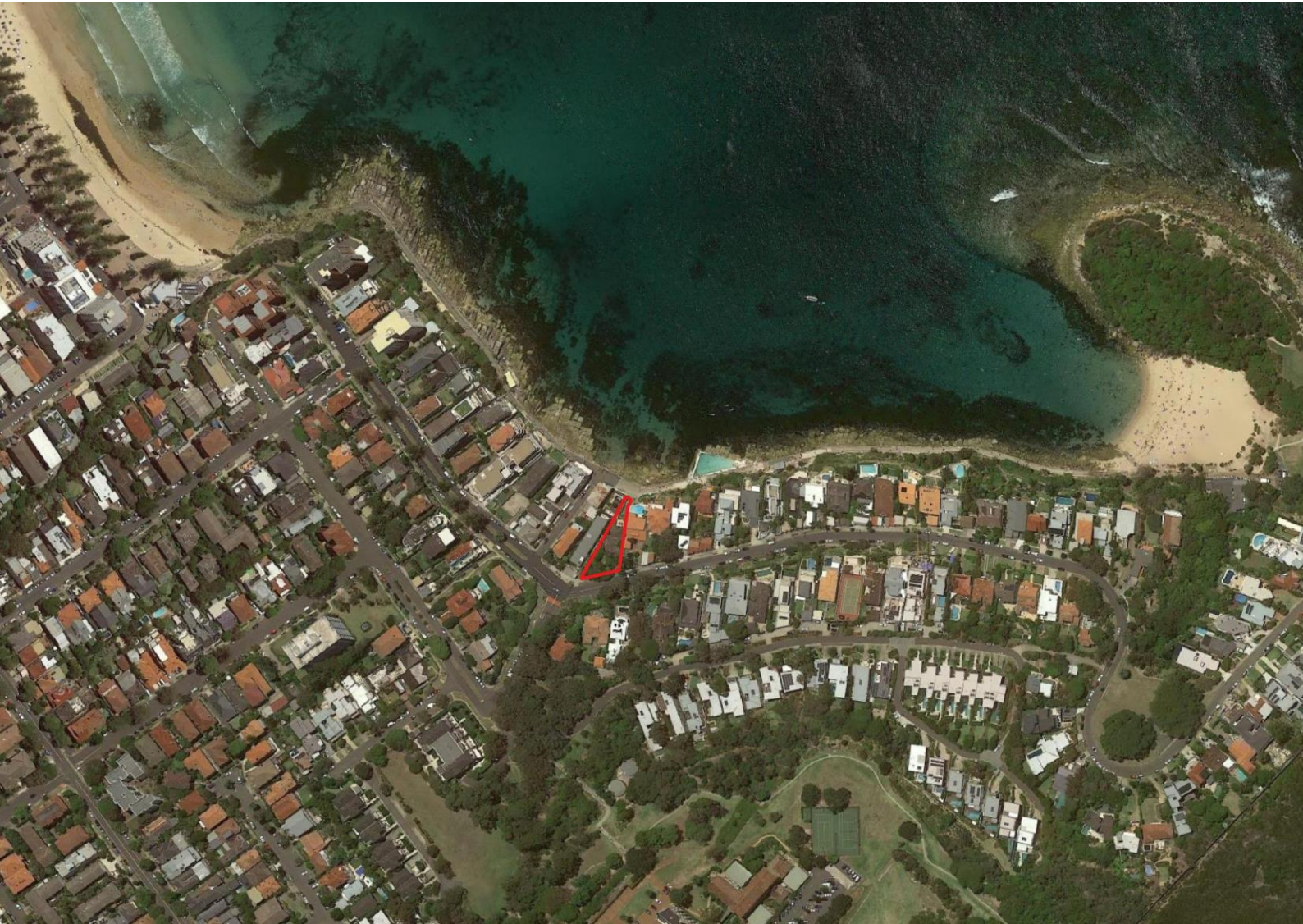


88 Bower St, Manly

Terrestrial Biodiversity Report
&
'5-part Test' for the Long-nosed Bandicoot



28 June 2021

SIA ECOLOGICAL & ENVIRONMENTAL PLANNING PTY LTD
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SIA Ecological & Environmental Planning Pty Ltd

88 Bower St, Manly:
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Report prepared by: Martin James

A handwritten signature in blue ink, appearing to read 'M. James', is written over a horizontal line.

Signed:

Date: 28th June 2021

Table of Contents

1	Introduction.....	1
1.1	Purpose of this Report.....	1
1.2	Site Location	1
1.3	Structure of this Report	2
2	Existing Terrestrial Biodiversity	1
2.1	Flora	1
2.2	Fauna	1
3	Impact Assessment.....	2
3.1	Terrestrial Biodiversity Clauses of Manly LEP 2013	2
3.2	‘5-part Test’ for the Long-nosed Bandicoot.....	3
4	Conclusion and Recommendations	6

List of Figures

Figure 1.1:	Aerial image of project area	1
Figure 1.2:	Aerial image of project site	2
Figure 4.1:	Design of retaining wall to enable Bandicoot access	10

List of Appendices

Appendix A	–	Plan Drawing of Proposed Development
Appendix B	–	Photographs
Appendix C	–	Species Lists

1 INTRODUCTION

1.1 Purpose of this Report

This report has been prepared as part of a Development Application (DA) to the Northern Beaches Council. The development proposal involves demolishing the existing residential dwellings at 88 Bower St, Manly and constructing a new residential dwelling there. Plan drawings of the proposal are provided in Appendix A.

This report satisfies Clause 5.4.2 of the Manly Development Control Plan 2013 (Manly DCP 2013) by providing an assessment of significance ('5-part test' under Section 7.3 of the *Biodiversity Conservation Act 2016* (BC Act)) for impacts on the threatened Long-nosed Bandicoot.

This report also satisfies Clause 6.5 Terrestrial Biodiversity of the Manly Local Environmental Plan 2013 (Manly LEP 2013) by addressing the matters specified in sub-clauses 6.5(3) and 6.5(4) of the LEP.

1.2 Site Location

The location of the project site is shown in Figures 1-1 and 1-2 below. Photographs of the site are provided in Appendix B.

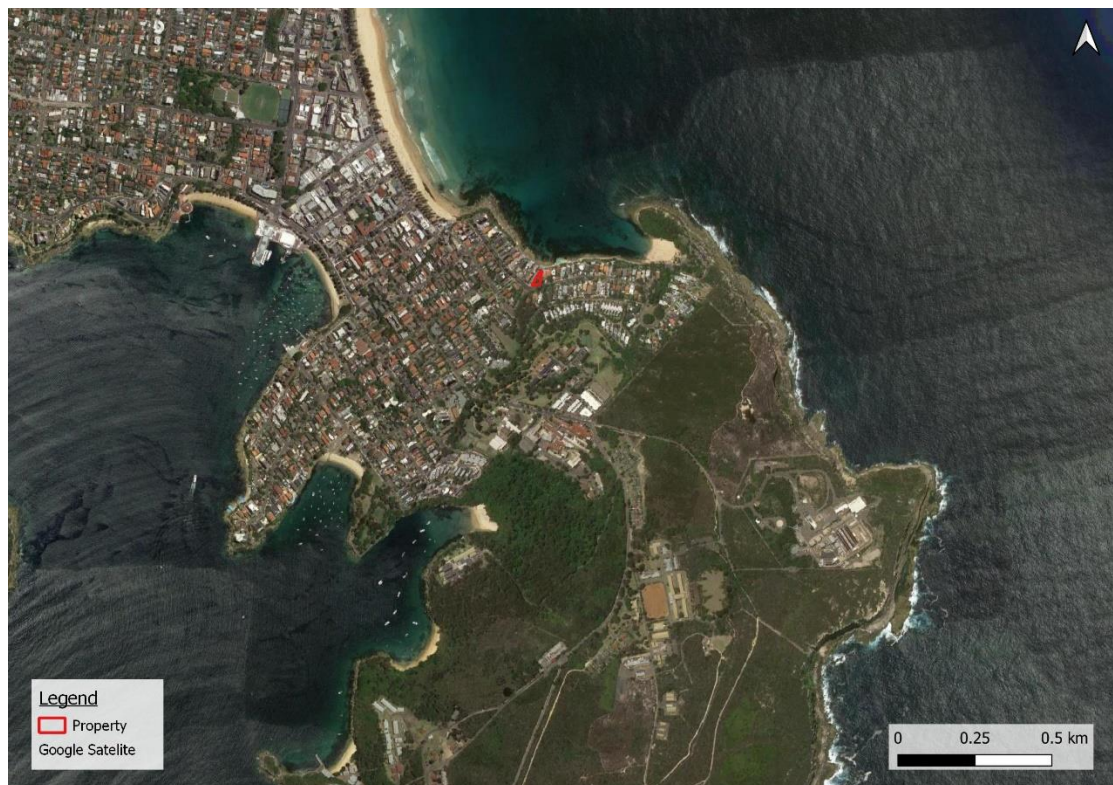


Figure 1-1: Aerial image showing location of subject property.



Figure 1-2: Aerial image of subject property.

1.3 Structure of this Report

This report is structured as follows:

Section 1 is this introduction.

Section 2 describes the existing terrestrial biodiversity on the subject property.

Section 3 assesses the impacts of the proposal on terrestrial biodiversity. Section 3.1 considers in turn each of the eight (8) sub-clauses 6.5 (3) and (4) of the Manly LEP. Section 3.2 provides an assessment of significance (5-part test) for impacts on the Long-nosed Bandicoot.

Section 4 provides a conclusion and recommendations.

A plan drawing of the development proposal is provided in Appendix A.

Photographs are provided in Appendix B.

2 EXISTING TERRESTRIAL BIODIVERSITY

2.1 Flora

Vegetation on the property is typical of residential properties in the Sydney metropolitan area. It comprises a small area of lawn at the front and rear of the property surrounded by rockeries with a mixture of planted native and introduced ornamental trees, shrubs and groundcover vegetation. At the front of the property the garden surrounding the lawn is complex, comprising numerous stepped beds dissected by sloping pedestrian pathways, a gazebo and a suspended concrete driveway overhanging part of the garden. Various tall plants as well as low dense shrubs occur. Plants include several tall Bangalow Palms (*Archontophoenix cunninghamiana*) and some smaller (younger) Cabbage Tree Palms (*Livistona australis*). There are many shrubs/ small trees including, for example, Orange Jasmine (*Murraya paniculata**), Frangipani (*Plumeria rubra**), Giant White Bird of Paradise (*Strelizia nicolai**), Treefern (*Cyathea* sp.), Fruit Salad Plant (*Monstera deliciosa**), Coral Plant (*Russelia equisetiformis**), Jade plant (*Crassula ovata**), and Bamboo (subfamily *Bambusoideae**). There is a variety of groundcover plants including, for example, Macrozamia (*Macrozamia* sp.), Ornamental Ginger (order Zingiberales *), Agapanthus (*Agapanthus* sp.*), Iris (*Iris* sp.*), Mondo Grass (*Ophiopogon Japonicus**), Agave (*Agave* sp.*), Rosemary (*Salvia rosmarinus**), Natal Lily (*Clivia miniata**), Arum lily (*Zantedeschia aethiopica**), Silver Leaf Gazania (*Gazania tomentosa**) and Fishbone Fern (*Nephrolepis cordifolia**). There is also a locally occurring native fig tree (*Ficus rubiginosa*) growing on the sandstone retaining wall at the front of the property alongside Bower St that is likely to have colonised the site naturally (e.g. from seed dispersed in bird or bat droppings).

The garden and lawn at the rear of the property is much simpler structurally and with far fewer plant varieties than at the front but also includes some of the plants described above.

No threatened or otherwise significant species of flora occur.

Photos are provided in Appendix B.

2.2 Fauna

Vegetation on the property provides habitat mainly for invertebrates such as insects, spiders, centipedes, millipedes, slugs and snails, and also for small lizards. Birds and Flying Foxes may utilise the taller trees/ palms including the fig at the front of the property. Insectivorous microbats may also forage over the property.

The site was assessed for evidence of microbat roosting activity on the underside of the suspended concrete driveway, the cavities between and behind the sandstone retaining wall, beneath the gazebo and also beneath the roof structure of the gazebo. No evidence was found.

There is evidence of a high level of bandicoot foraging activity in the front garden, on the lawn and in the surrounding rockeries in the form of the conical digging holes that are characteristic of the bandicoots. This suggests that the bandicoots may be nesting in the front garden. No bandicoots were located, however, a large and dense clump of Bamboo behind the gazebo provides ideal nesting habitat and there appear to be tunnels within the leaf litter accumulated within the base of the clump. It is recommended that prior to commencement of construction, any bandicoots within the garden area be captured and relocated to suitable habitat within the nearby Sydney Harbour National Park.

3 IMPACT ASSESSMENT

3.1 Terrestrial Biodiversity Clauses of Manly LEP 2013

Clause 6.5 of the Manly Local Environmental Plan (LEP) 2013 concerns Terrestrial Biodiversity. The relevant sub-clauses state:

6.5 (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.

6.5 (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.

The eight (8) sub-clauses are discussed in turn below.

Is the development likely to have an adverse impact on the condition, ecological value and significance of the fauna and flora on the land?

The property contains a variety of plant species covering various growth forms (i.e. trees, shrubs, groundcovers, etc.). No threatened or otherwise significant species of plants are present. It also has a variety of rocky habitats including basking surfaces, cracks and cavities. The property provides habitat mainly for invertebrates, small lizards and birds. There is evidence of a high level of bandicoot activity in the front garden and a potential nesting site within the clump of bamboo. The property also provides potential foraging habitat for the threatened Grey-headed Flying and for species of micro-bats, some of which are also listed as threatened. The type of habitat present on the property is widespread throughout the local area including within the nearby Sydney Harbour National Park. The proposed development would remove the existing flora and fauna habitat on the property and replace it within similar flora and fauna habitat typically found within residential properties in the area.

Is the development likely to have an adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna?

The proposed development is not likely to adversely impact the survival of native fauna as there is abundant similar and better quality habitat for native fauna throughout the local area including within the nearby Sydney Harbour National Park.

Is the development likely to have any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land?

Property is within highly developed urban landscape. The removal of existing habitat and replacement with new habitat would not significantly alter the local landscape of habitat.

Is the development likely to have any adverse impact on the habitat elements providing connectivity on the land?

The property does not form part of a habitat corridor, rather it is one of many similar properties that create an urban environment with scattered vegetation.

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

Appropriate measures would be put in place to capture and relocate Bandicoots prior to commencement of construction, should they be nesting on the property. Vegetation would be restored as part of landscaping.

Is the development designed, sited and will it be managed to avoid significant adverse environmental impact?

The proposed development is designed, sited and will be managed to avoid any significant environmental impacts.

If that impact cannot be reasonably avoided by adopting feasible alternatives – Is the development designed, sited and will it be managed to minimise that impact?

No significant impacts would occur as a result of the proposed development.

If that impact cannot be minimised – Will the development be managed to mitigate that impact?

No significant impacts would occur as a result of the proposed development.

3.2 '5-part Test' for the Long-nosed Bandicoot

- (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,**

There is evidence of a high level of bandicoot activity in the front garden of the property indicating that bandicoots may be nesting in the front garden. A potential nesting site would be located. The proposal would remove all of the habitat in the front garden including the potential nesting site. Given the large number of bandicoots in the local area there is likely to be many similar and better nesting sites throughout the local area including within the nearby Sydney Harbour National Park. Removal of the small area of habitat in the front garden and the potential nesting site is unlikely to place at risk of extinction the local population of Long-nosed Bandicoots.

- (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**

N/A.

- 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,**

N/A.

- (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 proposed development or activity, and**

A small area of foraging habitat in the front garden including a potential nesting site would be removed. There is an abundance of similar foraging habitat throughout the local area most likely including many similar and better quality nesting sites.

- 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**

No areas of habitat would become fragmented or isolated from other areas of habitat as a result of the proposed development.

- 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 small area of habitat that would be removed as a result of the proposal would have low importance for the long-term survival of Long-nosed Bandicoots in the locality.

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

No declared areas of outstanding biodiversity value would be impacted by the proposal.

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

The proposed development is not part of and nor would it increase any key threatening processes.

Conclusion

Based on the above assessment it is concluded that the proposed development would not have a significant impact on the Long-nosed Bandicoot population at North Head.

4 CONCLUSION AND RECOMMENDATIONS

The vegetation on the property is not native vegetation but rather a collection of mostly planted ornamental species, most of which are introduced. No threatened or otherwise significant species of flora occur on the property.

The property provides habitat mainly for invertebrates such as insects, spiders, centipedes, millipedes, slugs and snails, and also for small lizards. Birds and Flying Foxes may utilise the taller trees/ palms including the fig at the front of the property. Insectivorous microbats may also forage over the property. There is evidence of a high level of bandicoot foraging activity in the front garden, on the lawn and in the surrounding rockeries in the form of the conical digging holes that are characteristic of the bandicoots. This suggests that the bandicoots may be nesting in the front garden. No bandicoots were located, however, a large and dense clump of Bamboo behind the gazebo provides ideal nesting habitat and there appear to be tunnels within the leaf litter accumulated within the base of the clump. It is recommended that prior to commencement of construction, any bandicoots within the garden area be captured and relocated to suitable habitat within the nearby Sydney Harbour National Park. Measures are also recommended to prevent accidental injury to bandicoots during the construction phase.

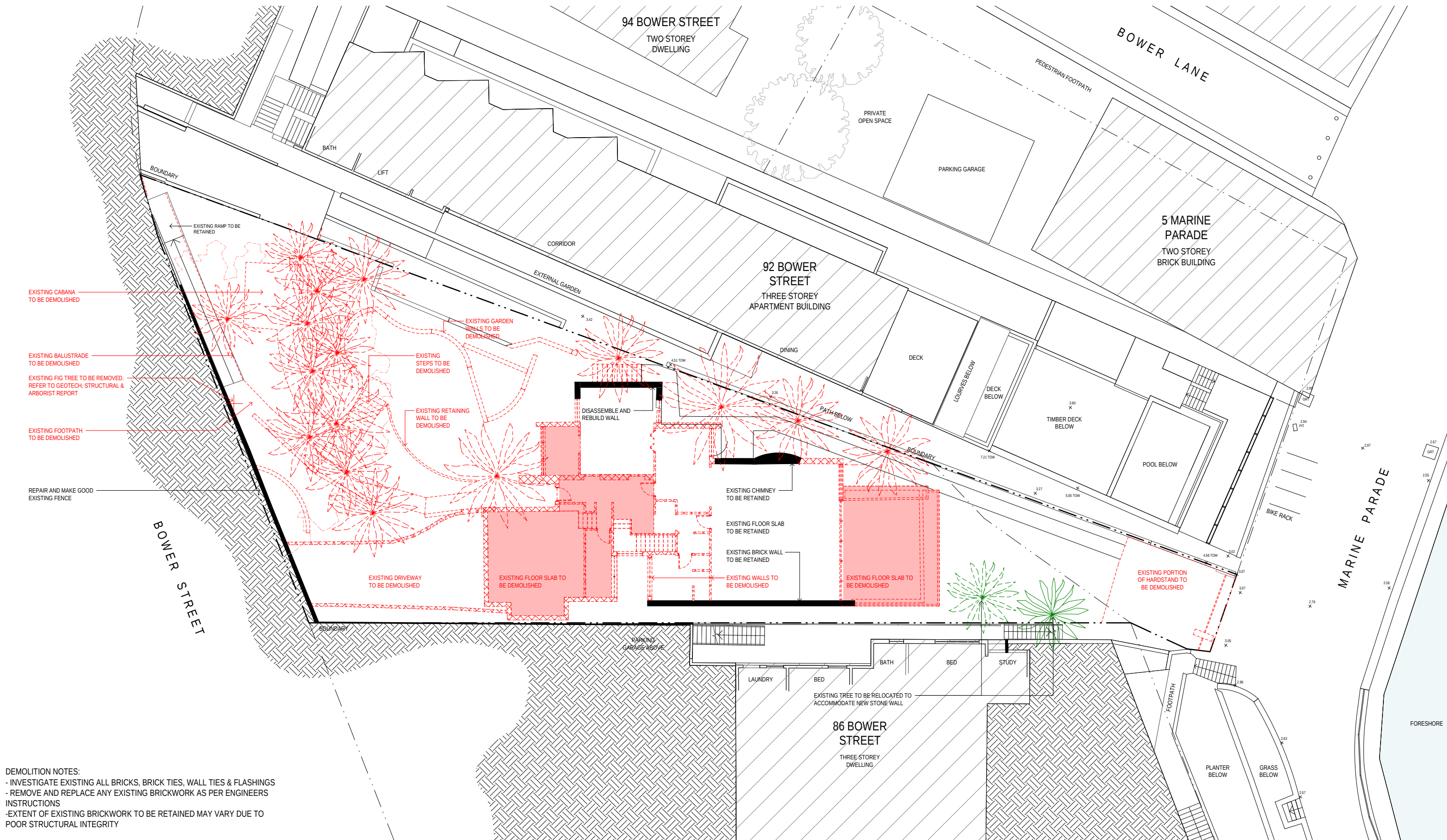
Provided the measures recommended are effectively implemented there would be no significant flora or fauna impacts as a result of the proposed development.

Recommendations

1. Prior to commencement of construction, any bandicoots roosting/ nesting on the property should be captured and relocated in consultation with the National Parks and Wildlife Service (NPWS) to the nearby Sydney Harbour National Park.
2. As part of the induction for all construction workers on this project, workers should be informed of the presence on and around the property of Long-nosed Bandicoots that are part of the endangered North Head population.
3. The Construction Environmental Management Plan (CEMP) for the project should include specific measures to avoid impacting Long-nosed Bandicoots. This should include, for example, inspecting equipment, material stockpiles and recent excavations prior to commencement of work each morning to ensure no Bandicoots are sheltering within, around or under these items.
4. Internal landscaping for the proposed development should also incorporate where possible locally occurring native plants.

Appendices

APPENDIX A – PLAN DRAWING OF PROPOSED DEVELOPMENT



DEMOLITION NOTES:
- INVESTIGATE EXISTING ALL BRICKS, BRICK TIES, WALL TIES & FLASHINGS
- REMOVE AND REPLACE ANY EXISTING BRICKWORK AS PER ENGINEERS INSTRUCTIONS
- EXTENT OF EXISTING BRICKWORK TO BE RETAINED MAY VARY DUE TO POOR STRUCTURAL INTEGRITY

1 DEMOLITION LEVEL 1 PLAN

1 : 100 @ A1

APPENDIX B – PHOTOGRAPHS



Photo 1: The front garden.



Photo 2: The rear garden.



Photo 3: The sandstone retaining wall bordering Bower St and pathway leading to the front garden. Note the gazebo on the right and adjoining clump of bamboo.



Photo 4: The base of the clump of bamboo provides ideal nesting habitat for the Long-nosed Bandicoot and tunnels within the leaf litter suggest the bandicoots may be nesting there.



Photo 5: Many conical diggings in the lawn and surrounding garden beds indicates a high level of bandicoot activity.



Photo 6: The underside of the gazebo roof was assessed as potential roosting habitat for microbats.



Photo 7: The underside of the concrete driveway was assessed as potential roosting habitat for microbats.



Photo 8: The cavities in the sandstone retaining wall underneath the driveway and away from the driveway was assessed as potential roosting habitat for microbats.



Photo 9: Example of a cavity in the sandstone retaining wall.

APPENDIX C – SPECIES LISTS

FLORA

TREES

Archontophoenix cunninghamiana
Cyathea sp.
Ficus rubiginosa
Livistona australis
*Plumeria rubra**
*Strelizia nicolai**

Bangalow Palms
 Treefern
 Port Jackson Fig
 Cabbage Tree Palm
 Frangipani
 Giant White Bird of Paradise

SHRUBS

Subfamily *Bambusoideae**
*Camellia japonica**
*Crassula ovata**
*Murraya paniculata**

Bamboo
 Camelia
 Jade Plant
 Murraya

GROUNDCOVERS AND CLIMBERS

Agapanthus sp.*
Agave sp.*
Blechnum cartilagineum
*Bouteloua dactyloides**
*Clivia miniata**
*Ctenanthe setosa**
*Gazania tomentosa**
Hydrangea sp.
Iris sp.*
Macrozamia sp.
*Monstera deliciosa**
*Nephrolepis cordifolia**
*Ophiopogon Japonicus**
*Oxalis corniculata**
*Pennisetum clandestinum**
*Russelia equisetiformis**
*Salvia rosmarinus**
*Trifolium repens**
*Yucca aloifolia**
*Zantedeschia aethiopica**
 Order *Zingiberales**

Agapanthus
 Agave
 Gristle Fern
 Buffalo Grass
 Clivia
 Grey Star
 Silver Leaf Gazania
 Hydrangea
 Iris
 Macrozamia
 Fruit Salad Plants
 Fishbone Fern
 Mondo Grass
 Yellow Wood-sorrel
 Kikuyu
 Coral Plant
 Rosemary
 White Clover
 Aloe Yucca
 Arum lily
 Ornamental Ginger

