

29, 31-35 Reddall St & 95 Bower St, Manly

Terrestrial Biodiversity Report **&** **‘5-part Test’ for the Long-nosed Bandicoot**



6 June 2019

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Terrestrial Biodiversity Report &
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Report prepared by: Martin James

A handwritten signature in blue ink, appearing to read 'M. James', is written over a faint circular stamp.

Signed:

Date: 6th June 2019

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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 existing residential dwellings at 95 Bower St and 29, 31 and 35 Reddall Street, Manly and amalgamating the properties to provide multi-level apartment buildings in a landscape setting. 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 habitat of 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).

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.

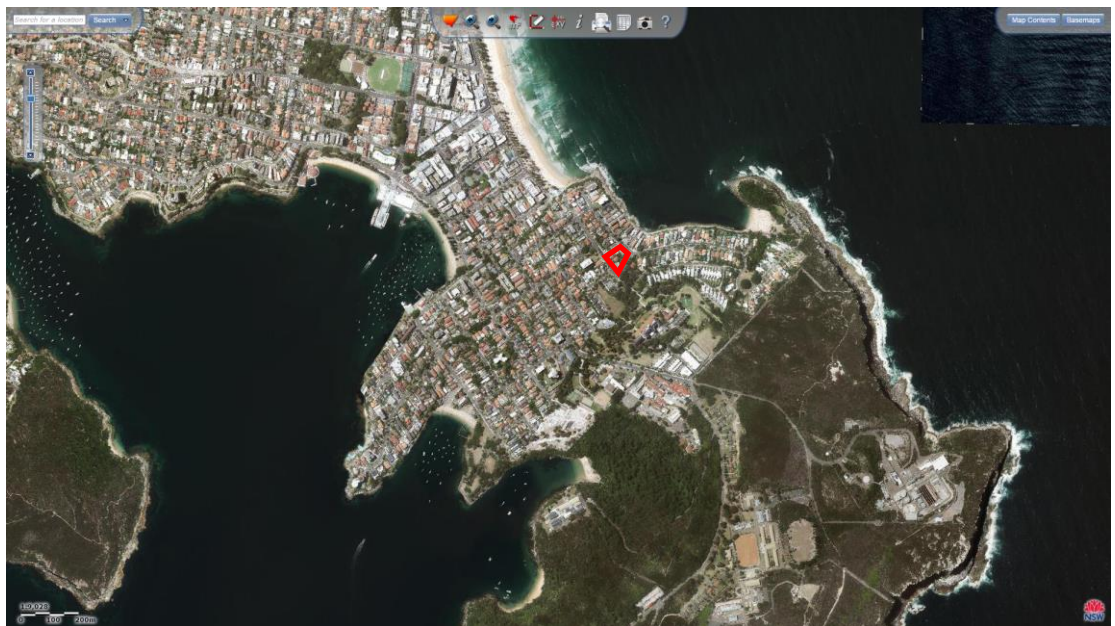


Figure 1.1: Aerial image showing project area. The subject property is bordered in red.



Figure 1.2: Aerial image of project site (source: maps.six.nsw.gov.au).

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 four properties is typical of residential properties in the Sydney metropolitan area. It comprises a mixture of mostly introduced, planted trees, shrubs and groundcover vegetation with small areas of lawn and many weeds. A small number of native plants are present. These have probably established naturally with seed from the nearby areas of native bushland brought onto the properties.

The tallest trees on the properties are palm trees. There are six (6) Bangalow Palms (*Archontophoenix cunninghamiana*) at the rear of 29 and 31 Reddall St, one of which is approximately 10m high. There are three (3) Cocos Palms (*Syagrus romanzoffianum**) and one (1) Canary Island Date Palm (*Phoenix canariensis**) at front of 35 Reddall St. These reach approximately 8m in height. There are two more Cocos Palms on the College St side of 35 Reddall St reaching approximately 6m in height. There is another Canary Island Date Palm at the rear of 35 Reddall St, approximately 5m high.

There are many small trees and shrubs approximately 2-5m high on all properties comprising a variety of species. These occur mostly just inside the property boundaries surrounding a small area of lawn, garden beds, rockeries and a swimming pool. Species include, for example, Brush Cherry (*Syzygium australe*), Port Jackson Fig (*Ficus rubiginosa*), Giant White Bird of Paradise (*Strelizia nicolai**), Frangipani (*Plumeria rubra**), White Mulberry (*Morus alba**), Southern Magnolia (*Magnolia grandiflora**), etc.

Many shrubs (<2m), climbers and groundcovers also occur on all properties, typically around and under the taller shrubs/ small trees. Species include, for example, English Ivy (*Hedera helix**), Ground Asparagus (*Asparagus aethiopicus**), Fishbone Fern (*Nephrolepis cordifolia**), Native Violet (*Viola hederacea*), Japanese Honeysuckle (*Lonicera japonica**), Rosemary (*Rosmarinus officinalis**), Morning Glory (*Ipomoea indica**), Umbrella Sedge (*Cyperus involucratus**), Fruit Salad Plant (*Monstera deliciosa**), Mondo Grass (*Ophiopogon Japonicus**), Agapanthus (*Agapanthus* sp.*), Iris (*Iris* sp.*), etc.

A variety of grasses are also present including, for example, Buffalo Grass (*Bouteloua dactyloides**), Couch (*Cynodon dactylon*), Kikuyu (*Cenchrus clandestinus**), etc.

The complete list of flora recorded on the property is provided in Appendix C. Photos are provided in Appendix B.

2.2 Fauna

The vegetation across the four properties includes a wide variety of species providing a wide range of food resources for fauna. The species comprise mostly introduced plants but there are also some native trees. However, the vegetation is discontinuous across the properties, being interrupted by buildings, pathways, lawns, paved areas, car ports, swimming pools, etc. Also the vegetation structure is limited across the properties, mainly because there is no continuous tree canopy, with the trees occur only around the perimeters of the properties. Also, the properties are surrounded by other development including roads, pedestrian pathways and other residential properties with

lawns, paved areas, etc. This greatly reduces the fauna habitat values of the subject properties.

The properties provide habitat mainly for invertebrates such as insects, spiders, centipedes, millipedes, slugs and snails, and also for lizards and birds.

There is evidence of bandicoot activity around the properties. Specifically, the conical diggings within lawns that are typical of the Long-nosed Bandicoot that occurs in the area. Such holes were observed on the median strip of College St outside 95 Bower St, in the front lawn of 95 Bower St and along the pedestrian walkway on the north-western side of 29 Reddall St. No Long-nosed Bandicoot shelters or nests were found on the properties.

Fauna observed at the time of the site assessment include the Noisy Miner (*Manorina melanocephala*), Rainbow Lorikeet (*Trichoglossus haematodus*), Brown Huntsman Spider (*Heteropoda jugulans*) and Golden Orb-weaving Spider (*Nephila edulis*).

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 proposed development would initially remove the existing flora and fauna habitat on the property. No threatened or otherwise significant species of flora or fauna would be impacted other than the threatened Long-nosed Bandicoot. Relatively small areas of lawn that the Bandicoot forages in would be removed. The impact on the Long-nosed Bandicoot would not be significant (refer 5-part test in Section 3.2 below). Furthermore, the proposal has been designed to ensure that Bandicoots continue to have access to internal gardens on the properties.

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?

There would be a temporary, minor adverse impact on a small variety of native fauna from the removal of vegetation on the property. The main fauna impacted would be invertebrates, small lizards, birds and the Long-nosed Bandicoot. Recommendations are made in this report to ensure that landscaping undertaken as part of the proposed development would restore similar vegetation and fauna habitat. Overall, therefore, following completion of construction, there would be no adverse impact on fauna.

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

The development would temporarily diminish the biodiversity values of the land during the construction phase. Following completion of construction the proposed landscaping, including recommendations made in this report, would restore the biodiversity values of the land.

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

The development would temporarily, adversely impact during the construction period the habitat elements providing connectivity on the land. However, the connectivity values of the habitat on the land are only minor as they do not provide an important link between important areas of habitat, but rather, a general and broad linkage across the local urban environment. Furthermore, the impact would be temporary only, during the construction phase. Following completion of construction the connectivity values of habitat on the land would be restored through the proposed landscaping.

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

Appropriate measures are proposed through landscaping and ensuring that Long-nosed Bandicoots continue to have access to gardens on the property.

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?

The impact can be reasonably avoided.

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

The impact can be minimised.

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,**

No evidence was found during the site assessment of any shelters or nests on the properties to be demolished. Conical shaped diggings that are evidence of Long-nosed Bandicoots foraging were found on the median strip outside the properties and on the internal lawn of one of the properties.

The median strips around the properties where most of the diggings were found would be largely unaffected by the development. There may be some temporary occupation of relatively small part of these areas of lawn during the construction period for access, storage of equipment, materials, etc. This report recommends that such occupation of the median strip lawns be avoided or where it cannot be avoided, minimised. Following completion of construction these areas of lawn would be restored where impacted and retained. There are sufficient areas of lawn on surrounding and nearby median strips and within the pedestrian pathway reserve on the north-western side of the development site for Long-nosed Bandicoots to forage during the construction stage of the project.

The small areas of internal lawns that are currently accessible for the Long-nosed Bandicoots would be removed as part of the development. However, proposed landscaping would restore areas of habitat that would be accessible to Long-nosed Bandicoots. These areas would include a variety of native plants as specified in the Manly DCP 2013. This may result in better habitat for the Long-nosed Bandicoot than presently exists there.

There may be a minor impact to Long-nosed Bandicoots that presently forage at the development site during the construction stage of the project. However, any impact would be temporary and relatively minor given the abundance of other areas of lawn in the vicinity of the development site. Any impact is unlikely to place at risk of extinction the North Head 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 relatively small area of foraging habitat in the form of lawn on the median strips surrounding the development site may be temporarily removed during the construction stage. There would remain relatively large areas of lawns on median strips around the development site and nearby that would provide alternative foraging habitat for Long-nosed Bandicoots in the area.

A small area of foraging habitat in the form of lawns within the properties to be developed would be removed. This would represent a very small proportion of available habitat in the area. Proposed landscaping would restore habitat on the properties that would be accessible for Long-nosed Bandicoots.

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 relatively small areas of habitat that would be impacted 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.

(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 would not 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 development site currently contains a wide variety of plants, most of which are introduced species. This would provide habitat for a limited range of native biodiversity being mainly arthropods, small reptiles and birds. Landscaping proposed as part of the development would restore similar habitat on the property. Consequently, there is likely to be no net loss of biodiversity habitat on the property as a result of the proposed development.

The median strips surrounding the development site provide foraging habitat for the Long-nosed Bandicoot. There may be a minor, temporary impact to these areas during the construction period. Recommendations are made below to minimise such impact. The proposed development would also remove a relatively small area of foraging habitat in the form of existing lawns within the properties to be developed. Proposed landscaping as part of the development would restore areas of habitat that would be accessible to Long-nosed Bandicoots. Such landscaping would include native species that provide habitat for Long-nosed Bandicoots as specified in the Manly DCP 2013. As demonstrated in the Test of Significance (5-part test) undertaken as part of this report there would be no significant impact to the Long-nosed Bandicoot population at North Head as a result of the proposed development.

The following recommendations are made to minimise and ameliorate any impacts from the proposed development on Long-nosed Bandicoots specifically and on biodiversity in general.

Recommendations

1. 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.
2. The Construction Environmental Management Plan (CEMP) for the project should include measures specifically to minimise impacts to Long-nosed Bandicoot habitat and to Long-nosed Bandicoots during the construction stage. This should include, for example, inspecting equipment prior to commencement of work each morning to ensure no Bandicoots are sheltering within, around or under the equipment.
3. During the construction stage of the project impacts to the lawn on median strips surrounding the development site and the pedestrian pathway reserve on the north-western side of the development site should be avoided where possible. Where avoiding such impact is not possible, the areas impacted should be kept to a minimum. These areas provide foraging habitat for the Long-nosed Bandicoots. This recommendation should be incorporated into the project CEMP.
4. The gates for pedestrian accessways into the property should provide at least 150mm ground clearance to enable Long-nosed Bandicoots to access the internal gardens of the property. The retaining wall inside the property in the northern corner at the top of the stairs should be no higher than 150mm to allow Bandicoots to access the gardens along the north-western boundary of the property. The recommended design of this retaining wall is illustrated in Figure 4.1 below. The plan drawing in Appendix A illustrates the areas that should be accessible to Long-nosed Bandicoots following implementation of these recommendations.

5. Gardens within the property should be landscaped as specified in Clause 3.3.1 of the Manly DCP 2013 that states: “In areas of habitat for the long-nosed bandicoot landscape design must include native plant species to provide new and/or improved low dense clumping habitat to provide for potential foraging and nesting. The planting schedule should comprise species such as *Lomandra* sp., *Dianella* sp., *Banksia spinulosa*, *Caustis* sp., *Xanthorrhoea* sp., *Isolepis* sp., *Juncus* sp., *Adiantum* sp., *Calochlaena* sp., *Callistemon* sp., *Grevillea juniperina*, *Gleichenia* sp., *Grevillea* ‘Robyn Gordon’ and tussocky native grasses (e.g. Kangaroo Grass).”
6. Internal landscaping for the proposed development should also incorporate where possible some locally occurring native plants.



Figure 4.1: Design of retaining wall in the northern corner of proposal with maximum height of 150mm to will allow Long-nosed Bandicoots to access the gardens along the north-western property boundary. The location of the retaining wall is illustrated in the figure in Appendix A.

Appendices

**APPENDIX A – PLAN OF DEVELOPMENT PROPOSAL SHOWING AREAS
TO REMAIN ACCESSIBLE TO LONG-NOSED BANDICOOTS**



APPENDIX B – PHOTOGRAPHS

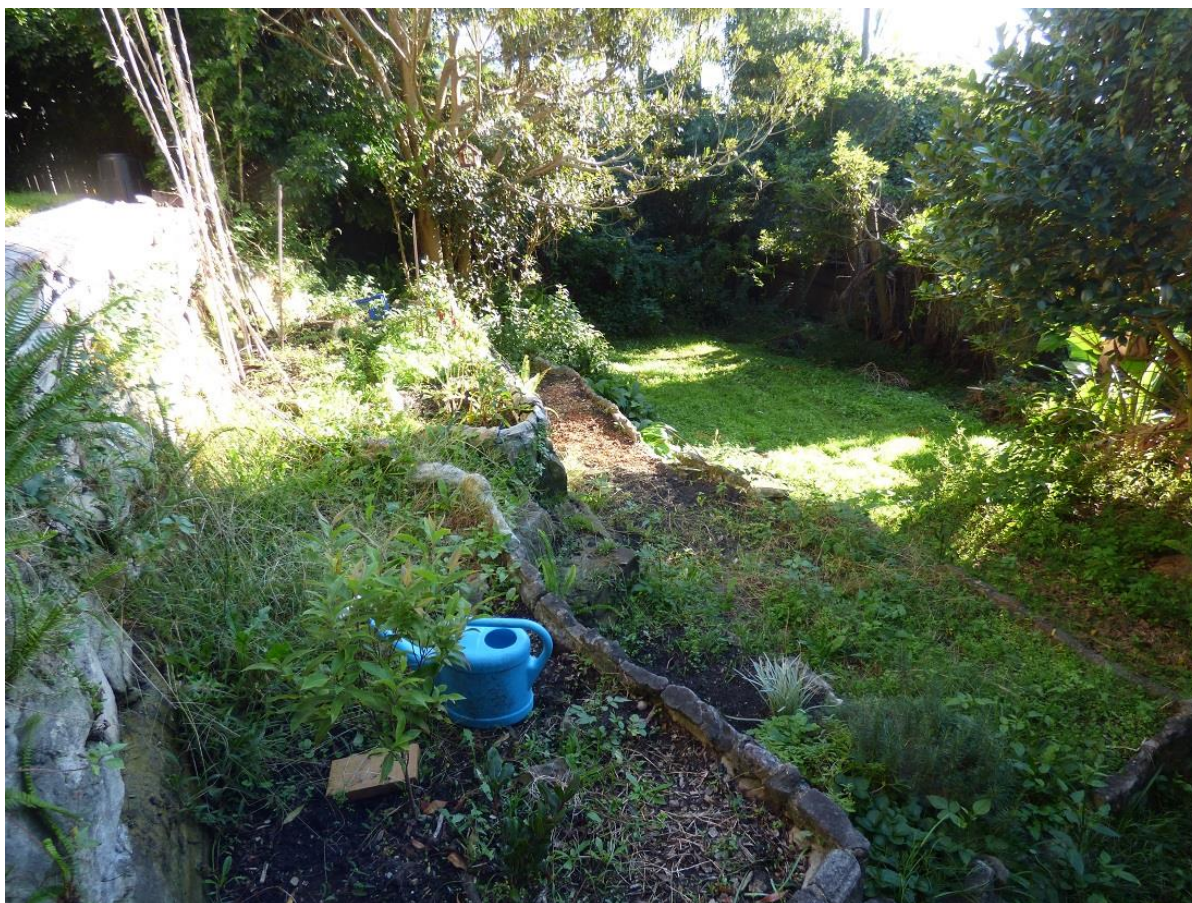


Photo 1: A variety of plants occur on the properties, most of which are introduced species.



Photo 2: Not all areas of lawn on the properties are accessible to Long-nosed Bandicoots.



Photo 3: A mixture of lawns, shrubs and trees provide some habitat for biodiversity.



Photo 4: There is a variety of gardens present on the development site. However, the biodiversity value of these gardens is limited.



Photo 5: Bandicoot diggings along pedestrian pathway on north-western side of 29 Reddall St.

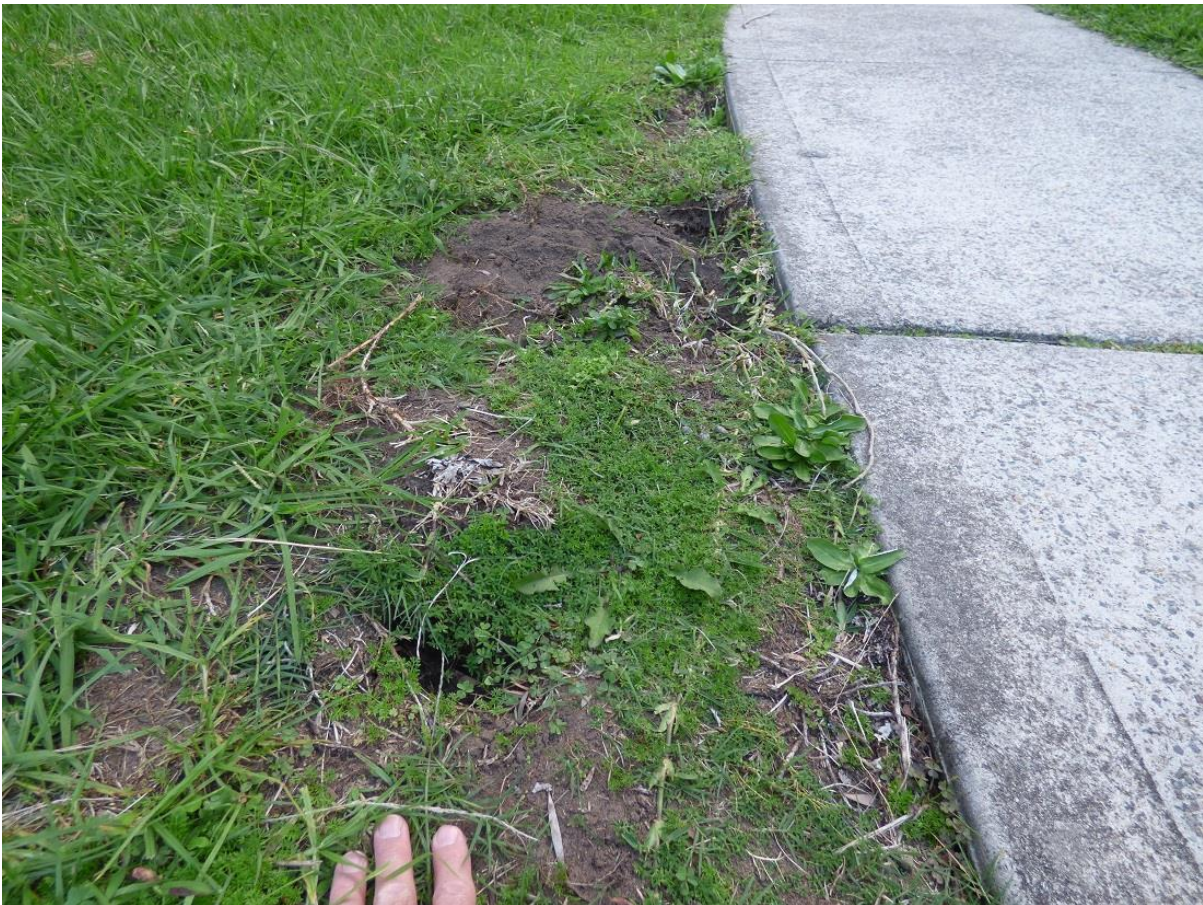


Photo 6: Close-up of bandicoot diggings outside 29 Reddall St.



Photo 7: Bandicoot diggings in the front lawn of 95 Bower St.



Photo 8: Close-up of Bandicoot diggings in front lawn of 95 Bower St.



Photo 9: Bandicoot diggings along College St median strip outside 95 Bower St.

APPENDIX C – FLORA SPECIES LIST

TREES

<i>Archontophoenix cunninghamiana</i>	Bangalow Palms
<i>Cinnamomum camphora</i> *	Camphor Laurel
<i>Citrus limon</i> (L.) Osbeck*	Lemon Tree
<i>Cupressus</i> sp.*	Cypress
<i>Cyathea cooperi</i>	Straw Treefern
<i>Elaeocarpus reticulatus</i>	Blueberry Ash
<i>Ficus rubiginosa</i>	Port Jackson Fig
<i>Glochidion ferdinandi</i>	Cheese Tree
<i>Homalanthus populifolius</i>	Bleeding Heart
<i>Magnolia grandiflora</i> *	Southern Magnolia
<i>Morus alba</i> *	White Mulberry
<i>Notelaea longifolia</i>	Mock Olive
<i>Olea europaea</i> *	Olive
<i>Phoenix canariensis</i> *	Canary Island Date Palm
<i>Pittosporum undulatum</i>	Sweet Pittosporum
<i>Plumeria rubra</i> *	Frangipani
<i>Robinia pseudoacacia</i> *	Black Locust
<i>Strelizia nicolai</i> *	Giant White Bird of Paradise
<i>Syagrus romanzoffianum</i> *	Cocos Palms
<i>Syzygium australe</i>	Brush Cherry
<i>Schefflera arboricola</i> *	Dwarf Umbrella Tree

SHRUBS

<i>Brugmansia</i> spp.*	Angel's Trumpet
<i>Buxus sempervirens</i> *	English Box
<i>Callistemon</i> sp.	Bottlebrush
<i>Camellia japonica</i> *	Camelia
<i>Cordyline</i> sp.*	Cordyline
<i>Crassula ovata</i> *	Jade Plant
<i>Grevillea</i> sp.	Grevillea 'Moonlight'
<i>Hibiscus</i> sp.*	Hibiscus
<i>Hydrangea macrophylla</i> *	Hydrangea
<i>Ilex aquifolium</i> *	Common Holly
<i>Lantana camara</i> *	Lantana
<i>Melaleuca armillaris</i>	Bracelet Honey-myrtle
<i>Murraya paniculata</i> *	Murraya
<i>Nerium oleander</i> *	Oleander
<i>Ochna serrulata</i> *	Mickey Mouse Plant
<i>Senna pendula</i> var. <i>glabrata</i> *	Cassia
<i>Solanum mauritianum</i> *	Wild Tobacco
<i>Yucca elephantipes</i> *	Spineless Yucca

GROUNDCOVERS AND CLIMBERS

<i>Acetosa Sagittata</i> *	Turkey Rhubarb
<i>Agapanthus</i> sp.*	Agapanthus
<i>Ageratina adenophora</i> *	Crofton Weed
<i>Anagallis arvensis</i> *	Scarlet Pimpernel
<i>Anredera cordifolia</i> *	Madeira Vine
<i>Asparagus aethiopicus</i> *	Ground Asparagus
<i>Axonopus compressus</i> *	Broad-leaved Carpet Grass

<i>Bidens pilosa</i> *	Cobbler's Pegs
<i>Bougainvillea</i> sp.*	Bougainvillea
<i>Bouteloua dactyloides</i> *	Buffalo Grass
<i>Cenchrus clandestinus</i> *	Kikuyu
<i>Clivia miniata</i> *	Clivia
<i>Conyza bonariensis</i> *	Fleabane
<i>Cucurbita pepo</i> *	Pumpkin
<i>Cynodon dactylon</i>	Couch
<i>Cyperus involucratus</i> *	Umbrella Sedge
<i>Ehrharta erecta</i> *	Panic Veldt Grass
<i>Ficus pumila</i> *	Creeping Fig
<i>Fragaria x ananassa</i> *	Strawberry
<i>Hedera helix</i> *	English Ivy
<i>Ipomoea cairica</i> *	Coastal Morning Glory
<i>Ipomoea indica</i> *	Morning Glory
<i>Iris</i> sp.*	Iris
<i>Lomandra longifolia</i>	Mat Rush
<i>Lonicera japonica</i> *	Japanese Honeysuckle
<i>Monstera deliciosa</i> *	Fruit Salad Plants
<i>Nephrolepis cordifolia</i> *	Fishbone Fern
<i>Ophiopogon Japonicus</i> *	Mondo Grass
<i>Oxalis latifolia</i> *	Fishtail Oxalis
<i>Parietaria judaica</i> *	Pellitory
<i>Rosmarinus officinalis</i> *	Rosemary
<i>Setaria palmifolia</i> *	Palm Grass
<i>Sida rhombifolia</i> *	Paddy's Lucerne
<i>Solanum nigrum</i> *	Black Nightshade
<i>Soliva sessilis</i> *	Bindyi
<i>Sporobolus africanus</i> *	Parramatta Grass
<i>Taraxacum officinale</i> *	Dandelion
<i>Tradescantia fluminensis</i> *	Wandering Jew
<i>Trifolium repens</i> *	White Clover
<i>Viola hederacea</i>	Native Violet