - SECTION 7.3 – SIGNIFICANCE OF IMPACT TEST

Test for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats

The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

(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,

Flora species

No threatened species were observed within the study area despite detailed targeted searches and a habitat assessment. Therefore it is considered that the proposed development or activity is unlikely to have an adverse effect on the life cycle of any flora species such that a viable local population of the species is likely to be placed at risk of extinction.

Fauna species

Fauna habitat assessment was undertaken as part of the botanical survey. The study area contains no hollow-bearing trees. However, two trees containing nest boxes are located within the proposed new building footprint.

The study area does not otherwise contain any habitat of potential importance for threatened fauna. The overall lack of native and natural vegetation (or landscaped understorey) and connectivity would reduce the likelihood of threatened species utilising the site for any breeding or roosting potential. Therefore the subject site is not considered likely to contain any unique or otherwise important habitat resources central to home range requirements for any threatened fauna species with considered potential to occur.

Conclusion and recommendation

The proposal is unlikely to result in a serious or irreversible impact on threatened flora or fauna species and their populations.

Regarding the loss of two (2) nest boxes located within the development footprint it is recommended that these nest boxes be relocated to nearby retained trees, or, two (2) or more new nest boxes be installed in nearby retained trees as compensation.

(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

No Endangered Ecological Community (EEC) was observed or considered likely to occur within the subject site.

Therefore, it is considered that the proposal is unlikely to have an adverse effect on the extent of any ecological community such that its local occurrence is likely to be placed at risk of extinction.

(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,

No Endangered Ecological Community (EEC) was observed or considered likely to occur within the subject site.

(c) in relation to the habitat of a threatened species or ecological community:

It is considered that the habitat attributes of the subject site provide potential foraging habitat for Grey-headed Flying-fox. This habitat is provided by a single *Ficus obliqua* (Small-leaved Fig) located near the south-eastern boundary. This tree is located outside any development footprint and is therefore expected to be retained.

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

The proposed development for the new building will remove a small area (approximately 0.14 ha) of mostly exotic landscape vegetation that provides some foraging habitat for a number of common avifauna species. It is likely that the single fruit producing *Ficus obliqua* tree will be retained as it is located outside of any development footprint.

(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

The vegetation within the subject site is already highly fragmented and isolated from any proximal area of native vegetation.

It is considered that the proposed development is located within a patch of highly modified and mostly exotic vegetation. The proposal will retain some Managed Landscape vegetation within the subject site. It is considered that the proposal is unlikely to further fragment or isolate habitat from other areas of habitat as a result of the proposed development or activity.

(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 importance of habitat to be impacted is considered low because it contains Managed Landscape vegetation comprised mostly of exotic and non-endemic species. The value of the Managed Landscape vegetation within the subject site is considered to be low due to the very high proportion of exotic and non-endemic species. This vegetation does not contain threatened flora habitat and very limited habitat value for threatened fauna. It is considered that the subject site does not provide any likely important or unique habitat of breeding importance for any threatened flora or fauna species or populations. The proposal will not further break any local connectivity linkages nor isolate native vegetation patches.

The highly modified Managed Landscape vegetation is of low quality and is considered to be of low importance with regard to the provision of habitat for native flora and fauna species, populations or ecological communities.

(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 subject site is not within any declared area of outstanding biodiversity value. Therefore the proposal will not have any adverse effects on any declared area of outstanding biodiversity value (either directly or indirectly).

(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.

A key threatening process is defined as a process that threatens, or could threaten, the survival or evolutionary development of species, populations or ecological communities.

The current list of key threatening processes, and whether the proposed activity is recognised as a threatening process, is shown below.

Listed key threatening process (as described in the final determination of the Scientific Committee to list the threatening process)	**Is the development or activity proposed of a class of development or activity that is recognised as a threatening process?**		
	Likely	**Possible**	**Unlikely**
Aggressive exclusion of birds by Noisy Miners (*Manorina melanocephala*)		✓	
Alteration of habitat following subsidence due to longwall mining			✓
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands			✓
Anthropogenic Climate Change			✓
Bushrock removal			✓
Clearing of native vegetation			✓
Competition and habitat degradation by feral goats			✓
Competition and grazing by the feral European Rabbit (*Oryctolagus cuniculus*)			✓
Competition from feral honeybees			✓
Death or injury to marine species following capture in shark control programs on ocean beaches			✓
Entanglement in, or ingestion of anthropogenic debris in marine and estuarine environments			✓
Forest Eucalypt dieback associated with over-abundant psyllids and bell miners			✓
High frequency fire resulting in the disruption of life-cycle processes in plants and animals and loss of vegetation structure and composition			✓
Herbivory and environmental degradation caused by feral deer			✓
Importation of red imported fire ants into NSW			✓
Infection by *Psittacine circoviral* (beak and feather) disease affecting endangered psittacine species and populations			✓
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis			✓
Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family			✓

Listed key threatening process (as described in the final determination of the Scientific Committee to list the threatening process)	Is the development or activity proposed of a class of development or activity that is recognised as a threatening process?		
	Likely	**Possible**	**Unlikely**
Myrtaceae			
Infection of native plants by *Phytophthora cinnamomi*			✓
Introduction of the large earth bumblebee (*Bombus terrestris*)			✓
Invasion and establishment of exotic vines and scramblers		✓	
Invasion and establishment of Scotch Broom (*Cytisus scoparius*)			✓
Invasion and establishment of the Cane Toad (*Bufo marinus*)			✓
Invasion, establishment and spread of *Lantana camara*			✓
Invasion of native plant communities by bitou bush & boneseed *Chrysanthemoides monilifera*			✓
Invasion of native plant communities by exotic perennial grasses			✓
Invasion of native plant communities by African Olive (*Olea europaea* subsp. *cuspidata*)			✓
Invasion of the Yellow Crazy Ant (*Anoplolepis gracilipes*)			✓
Loss of Hollow-bearing trees			✓
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants			✓
Loss and/or degradation of sites used for hill-topping by butterflies			✓
Predation and hybridisation by feral dogs (*Canis lupus familiaris*)			✓
Predation by the European Red Fox (*Vulpes vulpes*)			✓
Predation by the Feral Cat (*Felis catus*)			✓
Predation by Gambusia holbrooki Girard, 1859 (plague minnow or mosquito fish)			✓
Predation by the Ship Rat (*Rattus rattus*) on Lord Howe Island			✓
Predation, habitat degradation, competition & disease transmission from Feral pigs (*Sus scofa*)			✓
Removal of dead wood and dead trees			✓

The above key threatening processes have been considered in reference to the proposal. It was considered that the proposal may contribute to a small degree to a number these processes as described below. It was not considered that the proposal will have a large or significant impact on any of the following key threatening processes. Some mitigation measures have been listed under each process to minimise or reduce such impacts upon those processes.

Summary of "likely" or "possible" Key Threatening Processes

This section identifies what mitigation measures can be implemented to address threatening processes.

Aggressive exclusion of birds by Noisy Miners (Manorina melanocephala)

It is expected that this threatening process is already relevant to the study area and the proposal will not likely further exacerbate this process.

Invasion and establishment of exotic vines and scramblers

The subject site currently contains exotic vine and scrambler species such as *Anredera cordifolia* (Madiera Vine) and *Hedera helix* (English Ivy). The proposed development will provide an opportunity to remove, control and possibly eradicate these species within the subject site. This will result in a beneficial outcome by reducing the likelihood of this Key Threatening Process (KTP) from further impacting on the site.