Biodiversity Management Plan

54 Bardo Road, Newport NSW 2106

Report prepared by Narla Environmental for BPG Holdings (No 5) Pty Ltd

October 2020

Issued By	Position	Role
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BPG Holdings (No 5) Pty Ltd
Biodiversity Management Plan
54 Bardo Road, Newport NSW 2106

NARLA

environmental

Report:	Biodiversity Management Plan – 54 Bardo Road, Newport NSW 2106
Prepared for:	BPG Holdings (No 5) Pty Ltd
Prepared by:	Narla Environmental Pty Ltd
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1. Introduction

1.1 Project Background

Narla Environmental Pty Ltd (Narla) were engaged by BPG Holdings (No 5) Pty Ltd (the proponent) to prepare a Biodiversity Management Plan (BMP) for the proposed development at 54 Bardo Road, Newport NSW 2106 (Lot 42/2/DP4689), hereafter referred to as the 'Subject Property' (**Figure 1**). The Subject Property is entirely mapped as containing 'Biodiversity' in the Pittwater Local Environmental Plan 2014 (PLEP) Terrestrial Biodiversity Map (**Figure 2**). As such, this BMP recommends the protection and management of native vegetation and fauna habitat within the Subject Property.

The proposed development involves the construction of a senior housing block with six (6) dwellings, an underground carpark, and associated landscaping (Giles Tribe 2020). The areas associated with the proposed development lie within the centre of the Subject Property and are hereafter referred to as the 'Subject Site' (**Figure 1**).

Th Subject Property contains native vegetation identified as Central Coast Escarpment Moist Forest along with areas of Urban Exotic/Native vegetation and existing hardstand. The proposed development will require the clearing of 179m^2 of Central Coast Escarpment Moist Forest and six (6) native tree species, including one (1) *Eucalyptus botryoides* (Bangalay) and five (5) *Syncarpia glomulifera* (Turpentine) (Narla Environmental 2020).

This BMP is to be read in conjunction with the Flora and Fauna Assessment Report (Narla Environmental 2020).

1.2 Site Assessment

A site assessment was undertaken by Narla Ecologist, Stefan Giessler, on Tuesday the 13th of October 2020. During the site assessments, the following activities were undertaken:

- Mapping the extent of native and exotic vegetation including areas that exist only as ground cover;
- Mapping all occurrences of any threatened plants across the site;
- Mapping all priority and environmental weed infestations on the site, and identify areas of weed infestation from adjoining properties;
- Identifying and recording the locations of notable fauna habitat such as important nesting, roosting, or foraging microhabitats; and
- Identifying any management issues that requires addressing in the BMP (e.g. erosion works, rubbish removal, revegetation).

1.3 Management Areas

The Subject Property has been divided into two (2) distinct management zones (**Figure 3**):

- Management Zone 1 – Subject Site; this covers the areas associated with the proposed development; and
- Management Zone 2 – Retained Vegetation.

Protection efforts outlined as Key Performance Indicators (KPIs) specific to each management zone are outlined below.

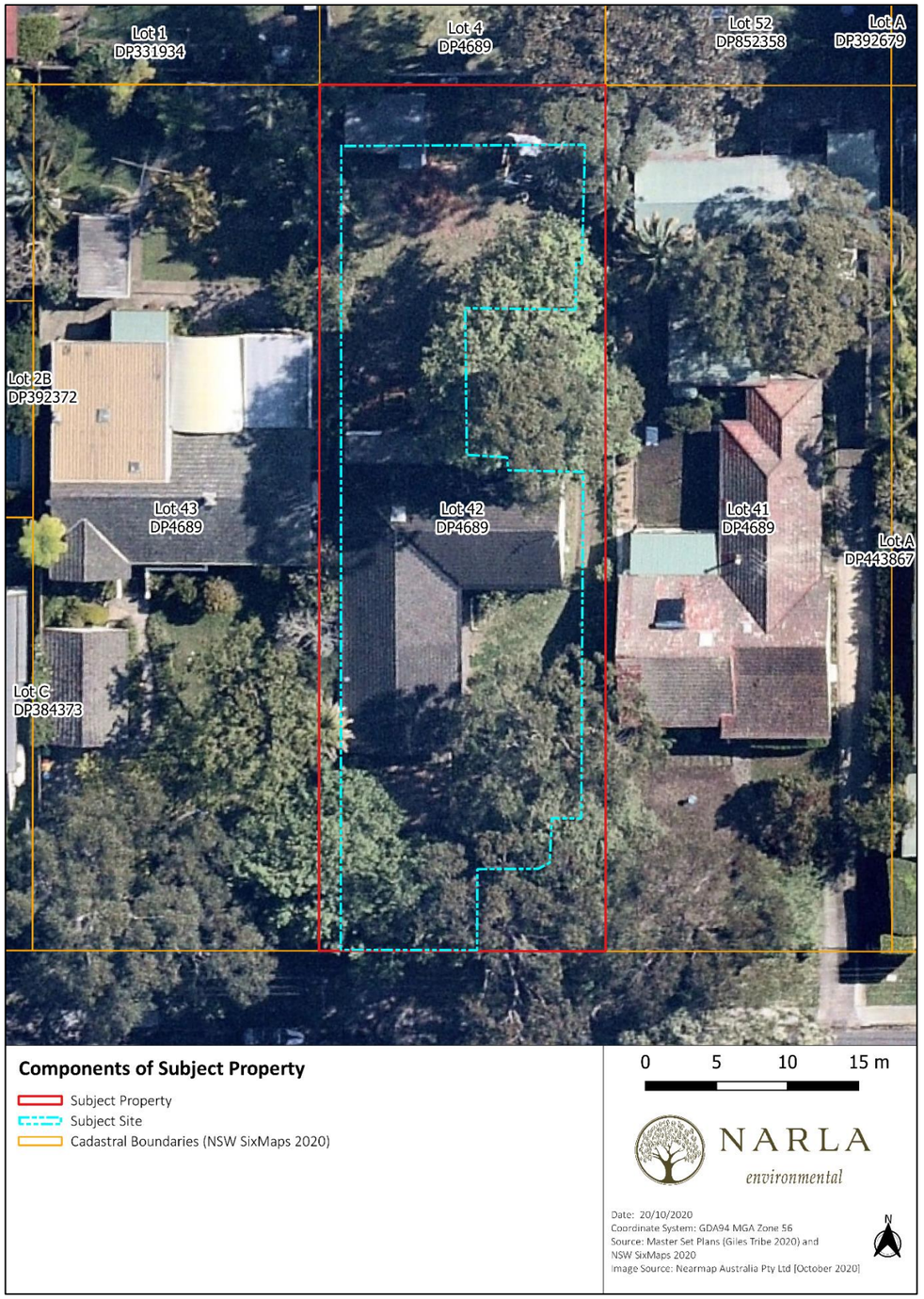

Figure 1. Subject Property and Subject Site.

Figure 2. Biodiversity mapping within the Subject Property (Northern Beaches Council 2014b).

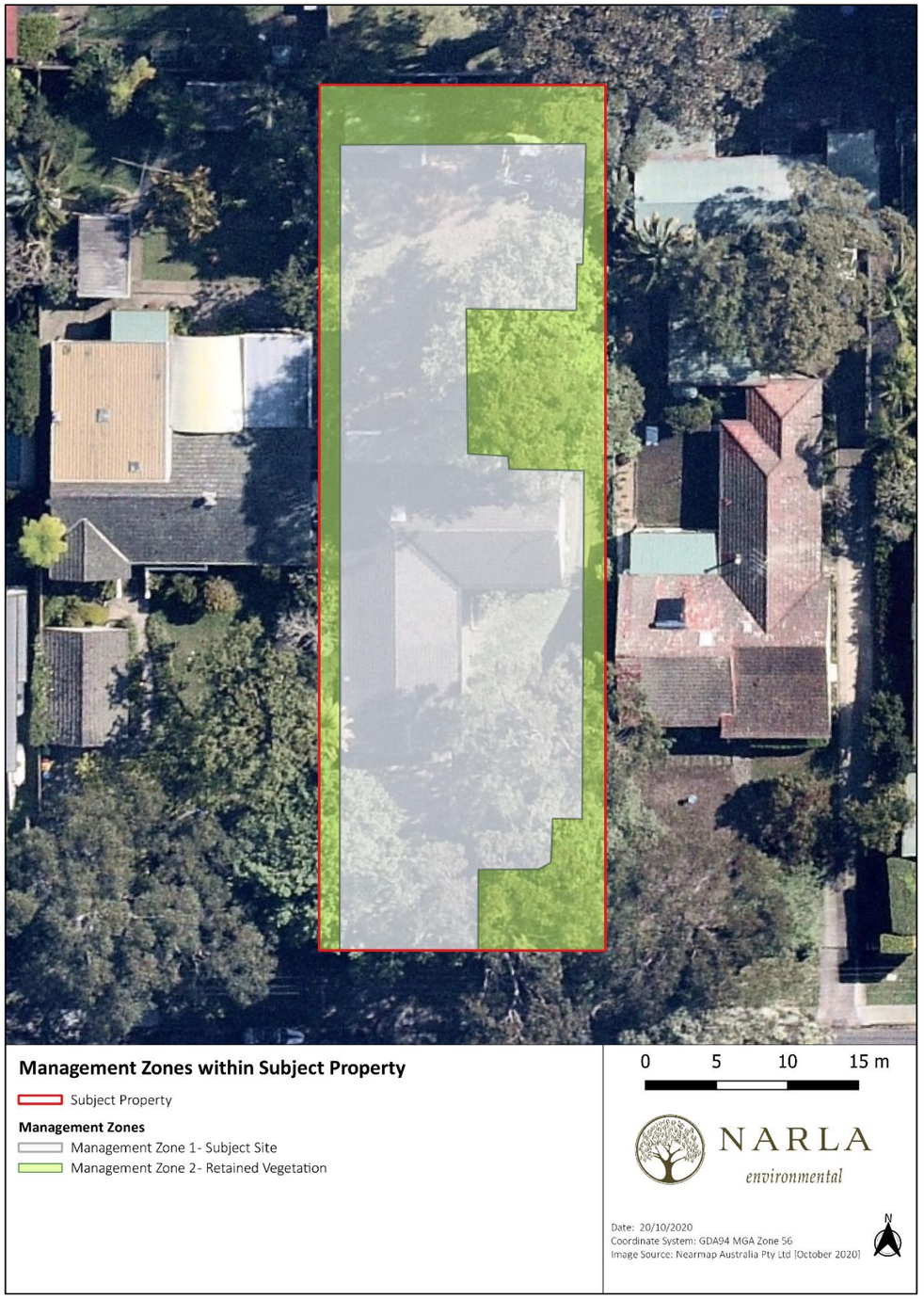

Figure 3. Management Zones identified within the Subject Property.

2. Management Zones

2.1 Management Zone 1 – Subject Site (approximate area: 833m^2)

Description

This zone covers the centre of the Subject Property and will be cleared to accommodate the proposed development. An existing dwelling, shed, and areas of hardstand will be demolished. The vegetation within this area is dominated by Urban Exotic/Native vegetation with commonly planted exotic species such as *Chlorophytum comosum* and *Strelitzia* sp. This zone also contained patches of Central Coast Escarpment Moist Forest with a highly modified ground and mid stratum along the southern and eastern extent. Native canopy species present included *Eucalyptus botryoides* and *Syncarpia glomulifera.* The mid stratum contained exotics including *Ochna serrulata* and the ground stratum contained exotics such as *Ehrharta erecta.* Priority Weeds, *Asparagus aethiopicus* and *Senecio madagascariensis,* were also identified within this management zone. No habitat features such as hollow-bearing trees or drainage lines were identified. The objective of this management zone is to appropriately clear vegetation in order to avoid the potential of incurring indirect impacts on biodiversity values within the Subject Property.

Management Requirements

Pre-clearing

- Installation of sediment fencing surrounding the proposed construction area must be completed prior to any excavation or modification of vegetation for construction;
- A pre-clearing survey is required before clearing begins and should be carried out by a qualified Ecologist; and
- Tree protection fencing and trunk protection must be established at the locations shown in the tree protection plan (Tree Survey Arboricultural Consultants 2020) prior to any clearing.

Clearing

- Implementation of the Hygiene Protocol as per the report, 'Arrive Clean, Leave Clean' (Commonwealth of Australia 2015), must be implemented during all construction works;
- Clearing supervision is to be carried out by a qualified Ecologist. The Ecologist will be present during the felling of all trees to manage any fauna that may be present in situ;
- Allocate all storage, stockpile, and laydown sites within this zone, away from any vegetation that is planned to be retained; and
- Avoid importing any soil from outside the site as this can introduce weeds and pathogens to the site.

Landscaping

- All landscaping should be completed with species from the associated landscape plan (Landscape Architects 2020);
- If additional plants are required, they should be locally indigenous species representative of the Central Coast Escarpment Moist Forest (**Appendix A**);
- No Priority Weeds listed under the *Bio Security Act 2015* are to be planted.

2.2 Management Zone 2 – Retained Vegetation (approximate area: 399m^2)

Description

This zone exists around the perimeter of the Subject Property. Vegetation within this area consisted of Urban Exotic/Native vegetation in the north-west and a patch along the eastern boundary. Commonly planted native species included *Banksia ericifolia* and *Banksia serrata.* Exotic species included *Ligustrum sinense* and the Priority Weed, *Asparagus aethiopicus*. Patches of Central Coast Escarpment Moist Forest existed along the southern and eastern boundaries of the Subject Property. The canopy contained native species including *Eucalyptus botryoides, E. crebra, E. punctata,* and *Syncarpia glomulifera.* The mid and ground stratum were highly modified with various exotic species present including *Ehrharta erecta, Tradescantia fluminensis,* and the Priority Weed, *Asparagus asparagoides.* No habitat features such as hollow-bearing trees or drainage lines were identified within this area. The objective of this management zone is to retain and enhance the native vegetation representative of Central Coast Escarpment Moist Forest.

Management Requirements

Assisted Natural Regeneration

- Removal and control of all environmental and Priority Weeds that occur within the zone;
- Prevent further encroachment of weeds from this zone into adjoining areas; and
- Herbicides should be used conservatively, with only environmentally friendly herbicides to be used.

Fencing

- Temporary fencing should be erected around this zone to ensure the vegetation is not impacted during construction works.

Landscaping

- All landscaping should be completed with species from the associated landscape plan (Landscape Architects 2020);
- If additional plants are required, they should be locally indigenous species representative of the Central Coast Escarpment Moist Forest (**Appendix A**); and
- No Priority Weeds listed under the *Bio Security Act 2015* are to be planted.

3. Ongoing Management Actions

3.1 Performance Criteria

Task	Objective	Key Performance Indicator (KPI)	How will this KPI be assessed?	Designated time to meet KPI	If KPI cannot be met by designated time
1.	Control all Priority Weeds.	Priority Weeds for the Greater Sydney region must be eradicated from the entire Subject Property by the end of the first year.	This should be confirmed by the Project Ecologist through a site assessment that comprises a randomised monitoring plot within management zone 2.	Within 12 months of bush regeneration works commission.	Double the amount of site visits by Bush Regeneration team for the next 6 months or until KPI is met.
2.	Control all other (environmental) weeds.	All other (environmental) weeds to comprise less than 5% cover within management zone 2 by the end of each maintenance period.			
3.	Pre-clearing survey complete.	A pre-clearing survey must be completed by a suitably qualified and experienced Ecologist prior to any vegetation clearing works.	This will be confirmed by the pre-clearing survey report completed by the attending Ecologist.	Prior to vegetation clearing works.	Clearing works are to be suspended until the pre-clearing survey has been completed.
4.	Clearing supervision.	A suitably qualified and experienced Ecologist is to supervise all tree clearing works to manage any fauna that may be present in situ.	This will be confirmed by the post-clearing report completed by the attending Ecologist.	During clearing works.	N/A
3.	Implementation of the landscape plan.	Implementation of the landscape plan (Landscape Architects 2020) within both management zones to be completed by a suitably qualified Bush Regeneration Contractor or Gardener within 6 months of the commencement of construction works. If additional plants are required, they should be locally indigenous species representative of the Central Coast Escarpment Moist Forest (**Appendix A**). No environmental or Priority Weeds are to be planted.	This should be assessed by the Project Ecologist who will confirm the installation of plants within the management zones.	After 12 months of weed control works.	Bush Regeneration Contractor should be contacted. The proponent should commission double the number of site visits for the following year, unless planting is completed before this time.
4.	Survival of native tree and shrub plantings from the landscape plan.	95% survival rate of all native shrub plantings and 100% survival rate of all native tree plantings installed within the Subject Property over the life of the BMP.	This is determined by the Project Ecologist through a site assessment involving a count of individual plantings installed within Zone 1 and 2 on an annual basis.	By the end of each calendar year for 5 years.	A suitably qualified gardener should be contacted in order to replace all plants that have not survived the initial establishment phase of the BMP.
5.	Review of the BMP document.	This BMP document should be reviewed by a qualified Ecologist with experience in preparing BMPs.	An Ecologist is to review this BMP by the date that is exactly 5 years after commencement of BMP implementation. The ecologist must undertake a site survey and produce a report that compares all of the data from the previous 5 years before reviewing the BMP. The review will allow the BMP to be updated to best reflect the condition and requirements of the Subject Property.	5 years after commencement of BMP implementation.	N/A

3.2 Proposed Work Schedule / Timing

Task	Process for Completion	Time Required (estimate)	Responsibility	Scheduling					
				Year 1	Year 2	Year 3	Year 4	Year 5	Ongoing
Appointment of relevant contractors.	Appointment of a qualified Project Ecologist.	Prior to construction.	Proponent						
Installation of sediment fencing and controls.	Installation of sediment control surrounding the proposed construction area should be completed prior to any excavation or modification of vegetation for construction. Install temporary signage around the development to delineate the external area to be conserved during and after works.	Once, prior to any excavation or vegetation clearing for construction works.	Contractor						
Pre-clearing and report.	Pre-clearing survey to be undertaken before the commencement of vegetation clearing. A pre-clearing report is to be submitted within ten (10) days of pre-clearing survey completion.	Once, prior to vegetation clearing works.	Project Ecologist						
Clearing supervision and post-clearing report.	Clearing supervision is maintained during the vegetation clearing process. A post-clearing report is to be submitted within ten (10) days of clearing completion.	During vegetation clearing works.	Project Ecologist						
Implement the Hygiene Protocol.	Implementation of Hygiene Protocol as per the report, 'Arrive Clean, Leave Clean' (Commonwealth of Australia 2015).	During all construction and vegetation works.	All Contractors Project Ecologist Proponent						
Assisted natural regeneration.	Active removal of environmental and Priority Weeds from all Management Zones. Ensure 0% Priority Weed cover and <5% environmental weed cover across management zone 2.	By the end of each management period	Proponent						
Landscaping.	Implementation of the landscape plan (Landscape Architects 2020). If additional plants are required, they should be locally indigenous species representative of the Central Coast Escarpment Moist Forest (**Appendix A**). No environmental or Priority Weeds are to be planted.	As quoted by suitably qualified person. Follow up plantings should be undertaken throughout the life of the BMP if the survival rate drops below 95%.	Proponent		As required				
The proponent should undertake long-term maintenance.	Any repair or maintenance of fences (incl. sediment fence).	As advised by Project Ecologist.	Proponent	As required					
The proponent should commission formal monitoring and reporting.	Assess progress of remediation and ongoing assisted natural regeneration works through sampling of one (1) 5m x 5m vegetation plot within management zone 2.	Annually: 1 Project Ecologist for 1-day site visit, 20hrs report writing.	Project Ecologist						

4. Additional Management Actions and Details Applicable

4.1 Assign a Project Ecologist

- Prior to commencement of any vegetation clearing, weed removal, or construction works on the Subject Property, a Project Ecologist must be assigned to oversee relevant works. The Project Ecologist must as a minimum:
    - Hold a relevant tertiary degree in Science, Biology, Ecology, Environmental Science, Environmental Management, or Natural Resource Management;
    - Be fully licensed under the Biodiversity Conservation Act 2016 (or equivalent); and
    - Be fully licensed with a NSW Animal Research Authority (or equivalent) permitting the handling, relocation, and humane euthanasia of all terrestrial fauna.

4.2 Assigning a Bush Regenerator Contractor or Gardener

- All works associated with weed management and revegetation must be implemented by a suitably qualified person with familiarity of New South Wales south-east Coast flora, in particular, the floristics of the Central Coast Escarpment Moist Forest community.

4.3 Weed Management

- Weed management must be undertaken throughout all management zones, targeting weed infestations and ensuring no weed encroachment into surrounding area of native vegetation; and
- All weeds removed should be bagged, removed from site, and disposed of at a registered waste facility.

a. Performance Criteria

- Specified weed densities achieved and maintained;
- No Priority Weeds present within any management zones; and
- Environmental weeds maintained to low levels (not spreading or impacting native plant species growth or regeneration).

b. Weeding Techniques

- Cut and Paint: Woody weeds (i.e. Small and Large-leaved Privet) are to be treated using the cut and paint method, which involves the cutting of the stem as close to the ground as possible and applying herbicide to the freshly exposed stem;
- Scrape and Paint: Weeds with a deep tap root (i.e. *Ochna serrulata*) will need to be treated utilising the cut and paint method which involves taking a knife and scrapping up the stem from the base to as high as possible and then applying herbicide to the exposed section of the stem;
- Hand Removal: Weeds such as *Asparagus aethiopicus* will require digging out with a trowel or shovel. Trying not to remove too much soil, you should dig to expose and remove the crown; and
- Herbicide Usage: Due to the native vegetation located on the Subject Property, only herbicides suitable for use in environmentally sensitive areas, such as Roundup Biactive, should be used.

4.4 Planting Guidelines

- Plantings should consist only of species listed in the landscape plan (Landscape Architects 2020);
- If additional plants are required, they should be locally indigenous species representative of the Central Coast Escarpment Moist Forest (**Appendix A**);
- Tree plantings should be undertaken using mature stock;
- Shrub plantings should be undertaken using hiko cells or tube stock;
- Groundcover (grass, sedge and herb) densities can be achieved using a combination of any of the following sources: direct seeding (e.g. *Microlaena stipoides*), translocation by bush regenerators, or planting of hiko cell or tube stock;
- Success of plantings and planting methods should be reviewed by an Ecologist during the monitoring visits;
- Planting efforts should be conducted by a suitably qualified person;
- Tube stock and hiko cells should be planted into appropriately sized pits in the soil that are at least twice the depth of the pot the plant is in. Appropriate fertiliser and soil wetting agent should be applied to each plant;
- Planting should only take place after exotic groundcovers have been cleared around the planting area; and
- All plantings should be watered and maintained by a team of Bush Regenerators Contractors, with extra watering visits planned during times of predicted low rainfall.

4.5 Erosion Control

- In pre-emptive action, adequate erosion and sediment measures should be in place during construction activities in case of minor sediment run off and/or disruption to soil profiles;
- Preceding construction works, the 'Blue Book' (Landcom 2004) should be consulted to ensure any additional necessary erosion controls are adequately installed; and
- Appropriate sediment traps should be installed around the construction area prior to any excavation works being undertaken.

4.6 Monitoring Specifications

a. Establishment of Monitoring Quadrats

- One (1) 5m x 5m monitoring quadrat should be assessed within management zone 2 to record all native and exotic species, and abundance cover of each species as a percentage of the plot;
- Photographs should be taken as a reference to highlight the regeneration and maintenance of the management zone and should be included in annual monitoring reports;
- Monitor planted trees and shrubs to assess their condition and survival rate within both management zones. If plant survival rate is less than 100% for trees and 95% for shrubs after 1-year, dead plants should be replaced with healthy ones to the extent that the densities and types of plants are restored; and
- The Ecologist should monitor the percentage of native ground cover across management zone 2 and track its regeneration against key performance criteria.

b. Monitoring Details

- Vegetation monitoring should be completed on an annual basis (during Spring) by a suitably qualified Ecologist;
- General site-specific photographs should be collected within the management zone;
- Vegetation condition within the monitoring plot should be monitored against performance criteria;
- Floristic data to be collected within each plot should include:
    - Weed cover within each vegetation layer (ground, mid-strata, canopy);
    - Full species list including native and weed species; and,
    - One photograph collected of the groundcovers within a 1m x 1m quadrat.

4.7 Reporting and Review

- Vegetation monitoring reports should be produced annually (late Winter – Spring) by a qualified Ecologist and should include;
    - A summary of annual weed management works;
    - A site assessment based on performance targets;
    - Presentation of photographic evidence to illustrate progress of weed management and native regeneration;
    - Any management issues/recommendations required to meet performance targets;
    - Updated work specifications as required to meet performance targets; and
    - Management/maintenance requirements or recommendations to inform any subsequent management of the site (beyond the 1st year maintenance period).
- This BMP should be reviewed by a qualified Ecologist at least every five years from the date of its adoption.

4.8 References

- Giles Tribe (2020) Master Set Plans – Proposed Seniors Housing 54 Bardo Road, Newport NSW 2106
- Landcom (2004) Managing Urban Stormwater: Soils and Construction
- Landscape Architects (2020) Landscape Plan for 54 Bardo Road, Newport NSW 2106
- Narla Environmental (2020) Flora and Fauna Assessment 54 Bardo Road, Newport NSW 2106
- Northern Beaches Council (2014a) Pittwater Development Control Plan (PDCP)
- Northern Beaches Council (2014b) Pittwater Local Environmental Plan (PLEP)
- NSW Department of Primary Industries (DPI) (2020) Priority Weeds for the Greater Sydney, NSW Weeds Wise https://weeds.dpi.nsw.gov.au/WeedBiosecurities?AreaId=77
- NSW Government Spatial Services (NSW SixMaps) (2020) NSW Government Land & Property Information Spatial Information Exchange map viewer, https://six.nsw.gov.au/
- Office of Environment and Heritage (OEH) (2016) The Native Vegetation of the Sydney Metropolitan Area. Volume 2: Vegetation Community Profiles. Version 3.0
- Tree Survey Arboricultural Consultants (2020) Arboricultural Impact Assessment & Tree Protection Plan – 54 Bardo Road, Newport
- Warringah Council (2014) Biodiversity Management Plan Report Guidelines

Appendix A. Recommended revegetation species list for Central Coast Escarpment Moist Forest (OEH 2016)

Scientific Name	Canopy	Mid-storey	Groundcover
Acacia floribunda		x	
Acacia longissima		x	
Acmena smithii		x	
Allocasuarina torulosa		x	
Angophora floribunda	x		
Astrotricha floccosa		x	
Backhousia myrtifolia		x	
Banksia integrifolia		x	
Billardiera scandens			x
Blechnum cartilagineum			x
Bursaria spinosa		x	
Calochlaena dubia			x
Cassytha pubescens			x
Cissus hypoglauca			x
Clematis aristata			x
Dianella caerulea			x
Dodonaea triquetra		x	
Eucalyptus botryoides	x		
Eucalyptus paniculata subsp. *paniculata*	x		
Eucalyptus piperita	x		
Eucalyptus umbra	x		
Geitonoplesium cymosum			x
Gymnostachys anceps			x
Hibbertia dentata			x
Lepidosperma laterale			x
Livistona australis		x	
Lomandra longifolia			x
Myrsine variabilis		x	
Pteridium esculentum			x
Pultenaea flexilis		x	
Schelhammera undulata			x
Syncarpia glomulifera	x		
Synoum glandulosum		x	
Trema tomentosa var. *aspera*		x	
Tristaniopsis laurina		x	

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