Flora and Fauna Assessment Report

30a Addison Road, Manly NSW 2095

Report prepared by Narla Environmental

for Chateau Architects & Builders

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NARLA
environmental

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Report Certification

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Glossary

Acronym/ Term	Definition
BAM	Biodiversity Assessment Methodology
BC Act	New South Wales Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
DA	Development Application
DAWE	Department of Agriculture, Water and the Environment
Development	The use of land, and the subdivision of land, and the carrying out of a work, and the demolition of a building or work, and the erection of a building, and any other act, matter or thing referred to in section 26 that is controlled by an environmental planning instrument but does not include any development of a class or description prescribed by the regulations for the purposes of this definition (Environmental Planning and Assessment Act 1979)
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment
EP&A Act	Environmental Planning & Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
FFA	Flora and Fauna Assessment
ha	Hectares
km	Kilometre
Locality	The area within a 10 km radius of the Subject Property
m	metres
MDCP	Manly Development Control Plan 2013
MLEP	Manly Local Environmental Plan 2013
mm	millimetres
NSW	New South Wales
OEH	Office of Environment and Heritage (now known as the DPIE)
SEPP	State Environmental Planning Policy
SRZ	Structural Root Zone
Subject Property	30a Addison Road, Manly NSW 2095 (Lot B/DP360797)
Subject Site	All areas associated with the proposed development
Threatened species, populations and ecological communities	Species, populations and ecological communities specified in Schedules 1 and 2 of the BC Act 2016
TPZ	Tree Protection Zone

1. Introduction

1.1 Project Background

Narla Environmental Pty Ltd (Narla) were engaged by Chateau Architects & Builders ('the proponent') to undertake a Flora and Fauna Assessment (FFA) for the proposed development at 30a Addison Road, Manly NSW 2095 (Lot B/DP360797; hereafter the 'Subject Property', **Figure 1**). The proposed development involves the demolition of the existing dwelling as well as the development of a new dwelling, garage, alterations to ancillary infrastructure (external staircases, fencing and side paths) and various landscaping works (hereafter the 'Subject Site'; **Appendix C**; **Figure 1**).

Narla have produced this report in order to assess any potential impacts associated with the proposed activity on terrestrial ecology (biodiversity), particularly threatened species, populations, and ecological communities listed under the Biodiversity Conservation Act 2016 (BC Act) and the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The report will also address potential impacts to *Eudyptula minor* (Little Penguin) in the Manly Point Area and *Perameles nasuta* (Long-nosed Bandicoot), North Head Population as the Subject Property is located within the Manly DCP Schedule 1 – Map D – Assessment of Significance Area – Bandicoots and Penguins (**Figure 2**) and is located within 20m of the State declared Area of Outstanding Biodiversity Value (AOBV), that is the Little Penguin population in Sydney's North Harbour – critical habitat declaration.

The report will also recommend appropriate measures to mitigate any potential impacts in line with all relevant State Environmental Planning Policies (SEPP) and local government plans, namely the Manly Local Environmental Plan 2013 (MLEP) and the Manly Development Control Plan 2013 (MDCP).

1.2 Site Description and Location

The Subject Property is located at 30a Addison Road within the locality of Manly in the Northern Beaches Local Government Area (LGA). The site boundary was defined by the Development Application Site Plans (Chateau Architects & Builders 2021; **Appendix C**).

The Subject Property covers an area of approximately 700m^2, located on the south side of Addison Road and is bordered by Little Manly Cover to the south-east in a residential setting. The Subject Property contains an existing dwelling and hardstand areas with areas of landscaped vegetation. The Subject Site encompasses are majority of the Subject Property covering approximately 650m^2, and only excludes the area of land adjacent to Manly Cover, surrounding the existing pool (**Figure 1**).

1.3 Topography, Geology and Soil

The Subject Property is located on a cliff with elevation ranging from 18-4m above sea level (Google 2021) and is situated on the 'Gymea' soil landscape as described in the Soil Landscapes of the Sydney 1:100,000 sheet (Chapman et al. 2009). This soil landscape is categorised by undulating to rolling rises and low hills on Hawkesbury Sandstone which is a medium to coarse-grained quartz sandstone with minor shale and laminite lenses. Soils are shallow to moderately deep (30-100 cm) Yellow Earths and Earthy Sands on crests and inside of benches, shallow (<20cm) Siliceous Sands on leading edges of benches and localised Gleyed Podzolic Soils and Yellow Podzolic Soils on shale lenses.

1.4 Hydrology

The Subject Site is bordered by Manly Cove to the south-east. No other water features (e.g watercourses) are mapped or were observed within the Subject Site.

Figure 1. Components of the Subject Site within the Subject Property

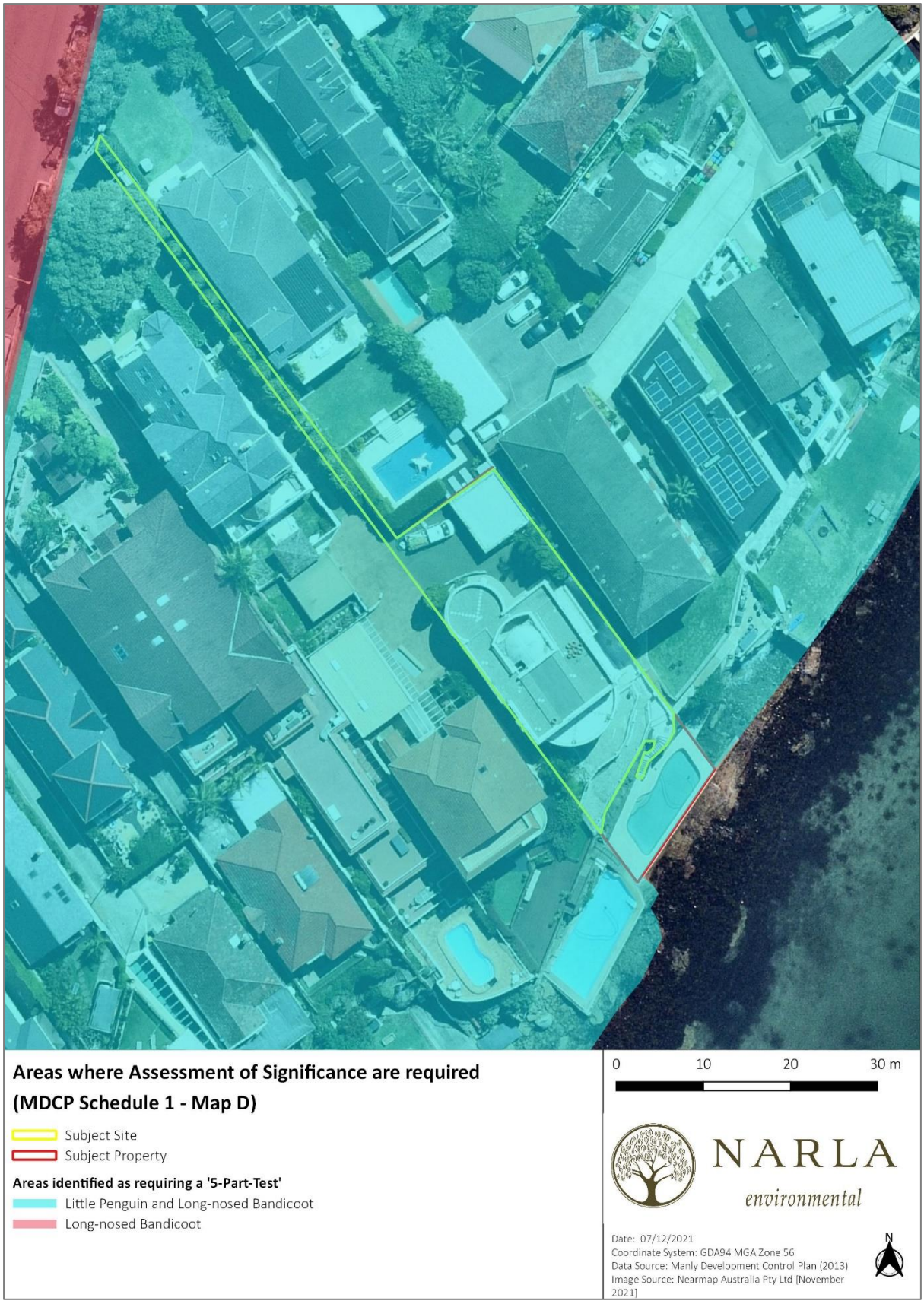

Figure 2. Manly DCP Schedule 1 – Map D – Assessment of Significance Area – Bandicoots and Penguins

1.5 Relevant Legislation and Policy

The legislation and policy that are addressed in this report are listed in **Table 1.**

Table 1. Relevant legislation and policy addressed

Legislation/Policy	Relevant Ecological Feature on Site	Triggered	Action Required
Environmental Planning and Assessment Act 1979 (EP&A Act)	All threatened species, populations, and ecological communities and their habitat that occur or are likely to occur on the Subject Property during a part of their lifecycle.	Yes	This Flora and Fauna Assessment and all subsequent recommendations relevant to the planning process under 'Part 4 Development assessment and consent'.
Biodiversity Conservation Act (BC Act) (New South Wales)	There were no BC Act listed Threatened Ecological Communities, species or populations identified within the Subject Site during the site assessment. A 5-Part Test Assessment of Significance was undertaken for *Perameles nasuta* (Long-nosed Bandicoot, North Head) and *Eudyptula minor* (Little Penguin in the Manly Point Area). It was deemed that there was no potential for significant impact upon any of the potentially occurring BC Act listed threatened species.	Yes	This FFA, particularly the 5-part test for *Perameles nasuta* (Long-nosed Bandicoot, North Head), *Eudyptula minor* (Little Penguin in the Manly Point Area). And likelihood tables for threatened fauna and flora species occurring or potentially occurring within the Subject Site, as well as severity of potential impacts.
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Commonwealth)	EPBC Act threatened species have the potential to occur within the Subject Property. No EPBC Act listed threatened species or ecological communities were observed within the Subject Site during the site assessment.	Yes	This FFA, particularly the likelihood tables for threatened fauna and flora species occurring or potentially occurring within the Subject Property, as well as severity of potential impacts.
Biosecurity Act 2015 (Bio Act)	One priority weed for the Greater Sydney region were identified within the Subject Site, *Asparagus aethiopicus* (Ground Asparagus).	Yes	General biosecurity duty to prevent, eliminate or minimise any biosecurity risk it may pose.
State Environmental Planning Policy (Coastal Management) 2018	The Subject Site is mapped as Coastal Environment Area and Coastal Use Area within the State Environmental Planning Policy (Coastal Management) 2018 – maps (DPIE 2020a). However, as the Subject Site is mapped in the Sydney Harbour Catchment, Waterways and Foreshore Area under the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005, the relevant clauses do not apply (see **Section 1.7**).	No	None.

Legislation/Policy	Relevant Ecological Feature on Site	Triggered	Action Required
Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005	The Subject Property is mapped within the Sydney Harbour Catchment, Waterways and Foreshore Area; therefore, this SREP applies.	Yes	The applicable clauses of the SREP have been addressed in this FFA (see Section 1.8).
State Environmental Planning Policy (Koala Habitat Protection) 2021	Although this SEPP applies to the Northern Beaches LGA, the Subject Property does not have an area of at least 1 hectare. Therefore, this SEPP does not apply to the proposed development.	No	None.
State Environmental Planning Policy No 19— Bushland in Urban Areas	The Subject Property does not adjoin land reserved for public open space therefore, SEPP 19 does not apply.	No	None.
Water Management Act 2000	The Subject Property is in close proximity Little Manly Cove (waterfront land); therefore, this Act applies.	Yes	A vegetation management plan may be required for the Subject Site.

1.6 Biodiversity Assessment Pathway

The requirements of the BC Act 2016 and Biodiversity Conservation Regulation 2017 are mandatory for all Development Applications (DA) assessed pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act) submitted in the Northern Beaches LGA.

The BC Act and its regulations stipulate clearing 'area threshold' values (Table 2) that determine whether a development is required to be assessed in accordance with the 'Biodiversity Offset Scheme' (BOS). Minimum entry thresholds for vegetation clearing depend 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 minimum lot size prescribed by the MLEP to the Subject Property is 250m^2. To avoid triggering the Biodiversity Offset Scheme, the proponent must avoid the clearing/management of native vegetation in excess of 0.25ha. The entire Subject Site covers an area of approximately 650m^2, therefore, the clearing threshold cannot be exceeded.

Table 2. Biodiversity offset scheme entry thresholds. Bold indicates the threshold relevant to this report.

Minimum lot size associated with the property	Threshold for clearing, above which the BAM and offsets scheme apply
Less than 1ha	**0.25ha or more**
1ha to less than 40ha	0.5 ha or more
40ha to less than 1000ha	1ha or more
1000ha or more	2ha or more

The Subject Property does not contain land mapped as 'Biodiversity Values' within the Biodiversity Values Map (DPIE 2021a), and the threshold for clearing is greater than the entire area of the Subject Site, therefore a standard Flora and Fauna Assessment Report (this report) has been produced to assess the impact of the proposed DA.

1.7 State Environmental Planning Policy (Coastal Management) 2018

The Development Footprint is located within an area mapped as Coastal Environment Area and Coastal Use Area within the State Environmental Planning Policy (Coastal Management) 2018 – maps (DPIE 2021). However, as the Subject Site is mapped within the Sydney Harbour Catchment, Foreshore and Waterways Area in the Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005 (see **Section 1.8**), these clauses do not apply to the Subject Site.

1.8 Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005

The Subject Property is mapped within the Sydney Harbour Catchment, Foreshore and Waterways Area; therefore, this SREP applies.

1.8.1 Foreshore and Waterways Area (Part 3)

The entirety of the Subject Site is located within the 'Foreshore and Waterways Area', as such this clause applies. The clauses relevant to the ecology of the Subject Site include:

- Development should protect and enhance terrestrial and aquatic species, populations and ecological communities and, in particular, should avoid physical damage and shading of aquatic vegetation (such as seagrass, saltmarsh and algal and mangrove communities);
- Development should promote ecological connectivity between neighbouring areas of aquatic vegetation (such as seagrass, saltmarsh and algal and mangrove communities);
- Development should avoid indirect impacts on aquatic vegetation (such as changes to flow, current and wave action and changes to water quality) as a result of increased access;
- Development should protect and reinstate natural intertidal foreshore areas, natural landforms and native vegetation;
- Development should retain, rehabilitate and restore riparian land;
- Development on land adjoining wetlands should maintain and enhance the ecological integrity of the wetlands and, where possible, should provide a vegetative buffer to protect the wetlands; and
- The cumulative environmental impact of development.

The proposed development is anticipated to have negligible effect on terrestrial species and is not anticipated to directly or indirectly effect aquatic species. Furthermore, the natural rock wall that is present within the Subject Property that may provide habitat for terrestrial species, will be retained and is not anticipated to be impacted by the proposal.

1.9 Manly Local Environmental Plan 2013 (MLEP)

1.9.1 Zoning

The Subject Property is zoned 'E4: Environmental Living'. The MLEP requires that the development satisfies the zone objectives which are:

To provide for low-impact residential development in areas with special ecological, scientific or aesthetic values.

- To ensure that residential development does not have an adverse effect on those values.

- To protect tree canopies and ensure that new development does not dominate the natural scenic qualities of the foreshore.
- To ensure that development does not negatively impact on nearby foreshores, significant geological features and bushland, including loss of natural vegetation.
- To encourage revegetation and rehabilitation of the immediate foreshore, where appropriate, and minimise the impact of hard surfaces and associated pollutants in stormwater runoff on the ecological characteristics of the locality, including water quality.
- To ensure that the height and bulk of any proposed buildings or structures have regard to existing vegetation, topography and surrounding land uses.

The proposed development is situated on areas of urban exotic/native vegetation and existing hardstand. Terraces adjacent to the foreshore on the Subject Site a proposed to by revegetation as part of the landscape plan. Furthermore, the natural rock wall present within the Subject Property will be retained as part of the proposal. These actions seek to retain and improved the ecological and aesthetic values of the foreshore and therefore satisfies the objectives of this zone.

1.9.2 Terrestrial Biodiversity

The whole of the Subject Site is mapped as Biodiversity on the MLEP Terrestrial Biodiversity Map. As such, the objectives of this clause are:

- Protecting native fauna and flora;
- Protecting the ecological processes necessary for their continued existence, and
- Encouraging the conservation and recovery of native fauna and flora and their habitats.

The Subject Property is comprised of landscaped urban native/exotic vegetation and hardstand, thus, the proposed development is not likely to have any adverse impact on native flora, fauna, ecological communities, or the process necessary for their continued existence. Terraces adjacent to the foreshore on the Subject Site a proposed to by revegetation as part of the landscape plan. Furthermore, the natural rock wall present within the Subject Property will be retained as part of the proposal. The retention of the natural rock wall and the revegetation proposed within the Subject Site will allowed the continue use and conservation of any native fauna that may use the site.

1.10 Manly Development Control Plan 2013 (MDCP 2013)

1.10.1 Landscaping Design (3.1.1)

The objectives of this clause are to:

- To encourage appropriate tree planting and maintenance of existing vegetation; and
- To retain and augment important landscape features and vegetation remnant populations of native flora and fauna.

The design, quantity and quality of open space should respond to the character of the area. The following applies the Subject Site:

- In low density areas (including LEP Zones R2 Low Density, E3 Environmental Management and E4 Environmental Living) open space should dominate the site. Setbacks of buildings from open space should also be maximised to enable open space to dominate buildings, especially when viewed to and from Sydney Harbour, the Ocean and the foreshore; and
- In areas of habitat for the long-nosed bandicoot: (see paragraph 5.4.2), landscape design must include native plant species to provide new and/or improved low dense clumping habitat to provide for potential foraging and nesting. The planting schedule should comprise species such as *Lomandra* sp. *Dianella* sp.,

Banksia spinulosa, Caustis sp., *Xanthorrhoea* sp., *Isolepis* sp., *Juncus* sp., *Adiantum* sp., *Calochlaena* sp., *Callistemon* sp., *Grevillea juniperina*, *Gleichenia* sp., *Grevillea* 'Robyn Gordon' and tussocky native grasses (e.g. Kangaroo Grass).

In accordance with this clause, landscaping should incorporate native species that improve Long-nosed Bandicoot potential for foraging and nesting, as listed above. Furthermore, the planting criteria states:

- Landscaped Areas must be capable of supporting new native tree species that are typically expected to reach a mature height of 10m notwithstanding the minimum dimension requirements at paragraph 4.1.5.2 of this plan.
- The use of locally occurring native plant species is preferred to assist in providing habitat for local fauna; and preserve threatened native plants.
- Trees should be positioned in locations that minimise significant impacts on neighbours in terms of:
    - blocking winter sunlight to either living rooms, private open space or solar collectors; or
    - where the proposed location of the tree may be otherwise positioned to minimise any significant loss of views.

In accordance with this clause trees proposed landscaping should incorporate native species of the locally occurring plant community that occurs in the broader locality, Coastal Sandstone Foreshores Forest (DSF06; OEH 2016b).

1.10.2 Threatened Species and Critical Habitat Lands (5.4.2)

Any development of land with known habitat for threatened species must consider the likely impacts of the development and whether further assessment needs to be undertaken by a Species Impact Statement. As the Subject Site is located on land mapped in Schedule D of the MLEP - Areas where Assessment of Significance required (for Little Penguins and/or Long Nosed Bandicoots), a 5-Part Test of Significance has been undertaken for *Eudyptula minor* (Little Penguin) in the Manly Point Area (Appendix E) and *Perameles nasuta* (Long-nosed Bandicoot) in North Head (Appendix D).

1.11 Scope of Assessment

The objectives of this FFA were to:

- Establish the likelihood of occurrence of migratory species, threatened species, endangered populations, and threatened ecological communities as listed under the BC Act and/or the EPBC Act;
- Assess any potential impacts to species and/or communities listed under the BC Act and EPBC Act;
- Undertake a 5-Part Test of Significance for *Eudyptula minor* (Little Penguin) in the Manly Point Area and *Perameles nasuta* (Long-nosed Bandicoot) in North Head, and detail construction mitigation measures to manage potential indirect impacts;
- Identify and map the distribution of vegetation communities within the Subject Site;
- Record presence and the extent of any known or potential fauna habitat features such as nests, dreys, caves, crevices, culverts, pools, soaks, flowering trees, fruiting trees, or hollow-bearing trees and provide recommendations for on-going management of these habitat features and any fauna present;
- Record presence and the extent of any priority weeds or weed infestations and provide recommendations for on-going management; and
- Recommend any controls or additional actions to be taken to protect or improve environmental outcomes of the proposed activity.

1.12 Study Limitations

This study was not intended to provide a complete inventory of all flora and fauna species with potential to occur on the Subject Site. The species list provided for the Subject Site in this report was restricted to what was observed during the site assessment by the Narla Ecologist. The timing of the survey may not have coincided with emergence times of some species of flora and fauna, such as seasonally flowering herbs, seasonal migratory fauna, or nocturnal fauna. To account for those species that could not be identified during the field survey, detailed habitat assessments were combined with desktop research and local ecological knowledge to establish an accurate prediction of the potential for such species to occur on or adjacent the Subject Site.

2. Methodology

2.1 Desktop Assessment and Literature Review

A thorough literature review of local information relevant to the Northern Beaches Council area was undertaken. Searches using NSW Wildlife Atlas (BioNet; DPIE 2021c) and the Commonwealth Protected Matters Search Tool (DAWE 2021) were conducted to identify all current threatened flora and fauna, as well as migratory fauna records within a 10km x 10km cell search area centred on the Subject Site. These data were used to assist in establishing the presence or likelihood of any ecological values as occurring on or adjacent the Subject Site, and helped inform our Ecologist on what to look for during the site assessment.

Soil landscape and geological mapping was examined to gain an understanding of the environment on the Subject Site and assist in determining whether any threatened flora or ecological communities may occur there (Chapman et al. 2009).

2.2 Ecological Site Assessment

2.2.1 General Survey

A site assessment was undertaken by Narla Ecologist, Jonathan Coy, on the 23rd of November 2021. During the site assessment, the following activities were undertaken:

- Identifying and recording the vegetation communities present within the Subject Site, with focus on identifying any threatened ecological communities (TEC);
- Recording a detailed list of flora species encountered within the Subject Site, with a focus on threatened species, species diagnostic of threatened ecological communities, and priority weeds;
- Recording opportunistic sightings of any fauna species seen or heard on or within the immediate surrounds of the Subject Site;
- Targeted habitat surveys for *Eudyptula minor* (Little Penguin) in the Manly Point Area and *Perameles nasuta* (Long-nosed Bandicoot) in North Head
- Targeted surveys for threatened flora;
- Identifying and recording the locations of notable fauna habitat such as important nesting, roosting, or foraging microhabitats;
- Assessing the connectivity and quality of the vegetation within the Subject Site and surrounding area; and
- Targeting the habitat of any threatened and regionally significant fauna including:
    - Tree hollows (habitat for threatened large forest owls, parrots, and arboreal mammals);
    - Caves and crevices (habitat for threatened reptiles, small mammals, and microbats);
    - Termite mounds (habitat for threatened reptiles);
    - Soaks (habitat for threatened frogs);
    - Wetlands (habitat for threatened fish, frogs, and water birds);
    - Drainage lines (habitat for threatened fish and frogs);
    - Fruiting trees (food for threatened frugivorous birds and mammals);
    - Flowering trees (food for threatened nectarivores birds and mammals);
    - Trees and shrubs supporting nest structures (habitat for threatened birds and arboreal mammals); and
    - Any other habitat features that may support fauna (particularly threatened) species.

2.2.2 Weather Conditions

Weather conditions recorded at the nearest weather station (Observatory Hill station 066214) prior to and during the site assessment are provided in **Table 3** (BOM 2021). The rainfall leading up to the assessment may have been conducive to the emergence of flowering plants.

Table 3. Weather conditions recorded at Observatory Hill (station 066059) preceding and during the site assessment (site assessment date in bold)

Survey date	Day	Minimum Temp. (°C)	Maximum Temp. (°C)	Rainfall (mm)
17/11/2021	Wednesday	13.5	22.5	0
18/11/2021	Thursday	14.9	25.3	0
19/11/2021	Friday	19	30.5	1
20/11/2021	Saturday	17.3	21	0.2
21/11/2021	Sunday	15.3	19.2	13
22/11/2021	Monday	15.4	22.3	18.4
23/11/2021	**Tuesday**	**16.3**	**22.7**	**2.8**

2.2.3 Mapping and Analysis of Vegetation Communities

Narla examined local satellite imagery, geological mapping, soil landscape mapping, and topographic mapping, in addition to existing vegetation mapping (The Native Vegetation of the Sydney Metropolitan Area [OEH 2016b]) in order to stratify the Subject Site and guide the site assessment survey efforts. The following documents were also consulted during the site assessment to assist with the identification of vegetation communities present within the Subject Site:

- Chapman G.A., Murphy C.L., Tille P.J., Atkinson G. and Morse R.J. (2009) Soil Landscapes of the Sydney 1:100,000 Sheet map, Ed. 4, Department of Environment, Climate Change and Water, Sydney
- Department of Planning, Industry and Environment (DPIE) (2021d) eSPADE v2.1 https://www.environment.nsw.gov.au/eSpade2Webapp#
- Office of Environment and Heritage (OEH) (2016a) The Native Vegetation of the Sydney Metropolitan Area. Version 3.1
- Office of Environment and Heritage (OEH) (2016b) The Native Vegetation of the Sydney Metropolitan Area. Volume 2: Vegetation Community Profiles. Version 3.0

2.2.4 Impact Assessment

An assessment of likely occurrence was carried out for locally occurring threatened species (**Table 5** and **Table 7**). It was then determined that a further impact assessment (5-Part Test) was required for *Eudyptula minor* (Little Penguin) in the Manly Point Area (**Appendix E**) and *Perameles nasuta* (Long-nosed Bandicoot, North Head; **Appendix D**). No other locally occurring threatened species or communities required further assessment.

3. Vegetation

3.1 Vegetation Community

3.1.1 Historically Mapped Vegetation Communities

Historic vegetation mapping (The Native Vegetation of the Sydney Metropolitan Area [OEH 2016b]) identified no mapped vegetation types within the Subject Site. Urban Exotic/Native vegetation is mapped in the vicinity, but the closest mapped native vegetation community, Coastal Sandstone Foreshores Forest, is over 200m from the Subject Site.

3.1.2 Field-validated Vegetation Communities

The field survey conducted by the Narla Ecologist identified the vegetation within the Subject Site as best conforming to one (1) vegetation community (**Figure 3**):

- Urban Exotic / Native (**Table 4**).

Vegetation identified within the Subject Site is detailed within **Table 4** and shown in **Figure 3**.

Table 4. Description of Urban Exotic/Native vegetation identified within the Subject Property

Urban Exotic/Native	
	
Extent within Subject Site (approximate)	105m^2
Description of the Vegetation within the Subject Property	
Urban Exotic/Native vegetation with the Subject Site was dominated by a diverse array of planted exotic species including, *Agapanthus spp., Agave attenuate, Dracaena spp., Parietaria Judaica, Thuja orientalis, Syagrus romanzoffiana* and *Agapanthus spp.* Sporadic native species included *Corymbia maculata* (overhang), *Adiantum formosum, Oplismenus aemulus* and *Commelina cyanea.*	
BC Act 2016 Status	Not Listed.
EPBC Act 1999 Status	Not Listed.

Figure 3. Narla field-validated vegetation communities within the Subject Site.

4. Threatened Species

4.1 Threatened Flora

Desktop analysis revealed a range of threatened flora as occurring or having the potential to occur on or within a 10km x 10km cell centred on the Subject Site. Thorough targeted surveys were undertaken throughout the Subject Site for potentially occurring threatened flora. No threatened flora was identified at the time of the site assessment. A comprehensive list of flora species identified during the site assessment is presented in **Appendix A**.

The following locally occurring species were assessed for their potential to occur within the Subject Site (**Table 5**). It was deemed that the proposed development is unlikely to have significant impact on these species. Therefore, no further assessment of impacts pursuant the BC Act (e.g. Biodiversity Development Assessment Report [BDAR]) and/or EPBC Act Referral to Commonwealth will be required.

Table 5. Assessment of likely occurrence of threatened flora species within the Subject Site

Species	BC Act	EPBC Act	Likelihood of occurrence within the Subject Site	Further Impact Assessment Required?
Acacia bynoeana (Bynoe's Wattle)	E	V	Low. Occurs in heath or dry sclerophyll forest on sandy soils. Associated overstorey species include Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple. Although appropriate soil may be present, the Subject Site has been extensively modified with common garden species. A targeted survey was undertaken and no individuals were identified.	No
Acacia terminalis subsp. Eastern Sydney (Sunshine Wattle)	E	E	Low. This species occurs within coastal scrub and dry sclerophyll woodland on sandy soils. Although appropriate soil exists within the Subject Site, it has been extensively modified with common garden species. A targeted survey was undertaken and no individuals were identified.	No
Allocasuarina portuensis (Nielsen Park She-oak)	E	E	Low. Habitat for this species is tall, closed woodland. Canopy species include: *Ficus rubiginosa*, *Angophora costata*, *Elaeocarpus reticulatus,* and *Glochidion ferdinandi* with a shrub layer of *Pittosporum revolutum*, *Kunzea ambigua,* and *Monotoca elliptica*. Often occurs above a sandstone shelf approximately 20m above the harbour. Although the appropriate geology exists within the Subject Site, none of the related species exist and the Subject Site has been extensively modified. A targeted survey was undertaken and no individuals were identified.	No
Asterolasia buxifolia	E	-	Low. Little is known about this species. Apparently restricted to the riparian zone of a granitic rocky section of the Lett River. No such features are present within the Subject Site, which is not located near Lett River.	No

Species	BC Act	EPBC Act	Likelihood of occurrence within the Subject Site	Further Impact Assessment Required?
Caladenia tessellata (Thick Lip Spider Orchid)	E	V	Low. The preferred habitat is generally grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. No such habitat was identified within the Subject Site.	No
Callistemon linearifolius (Netted Bottle Brush)	V	-	Low. Grows in dry sclerophyll forest on the coast and adjacent ranges. Such habitat does not occur within the Subject Site, a targeted survey was undertaken and no individuals were identified.	No
Chamaesyce psammogeton (Sand Spurge)	E	-	Low. This species grows in fore-dunes, pebbly strandlines, and exposed headlands often with *Spinifex sericeus* and *Zoysia macrantha.* The Subject Site is not located on sand dunes, pebbly strandlines or exposed head lanes, a targeted survey was undertaken and no individuals were identified.	No
Epacris purpurascens var. *purpurascens*	V	-	Low. This species is found in a range of habitat types, most of which have a strong shale soil influence. Such soil was not identified within the Subject Site. A targeted survey was undertaken and no individuals were identified.	No
Eucalyptus camfieldii (Camfield's Stringybark)	V	V	Low. This species is found in poor coastal country in shallow sandy soils overlying Hawkesbury sandstone, in coastal heath mostly on exposed sandy ridges. Occurs mostly in small scattered stands near the boundary of tall coastal heaths and low open woodland of the slightly more fertile inland areas. Although appropriate soil may be present, the Subject Site has been extensively modified with common garden species. A targeted survey was undertaken and no individuals were identified.	No
Grammitis stenophylla (Narrow-leaf Finger Fern)	E	-	Low. Occurs in moist places, usually near streams, on rocks or in trees, in rainforest and moist eucalypt forest. Such habitat does not occur within the Subject Site. A targeted survey was undertaken and no individuals were identified.	No
Grevillea caleyi (Caley's Grevillea)	CE	CE	Low. This species is restricted to an 8km square area around Terrey Hills. All sites occur on the ridgetop between elevations of 170 to 240m above sea level, in association with laterite soils and a vegetation community of open forest, generally dominated by *Eucalyptus sieberi* and *E. gummifera*. Commonly found in the endangered Duffys Forest ecological community. No such habitat occurs within the Subject Site. A targeted survey was undertaken and no individuals were identified.	No

Species	BC Act	EPBC Act	Likelihood of occurrence within the Subject Site	Further Impact Assessment Required?
Hibbertia superans	E	-	Low. The species occurs on sandstone ridgetops often near the shale/sandstone boundary. Occurs in both open woodland and heathland, and appears to prefer open disturbed areas, such as tracksides. No such habitat occurs within the Subject Site. A targeted survey was undertaken and no individuals were identified.	No
Melaleuca biconvexa (Biconvex Paperbark)	V	V	Low. Biconvex Paperbark generally grows in damp places, often near streams or low-lying areas on alluvial soils of low slopes or sheltered aspects. No such habitat was identified within the Subject Site. A targeted survey was undertaken and no individuals were identified.	No
Melaleuca deanei (Deane's Paperbark)	V	V	Low. The species occurs mostly in ridgetop woodland, with only 5% of sites in heath on sandstone. No such habitat was identified within the Subject Site. A targeted survey was undertaken and no individuals were identified.	No
Microtis angusii (Angus's Onion Orchid)	E	E	Low. This species is restricted to Ingleside in ridgetop lateritic soils. The Subject Site does not occur on the restricted ridgetop lateritic soils required by this species.	No
Persoonia hirsuta (Hairy Geebung)	E	E	Low. The Hairy Geebung is found in sandy soils in dry sclerophyll open forest, woodland and heath on sandstone. It is usually present as isolated individuals or very small populations. No such habitat is present within the Subject Site, a targeted survey was undertaken and no individuals were identified.	No
Pimelea curviflora var. *curviflora*	V	V	Low. Occurs on shale/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands. Appropriate geology is not present within the Subject Site, a targeted survey was undertaken and no individuals were identified.	No
Prostanthera marifolia (Seaforth Mint bush)	CE	CE	Low. Occurs in localised patches in or in close proximity to the endangered Duffys Forest ecological community. Located on deeply weathered clay-loam soils associated with ironstone and scattered shale lenses, a soil type which only occurs on ridge tops and has been extensively urbanised. No such habitat is present within the Subject Site, a targeted survey was undertaken and no individuals were identified.	No
Rhodamnia rubescens (Scrub Turpentine)	EC	-	Low. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. No such habitat was identified within the Subject Site. A targeted survey was undertaken and no individuals were identified.	No

Species	BC Act	EPBC Act	Likelihood of occurrence within the Subject Site	Further Impact Assessment Required?
Syzygium paniculatum (Magenta Lilly Pilly)	E	V	Low. This species is restricted mainly to remnant stands of Littoral Rainforest. No such habitat occurs within the Subject Site. A targeted survey was undertaken and no individuals were identified.	No
Tetratheca glandulosa	V	-	Low. This species is associated with shale-sandstone transition habitat. No such geology is present within the Subject Site, a targeted survey was undertaken and no individuals were identified.	No
Tetratheca juncea (Black-eyed Susan)	V	V	Low. It is usually found in low open forest/woodland with a mixed shrub understorey and grassy groundcover. However, it has also been recorded in heathland and moist forest. The majority of populations occur on low nutrient soils associated with the Awaba Soil Landscape. No such features are present within the Subject Site, a targeted survey was undertaken and no individuals were identified.	No

V = Vulnerable; E = Endangered; CE = Critically Endangered

4.2 Threatened Fauna

Details of the fauna habitat recorded within the Subject Site are included in **Table 6**. The likelihood of occurrence of threatened fauna species within the Subject Site is presented in **Table 7**.

It was deemed further impact assessment was required for two BC Act listed Endangered populations: *Eudyptula minor* (Little Penguin in the Manly Point Area; **Appendix E**) *Perameles nasuta* (Long-nosed Bandicoot, North Head; **Appendix D**), owing to their significance in the broader locality.

The proposed works were considered unlikely to result in a significant impact upon any other potentially occurring BC Act listed threatened species. Therefore, no other assessments under the '5-Part Test Assessment of Significance' were required. It was also deemed that the proposed works were unlikely to result in a significant impact such that a local viable population or occurrence of any of the threatened species will be placed at risk of extinction. Therefore, no BDAR or EPBC Act Referral to the Commonwealth is required for the proposed development.

Some native, common avian fauna species were identified within and surrounding the Subject Site during the site assessment. All native fauna species encountered were listed as 'protected' under the BC Act. The list of fauna recorded during the site visit was produced opportunistically (**Appendix B**).

Table 6. Fauna habitat values

Habitat component	Site values
Coarse woody debris	Absent.
Rock outcrops and bush rock	Present.
Caves, crevices and overhangs	Present at the base of the rock outcrop.
Culverts, bridges, mine shafts, or abandoned structures	Absent.
Nectar/lerp-bearing Trees	Present. A single *Corymbia maculata* overhangs the Subject Site.
Nectar-bearing shrubs	Absent.
Koala Feed Trees	Absent.
Large stick nests	Absent.
Sap and gum sources	Present. A single *Corymbia maculata* overhangs the Subject Site.
She-oak fruit (Glossy Black Cockatoo feed)	Absent.
Seed-bearing trees and shrubs	Absent
Soft-fruit-bearing trees	Absent
Dense shrubbery and leaf litter	Absent.
Tree hollows	Absent.
Decorticating bark	Absent.
Wetlands, soaks, and streams	Absent.
Open water bodies	Middle harbour is present in close proximity to the South of the Subject Property.
Estuarine, beach, mudflats, and rocky foreshores	Present. Rocky foreshore is present within the Subject Property.
Nests and Possums Dreys	Absent.

Table 7. Assessment of likely occurrence of threatened fauna species within the Subject Property

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Anseranas semipalmata (Magpie Goose)	V	-	Unlikely	Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. Equally at home in aquatic or terrestrial habitats; often seen walking and grazing on land; feeds on grasses, bulbs and rhizomes. No such habitat is present within the Subject Site.	Most breeding now occurs in monsoonal areas; nests are formed in trees over deep water; breeding is unlikely in south-eastern NSW. No such habitat is present within the Subject Site.	No anticipated loss of foraging or breeding habitat. A targeted survey did not detect this species.	No
Anthochaera phrygia (Regent Honeyeater)	CE	CE	Unlikely	This species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River She-oak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover, and an abundance of mistletoes. No such habitat was identified within the Subject Site.	There are only two (2) known key breeding regions remaining in NSW: Capertee Valley and the Bundarra-Barraba region.	No anticipated loss of foraging or breeding habitat. A targeted survey did not detect this species. The Subject Property is not mapped within the Regent Honeyeater Important Areas Map.	No
Botaurus poiciloptilus (Australasian Bittern)	E	E	Unlikely	This species favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. No such habitat was identified within the Subject Site.	This species nests in densely vegetated wetlands. No such habitat was identified within the Subject Site.	No anticipated loss of foraging or breeding habitat. A targeted survey did not detect this species.	No
Burhinus grallarius (Bush Stone-curlew)	E	-	Unlikely	This species inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber. No such habitat was identified within the Subject Site.	This species nests on the ground in a scrape or small bare patch. No nests were identified within the Subject Site.	Negligible, no anticipated net loss of foraging or breeding habitat. A targeted survey did not detect this species.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Calyptorhynchus lathami (Glossy Black-Cockatoo)	V	-	Unlikely	This species feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species). Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of she-oak occur. No such foraging habitat was identified within the Subject Site.	Dependent on large hollow-bearing eucalypts for nest sites. No hollows were identified within the Subject Property.	No anticipated loss of foraging or breeding habitat. A targeted survey did not detect this species.	No
Cercartetus nanus (Eastern Pygmy-possum)	V	-	Unlikely	This species is found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes, as well as insects. No such foraging habitat is present within the Subject Site.	Shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, Ringtail Possum dreys or thickets of vegetation, although hollows are preferred. No such items were present within the Subject Site.	No anticipated loss of foraging or breeding habitat.	No
Chalinolobus dwyeri (Large-eared Pied Bat)	V	V	Unlikely	This species forages for small, flying insects in well-timbered areas. Such foraging habitat is not present within the Subject Site.	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*). No such habitat was identified within the Subject Site.	No anticipated loss of foraging or breeding habitat.	No
Daphoenositta chrysoptera (Varied Sittella)	V	-	Unlikely	Species feeds on arthropods from crevices in rough or decorticating bark. Such habitat was not present within the Subject Site.	This species nests in shrubs and low trees, creating an open cup shaped nest. No nests were identified within the Subject Site.	No anticipated loss of foraging or breeding habitat. A targeted survey did not detect this species.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Dasyurus maculatus (Spotted-tailed Quoll)	V	E	Unlikely	Consumes a variety of prey, including gliders, possums, small wallabies, rats, birds, bandicoots, rabbits, reptiles and insects. Also eats carrion and takes domestic fowl. Potential prey unlikely to utilise the Subject Site.	This species uses hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. No such habitat is present within the Subject Site.	No anticipated loss of foraging or breeding habitat.	No
Esacus magnirostris (Beach Stone Curlew)	CE	-	Unlikely	Beach Stone-curlews are found exclusively along the coast, on a wide range of beaches, islands, reefs and in estuaries, and may often be seen at the edges of or near mangroves. They forage in the intertidal zone of beaches and estuaries, on islands, flats, banks and spits of sand, mud, gravel or rock, and among mangroves. Such habitat does not occur within the Subject Site.	Beach Stone-curlews breed above the littoral zone, at the backs of beaches, or on sandbanks and islands, among low vegetation of grass, scattered shrubs or low trees; also among open mangroves. No such habitat is present within or adjacent to the Subject Site.	No anticipated loss of foraging or breeding habitat.	No
Eudyptula minor (Little Penguin in the Manly Point Area)	EP	-	Moderate	They appear to be opportunistic feeders foraging in relatively shallow waters preying on small schooling fish and squid. Aquatic habitat is not present within the Subject Site.	A range of nest sites are utilised by the penguins at Manly including under rocks on the foreshore, under seaside houses and structures, such as stairs, in wood piles and under overhanging vegetation including lantana and under coral tree roots. Such habitat is present within the Subject Site and broader Subject Property; however, no nest sites were observed within the Subject Property.	Negligible impact to foraging habitat. No anticipated net loss of breeding habitat.	**Yes, owing to the importance of this species in the locality (See Appendix E)**

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Falsistrellus tasmaniensis (Eastern False Pipistrelle)	V	-	Unlikely	This species forages for small, flying insects just below the tree canopy. Such foraging habitat is not present within the Subject Site.	The species roosts in eucalypt hollows. No such habitat was detected within the Subject Site.	No anticipated loss of foraging or breeding habitat.	No
Glossopsitta pusilla (Little Lorikeet)	V	-	Unlikely	This species forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in *Angophora*, *Melaleuca,* and other tree species. Mostly feeds on nectar and pollen of flowers in the open canopy of woodland trees. No such habitat is present within the Subject Site.	Nests in small hollows. No hollows were identified within the Subject Property.	No anticipated loss of foraging or breeding habitat. A targeted survey did not detect this species.	No
Haematopus fuliginosus (Sooty Oystercatcher)	V	-	Low	This species forages on exposed rock or coral at low tide for foods such as limpets and mussels. Sub-optimal foraging habitat is present within the Subject Site, with the rock platform modified as a swimming pool, lacking food items such as limpets and mussels.	Breeds almost exclusively on offshore islands, and occasionally on isolated promontories.	Minimal impact to sub-optimal foraging habitat. No anticipated loss of breeding habitat. A targeted survey did not detect this species.	No
Haematopus longirostris (Pied Oystercatcher)	E	-	Low	Forages on exposed sand, mud and rock at low tide, for molluscs, worms, crabs and small fish. Sub-optimal foraging habitat is present within the Subject Site, with the rock platform modified as a swimming pool, lacking food items such as molluscs.	Nests mostly on coastal or estuarine beaches although occasionally they use saltmarsh or grassy areas. No nesting habitat present within the Subject Site.	Minimal impact to sub-optimal foraging habitat. No anticipated loss of breeding habitat. A targeted survey did not detect this species.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Haliaeetus leucogaster (White-bellied Sea-Eagle)	V	-	Low	Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries, and mangroves. Feed mainly on fish and freshwater turtles, but also waterbirds, reptiles, mammals and carrion. Potential prey items may occur within the Subject Site, however the foraging habitat is sub-optimal due the urban nature of the site.	Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nests are large structures built from sticks and lined with leaves or grass. No such habitat exists within the Subject Site.	Minimal impact to potential foraging habitat. No anticipated loss of breeding habitat. A targeted survey did not detect this species.	No
Hieraaetus morphnoides (Little Eagle)	Vulnerable	-	Low	This species occupies open eucalypt forest, woodland or open woodland. Preys on birds, reptiles and mammals, occasionally adding large insects and carrion. No such habitat is present within the Subject Site and potential prey are unlikely to use the Subject Site.	Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. No such habitat exists within the Subject Site.	Minimal impact to potential foraging habitat. No anticipated loss of breeding habitat. A targeted survey did not detect this species.	No
Isoodon obesulus obesulus (Southern Brown Bandicoot [eastern])	E	E	Unlikely	Typically found in heath or open forest with a heathy understorey on sandy or friable soils. They feed on a variety of ground-dwelling invertebrates and the fruit-bodies of hypogeous (underground-fruiting) fungi. Their searches for food often create distinctive conical holes in the soil. The Subject Site is unlikely to support this species due to its sparse exotic dominated vegetation, no distinctive scratching's were observed within the Subject Site.	Nest during the day in a shallow depression in the ground covered by leaf litter, grass or other plant material. Nests may be located under Grass trees *Xanthorrhoea* spp., blackberry bushes, and other shrubs, or in rabbit burrows. No nests were identified within the Subject Site.	Negligible, no anticipated net loss of foraging or breeding habitat.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Ixobrychus flavicollis (Black Bittern)	V	-	Unlikely	Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves. Feeds on frogs, reptiles, fish and invertebrates, including snails, dragonflies, shrimps. and crayfish, with most feeding done at dusk and at night. No such habitat was identified within the Subject Site.	Nests, built in spring, are located on a branch overhanging water and consist of a bed of sticks and reeds on a base of larger sticks. No nests were identified within the Subject Site.	Negligible, no anticipated net loss of foraging or breeding habitat.	No
Lathamus discolor (Swift Parrot)	E	CE	Unlikely	On the mainland, this species occurs in areas where eucalypts are flowering profusely or where there are abundant lerp infestations (from sap-sucking bugs). Favoured feed trees include winter flowering species such as *Eucalyptus robusta, Corymbia maculata, C. gummifera, E. tereticornis, E. sideroxylon, E. pilularis,* and *E. albens.* No such habitat was identified within the Subject Site.	This species breeds in Tasmania.	No anticipated loss of foraging or breeding habitat. A targeted survey did not detect this species. The Subject Site is not mapped within the Swift Parrot Important Areas Map.	No
Lophoictinia isura (Square-tailed Kite)	V	-	Unlikely	Found in a variety of timbered habitats including dry woodlands and open forests. The species is a Is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy. The Subject Site does not support such prey items.	Species nests along or near watercourses, in a fork or a larger horizontal limb. No suitable trees are present within the Subject Site.	No anticipated loss of foraging or breeding habitat. A targeted survey did not detect this species.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Miniopterus australis (Little Bent-winged Bat)	V	-	Unlikely	Found in moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. At night, this species forages for small insects beneath the canopy of densely vegetated habitats. No such habitat is present within the Subject Site.	Only five (5) nursery sites/maternity colonies are known in Australia. They require large colonies roosting together to provide the high temperatures needed to rear their young. No suitable breeding habitat was identified within the Subject Site.	No anticipated loss of foraging or breeding habitat.	No
Miniopterus orianae oceanensis (Large Bent-winged Bat)	V	-	Unlikely	Hunt in forested areas, catching moths and other flying insects above the tree tops. No such habitat is present within the Subject Site.	This species only breeds in caves. While rock outcropping was present, not suitable caves were identified within the Subject Site.	No anticipated loss of foraging or breeding habitat.	No
Myotis macropus (Southern Myotis)	V	-	Unlikely	This species forages over streams and pools catching insects and small fish by raking their feet across the water surface. The Subject Site has no such habitat; however, it is located adjacent to Little Manly Cove which may provide a range or foraging inlets for this species.	Generally, roost in groups of 10-15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges, and in dense foliage. No such habitat was identified within the Subject Site.	Negligible, no anticipated impact to foraging and no impact to breeding habitat. A targeted survey did not detect this species.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Ninox connivens (Barking Owl)	V	-	Unlikely	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Preferentially hunts small arboreal mammals such as Squirrel Gliders and Common Ringtail Possums. No such habitat is present within the Subject Site and potential prey are unlikely to use the Subject Site.	This species nests in large hollows. No hollows were identified within the Subject Site.	No anticipated impact to foraging or breeding habitat.	No
Ninox strenua (Powerful Owl)	V	-	Unlikely	The species breeds and hunts in open or closed sclerophyll forest or woodlands and hunts small mammals. It roosts by day in dense vegetation comprising species such as *Syncarpia glomulifera*, *Allocasuarina littoralis*, *Acacia melanoxylon*, *Angophora floribunda*, *Exocarpus cupressiformis* and a number of eucalypt species. No such habitat is present within the Subject Site and potential prey are unlikely to use the Subject Site.	This species favours hollows >20cm in diameter. No hollows were identified within the Subject Site.	No anticipated impact to foraging or breeding habitat.	No
Pandion cristatus (Eastern Osprey)	V	-	Unlikely	Favour coastal areas, especially the mouths of large rivers, lagoons, and lakes. Feed on fish over clear, open water. No such foraging habitat is present within the Subject Property but does occur immediately to the south of the Subject Site.	Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea. No nests were identified within the Subject Site.	No anticipated impact to foraging or breeding habitat. A targeted survey did not detect this species.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Perameles nasuta (Long-nosed Bandicoot, North Head)	EP	-	Unlikely	Forages mainly at or after dusk, digging for invertebrates, fungi and tubers. Leaves conical shaped holes as a result of foraging activities. No signs of foraging were present within the Subject Site.	Shelters during the day in a well-concealed nest based on a shallow hole lined with leaves and grass, sometimes under debris, sometimes hidden with soil and with the entrance closed for greater concealment. No nests were identified within the Subject Site.	Negligible, no anticipated impact to foraging and no impact to breeding habitat.	**Yes, owing to the importance of this species in the locality (See Appendix D)**
Petaurus norfolcensis (Squirrel Glider)	V	-	Unlikely	The species Inhabits Blackbutt-Bloodwood forest with heath understorey in coastal areas. The species diet consists of Acacia gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein. No such vegetation is present within the Subject Site.	The species requires abundant tree hollows for refuge and nest sites. No such habitat was present within the Subject Site.	No anticipated impact to foraging or breeding habitat.	No
Petroica boodang (Scarlet Robin)	V	-	Unlikely	The species live in dry eucalypt forests and woodlands, habitat usually contains abundant logs and fallen timber. Birds forage from low perches, fence-posts or on the ground, from where they pounce on small insects and other invertebrates which are taken from the ground. No such habitat is present within the Subject Site.	This species' nest is an open cup made of plant fibres and cobwebs and is built in the fork of tree usually more than 2 metres above the ground. No nests were identified within the Subject Site.	No anticipated impact to foraging or breeding habitat. A targeted survey did not detect this species.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Phascolarctos cinereus (Koala)	V	-	Unlikely	No potential feed trees were identified within the Subject Site and no recent proximal records are present (DPIE 2021c). The highly urbanised and fragmented nature of the Subject Site suggests the potential for Koala presence is extremely low.	No potential breeding habitat exists within the Subject Property. The urbanised and fragmented nature of the Subject Site makes the potential for Koala presence extremely low.	No anticipated impact to foraging or breeding habitat. A targeted survey did not detect this species.	No
Pseudophryne australis (Red-crowned Toadlet)	V	-	Unlikely	Occurs in open forests, mostly on Hawkesbury and Narrabeen Sandstones. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. No such habitat was identified within the Subject Site.	Breeding congregations occur in dense vegetation and debris beside ephemeral creeks and gutters. No such habitat was identified within the Subject Site.	No anticipated impact to foraging or breeding habitat.	No
Pteropus poliocephalus (Grey-headed Flying-fox)	V	V	Unlikely	Feed on the nectar and pollen of native trees, in particular *Eucalyptus*, *Melaleuca*, and *Banksia*, and fruits of rainforest trees and vines. No such habitat is present within the Subject Site.	No breeding camps were identified within the Subject Site.	No anticipated impact to foraging or breeding habitat. A targeted survey did not detect this species.	No
Ptilinopus regina (Rose-crowned Fruit-Dove)	V	-	Unlikely	Rose-crowned Fruit-doves occur mainly in sub-tropical and dry rainforest and occasionally in moist eucalypt forest and swamp forest, where fruit is plentiful. No such vegetation occurs within the Subject Site.	The species nest in rainforests with dense growth vines. The nest is a frail loosely woven cup of twigs and tendrils. No nests were detected within the Subject Site.	No anticipated impact to foraging or breeding habitat. A targeted survey did not detect this species.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Ptilinopus superbus (Superb Fruit-dove)	V	-	Unlikely	Inhabits rainforest and similar closed forests where it forages high in the canopy, eating the fruits of many tree species such as figs and palms. It may also forage in eucalypt or acacia woodland where there are fruit-bearing trees. No such habitat was identified within the Subject Site.	The nest is a structure of fine interlocked forked twigs, giving a stronger structure than its flimsy appearance would suggest, and is usually 5-30m up in rainforest and rainforest edge tree and shrub species. No such habitat exists within the Subject Site and no nests were identified.	No anticipated impact to foraging or breeding habitat. A targeted survey did not detect this species.	No
Saccolaimus flaviventris (Yellow-bellied Sheathtail-bat)	V	-	Unlikely	This species forages for small, flying insects. The species flies high and fast over the forest canopy, but lower in more open country. No such habitat was identified within the Subject Site due to a lack of forest canopy.	Species roosts in trees hollows and dilapidated buildings. No such habitat exists within the Subject Site.	No anticipated impact to foraging or breeding habitat	No
Scoteanax rueppellii (Greater Broad-nose bat)	V	-	Unlikely	Species Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m. No such habitat exists within the Subject Site.	Species roosts in trees hollows and dilapidated buildings. No such habitat exists within the Subject Site.	No anticipated impact to foraging or breeding habitat.	No
Stagonopleura guttata (Diamond Firetail)	V	-	Unlikely	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands. Feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects. Such vegetation formations do not occur within the Subject Site.	Birds roost in dense shrubs or in smaller nests built especially for roosting. No such nesting habitat is present and no nests were identified.	No anticipated impact to foraging or breeding habitat.	No

Species	BC Act	EPBC Act	Likelihood of Occurrence	Foraging Habitat Present Within the Subject Site	Breeding Habitat Present Within the Subject Site	Anticipated Impact	Further Impact Assessment Required?
Tyto novaehollandiae Masked Owl)	V	-	Low	Lives in dry eucalypt forests and woodlands from sea level to 1100m. The species often hunts along the edges of forests, including roadsides. Its diet consists of tree-dwelling and ground mammals, especially rats. No such habitat is present within the Subject Site and potential prey are unlikely to use the Subject Site.	This species nests in large hollows. No hollows were identified within the Subject Property.	Negligible impact to foraging habitat. No anticipated net loss of breeding habitat.	No
Varanus rosenbergi (Rosenburg's Goanna)	V	-	Unlikely	Species is found in heath, open forest and woodland and associated with termites. The species feeds on carrion, birds, eggs, reptiles and small mammals. The Subject Site. does not support this species or prey items of this species.	Not present. The species lays up to 14 eggs in a termite mound; the hatchlings dig themselves out of the mounds. No such habitat exists within the Subject Site.	No anticipated impact to foraging or breeding habitat. A targeted survey did not detect this species.	No
Vespadelus troughtoni (Eastern Cave Bat)	V	-	Unlikely	Little is understood of its feeding or breeding requirements or behaviour. Species roosts in caves that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals. Foraging habitat is unlikely to occur within the Subject Site.	Not present, the species roosts in caves. No such habitat exists within the Subject Site.	No anticipated impact to foraging or breeding habitat.	No

V = Vulnerable; E = Endangered; CE = Critically Endangered; EP = Endangered Population

4.2.1 Migratory Fauna Species

Desktop analysis revealed following EPBC Act listed migratory terrestrial fauna species were considered to have the potential to utilise habitat within the Subject Site (e.g. foraging or passage) during part of their lifecycles:

- *Cuculus optatus* (Oriental Cuckoo);
- *Hirundapus caudacutus* (White-throated Needletail);
- *Monarcha melanopsis* (Black-faced Monarch);
- *Monarcha trivirgatus* (Spectacled Monarch);
- *Motacilla flava* (Yellow Wagtail);
- *Myiagra cyanoleuca* (Satin Flycatcher);
- *Rhipidura rufifrons* (Rufous Fantail).

It was deemed that the proposed works is unlikely to have a significant impact on these species; therefore, a Referral to the Commonwealth pursuant to the EPBC Act is not required.

5. Impact Summary

5.1 Vegetation

The proposed development will see the removal of approximately 105m^2 of vegetation identified as Urban Exotic/Native. This includes the removal of 23 exotic planted trees due to building construction, new surfacing, or trees in poor condition.

5.2 Threatened Species

If the recommendations within this report are undertaken, it is considered unlikely there will be any significant impacts to threatened flora, fauna or populations. Further impact assessments (5-Part Test) were undertaken for *Eudyptula minor* (Little Penguin) in the Manly Point Area (**Appendix E**) and *Perameles nasuta* (Long-nosed Bandicoot, North Head; **Appendix D**) owing to the local significance of these species, the removal of 105m^2 of Urban Exotic/Native vegetation and other construction activities that had potential to indirectly impact these endangered populations. Potential habitat for Little Penguin (rock face and crevices) will be retained within the Subject Property, and mitigation methods have been recommended to avoid any potential indirect impacts to these species. Therefore, it was determined that is unlikely that there will be any significant impact to *Eudyptula minor* (Little Penguin) or *Perameles nasuta* (Long-nosed Bandicoot).

6. Recommendations

6.1 Impact Mitigation and Minimisation Recommendations

This section of the report details recommended efforts to avoid and minimise impacts on biodiversity values associated with the proposed development. Measures to be implemented before, during, and post construction are detailed in **Table 8.**

Table 8. Measures to be implemented before, during and after construction to avoid and minimise the impacts of the proposed development

Action	Outcome	Timing	Responsibility
Project Location, Design and Planning	The design of the proposed development is situated in areas of hardstand, and Urban Exotic/Native vegetation. Narla are satisfied that the position of the proposed development will have minimal potential impacts on biodiversity values, provided the following mitigation measures are followed.	Pre-construction phase	Proponent
Construction and Environmental Management Plan (CEMP)	A CEMP has been prepared to mitigate against the following aspects of the proposal: ▪ Demolition of existing structures (excluding pool, pool terrace and terrace retaining walls); ▪ Earthworks including excavation into rock; ▪ Sewer encasement; ▪ Erection and removal of a crane (located at top northeast corner of property, furthest away from shoreline); ▪ Construction of the house; ▪ Hard and soft landscaping; ▪ Connection of the stormwater to council conditions; ▪ Noise and vibration monitoring as required; and ▪ Waste generation. The measures to be implemented as part of the CEMP are detailed in **Appendix F**.		
Fauna Access Design	A new block wall adjacent to the driveway is proposed with access for the Long-nosed Bandicoot (and other fauna) to allow for the movement of any potential species using the site.	Pre-construction phase Construction phase	Proponent Construction Contractor

Action	Outcome	Timing	Responsibility
Erosion and Sedimentation	Appropriate erosion and sediment control must be erected and maintained at all times during construction in order to avoid the potential of incurring indirect impacts on biodiversity values. As a minimum, such measures should comply with the relevant industry guidelines such as 'the Blue Book' (Landcom 2004). An erosion and sediment control plan has been produced to mitigate any potential impacts to biodiversity and the environment, which includes a sediment basin during construction (Engineering Studio 2022). As acceptable levels for water quality are not well documented for Little Penguins, the quality of water discharged from the site during construction must adhere to the criteria set in section 5.1.1 of *Water Discharge and Reuse Guideline* (TfNSW 2016) for Oils, pH and turbidity, and the targets set in section 2.2 of *Stormwater Quality Targets Policy* (Sydney Water 2021) for general pollutants.	Construction phase	Proponent Construction Contractor
Landscaping	Where possible, landscape design must include native plant species to provide new and/or improved low dense clumping habitat to provide for potential foraging and nesting. The planting schedule should comprise species such as *Lomandra* sp. *Dianella* sp., *Banksia spinulosa, Caustis* sp., *Xanthorrhoea* sp., *Isolepis* sp., *Juncus* sp., *Adiantum* sp., *Calochlaena* sp., *Callistemon* sp., *Grevillea juniperina*, *Gleichenia* sp., *Grevillea* 'Robyn Gordon' and tussocky native grasses (e.g. Kangaroo Grass), in accordance with section 3.1.1 'Landscaping Design' of the MDCP.	Construction phase	Proponent
Construction restrictions during Little Penguin breeding and moulting	Any construction activities in close vicinity of potential Little Penguin habitat (i.e under rocks on the foreshore and under structures such as stairs) or below the foreshore building line will be undertaken outside the peak breeding period (June – February) and moulting period (December – February) for the species to avoid any potential impacts when they are most vulnerable. This will particularly apply to the any activities required to fix the stairs that access the rock platform / pool area. Furthermore, all high intensity works associated with the development with potential to disturb penguins are to be restricted to outside the breeding (June – February) and moulting periods (December – February). This includes the following activities: ▪ Demolition; ▪ Rock sawing; ▪ Rock hammering; and ▪ Any other construction activities that cause intense vibration or noise.	Construction phase	Construction Contractor

Action	Outcome	Timing	Responsibility
Storage and Stockpiling (Soil and Materials)	Allocate all storage, stockpile, and laydown sites away from any vegetation that is planned to be retained. Avoid importing any soil from outside the site as this can introduce weeds and pathogens to the site in order to avoid the potential of incurring indirect impacts on biodiversity values.	Construction phase	Construction Contractors
Noise and Light Spill Reduction	Noise and light spill have the potential to interrupt the lifecycle of both the Long-nosed Bandicoot and Little Penguin. Therefore, all construction activities should be restricted to day light hours to avoid potential indirect impacts. During the operation stage of the development, lighting devices must be directed away from the water's edge, potential penguin burrows and access routes between the water and potential penguin burrows (NPWS 2003). Any lighting devices below the foreshore line (e.g on the stairs or in the pool area) should be permanently switched off during the breeding (June – February) and moulting periods (December – February) of Little Penguins.	Construction phase & Post-construction phase	Construction Contractors Proponent
Stormwater	An Onsite Detention Basin (OSD) has been proposed on the middle terrace to allow for the slow release of stormwater into Little Manly Cove. This will be connected to the existing outlet, which the builder will verify the adequacy of to provide scour protection. As acceptable levels for water quality are not well documented for Little Penguins, the quality of discharged stormwater must adhere to the targets set in section 2.2 of *Stormwater Quality Targets Policy* (Sydney Water 2021). Such protections will mitigate against potential indirect stormwater impacts to the Little Penguin population.	Construction phase	Proponent Construction Architect
Vibration Management	Construction vibration will be undertaken in line with Australian Standard AS 2187: Part 2-2006 and the recommendations of the Geotechnical report (AssetGeoEnviro 2021). Construction should cease and action taken if any unanticipated impacts to natural rock wall on the foreshore are observed. All construction activities that cause high levels of vibration (e.g Demolition, rock sawing and rock hammering) will be restricted to outside the breeding (June – February) and moulting periods (December – February) of Little Penguins.	Construction phase	Proponent Construction Architect
Sewerage	All sewerage produced on site will be contained in an appropriate sewerage system. Containing all sewerage produced on site within a certified sewerage system will eliminate any adverse effects to the local ecology. The proposed sewer line is to avoid tree roots and tree protection zones.	Post-construction phase	Proponent

7. Conclusion

This assessment indicates that the relevant biodiversity conservation provisions of the Environmental Planning and Assessment Act 1979 and the relevant provisions of the MLEP 2013 have been fulfilled. Narla are satisfied that the proposed development has been appropriately located within the area identified as having least ecological impact. No threatened ecological communities, fauna or flora species or populations are expected to be significantly impacted as a result of the proposed DA.

In summary, the proposed development will require the removal of approximately 105m^2 of vegetation identified as Urban Native/Exotic. If the appropriate recommendations in this report are followed, the proposed DA is anticipated to have minimal ecological impact.

8. References

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9. Appendices

Appendix A. Flora species identified within the Subject Property

Appendix B. Fauna species identified within and surrounding the Subject Property

Appendix C Site Plan (Chateau Architects & Builders 2021).

Appendix D. Biodiversity Conservation Act 5-Part Test of Significance for Perameles nasuta (Long-nosed Bandicoot, North Head)

Appendix E. Biodiversity Conservation Act 5-Part Test of Significance for *Eudyptula minor* (Little Penguin in the Manly Point Area)

Appendix F. Construction and Environmental Management Plan

Appendix A. Flora species identified within the Subject Property

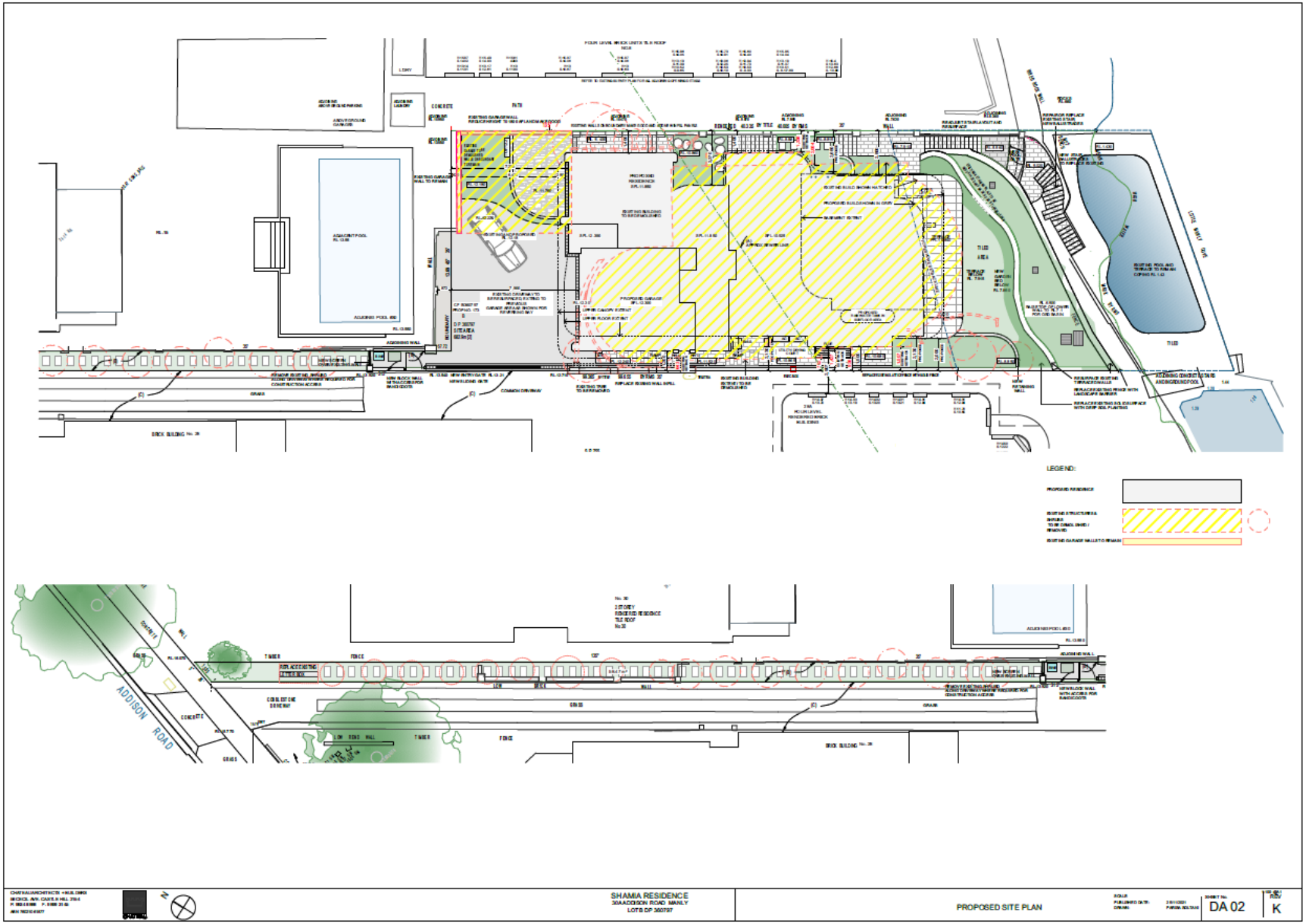
Scientific Name	Canopy	Mid-Story	Ground
*Acetosa sagittata**			x
Adiantum formosum			x
*Agapanthus spp.**			x
*Agave attenuata**		x	
*Asparagus aethiopicus***			x
*Citrus x limon**		x	
Commelina cyanea			x
Corymbia maculata	x		
*Cupressus sempervirens**	x		
Cyathea australis		x	
*Cyclospermum leptophyllum**			x
*Cyrtomium falcatum**			x
*Dracaena spp**		x	
*Ehrharta erecta**			x
*Gamochaeta americana**			x
*Lotus angustissimus**			x
*Nephrolepis cordifolia**			x
*Nothoscordum gracile**			x
Oplismenus aemulus			x
*Parietaria judaica**			x
*Solanum nigrum**			x
*Soliva sessilis**			x
*Sonchus oleraceus**			x
*Stellaria media**			x
*Stenotaphrum secundatum**			x
*Syagrus romanzoffiana**	x		
*Thuja orientalis**		x	
*Trifolium repens**			x

** Denotes exotic species; ** Denotes a priority weed*

Appendix B. Fauna species identified within and surrounding the Subject Property

Class	Scientific Name	Common Name	Status
Aves	*Cacatua galerita*	Sulphur-crested Cockatoo	Protected
	Corvus coronoides	Australian Raven	
	Chroicocephalus novaehollandiae	Silver Gull	
	Phalacrocorax sulcirostris	Little Black Cormorant	
Reptilia	*Intellagama lesueurii*	Australian Water Dragon	

Appendix C Site Plan (Chateau Architects & Builders 2021).



Appendix D. Biodiversity Conservation Act 5-Part Test of Significance for *Perameles nasuta* (Long-nosed Bandicoot, North Head)

Biodiversity Conservation Act 2016 – Test of Significance (5-part Test) for *Perameles nasuta* (Long-nosed Bandicoot, North Head)		
BC Act Status: Endangered Population		
Species Ecology	A solitary, terrestrial marsupial that occupies a variety of habitats on North Head. Forages mainly at or after dusk, digging for invertebrates, fungi and tubers. Shelters during the day in a well-concealed nest based on a shallow hole lined with leaves and grass, sometimes under debris, structures (e.g. buildings). Shelters are sometimes hidden with soil and with the entrance closed for greater concealment. Mating takes place at night and may occur throughout the year in the Sydney Region, although there is a trough in breeding activity from late autumn (April) to mid-winter (June). Restricted to North Head in the Manly Local Government Area.	
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	The proposed development is unlikely to adversely effect upon the life cycle of Long-nosed Bandicoots such that a viable local population is likely to be placed at risk of extinction. Long-nosed Bandicoots have the potential to utilise the vegetation identified as Urban Exotic/Native within the Subject Site, however this vegetation is considered to be suboptimal based on the highly modified nature of the site and is only likely to be utilised as intermittent foraging habitat. The Subject Site does not contain any breeding habitat. Breeding habitat consists of a well-concealed nest based in a shallow hole.	
(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	Not applicable – species does not belong to an Endangered Ecological Community or Critically Endangered Ecological Community
	(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,	Not applicable – species does not belong to an Endangered Ecological Community or Critically Endangered Ecological Community

Biodiversity Conservation Act 2016 – Test of Significance (5-part Test) for *Perameles nasuta* (Long-nosed Bandicoot, North Head)		
BC Act Status: Endangered Population		
(c) in relation to the habitat of a threatened species or ecological community:	**(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and**	The proposed development involves the clearing of approximately 105m^2 of Urban Exotic/Native vegetation which may provide sub-optimal foraging habitat for this species.
	(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 suboptimal habitat proposed to be removed is already highly fragmented as it existed in a heavily urbanised environment surrounded by houses and roads. The proposed development is unlikely to further exacerbate this fragmentation.
	(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 Subject Site represents low ecological value and significance to local fauna and flora as it is comprised of almost completely exotic vegetation and situated within a largely urban landscape. It is not anticipated that the proposed works will not impact the long-term survival of this species.
(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 development proposed is not likely to have an adverse effect on any declared area of outstanding biodiversity value (AOBV), directly or indirectly. Habitat for *Eudyptula minor* (Little Penguin in the Manly Point Area) is mapped as (AOBV) approximately 20m west of the Subject Site. This has been addressed in **Appendix E.**	
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	The main Key Threatening Processes (KTP) of relevance to Long-nosed Bandicoots are: ▪ Predation by the European red fox (*Vulpes vulpes*); ▪ Predation by the feral cat (*Felis catus*); ▪ Clearing of native vegetation; ▪ Competition and grazing by the feral European rabbit (*Oryctolagus cuniculus*); ▪ High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition; and ▪ Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants The proposed development is not likely to increase the impact of a key threatening process to this species.	
References NSW Office of Environment and Heritage (2017) Long-nosed Bandicoot, North Head - Profile http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10589 NSW Government (2017) NSW Legislation: Biodiversity Conservation act 2016 No 63, Schedule 4: Key Threatening Processes https://www.legislation.nsw.gov.au/acts/2016-63.pdf		

Appendix E. Biodiversity Conservation Act 5-Part Test of Significance for *Eudyptula minor* (Little Penguin in the Manly Point Area)

Biodiversity Conservation Act 2016 – Test of Significance (5-part Test) for *Eudyptula minor* (Little Penguin in the Manly Point Area)		
BC Act Status: Endangered Population		
Species Ecology	This endangered population occurs from just north of Smedley's Point to Cannae Point, North Sydney Harbour, Manly and is the only known breeding population on the mainland in NSW. They appear to be opportunistic feeders foraging in relatively shallow waters preying on small schooling fish and squid. A range of nest sites are utilised by the penguins at Manly including under rocks on the foreshore, under seaside houses and structures, such as stairs, in wood piles and under overhanging vegetation including lantana and under coral tree roots. Time of egg-laying varies slightly from year to year but has been recorded at Manly as early as the first week of June. The peak breeding season however is generally from July to February. The Manly penguins moult between December and February and it is at this time when they are most vulnerable as they do not always moult deep in the burrows, but often only in shallow depressions.	
(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,	The proposed development is unlikely to adversely impact upon the life cycle of Little Penguins such that a viable local population is likely to be placed at risk of extinction. Little Penguins have the potential to use the foreshore areas of the Subject Property and surrounding properties for nesting and moulting. The proposed development will not directly impact the rock platform or wall located at the south of the Subject Site. Furthermore, mitigation measures have been included in the proposal to avoid potential indirect impacts associated with the development on the potential Little Penguin habiat and the nearby declared Critical Habitat for the species. This includes alterations to construction times and activities, parameters for water quality and stormwater discharge, an OSD Basin and requirements to avoid noise and light spill.	
(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	Not applicable – species does not belong to an Endangered Ecological Community or Critically Endangered Ecological Community

Biodiversity Conservation Act 2016 – Test of Significance (5-part Test) for *Eudyptula minor* (Little Penguin in the Manly Point Area)		
BC Act Status: Endangered Population		
	(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,	Not applicable – species does not belong to an Endangered Ecological Community or Critically Endangered Ecological Community
(c) in relation to the habitat of a threatened species or ecological community:	(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and	The proposed development involves the clearing of approximately 105m^2 of Urban Exotic/Native Vegetation which is unlikely to provide habitat for the species, given its location on top of the cliff. The existing stairs that provide access to the rock platform will be modified (fixed), which is approximately 4m^2. The main potential habitat for the species (the rock platform and wall) will not be impacted by the proposal. Nesting habitat and areas of declared critical habitat for the species has the potential to be indirectly impacted by noise, light, vibration and water quality, however mitigation measures have been recommended to avoid these potential impacts in **section 6.1** and **Appendix F.**
	(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 proposed development will not fragment or isolate potential habitat for the species as it will not be directly impacted by the development and it is located on the periphery on the known habitat (approximately 20m away). Potential impacts such as noise, light, vibration and water quality are not considered likely to fragment or isolated the potential habitat for the species given the mitigation measures that have been recommended to avoid these potential impacts in **section 6.1** and **Appendix F.**

Biodiversity Conservation Act 2016 – Test of Significance (5-part Test) for *Eudyptula minor* (Little Penguin in the Manly Point Area)		
BC Act Status: Endangered Population		
	(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 vegetation within the Subject Site represents low ecological value and significance to local fauna and flora as it is comprised of almost completely exotic vegetation and situated within a largely urban landscape. The rock platform and wall, that may be potential habitat for the species, would be considered important if used by this species for nesting. Declared critical Habitat for the species is located in close proximity to the site, which is very important for this populations survival.
(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),	Critical habitat for the Endangered population of Little Penguins at Manly is located approximately 20m from the Subject Property. The proposed development is not likely to have an adverse effect on this declared area of outstanding biodiversity value, directly or indirectly. The Little Penguin AOBV Critical Habitat is located approximately 20m from the Subject Site which will not be impacted directly. This area will not be directly impacted by the proposed development and mitigation measures have been included in the proposal to avoid potential indirect impacts on this area. This includes alterations to construction times and activities, parameters for water quality and stormwater discharge, an OSD Basin and requirements to avoid noise and light spill. The full recommendations are outlined in **section 6.1** and **Appendix F.**	
(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	The main Key Threatening Processes (KTP) of relevance to Little Penguin are: ▪ Predation by the European red fox (*Vulpes vulpes*); ▪ Predation by the feral cat (*Felis catus*); ▪ Clearing of native vegetation; ▪ Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants; ▪ 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; and ▪ Predation and hybridisation by Feral Dogs, *Canis lupus familiaris* The proposed development is not likely to increase the impact of a key threatening process to this species.	
References NSW Office of Environment and Heritage (2017) Little Penguin in the Manly Point Area (being the area on and near the shoreline from Cannae Point generally northward to the point near the intersection of Stuart Street and Oyama Cove Avenue, and extending 100 metres offshore from that shoreline)- Profile http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10321 NSW Government (2017) NSW Legislation: Biodiversity Conservation act 2016 No 63, Schedule 4: Key Threatening Processes https://www.legislation.nsw.gov.au/acts/2016-63.pdf		

Biodiversity Conservation Act 2016 – Test of Significance (5-part Test) for *Eudyptula minor* (Little Penguin in the Manly Point Area)
BC Act Status: Endangered Population
NSW National Parks and Wildlife Service (2002) Declaration of Critical Habitat for the Endangered Population of Little Penguins (*Eudyptula minor*) at Manly- (Pursuant to s.40 and 43 of the Threatened Species Conservation Act 1995). NSW NPWS, Hurstville, NSW.

Appendix F. Construction and Environmental Management Plan

Item	Management Action	Management Measures
1	Project Ecologist confirmation	No works will commence until receipt of written confirmation is received from a nominated site ecologist to verify that there are no nesting or moulting penguins in the vicinity of the work site. If evidence of penguins or recent use is found, works cannot start and Council will be notified.
2	Waterway Protection	Material delivery will be via common driveway access from Addison Road. Barge and waterway access is not anticipated to be required.
3	Timing and Direction of Construction	All works related to the lower pool terrace staircase area and lower garden walls by landscaper (i.e below the foreshore line) will be confined to the months of March – June being outside the Little Penguin breeding season. This includes all high intensity works associated with the development with potential to disturb penguins. This includes the following activities: ▪ Demolition; ▪ Rock sawing; ▪ Rock hammering; and ▪ Any other construction activities that cause intense vibration or noise.
4	Operating Hours, Light, Noise and Vibration Controls	Normal construction hours are to be adhered to as per Council conditions. Acceptable noise and vibration levels are to be adhered to as per Council Conditions. No external artificial bright light sources are to be used during construction.
5	Staging of Construction	Construction will be undertaken in the following stages: ▪ Temporary fencing and sediment control to be installed, the fence to be 100mm to 150mm raised from ground level for Bandicoot access. ▪ Demolition will be carried out over approximately 6-to-8-week. Concrete will be sawcut and broken with a hydraulic hammer, materials will be handled and removed from site by small team of contractors via common driveway and loaded into small trucks and disposed of at a licensed waste/ recycling facility. ▪ Shrubs and trees to be removed as per arborist report and approved Council Conditions. ▪ Excavation is carried out, excavator removed from site via common driveway. Existing garage wall near front boundary will be shored. ▪ Sewer encasement will commence. ▪ Crane arrival and install with appropriate traffic management control measures. ▪ Early works including detailed excavation, concrete piering, trenches laid. ▪ Formwork will be installed to basement, lower brick and blockwork, form up and pour of suspended slab over and waffle slab on ground. ▪ External and internal brickwork to ground floor, perimeter scaffolding of site with shade cloth perimeter for neighbouring privacy. ▪ Form up n pour of suspended first floor reinforced concrete slab, internal and external brickwork of first floor. ▪ Form up n pour of suspended concrete roof and roof access. ▪ Delivery and install of windows and roof lights/ roof access box. ▪ External render of walls and waterproofing of roof and terraces. ▪ Internal works, rough in, power, plumbing, air conditioning. ▪ Internal wall and ceiling linings, ▪ Floor coverings,

Item	Management Action	Management Measures
		▪ External and internal tiling, ▪ Joinery delivery and installation, ▪ External render and paint finished; scaffolding removed. ▪ Crane removed from site with appropriate traffic management measures at earliest possible stage. ▪ Inspection and adjustment of the existing middle lower terrace retaining wall height to achieve correct levels for OSD basin. R ▪ Removal of existing wall tiling and placement of replacement Tiling to lower terraces. ▪ Height adjustments and improvement of near boundary and pool fencing, side pathways and steps by landscaper. ▪ Upgrade of pool pump and equipment if required. ▪ resurfacing of driveway, planting and irrigation works. ▪ Final clean, remove temporary fencing and sediment control, final inspection, and handover.
6	Site Induction	All workers and visitors are to be given a site induction as outlined below in Terrestrial Mitigation Measures.
7	Worksite Access	Access to the worksite will be from land via Addison Road.
8	Terrestrial Mitigation Measures	▪ Signs will be permanently present to alert workers to the potential presence of threatened species i.e. little penguins and bandicoots ▪ The existing self-closing gate (with 100mm gap) that is located down the rear yard prevents dogs and foxes from entering the cliff face and critical habitat areas, replacement fence and self-closing gate will be planned in a manner that the cliff side will be fenced and always protected with the Bandicoot access gaps in place. ▪ No dogs will be allowed at the site during construction. ▪ Signs will indicate that fines and penalties apply. ▪ No bright lighting or motion detectors are to be installed during construction. ▪ Site inductions will be provided to all workers and those who deliver materials to ensure that the following factors are met: o Workers are provided with a visual of the penguin and long nosed bandicoot so that they can be confident in identifying them o Workers understand the sensitive nature of the work site by being provided with verbal information about the significance of the penguins and bandicoots o Workers are made aware to maintain distance from penguins and their burrows o Workers are provided with a plan of what to do if a penguin or bandicoot is found at the site o Workers are provided with contacts for the relevant agencies should any injured or dead little penguins or bandicoots be found o Dogs are not allowed access to the foreshore at any time during construction o All site works will be informed of the importance of restricting movements to avoid being in the vicinity of any penguin or long nosed bandicoot burrows. o Food scraps not to be left around site

Item	Management Action	Management Measures
	Marine Mitigation Measures	▪ All sediment and pollutants are to be vacuumed up before high tide every day.
9	Storage of Equipment	All debris, materials and equipment will be stored above the high-water mark or above the cliff.
10	Public Safety, Amenity and Site Security	The site will be closed off and only workers are allowed on site. Works will be carried out with a crane located in the front northeast corner of the site, an excavator and portable tools, all of which are noise attenuated and used within operating hours.
11	Air and Dust Management	Waste will be contained in bulker bags or skip bins and will remain covered until disposed of at a suitable licenced waste facility
12	Stormwater and Sediment Control	Alteration of the natural flow of ground and surface water will not be affected. Any sedimentation or soil erosion that may occur during construction will be controlled by standard on-site construction methods.
13	Waste and Materials Re-use	▪ -Equipment, materials and waste would be transported from the site directly to the street for removal or disposal. ▪ Waste will be disposed of at a licensed waste facility or recycled.
14	Complaints & Incidents Handling	Any complaints from the public or authorities will be treated seriously and with discretion. Complaints will be directed to the Site Manager in the first instance and dependent upon the circumstances and the source of the complaint, a response to the complainant will be made either directly on the phone, or by email / letter within a reasonable timeframe. Any incidents – accident and near miss accident– will be investigated at first opportunity and a full report will be recorded by the Site Manager. Serious incidents – such as trauma, serious injury or fatality, will be reported to WorkCover. Any injuries will be reported to the Site Manager as listed above. Injuries will be recorded in the Site Injury Register. If the injury is likely to result in an absence from the workplace of 7 days or more, then the injury and its circumstances must be reported to WorkCover (within 48hrs verbally and in writing within 7 days) using the WorkCover Incident Report Form.

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