Terrestrial Biodiversity Report

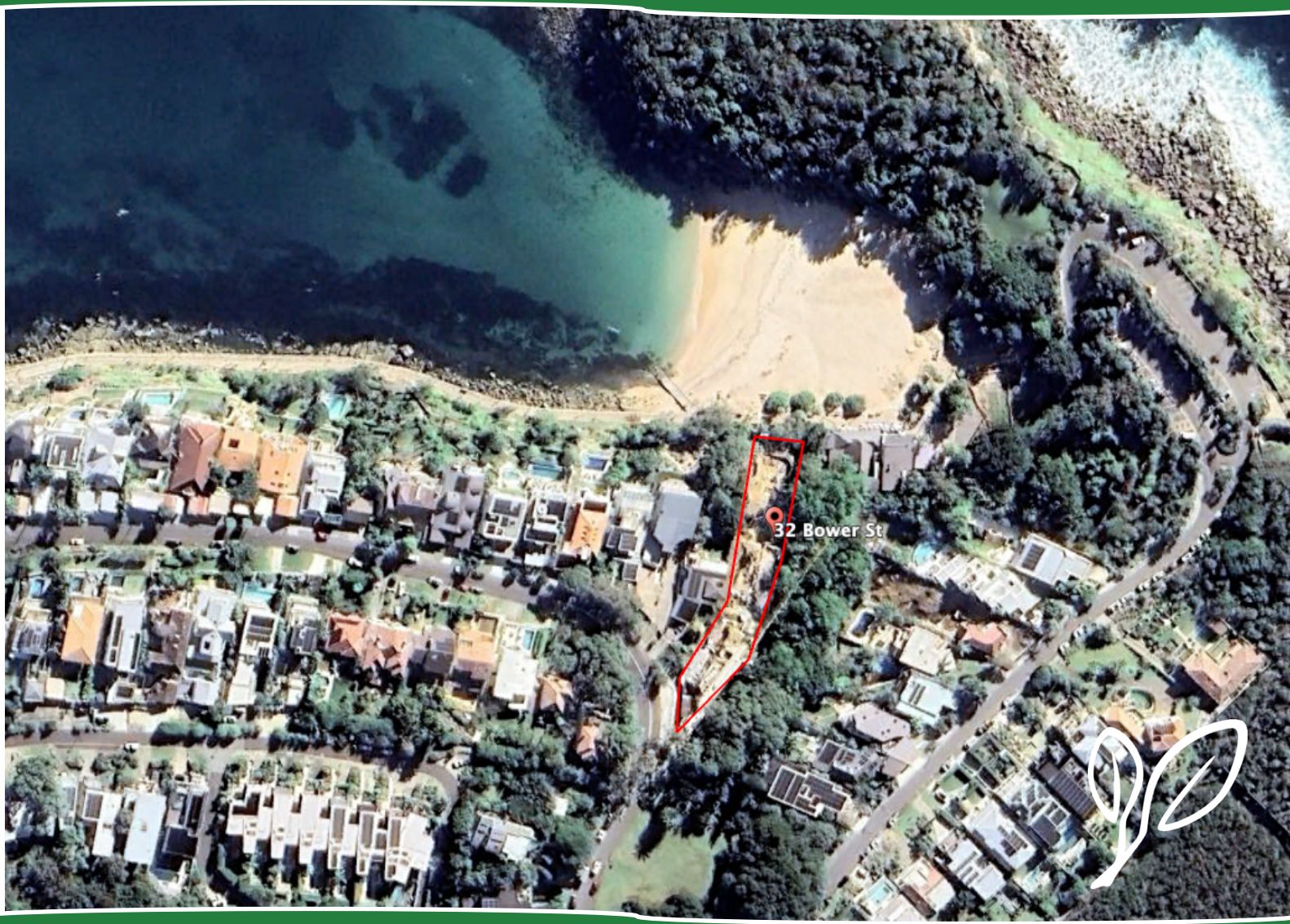
for

s4.55 Modification of DA2019/0916 as Modified by Mod2023/0211

at

32 Bower Street, Manly

Date: 12 August 2024



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We acknowledge the traditional owners of this land and pay respect to Elders, past, present and emerging.

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1 Introduction

1.1 Background

This report addresses the ecological impact of a proposed modification to a DA for demolition and construction for a dwelling house and swimming pools DA2019/0916 as modified by Mod2023/0211 (Approved 31/10/2023) at 32 Bower St, Manly and then assess the likely impact of the proposed development on the terrestrial flora, fauna, and ecological communities. In particular, the Endangered (BC Act) Long-nosed Bandicoot population on North Head. The NSW Biodiversity Conservation Act Scientific Committee and Department of Planning and Environment (DPE) Profile have determined that this population is a risk of extinction unless threats cease, and they have identified that the Key Threatening Processes are loss of habitat and change to habitat access as potential impacts and to the Endangered Long-nosed Bandicoot population. This report also makes recommendations on ways to avoid or reduce impacts caused by the development.

1.2 Legislation Addressed by this Report

This section describes the Local, State and Federal legislation that provide the legal framework for approval of development and the protection and conservation of native flora and fauna that are relevant to this proposal.

The proposal has been assessed against provisions outlined in the following legislation.

1.2.1 Environment Planning and Assessment Act 1979, EP&A Act

The NSW Environment Planning and Assessment Act 1979 is the framework for approval of development in NSW. This proposal will be assessed under Part 4 of the EP&A Act, which requires the determining authority (usually Council) to not approve local development (Development Applications, DA's) without considering the heads of consideration in S 4.15 of the EPA Act, which requires the assessment of relevant legislation (Biodiversity Conservation Act, SEPP, LEPs, DCPs ect.)(4.15a), the environmental impact of the proposal (4.15b) and the suitability of the site for development (4.15c). Section 6.3 of this report addresses the BC Act and the relevant heads of consideration.

1.2.2 Biodiversity Conservation Act 2016

Section 7.2 of the Biodiversity Conservation Act requires that all local developments (Development Applications DAs, Part 4 EP&A Act):

- *Implement the core purpose of the Act a hierarchy to "Avoid" and "Minimise" impacts; only then can "Offsets" be used for any residual impacts.*
- *Be assessed to determine whether they trigger the BOS Threshold Test specified in the Biodiversity Conservation Regulation 2017, which has two parts; the area of native vegetation that the proposal will impact and a check of whether the impact is within an area of mapped "biodiversity" on the biodiversity values map; and*
- *Be assessed by a qualified ecologist to determine if there may be a positive a 5-Part Test of Significance as outlined in part 7.3 of the BC Act for each Threatened species or ecological community (listed in the schedules of the BC Act) or their habitats (listed in the schedules of the BC Act) that may occur on the site.*
- *Be assessed to determine if the proposal may impact on an Area of Outstanding Biodiversity Value (AOBV).*

Developments that trigger the Threshold Test or have a positive 5-Part Test of Significance, or impact on an AOBV, need to enter the Biodiversity Offset Scheme (BOS), and require that the Biodiversity Assessment Method (BAM) be applied and include a Biodiversity Development Assessment Report (BDAR) with the DA application. The proposal also needs to be assessed to determine if it may result in a Serious and Irreversible Impact (SAII).

If a development application does not meet the threshold or any other triggers, then a smaller report is still required to address the "heads of consideration" (section 4.15 of the EP&A Act), 5-part Test of Significance as required by the Manly DCP, SEPPs and Local Council's LEP/DCP requirements.

Biodiversity Conservation Act 2016, Threshold Test

This proposal is **not** considered to meet the BC Act threshold as;

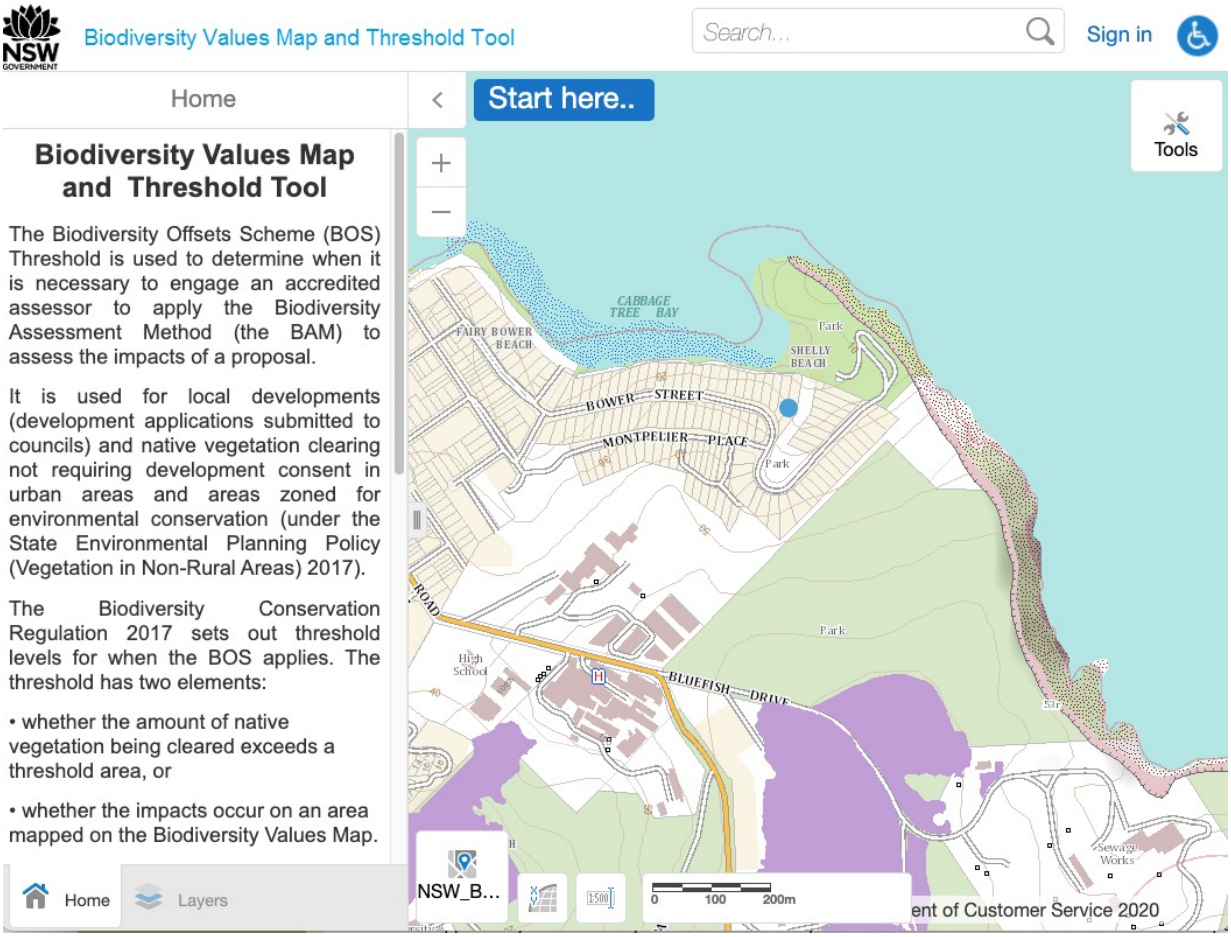
The lot size is less than 1ha and there is less than 0.25ha of native vegetation being removed. **and**

The proposal will not directly or indirectly impact a declared Area or Outstanding Biodiversity Significance (AOBV) or an area mapped as having high biodiversity value on the "Biodiversity Values Map". See figure below. **and**

There is not likely to be a significant affect (5-part test of significance test in Section 7.3, BC Act) on any Threatened species or ecological community or their habitat, as has been determined by section 6.1 of this report.

Therefore, the proposal does not need a Biodiversity Development Assessment Report (BDAR).

The Threshold Test, 5-Part Test, assessment of AOBV, heads of consideration, SEPP LEP/DCP requirements are all assessed in Section 4 of this report.



1.2.3 Northern Beaches (Manly) Local Environment Plan, MLEP 2013

The development proposal has been assessed against the following Local Government provisions: Manly LEP Clause 6.5 (Terrestrial Biodiversity) - Manly DCP Clause 5.3.2.1 (Threatened Species and

Critical Habitat Lands) - Manly DCP Clause Manly DCP Clause 3.3.1.iv) (Landscaping in Bandicoot Habitat).

The Manly (Northern Beaches Council) Local Environment Plan's (2013) 'Terrestrial Biodiversity Map' identifies this property as having high terrestrial biodiversity value. Development applications in the mapped area require consideration of Clause 6.5 (3) and (4) 'Terrestrial Biodiversity' (Manly LEP 2013). Development proposals need to be consistent with the objectives of this clause and include appropriate measures to avoid, minimise or mitigate possible impacts of the development on biodiversity.

The property is located within known habitat for the endangered population of Long-nosed Bandicoots at North Head; as such, assessment of potential impacts is required to be undertaken in accordance with Section 7.3 of the NSW Biodiversity Conservation Act (i.e. the threatened species "test of significance"). This assessment has been undertaken.

Extract from MLEP 2013:

6.5 Terrestrial biodiversity

(1) The objective of this clause is to maintain terrestrial biodiversity by:

(a) protecting native fauna and flora, and

(b) protecting the ecological processes necessary for their continued existence, and

(c) encouraging the conservation and recovery of native fauna and flora and their habitats.

(2) This clause applies to land identified as "Biodiversity" on the Terrestrial Biodiversity Map.

(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider:

(a) whether the development is likely to have:

(i) any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and

(ii) any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and

(iii) any potential to fragment, disturb or diminish the biodiversity structure, function, and composition of the land, and

(iv) any adverse impact on the habitat elements providing connectivity on the land, and

(b) any appropriate measures proposed to avoid, minimise, or mitigate the impacts of the development.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:

(a) the development is designed, sited, and will be managed to avoid any significant adverse environmental impact, or

(b) if that impact cannot be reasonably avoided by adopting feasible alternatives—the development is designed, sited, and will be managed to minimise that impact, or

(c) if that impact cannot be minimised - the development will be managed to mitigate that impact.

These sections of the Manly LEP are addressed within this report.

1.2.4 Manly Development Control Plan, DCP

Manly Development Control Plan 2013 Section 2.1.15 'Threatened Flora and Fauna Assessment of Significance Report, including the Long-nosed Bandicoot, and Little Penguins' requires the

assessment of the significance of impact on threatened species, populations or ecological communities or their habitats.

Manly DCP 2013

DCP extract 2.1.15 'Threatened Flora and Fauna Assessment of Significance Report'

> *Objective 1) To ensure the assessment of any significant effect on threatened species, populations or ecological communities or their habitats (as listed in the Threatened Species Conservation Act 1995) in accordance with Section 5A of the Environmental Planning and Assessment Act 1979* (now superseded by section 7.3 of the Biodiversity Conservation Act 2016).

DCP extract 5.4.2 'Threatened Species and Critical Habitat'

> *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.*

DCP 3.3.1 Landscape Character

> *a) The design, quantity and quality of open space should respond to the character of the area. In particular:*
>
> iv) 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 (eg. Kangaroo Grass)*

DCP Extract - Schedule 1 - Map D - Areas where Assessment of Significance is required (for Little Penguins and/or Long Nosed Bandicoots)

This report includes a Test of Significance (5-part test) for the Endangered Long-nosed Bandicoot population at North Head and other Threatened Species, Populations or Endangered Ecological Communities that may be impacted by the proposal. The Impact Assessment section of this report addresses these clauses.

1.2.5 State Environmental Planning Policies and Sydney Regional Environmental Plans

The SEPPs and SREPs which are relevant to Northern Beaches LGA and which may be relevant to this proposal are Sydney Regional Environmental Plan (Sydney Harbour Catchment) (SREP SHC) 2005 (which amends SEPP No 56 Sydney Harbour Foreshores and Tributaries).

Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005

The plan aims to establish a balance between promoting a prosperous working harbour, maintaining a healthy and sustainable waterway environment, and promoting recreational access to the foreshore and waterways. It establishes planning principles and controls and consolidates and replaces the following instruments: - Sydney Regional Environmental Plan No. 22 - Parramatta River (SREP 22); - Sydney Regional Environmental Plan No. 23 - Sydney and Middle Harbour (SREP 23); and amends State Environmental Planning Policy No. 56 Sydney Harbour Foreshores and Tributaries (SEPP 56).

The area to the south of the heavy black boundary line on the figure below is within the Foreshores and Waterways Area and includes the whole of North Head, St Patrick's Estate, Manly Boatshed and Manly Wharf. See image below. The whole of Manly Cove is zoned as W2 Environment Protection Zone. Wetlands are mapped along the majority of Manly Coves' foreshore.

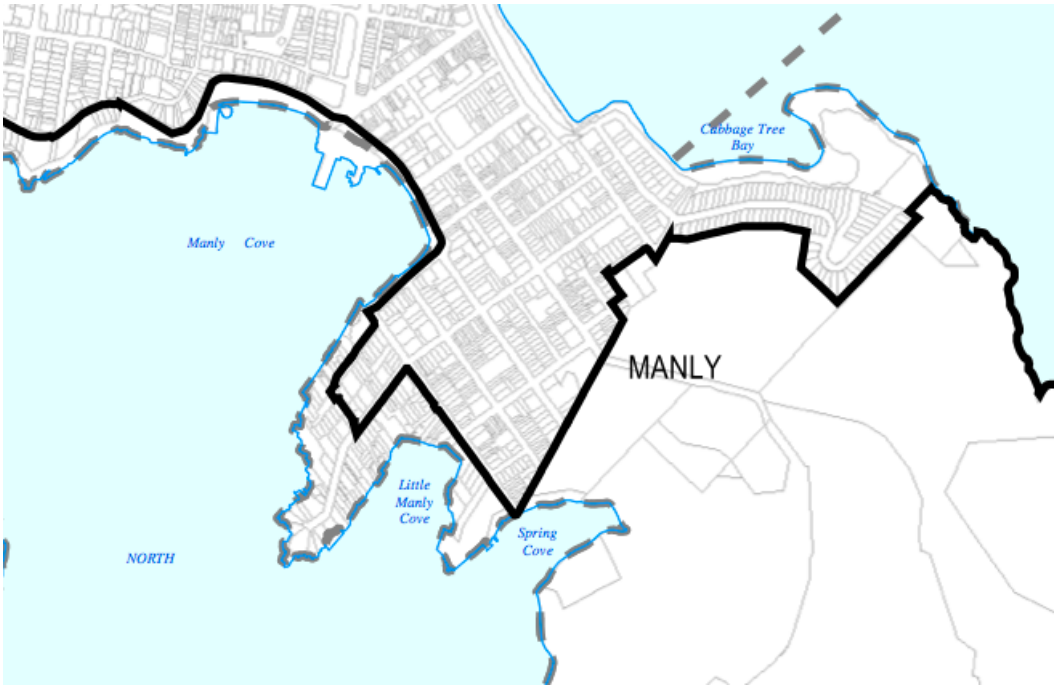


Image: Strategic Foreshores and Waterways Area – Part of Sheet 4 SREP SHC

The Ecological Aim of the SREP is to ensure the protection, maintenance and rehabilitation of watercourses, wetlands, riparian lands, remnant vegetation and ecological connectivity.

The Impact Assessment section of this report assesses the specific ecological matters that are to be considered.

Resilience and Hazards SEPP 2022

This SEPP defines four coastal management areas and specifies the assessment of development within these management areas.

The Resilience and Hazards SEPP also maps Coastal Wetlands and Littoral Rainforest and areas within proximity of Coastal Wetland and Littoral Rainforest and includes controls for development within those areas.

The site and the adjacent land are not mapped as Littoral rainforest.

The SEPP Resilience and Hazards (2021) 'Coastal Environment Area Map' identifies this property as having Coastal Environment Area present in the North-west corner of the site. Development applications in the mapped area require consideration of Clause 2.10 (1a, b, c, and d) and (2) 'Development on Land within the Coastal Environment Area' (Resilience and Hazards SEPP 2022). Development proposals need to be consistent with the objectives of this clause and include appropriate measures to avoid, minimise or mitigate possible impacts of the development on biodiversity.

1.2.6 Federal Environment Protection and Biodiversity Conservation Act 1999, EPBC Act

The Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) will need detailed assessment if the proposal is considered likely to have an impact on a 'Matter of National Environmental Significance (MNES), thus providing a trigger for referral of the proposal to the Department of the Environment and Water Resources. Matters of national environmental significance identified in the Act are; world heritage properties; national heritage places; RAMSAR wetlands; nationally threatened species and communities; migratory species protected under international agreements; the Commonwealth marine environment; and nuclear actions.

Section 6.3 of this report addresses this requirement.

1.3 Definitions

Assessment of Significance (5-Part Test) - Assessment under Section 7.3 of the BC Act to determine whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. The minister has provided a guide under 7.3(2) titled Threatened Species Assessment Guidelines.

BC Act - NSW Biodiversity Conservation Act 2016 contains the lists of threatened species, the definitions of the threatened ecological communities, the 5-part Test of Significance and the Biodiversity Offset Scheme (BOS). There are associated Biodiversity Conservation regulations which refers to the BAM.

Clearing – clearing of native vegetation including cutting down, felling, uprooting, thinning or otherwise removing native vegetation, killing destroying, poisoning, ringbarking or burning native vegetation and includes establishment and maintenance of bushfire protection Asset Protection Zones (APZ) inner and outer zones.

Direct Impacts - are impacts that directly affect habitat, ecosystems and individuals. They include, but are not limited to, death, trampling, poisoning of the animal/plant itself and the removal of vegetation and suitable habitat. When applying each factor, consideration must be given to all the likely direct impacts of the proposed activity or development during construction. As defined by the 2018 Threatened Species Assessment Guidelines.

DPI – NSW government of Department of Primary Industries

EPA Act (EP&A Act) – NSW Environment Planning and Assessment Act 1979, controls development in NSW, includes the requirement to consider SEPPs, LEPs, DCPs, BC Act 2016.

EPBC Act – Federal Environment Protection and Biodiversity Conservation Act 1999.

Indirect Impacts - occur when project-related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas. Indirect impacts may occur after construction

during the life of the development, e.g. escape of garden plants, excess nutrients and changes in fire frequency and grazing. As with direct impacts, consideration must be given to all of the likely indirect impacts of the proposed activity or development (2006 DECC Assessment of Significance Guidelines)

LEP – Local Environment Plan, a local planning instrument for each Council area.

Native Vegetation - is defined in the LLS Act as any plants native to NSW including trees, understory plants or groundcover plants including wetland. Marine vegetation is protected by the Fisheries Act.

OEH – NSW Office of Environment and Heritage, formerly NPWS, DEC, DECC and DECCW. Government organisation responsible for the conservation of native flora and fauna.

Property – The lot(s) that are the subject of the proposal. In this report, this is the same as the Study Area, the Subject Site and "site".

Proposal – The works/actions that are proposed on the property that is the subject of the development application.

Protected Fauna - refers to any native bird, mammal, reptile or frog in NSW.

Site - In this report this is the same as the Study Area and the Subject Site and the property.

Study Area - means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account. In this report, this is the same as the Subject Site, the property and "site".

Subject Site - means the area directly affected by the proposal. In this report, this is the same as the Study Area, the property and "site".

Threatened Species - refers to those species listed in the schedules of the Biodiversity Conservation Act 2016 as "Critically Endangered ", "Endangered" or "Vulnerable".

For definitions that are relevant to the Assessment of Significant test see the Appendices.

1.4 Assumptions and Limitations

- This document only assesses the impacts of the proposal described in this report and shown on Map 1.
- This report does not take into account the cumulative impact of other developments on this property or on adjacent land.
- It can never be proven that other Threatened Species have not, do not or will not use the site as habitat. The conclusions drawn in this report are a result of testing, observation, and experience.
- This report describes the habitat and species of the site at the time of the field survey. Vegetation, habitat, and legislation will change over time and therefore the findings of this report are only relevant for 6 months.
- This report should be read in its entirety and no part should be taken out of context.
- No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.
- This report does not include assessment of soil suitability or European/Aboriginal heritage.

1.5 Endangered Bandicoot Population at North Head

The main species of interest on this site is the Long-nosed Bandicoot, *Perameles nasuta*, (Geoffrey 1804) and in particular, the Endangered population at North Head, Manly, which is known to occur in the vicinity of the Subject Site.

The Final Determination (TSC Act Scientific Committee 1997) for the listing of this population in the schedules of the Threatened Species Conservation Act described the population as:

> *"P. nasuta was once widespread in the Sydney region but many formerly recorded populations have become extinct. The North Head population is now isolated and disjunct."*
>
> *"…the North Head population of P. nasuta is in immediate danger of extinction."*
>
> *"…the North Head P. nasuta population is of significant conservation value on the grounds that it is:*
>
> - *A disjunct population*
> - *One of the few surviving populations within the Sydney region*
> - *A population which has been the subject of a number of scientific studies and is thus an important reference population.*

Accorded considerable value by the local community, and thus serves to promote conservation more generally"

The Office of Environment and Heritage has identified 25 priority actions to help recover the Long-nosed Bandicoot population on North Head in New South Wales (as of July 2013). These priority actions relate to OEH, Northern Beaches Council and other determining authorities developing, implementing, and continuing the fox, feral cat and rabbit control program, weed control program, monitoring program, community awareness program, collecting mortality data, finalising and reviewing Long-nosed Bandicoot Recovery Plan, and Sydney Harbour National Park Fire Management Strategy and Plan of Management.

1.5.1 Long-nosed Bandicoot (Perameles nasuta) Biology

Description: The Long-nosed Bandicoot (Perameles nasuta) is a solitary nocturnal marsupial that grows to a size of between 850 and 1100 g, 310 to 425 mm in head and body length, and with a tail length of 120 to 155 mm (Stoddart 1995). The males are larger than females. These bandicoots are characteristically dark, greyish-brown above and creamy white below. The forefeet and upper surfaces of the hind feet are also creamy white (NPWS 2000b). The muzzle is long and pointed and the ears are markedly larger and more pointed than short-nosed bandicoots of the genus Isoodon, such as the other bandicoot that lives in Sydney, the Southern Brown Bandicoot (Stoddart 1995).

Distribution: Long-nosed Bandicoots are locally common along the east coast of Australia and adjacent mountains from north-eastern Queensland to south-western Victoria. This Endangered population is restricted to the relatively isolated area of habitat on North Head in the Manly Local Government Area, south of Addison Road (NSW Scientific Committee 2003). See above the DCP extract, Schedule 1 - Map D - Areas where Assessment (test) of Significance is required. There is another Threatened population in the inner western part of Sydney.

Habitat: At North Head, Long-nosed Bandicoots inhabit, to varying extents, all of the habitat types available including woodlands, scrub, heath open areas and the urban landscape. Recent research indicates that urban areas are important for the population and that there are individuals who live their entire lives within the urban area. Long-nosed Bandicoots prefer sites with sandy soils, as well as with low undergrowth and leaf litter cover and does not have a particular preference for proportion of canopy cover (Chambers & Dickman 2002). This species depends on a mosaic of vegetation types at a landscape level, including feeding grounds in patches of moist, soft soil located

close to shelter with an abundance of invertebrates (Scott et al. 1999). These types of habitat can be found in both bushland and urban environments including native vegetation and residential gardens. Resting and nesting habitat is low, dense vegetation or litter where a bandicoot can take shelter in during the day. Bandicoot diggings are more abundant in areas of moist, soft soils close to cover.

Individuals build diurnal nests that are typically made in a shallow hole or depression on ground surface and are lined with leaf litter and dry grasses. The entrance to each nest is closed when occupied making them generally difficult to locate. Nests on North Head have been found in a variety of habitat types, such as at the base of large trees and within tall grasses including residential backyards (Scott 1995; Scott et al. 1999). Long-nosed Bandicoots typically have more than 1 nest that is in regular use within their territory (Chambers & Dickman 2002). It is expected that bandicoots in the wild may live up to 2 to 2.5 years.

Home Range Size: Home range size of an individual Long-nosed Bandicoots have been recorded at 1.3ha (+-0.2 S.E. 50% KDE) for females (n=5) and 1.1ha (50% KDE) for a male. Animals tended to maintain exclusive and relatively stable core home ranges, although overlap of non-homes ranges was common (Hope 2012).

Diet: Long-nosed Bandicoots feed on invertebrates, plants, tubers, fungi and vertebrates (Menkhorst & Knight 2004, Scott et al. 1999, Claridge 1993). Invertebrates mostly include insects from the orders Coleoptera and Hymenoptera (> 80%). Plants preferred are mainly the leaves and stems of monocotyledons (>76%). Fungi are consumed in a high proportion (> 63%), mostly those hypogeal from the family Zygomicetes, in particular the species Glomus fueglanum. Vertebrates contribute little to bandicoots' diet, but include skinks, birds and sometimes eggs of the Eastern Water Dragon (Scott et al. 1999).

Breeding: At North Head, Long-nosed Bandicoots were recorded breeding from June to March (Scott 1995), however mating can occur throughout the year. The average recorded litter size for the North Head population is 2.3 babies (Stoddart 1995). In productive years, females may have up to 4 litters.

Litters are typically 2-3 (>76%), with the young weaned at about 7 weeks and reaching maturity at 20 weeks. Females tend to overlap their home ranges (i.e., 1.7 ha) throughout the year, as well as to reduce their size during the breeding season. By contrast, home ranges of males (i.e., 4.4 ha) only overlap during the breeding season, as they also enlarge their home ranges (Scott et al. 1999, Menkhorst & Knight 2004).

1.5.2 Population Viability

There have been many studies on this population over the last 20 years including micro-chipping, radio tracking, extensive trapping, diet analysis, population viability estimation (Banks, 2000; Banks, 2004; Chambers and Dickman, 2002; Hughes and Banks, 2006; Hughes and Banks, 2010; Lenehan and Banks, 2004; Scott, Hume, and Dickman, 1999). There is ongoing biannual monitoring program by the Office of Environment and Heritage (OEH; formerly DECCW, DECC and NPWS) in collaboration with Northern Beaches Council and Sydney University.

Every two years there is a more extensive Long-nosed Bandicoot trapping survey conducted in the bushland part of North Head. This survey does not include the urban environment part of North Head, which is now known to have bandicoot residence. These areas are likely to be the same population. Population viability estimates within the urban environment occurred in November 2012 and March 2013. This urban study utilised 14 transects across Eastern Hill and used the same methods as the current study by NPWS within the bushland habitat on North Head (Hughes and Banks, 2010).

In May 2015, a total of 152 individual Long-nosed Bandicoots were trapped at North Head, compared to 99 in 2014, and 71 in 2010. The sex ratio of the bushland population is relatively even. Under current conditions, the North Head Long-nosed Bandicoot population has a 62% chance of persisting after 50 years. This figure has dropped from 80% in since the previous Population Viability Assessment (PVA), due to the slightly higher sex specific adult mortality rates used in the current PVA's (Price & Banks, 2015). The latest PVA analysis determined that the population is stable and has been for the last few years. It has been calculated that only a small loss to the population could cause the local population to become extinct.

Most recently, in May 2020, 109 long-nosed bandicoot individuals were trapped across 49 transects over 4 nights at North head. This was similar to the number of individuals trapped in 2018 and 2016, suggesting the population has been relatively stable for the past few years. There was a slightly higher ratio of females compared to males. The ratio of adults to juveniles caried between sexes, but there were overall more adults than juveniles. Modelling of this data suggested an overall estimated headland population of 228 ($\pm$15).

Genomic analysis of the long-nosed bandicoot population at North head has revealed that genetic diversity indicators (allelic richness and observed heterozygosity) between 2008 and 2018 have remained relatively constant, with minor levels of inbreeding (Nelson et al. 2021).

1.5.3 Previous Years Survey Results for the Bushland Area of Habitat

See below text results from the Long-Nosed Bandicoot Urban Monitoring Program (Cumberland Ecology) 2016.

- *A total of 34 (14 males and 19 females, adults 72%) individual Long-nosed Bandicoots were trapped in the urban area of Manly, in May 2016, compared with 31 (19 males and 12 females, 75% adult) in March 2013.*
- *Four of the females captured had 1-2 young in their pouch.*
- *25% of the total population on North Head are living within the urban environment with 28 - 45 individuals in the urban environment compared with 120 - 140 individuals in the bushland environment (NPWS).*
- *There are individuals with their home range within the urban environment*

Individuals were trapped across Eastern Hill and down to Ashburner Street.

See below text results from the Long-Nosed Bandicoot Urban Monitoring Program 2018:

- *A total of 36 individual Long-nosed Bandicoot (86% Adults, 19 males and 17 females), these numbers are similar to 2016 and 2017 results. The number of recaptures has increased over recent years likely meaning the majority of the population has been surveyed.*
- *One of the females captured had 4 young in its pouch.*
- *Majority of the population abundance was captured closer to North Head, although the individuals were captured as far as Ashburner street at the furthest urban edge of the study area.*

The greatest distance on male travelled was 620m.

1.5.4 Threats to the North Head Population

The likely major threats to this population are vehicle traffic, loss of habitat through development and, to a lesser degree, predation by dogs, cats, and foxes. Other threats include inbreeding depression, loss of genetic variation, the risk of catastrophic events (such as bushfires or disease), inappropriate fire regimes, clearing of native vegetation and invasion of native plant communities by Bitou Bush. Bandicoots are also susceptible to infection by cats carrying the disease toxoplasmosis. If urban developments keep reducing the area of accessible habitat available it is likely to result in population decrease and the likelihood of the population becoming extinct in the near future (i.e., 20 years) range between 31% and 46%.

The removal of habitat or prevention of access to habitat on a site may constitute a significant impact to the conservation of the threatened population and may require modifications to the development so there is no significant impact or a more extensive assessment in the form of a Species Impact Statement or modification of the proposal.

1.6 The Existing Study Site

The Site is the whole of Lot 28 DP 8075, known as 32 Bower St Manly, which is irregular in shape and has an area of 1853m^2. The property slopes steeply to the north and the east. The approved development is demolishing, a two-story house, boat shed, driveway, retaining walls, sandstone boulders, terraced gardens, and native fig trees, as well as patches of weedy vegetation in the front and rear yards. The front yard (south) has undergone demolition and habitat clearing, with the unmaintained lawns and dense weedy vegetation sprawling between the driveway and house removed allowing for the terracing, carport, and garage to be demolished. The rear yard (north) is large and multi-levelled and contains paved areas, large sandstone boulders, steps, patches of lawn as well as gardens, a boat shed at the bottom (northern) end and retaining walls. This area is currently undisturbed by demolition works. See Map 1 for plans showing the approved development, habitat, and access.

There are areas of urban habitat surrounding the approved development (see cover photo), and extensive areas of bushland reserve on North Head, mostly Sydney Harbour National Park and Sydney Harbour Federation Trust land to the east of the property. Bower Streets runs along the southern border and a residential property borders the site to the west. The property backs onto Marine Parade and Shelly Beach to the north, and a council bushland/drainage reserve borders the full length of the eastern boundary. The approved development is located approximately 200m to the west of the 2.5m high stone wall that roughly forms the boundary between St Patricks Estate and Sydney Harbour National Park.

The geographic co-ordinates of the site are -33.801294º S and 151.297825 º E.

See Map 1 shows the approved development and the proposed modifications. The aerial photo on the cover of this report shows the site and the adjacent habitat.

1.7 The Proposed Development

This report addresses a DA for:

The modification to the approved DA 2019/0916 includes:

- *Amendments to internal rooms and spaces across all levels*
- *Minor extension of the driveway*
- *Minor changes to landscaping*

For further information on the location and extent of the development see Map 1.

The plans and documents used for this report are listed below in Section 1.7.1.

1.7.1 Plans and Documents Used

The following table outlines the plans and documents utilised.

Title	Author	Rev	DWG./Doc. No./Ref. No.	Date Modified or Accessed
Terrestrial Biodiversity Report	GIS Ecological Consultants			23/03/2023
Approved Plans (Council Stamped)	360 Degrees	A	Landscape Plan - Masterplan	22/02/2023

Modification Site Plans	Eaton Molina Architects	A	General Arrangement Site Plan, General Arrangement Levels 1 + 2 + 3 Plans	22/07/2024

2 Methods

The Site was inspected in 2014, 2015 and 2019 14th of June 2022 and in November 2022 and several times in January February and March 2023, an several times in 2024 by the qualified ecologist Nicholas Skelton for a total of 23 person hours. This locality has been visited on many previous occasions by the authors for various other ecological survey projects.

The principal ecologist, Nicholas Skelton, has 25 years of experience in Flora and Fauna surveys in the Sydney Metropolitan area and has completed over 250 bandicoot surveys and assessments in Manly.

Existing and potential foraging, resting, and nesting Long-nosed Bandicoot habitat was determined and quantified, and is shown on Map 1. Existing bandicoot access to, from and within the site was also identified and mapped.

The plans referenced within this report were assessed to determine the amount and type of habitat and the access that would be altered as a result of the proposal. Map 1 shows the change in the amount of habitat and access.

The habitat potential of the site for bandicoots was determined by this detailed onsite assessment of the access, shelter, and food sources. The use of the property by bandicoots was determined by Nicholas Skelton, principal ecologist with extensive experience in bandicoot survey in urban environments, by searching for diggings, scats, frequently used trails and boundaries were thoroughly searched for accessibility by bandicoots. The road reserve and accessible parts of nearby properties were searched for evidence of bandicoot activity and habitat value. Photographs were taken of the site. Habitat for other Threatened species was also searched for.

Changes to existing bandicoot access to, from and within the site is identified and mapped shown in Map 1.

3 Findings

3.1 Long-nosed Bandicoot Use of Adjacent Land

Evidence of bandicoots using the site was found during the field surveys. There is bandicoot foraging area on site and on adjacent land to the north south and east, the private land to the west was not accessed. It is likely that bandicoots use adjacent properties and nearby bushland areas for resting, breeding, and foraging due to the presence of good quality foraging and resting habitat in gardens, the road reserve, and other areas of public and Council land. Long-nosed Bandicoots from the endangered population at North Head have been regularly recorded in this locality by GIS Environmental Consultants, and other consultants and researchers.

The site is currently a building site for the approved DA (2019/0916) and the approved habitat has been removed.

Longnose Bandicoot habitat that existed prior to the approved works is described in my previous reports from 2014 and 2019.

Long-nosed Bandicoots from the endangered population at North Head have been regularly recorded in this locality by GIS Environmental Consultants, and other consultants and researchers.

3.2 Existing Bandicoot Habitat and Access

No resting or nesting bandicoots were observed on the property during the site survey.

The approved development contains bandicoot foraging habitat in the landscaped areas at the rear of the development.

There is very limited bandicoot access to the development, which is currently restricted by fencing around the entirety of the development.

Map 1 show the existing bandicoot habitat access into and within the development.

The following table outlines the existing bandicoot access and habitat to and from adjacent land.

Summary of Existing Bandicoot Access to, and from, Adjacent Land

Adjacent Land	Existing Bandicoot Access and Habitat
North – Marine Parade and Shelly Beach	No access due to the recently erected construction fence and sediment fence.
East – Council Reserve	No access due to the recently erected construction fence and sediment fence.
South – Bower Street	No access due to the recently erected construction fence and sediment fence.
West – Neighbouring property	No access due to the recently erected construction fence and sediment fence.

3.3 Proposed Bandicoot Habitat and Access

Map **1** shows the existing and proposed bandicoot habitat access to and from and within the site.

To avoid the development from impacting bandicoot access, it is recommended that all potential new gates have a 150mm gap under the full length.

3.3.1 Proposed Bandicoot Access to, and from, Adjacent Land

The following table outlines the proposed bandicoot access and habitat to and from adjacent land.

Adjacent Land	Bandicoot Access and Habitat
North – Marine Parade and Shelly Beach	Access is shown on the Maps. Good quality habitat. Access to be maintained to habitat in rear of property under gates.
East – Council Reserve	Access is shown on the Maps. Access to be maintained along fence line of property. Good quality habitat in the Reserve.
South – Bower Street	Access is shown on the Maps. Access to be maintained to habitat in front of property under gates.
West – Neighbouring property	Access is shown on the Map. Likely habitat in neighbouring property. Access to be maintained in northern section of western boundary.

3.3.2 During Construction Impacts to Bandicoots

Likely impacts during construction are as follows:

- Temporary loss of habitat on the front courtyard and rear pool deck area for storage of building materials and waste during construction, **Medium risk** and,
- Temporary additional traffic movement around the street. **Low risk.**

Measures to ameliorate these potential impacts are discussed in the Recommendations and Ameliorative Conditions sections of this report.

3.4 Ongoing Post-construction Impacts to Bandicoots

3.4.1 Artificial Lighting

Artificial lights may deter bandicoots from using areas of habitat. Multiple lights, bright lights or motion sensing lights are likely to be detrimental to bandicoots. Lighting impact can be ameliorated by reduced lighting, careful design of light shades to reduce light spill, use of multiple low-level LEDs rather than overhead lighting, use of warmer red end spectrum lighting use of light-coloured surfaces and flooring.

3.4.2 Noise

Noise is likely to deter bandicoots. There is currently very little information regarding the amount or type of noise that has impact. Potential noise sources are alarms, people, and music.

3.4.3 Predation

Cats are considered to have contributed to the extinction of 25 of the 30 native Australian mammal species. They have had devastating impacts on reptiles, amphibians, invertebrates, and birds have been summarised in a recent series of studies. (Johnston, M. and Algar, D (2020). Glovebox Guide for Managing Feral Cats. PestSmart Toolkit publication. The Centre for Invasive Species Solutions, Canberra, ACT) There is also a growing understanding of impacts associated with disease transmission, particularly toxoplasmosis as well as competition for food resources. Cats shed toxoplasma oocysts in their faeces, which are inadvertently consumed by terrestrial and marine wildlife species that may subsequently develop toxoplasmosis leading to physiological and behavioural changes. (Johnston, M. and Algar, D (2020). Glovebox Guide for Managing Feral Cats. PestSmart Toolkit publication. The Centre for Invasive Species Solutions, Canberra, ACT)

Approximately 40% of cats, including domestic cats, carry the parasitic disease toxoplasmosis that is harmful to native animals and has been proposed to be a reason for the decline and extinction of many native marsupial species in Australia. Cats infect native animals by scratches and faecal transfer and the disease is chronic or fatal. Cats that are allowed outside are a threat to survival of the native fauna and in particular bandicoots. (Ecology of Cat-borne Parasitoses in Australia, Patrick Leo Taggart, 2019, Phd Thesis, School of Animal and Veterinary Sciences Faculty of Sciences The University of Adelaide)

3.5 Habitat and Presence of Other Flora and Fauna Species

3.5.1 Non-Threatened Fauna

The site contains habitat for a wide range of non-threatened fauna including reptiles, birds and mammals. The fauna that have been recorded on the site are:

Brush Turkey
Brush Tailed Possum
Green Tree Snake
Diamond Python

There was also evidence of Ring-tailed (Pseudocheirus peregrinus) or Brush-tailed possums (Trichosurus vulpecula), and Brush-turkeys (Alectura lathami) using habitat near the site. The site provides habitat for these and a range of other native species including Rainbow Lorikeets (Trichoglossus moluccanus), Laughing Kookaburras (Dacelo novaeguineae), Crested Pigeon (Ocyphaps lophotes) and Noisy Miners (Manorina melanocephala).

3.5.2 Other Threatened Fauna

Threatened Grey-headed Flying-foxes regularly feed from the fig trees on the site. There is extensive Grey-headed Flying-fox foraging habitat in the locality. Threatened Micro-bats and owls are likely to regularly fly over this property supported by OEH BioNet records of these species in the region. There is no evidence of any flying-foxes or microbats roosting at the site.

The local population of Eastern Pygmy Possum and Brown Antechinus became extinct approximately 10 years ago, and the local population of native Bush Rat population became non-viable or locally extinct. The Sydney Harbour Federation Trust, in collaboration with Sydney University, then reintroduced the Eastern Pygmy Possum, Brown Antechinus and the native Bush Rat to North Head. These species are now strongly established regionally, with the Bush Rat population being the most successful so far as they are out competing with the introduced Black Rat, covering most of North Head.

The native Bush Rat can be found in the urban area; however, it is unlikely that the Antechinus or the Pygmy Possum yet occur in the urban area.

The native Bush Rat, Antechinus and Eastern Pygmy-possum have been recorded along Darley Road, adjacent to the north of St Patricks. However, it is incredibly unlikely that they would access the site.

3.5.3 Threatened Plants

There are local populations of the endangered Magenta Lillypilly, *Syzygium paniculatum* and Sunshine Wattle (*Acacia terminalis* subsp. *terminalis*) on North Head and wild population of the Magenta Lillypilly has been recorded nearby Bower Street Gully Reserve and at St Patrick's estate, however, it does not occur on this site.

No evidence was found of any other Threatened Species, Population or Endangered Ecological Community on this property at the time of the previous survey. None of the other six (6) endangered and twenty-eight (28) vulnerable fauna species that occur in the Manly area were found on the site or have important habitat on the site.

3.5.4 Non-Threatened Flora Species

There are not sufficient native species on the site, or the correct structure for the vegetation to represent any native vegetation community. No Endangered Ecological Community occurs on the site.

3.6 Ecological Communities

The NSW Threatened Species Conservation Act (TSC), 1995 and the Federal Environment Protection and Biodiversity Conservation (EPBC) Act 1999, both list Threatened Ecological Communities. Threatened ecological communities can be either Vulnerable (VEC) or Endangered (EEC) or Critically Endangered (CEEC) Ecological Communities under the TSC Act. The Federal Act lists only Endangered or Critically Endangered Ecological Communities. These communities are likely to become extinct in nature unless the circumstances and factors threatening their survival cease to operate. The listing is most commonly referred to as a determination, which is a several page definition of the community written by a scientific committee and listed in the schedules of the Act.

During the site survey, the likelihood of Endangered Ecological Communities occurring on the site was determined using a three-step approach:

1. Has the community been recorded in the locality?
2. Is there a sufficient density of characteristic species on the site?
3. Does the environmental description in the determination fit the site?

The most common Endangered Ecological Community in this region is the **Littoral Rainforest Endangered Ecological Community**, and is discussed in Section 3.6.1.

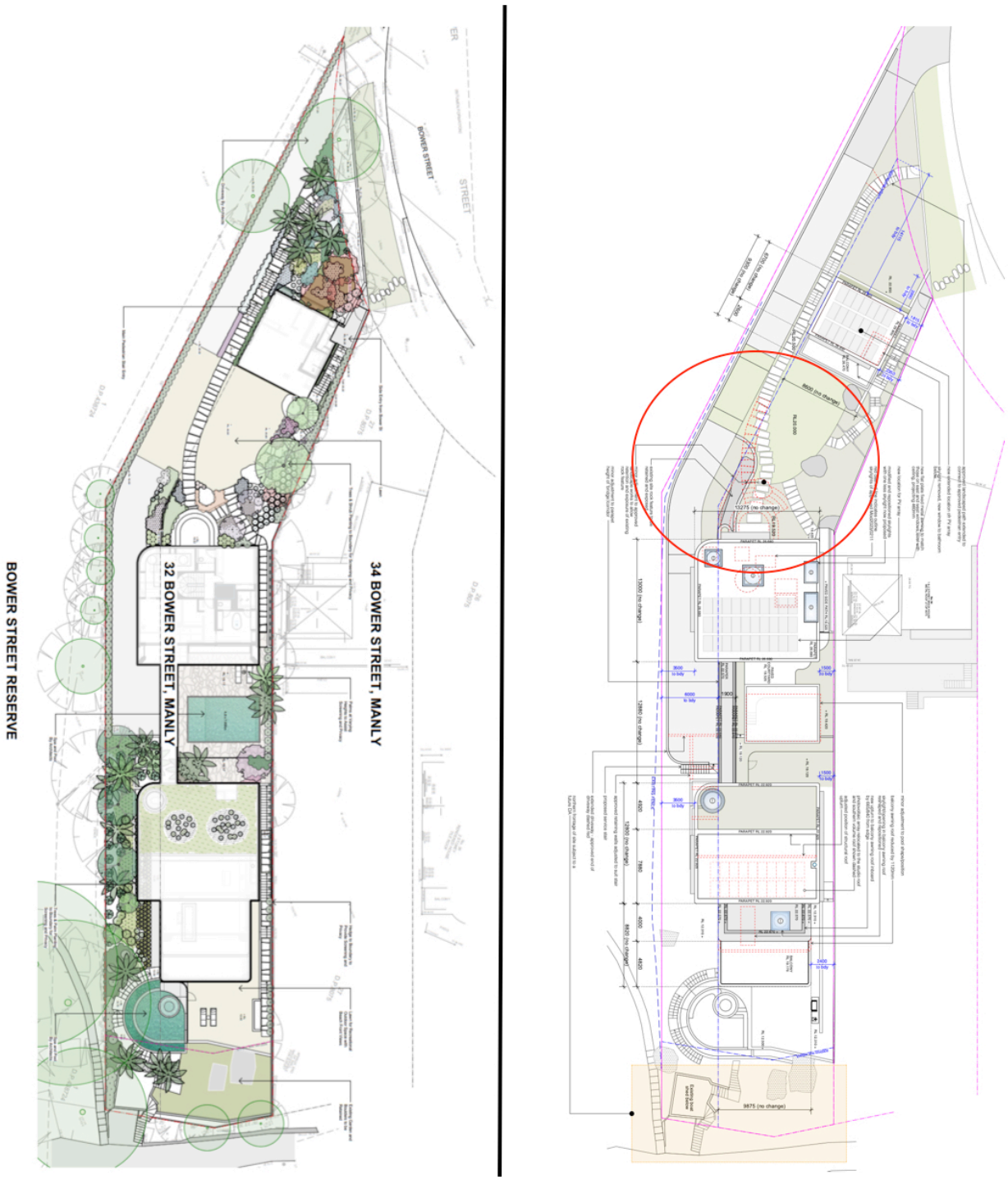
There are insufficient species on the site or the correct structure for the vegetation on the site to represent any native vegetation community, hence, no Endangered Ecological Community occurs on the site.

3.6.1 Littoral Rainforest Endangered Ecological Community

Littoral Rainforest in the NSW North Coast, Sydney Basin and Southeast Corner Bioregions endangered Ecological Community (EEC) is generally a closed forest. It's structure and composition of is strongly influenced by proximity to the ocean. The plant species in this ecological community contain some rainforest species with evergreen mesic or coriaceous leaves. The site does not contain enough species to be considered Littoral Rainforest however the land adjacent to the east does meet the definition of Littoral Rainforest even though it was planted in the 1980s by a community group.

There are not enough native species on the site or the correct structure for the vegetation on the site to represent any native vegetation community. No Endangered Ecological Community occurs on the site.

Map 1. Bandicoot Habitat and Access Approved and Proposed



Map to be viewed in colour

32 Bower Street, Manly

29th July 2024

GIS Environmental Consultants

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4 Impact Assessment

This Test of Significance is in accordance with the Threatened Species Assessment Guidelines recommended for use by Manly Development Control Plan 2013 (MDCP 2013) in section 2.1.15.2 (a).

4.1 Test of Significance (5-part test) for the Long-nosed Bandicoot Population

Part 7.3 of the BC Act, Test of Significance (5-part test) for impact of the proposed development on the Long-nosed Bandicoot Population at North Head

(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,

Response:

The Long-nosed Bandicoot population on North Head is listed in Schedule 1, Part 2, Division 4 of the BC Act 2016 as an Endangered Species Population.

The local population is viable at least in the short term. In May 2015, a total of 152 individual Long-nosed Bandicoots were trapped at North Head, compared to 99 in 2014, and 71 in 2010. The sex ratio of the bushland population is relatively even. Under current conditions, the North Head Long-nosed Bandicoot population has a 62% chance of persisting after 50 years. This figure has dropped from 80% in since the previous Population Viability Assessment (PVA), due to the slightly higher sex specific adult mortality rates used in the current PVA's (Price & Banks, 2015). The latest PVA analysis determined that the population is stable and has been for the last few years.

The site currently contains 177m^2 of accessible bandicoot habitat. The proposal will not result in any change to the foraging habitat area within the property. Access into and across the property will also remain the same. There will also be no temporary change to foraging habitat during construction.

This population is restricted to North Head, which has an area of 385 ha, of which there will be an increase due to the proposed development. The proposal is not likely to have a significant negative effect on the life cycle of this population such that the viability of the population is compromised and placed at risk of extinction.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

> *(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
>
> *(ii) is likely to modify the composition of the ecological community substantially and adversely such that its local occurrence is likely to be placed at risk of extinction,*

Response:

This question is not applicable as the Long-nosed Bandicoot Population at North Head is listed as a threatened population and not an Endangered or Critically Endangered Ecological Community.

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

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

Response:

The site currently contains 177m^2 of accessible bandicoot habitat. The modification will not result in an overall change in foraging habitat area or access across and within the property.

This population is restricted to North Head, an area of 385 ha. The proposal is not likely to have a significant negative effect on the life cycle of this population such that the viability of the population is compromised and placed at risk of extinction.

The change in the extent of bandicoot habitat is of a scale that is not likely to lead to the reduction in the population size or reproduction success of individuals, the population, or their habitat. If the recommendations of this report are followed, the proposed development will not change the access to this habitat.

> *ii) whether an area of habitat is likely to become **fragmented or isolated** from other areas of habitat as a result of the action proposed, and*

Response:

Maps 1 summarises the existing and proposed bandicoot habitat and access routes, including to, from and within the site. This map shows that the habitat onsite will not become fragmented or isolated as a result of the actions proposed.

> *iii) the **importance** of the habitat to be removed, modified, fragmented or isolated to the **long-term survival** of the species, population or ecological community in the locality*

Response:

This population is restricted to 385ha North Head area. The change in bandicoot habitat is of a scale that is not likely to lead to the significant reduction in the population size or reproduction success of individuals, the population, or their habitat. The proposal is not likely to have serious negative impacts on the life cycle of this population such that the viability of the population is compromised and placed at risk of extinction.

(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),

Response:

There is no area of outstanding biodiversity on the site. The proposal will not directly or indirectly affect any area of outstanding biodiversity value.

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

Response:

Threatening processes listed for the Long-nosed Bandicoot population at North Head are habitat loss and fragmentation as a result of urban development and increased rate of road mortalities. The proposed development generally meets the definition of the key threatening process “loss of habitat through urbanisation”, however, due to the small size of this property and the dense urbanization of the general area, it is not likely to result in the worsening of the impact of a key threatening process. The impact can be reduced by the recommendations of this report, in particular, appropriate landscaping, and gaps in fencing is strongly encouraged.

Further ‘key threatening processes’ listed for the Long-nosed Bandicoot population include predation by domestic cats, dogs and introduced foxes, in-breeding depression, disease (toxoplasmosis) spread by cats, high fire frequency, clearing of native vegetation and invasion of native plant communities by Bitou Bush. The proposal is unlikely to change the use of the bandicoot accessible areas by dogs and cats. These other threatening processes are not relevant to this site or to this proposal.

4.1.1 Conclusion to the 5-Part Test of Significance on the Endangered populations of Long-nosed Bandicoots

It is unlikely that the proposal will have a significant impact on the Endangered Long-nosed Bandicoot population at North Head. Entry into the Biodiversity Offset Scheme (BOS) and further assessment in the form of a Biodiversity Development Assessment Report (BDAR) is not considered necessary for this population.

4.2 Manly LEP 2013 Assessment of Clause 6.5 (3) & (4), Terrestrial Biodiversity

Manly LEP 2013 'Terrestrial Biodiversity Map' shows the subject property is located within an area identified as of 'Terrestrial Biodiversity'.

Therefore Clause 6.5 of MLEP 2013 applies to this Development Application and the objectives of the clause and in particular points (3) and (4) must be considered in regard to this proposal.

4.2.1 Clause 6.5 (3) Assessment

a) Whether the development is likely to have:

> *i. Any adverse impact on the condition, ecological value and significance of the fauna and flora on the land?*

Response: It is likely that bandicoots use the adjacent properties and nearby bushland areas for foraging, resting and breeding. Long-nosed Bandicoots have been recorded regularly in the locality.

Other fauna that are likely to use the site include possums, Rainbow Lorikeets, Noisy Miners, Sulphur Crested Cockatoos, Garden Skinks, Eastern Water Dragons, Brush turkeys, Crested Pigeon, Grey-headed Flying-fox, Eastern Water Dragons and Diamond Pythons.

No evidence was found of any other Threatened Species, Populations or Endangered Ecological Communities utilising this property.

Based on the information gathered and the assessments of potential impacts of the proposal on flora and fauna in section 3 of this report, it is considered that the proposal will not have any adverse impact on the condition, ecological value and significance of the fauna and flora on the land.

> *ii. Any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna?*

Response: The vegetation on the site is medium quality habitat for a wide range of fauna including reptiles, birds and mammals. Brush-tailed and Ring-tailed Possums are likely to occur. There is no native vegetation community on the property. The proposal will result in no change to habitat.

Based on the findings and assessment of the impact of this proposal on flora and fauna in this report, fauna habitat is not likely to be adversely impacted by the proposal and the habitat is not likely to be important habitat for these species due to the higher quality bushland habitat to the east in Sydney Harbour National Park. The proposed development will not have any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna.

> *iii. Any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land?*

Response: Based on the findings and assessment of the impact of this proposal on flora and fauna in Sections 3 and 4 of this report, the proposed development will not significantly fragment, disturb or diminish the current biodiversity structure, function and composition of the subject site. See Section 4 for details.

> *iv. Any adverse impact on the habitat elements providing connectivity on the land?*

Response: The site is in a residential area surrounded by private properties with a dis-contiguous canopy of trees. Access to the habitat will not change for birds or arboreal mammals such as possums that are using the site.

Based on the findings and assessment of the impact of this proposal on flora and fauna in this report, this proposal will not adversely impact on the habitat elements providing connectivity to other areas of suitable habitat.

b) Are there appropriate measures proposed to avoid, minimise or mitigate the impacts of the development?

Response: This report makes recommendations for appropriate measures to avoid, minimise or mitigate the impacts of the development. See the Ameliorative Conditions and Management Recommendations sections of this report for further information.

4.3 Avoiding and Minimising Impacts

Discussions were held with the architect, landscape designer and arborist, and the owner to consider how the design can be changed to avoid and minimise ecological impacts. The following sections outline the changes that were made.

4.3.1 Existing access to be maintained

- When the tree on the northern boundary is removed, it is likely the fence will be removed and re-instated. The existing bandicoot access on the northern side is to be maintained or improved. See Map 1.

4.3.2 Gates

- All new gates are to have a 100mm-150mm gap at the base for the full length of the gate. This will provide bandicoot access between the road reserve and the site's front garden. The height of the gap has been reduced in size from 150 to 100 mm to ensure the owners' small dog cannot fit through the gap. See Map 1.
- There will be gaps underneath the new internal gates including the south western corner of the house. See Map 1

4.3.3 Planting

Recommendations for substitution of plants in the landscape plan have been incorporated into the landscape plan.

4.3.4 Clause 6.5 (4) Assessment

a) *Is the development designed, sited and will be managed to avoid any significant adverse environmental impact? OR*

Response: The development has been designed to utilise the site topography and surrounding landscape. The proposal will retain existing access for bandicoots. The current and proposed access to the site is shown on Map 1. The recommendations and ameliorative conditions in this report provide measures to manage and mitigate impacts.

b) *If the impact cannot be reasonably avoided by adopting feasible alternatives—is the development designed, sited and will be managed to minimise that impact? OR*

Response: The development has been designed to utilise the site topography and surrounding landscape. The proposal will retain existing access for bandicoots. The recommendations and ameliorative conditions in this report provide measures to manage and mitigate impacts.

a) *If that impact cannot be minimised—will the development be managed to mitigate that impact?*

Response: Not applicable

Conclusion to the Assessment of Clause 6.5 of the MLEP

The proposal is consistent with the requirements of Clause 6.5 of the MLEP 2013 and is not considered to have a significant adverse impact on Terrestrial Biodiversity.

4.4 Biodiversity and Conservation SEPP 2021

This SEPP groups together 11 previous SEPPs and REPs.

4.4.1 SREP Sydney Harbour Catchment 2005 Assessment

The site is included within the Sydney Harbour Catchment Map. this proposal is consistent with the matters to consider in respect to the biodiversity, ecology and environment protection of the site.

4.4.2 SEPP Coastal Management 2018 Assessment

The site is mapped as Coastal Environment Area in the Coastal Management SEPP 2018.

The site is not mapped as containing Littoral Rainforest, Coastal Wetland, Proximity to Littoral Rainforest or Proximity to Coastal Wetland.

(a) The proposed development should have a neutral or beneficial effect on the quality of water entering the waterways

(b) The proposed 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)

(c) The proposed development should promote ecological connectivity between neighbouring areas of aquatic vegetation (such as seagrass, saltmarsh and algal and mangrove communities)

(d) The proposed 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

(e) The proposed development should protect and reinstate natural intertidal foreshore areas, natural landforms, and native vegetation

(f) The proposed development should retain, rehabilitate, and restore riparian land

(g) The proposed 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

(h) The cumulative environmental impact of development

(i) Whether sediments in the waterway adjacent to the development are contaminated, and what means will minimise their disturbance.

(a) to protect the natural and cultural values of waters in this zone,

(b) to prevent damage or the possibility of longer term detrimental impacts to the natural and cultural values of waters in this zone and adjoining foreshores,

(c) to give preference to enhancing and rehabilitating the natural and cultural values of waters in this zone and adjoining foreshores,

to provide for the long-term management of the natural and cultural values of waters in this zone and adjoining foreshores.

4.5 EPBC Act 1999 Assessment

Flora, fauna, and ecological communities within Manly, which are listed under the EPBC Act are:

- *Eastern Suburbs Banksia Scrub is listed as Endangered.*
- *Grey-headed Flying-fox (Pteropus poliocephalus) is listed as Vulnerable.*
- *Littoral Rainforest and Coastal Vine Thickets of Eastern Australia is listed as Critically Endangered.*
- *Sunshine Wattle (Acacia terminalis subsp. terminalis) is listed as Endangered.*
- *Seaforth Mintbush (Prostanthera marifolia) is listed as Critically Endangered.*
- *Pimelea curviflora var. curviflora is listed as Vulnerable.*

North Head is listed as a National Heritage Place. About 277ha, at Manly, comprising the whole of the headland, to Low Water, south of a line commencing at Low Water north of Collins Beach on the alignment of the north-west boundary of Lot 2763 DP752038, then easterly via that alignment and boundary and then following the north-westerly boundaries of Lot 2774 DP752038 Lot 2728 DP752038, Lot 2764 DP752038 and Lot 2763 DP752038 to the most northerly point of Lot 2763 DP752038, then generally easterly via the north-east and northern boundaries of Lot 2763 DP752038 and the alignment of the latter segment to Low Water. Excluded is the North Head Sewage Treatment Plant being the whole of Lot 1 DP604428.

The only matters of relevance to this proposal are migratory species, threatened species and communities and national heritage places. North Head was placed on the National Heritage List on12 May 2006; however, the listing does not include this part of North Head. This Endangered Bandicoot Population is not listed in this Act. The relevant matters of National Environmental Significance have been considered. This proposal is not considered likely to have an impact on any matter of National Environmental Significance and referral is not required.

5 Conclusions

- The site surveys found evidence of the Long-nosed Bandicoot species using the site. It is likely that bandicoots use this site and adjacent properties and nearby bushland areas for foraging and probably resting and breeding. Long-nosed Bandicoot have been recorded regularly in the locality.
- No evidence was found of any other Threatened Species, Populations or Endangered Ecological Communities utilising this property. The proposed development will result in no overall change in Bandicoot foraging habitat area.
- The site currently contains bandicoot foraging habitat in the landscaped area at the rear (lower end) of the site. It is not likely that the new proposal will remove any more habitat than the existing approved plans. There will also be no additional temporary change to foraging habitat during construction.
- Assessment of potential impacts to Threatened entities in accordance with Section 7.3 of the NSW Biodiversity Conservation Act (i.e. the threatened species “test of significance”) was carried out and the development was found unlikely to have a significant impact of this proposal in the form of a Biodiversity Development Assessment Report (BDAR) is not recommended in relation to this development application at this site.
- The ecological impact is not considered an unacceptable impact under section 4.15 (79C(b)) of the Environmental Planning and Assessment Act 1979 or a significant impact under Section 7.3 of the Biodiversity Conservation Act 2016.
- The proposal will not have a significant impact to terrestrial biodiversity and meets the requirements of: Manly LEP Clause 6.5 (Terrestrial Biodiversity) - Manly DCP Clause 5.3.2.1

(Threatened Species and Critical Habitat Lands) - Manly DCP Clause Manly DCP Clause 3.3.1.iv) (Landscaping in Bandicoot Habitat).

- The submitted Landscape Plan includes appropriate landscaping and maintains access for bandicoots. The proposal is considered to comply with the DCP controls.
- It is recommended that the ameliorative conditions and management recommendations in this report be followed to limit disturbance during construction and to further reduce the impact of the proposal on potential bandicoot habitat and access.

6 Ameliorative Conditions (Minimising Impacts)

- It is recommended that any new **replacement gates** have gaps of at least 100mm under the full length of the gate to allow bandicoot access to remain.
- Workers at the site should be **made aware** of the likely presence of endangered bandicoots and other wildlife and the appropriate measures that should be carried out if the encounter bandicoots. To the untrained eye, an Endangered Long-nosed Bandicoot may be mistaken for a rat. To avoid direct physical harm to Long-nosed Bandicoots, it is important that workers on the site are aware of their presence, their conservation significance, and the steps to take to protect them.
- Areas of Bandicoot habitat on the site should be **cleared of sheltering bandicoots** before the use of harmful machinery to reduce the chance of bandicoots being harmed.
- If any Bandicoot is **found on the site during works**, works must be stopped until the Bandicoot has safely exited the site.
- Any injured or dead Bandicoots within the site should be reported to National Wildlife Services or Northern Beaches Council.
- New or replaced boundary fences (with the exception of swimming pool fencing) where the finished soil level on either side is within 300mm are to be made passable to native fauna through the provision of access gaps are to have 150mm-300mm gaps every two metres along the fence at ground level (see Photo Page 1 for examples).
- Access is to be provided to and from the property to the north-east and north-west through gaps in the wall/fence in the north-eastern and north-western corners of the site, inside the pool area.
- There is to be no access for bandicoots to the pool areas.
- If construction is to occur in the Scrub Turkey breeding season then a licence will need to be obtained from NPWS.
- Weeds are to be removed before, during and at the completion of works to prevent weed spread through this site and to adjacent land. There is LEP and Biosecurity Act requirements to control and prevent the spread of weeds.
- **Protection of natural features** such as rock outcrops, native vegetation that are not approved to be removed are to be actively protected during construction.
- All native fauna are protected, if any **native animals are harmed or killed** during construction, contact the author of this report for advice.
- If the **plans change** from what is described in this report and is shown on Map 1 then the impacts will change, and this report may need reviewing.
- **Noise and vibration** discourage bandicoot occupation of this and adjacent sites. Normal construction hours are to be adhered to, with no machinery to be used outside the hours of 7:30am and 4:30pm.
- **Bright lighting** discourages bandicoot occupation. No bright lighting or motion detector lights are to be installed to illuminate the lawn or garden areas. A modest amount of low lighting is acceptable for safety purposes only.

7 Management Recommendations

- The Companion Animals Act 1998 requires that dog and cat owners ensure that their cat or dog does not threaten or harm a person or animals.
- Domestic cats and dogs should be kept indoors from dusk to dawn. Cats should only be allowed outside if in a sealed cat run. Example solutions can be seen at these internet addresses:

  http://www.catnip.com.au/design_ideas.html

  http://www.catnets.com.au/

  http://www.catcagesaustralia.com.au/gallery/index.html

  http://www.cat-world.com.au/cat-worldenclosures.htm

  http://www.catmax.com.au/photo-gallery.php
- Dog owners must take all reasonable precautions to prevent your dog from escaping from the property on which it is being kept. If you fail to comply with this requirement, you may be liable for a penalty of $880.
- **Cats should be kept indoors at night,** as there are benefits to both the cat and the community. Yowling and fighting is more of a problem at night. The noise is likely to be intrusive and may keep your neighbours awake. Keeping your cat indoors at night is recommended in the interests of both your cat's safety and community harmony. Many kinds of native wildlife are more active or more vulnerable to hunting at night. There is also evidence that cats hunt more during the night. By keeping your cat indoors, you can help reduce the number of native birds and animals that are killed in your area. Kittens can quickly become accustomed to staying indoors at night. Consider also containing your cat in a cat enclosure on your premises both during the day and during the night. Council Rangers can issue nuisance orders to cat owners.
- Injured bandicoots and other native animals should be given expert care in order that they can be rehabilitated and returned to the population where possible. It is also important that any deceased bandicoots are reported, so that appropriate investigations can be undertaken to understand the cause of death to inform the future management and recovery of the endangered Long-nosed bandicoot population. Any **injured or dead Long-nosed Bandicoots** should be reported by phoning Council on 9976 1500 or Office of the Environment and Heritage (OEH) on 131 555
- Modest, low external lighting in the garden should be used at the minimum level required for safety.
- Landscaping watering and additional cover in the form of planting low, dense vegetation will increase the value of the foraging habitat and facilitate bandicoot persistence in the urban mosaic.
- Bandicoots and other native animals should **not be fed artificial foods** as it may cause them nutritional problems and may increase predation.
- Feral animals including cats and/or foxes should never be fed, nor should food be left out where they can access it, such as rubbish bins without lids, or in pet food bowls, as these animals present a significant threat to Long-nosed Bandicoots and other wildlife.
- Rat baiting is to only occur within buildings. No Rat baiting should occur under or around houses.
- The use of insecticides, fertilisers, or snail baits should be avoided on the property. Garden insects will be kept in low numbers if Long-nosed Bandicoots are present.
- When the final North Head Long-nosed Bandicoot Recovery Plan is released it should be implemented where relevant.
- Care should be taken when driving in the area, especially at night as bandicoots have little road sense and cars are a major threat to bandicoots.
- Dead bandicoots should be reported by phoning Council on 9976 1500 as they will assist in monitoring the program.

- Please report all sightings of feral rabbits, feral or stray cats and/or foxes to Council on 9976 1500 or NPWS (OEH) on 9997 6102.

Photo Page 1. Examples of Gaps at the base of Walls and Fences

Example of gap under boundary fence for bandicoot access

Example of gap under boundary fence for bandicoot access

Example of gap under boundary fence for bandicoot access

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