Biodiversity Management Plan

58 Laitoki Road, Duffys Forest

Report prepared by Narla Environmental Pty Ltd

for Calderflower Architects

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NARLA
environmental

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Report Certification

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I, Kurtis Lindsay, certify that:

- This Biodiversity Management Plan has been prepared in accordance with the brief provided by the client
- The information presented in this report is a true and accurate record of the study findings in the opinion of the authors
- This report is the honest opinion of the authors and Narla Environmental Pty Ltd

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Executive Summary

Narla Environmental have produced a comprehensive Biodiversity Management Plan (BMP) to accompany the proposed development at 58 Laitoki Road, Terrey Hills (Lot 368/ DP752017). The BMP is designed to assist the proponent in identifying, protecting and successful management of native flora and fauna habitat occurring within the Subject Site. The aim of the plan is to provide a schedule of impact mitigation measures along with ongoing conservation, restoration and maintenance activities for the bushland to be retained on the site.

Through the implementation of this BMP, the proponent will undertake:

- The management of both environmental and priority weed species from within the Subject Site to below a minimum of 5% coverage in relation to the overall coverage of native vegetation
- The complete floristic revegetation of the Riparian Corridor within the western extent of the Subject Site with locally indigenous native vegetation representative of the Duffy's Forest Endangered Ecological Community
- The exclusionary and sediment fencing of the Riparian Corridor to ensure the area is not damaged pre, during and post construction.
- The floristic revegetation of all native vegetation areas to be retained, outside of the proposed development footprint, with locally indigenous native vegetation representative of the Duffy's Forest Endangered Ecological Community
- The engagement of a suitably qualified Bush Regeneration Contractor to undertake all wee management and native revegetation works and maintenance
- The engagement of a suitably qualified Project Ecologist to undertake all required pre-clearing surveys, clearing supervision and routine monitoring surveys in order to report on the progress of the BMP to Northern Beaches Council as required.
- The installation of compensatory fauna habitat within retained vegetation at the minimum rate of 1:2 (two nest boxes installed per tree hollow removed)

The successful implementation of this BMP will result in an overall gain in biodiversity values present within the property including an increase in the amount of native vegetation representative of the Duffy's Forest Endangered Ecological Community.

Contents

Figures

Tables

1. Introduction and Site description

1.1 Background and Project Proposal

Narla Environmental (Narla) was engaged by Calder Flower Architects (the proponent) to provide this Biodiversity Management Plan (BMP). This BMP is to be lodged in conjunction with a Development Application (DA) for proposed development of 58 Laitoki Road, Terrey Hills (Lot 368/ DP752017), here after referred to as the 'Subject Site' (**Figure 1**).

The proposed works involve the demolition of existing dwellings and ancillary structures, and the partial clearing of both native and exotic vegetation for the construction of a multi-structured aged care facility development within the Subject Site.

This report is based upon Warringah Local Government Area (LGA) planning requirements for management of biodiversity under Warringah Local Environment Plan 2011 (LEP) and Warringah Development Control Plan 2011(DCP).

Figure 1. Location of the Subject Site, proposed development footprint and mapped riparian corridor

1.2 Requirement for a Biodiversity Management Plan

The presence of native bushland within the Subject Site, including threatened species and Endangered Ecological Communities (EEC) within the Subject Site, required the preparation this Biodiversity Management Plan (BMP).

The BMP provides appropriate management actions for the on-going management of the Subject Site and relevant parts of the Subject Site.

For a full description of the Subject Site including location, extent, existing flora, fauna, geology and hydrology see the corresponding, Flora and Fauna Assessment' (Narla 2019).

1.3 Aims and Objectives

This aim of this BMP is to:

- ensure the proposed development is conducted in line with the principles of ecologically sustainable development;
- generate a net ecological gain for the Northern Beaches LGA by guiding the enhancement and regeneration of native vegetation on the Subject Site;
- reduce the coverage of priority and environmental weeds within the Subject Site;
- benefit local bushland and waterways by reducing sources of weed infiltration; and,
- enhance the local habitat for fauna on the Subject Site and surrounds.

This BMP is intended as a practical document to specify appropriate native vegetation management and rehabilitation field works in order to enhance the riparian corridor within the Subject Site and to guide vegetation maintenance into the future.

These aims of this BMP will be achieved through this document by:

- guiding site management and native vegetation establishment;
- specifying best-practice native vegetation rehabilitation works;
- specifying any required flora and fauna protections;
- directing the appropriate removal and handling of Priority Weeds;
- advising local provenance plant selection, seed collection and propagation;
- detailing plant installation and maintenance; and,
- providing indicative costing for native vegetation management and rehabilitation works.

2. Site Description

2.1 Existing Vegetation

Site Assessment conducted by Narla Environmental revealed that the native vegetation observed within the Subject Site was representative of a single vegetation community, *PCT 1786 Sydney Ironstone Bloodwood-Silvertop Ash Forest*. The vegetation identified is representative of the EEC, *Duffys Forest Ecological Community in the Sydney Basin Bioregion* (TSSC 2002). This community is listed as an EEC within New South Wales under the BC Act. It is therefore of high retention value.

Field validated vegetation communities within the Subject Site are mapped in **Figure 2.**

2.1.1 Duffys Forest Ecological Community in the Sydney Basin Bioregion

An occurrence of '*PCT 1786 Sydney Ironstone Bloodwood-Silvertop Ash Forest*' was identified within the Subject Site. This vegetation meets the thresholds to be considered as 'Duffys Forest in the Sydney Basin Bioregion EEC (TSSC 2002) here forward referred to as 'Duffys Forest EEC'. This community has a highly-restricted distribution known almost entirely from suburbs of northern Sydney, including the local government areas of Northern Beaches, Kur-ring-gai and Hornsby Local Government Areas, although it may occur elsewhere in the Sydney Basin Bioregion. Duffys Forest has been mapped within the southern reaches of Kur-ring-gai Chase National Park and the northern edge of Garigal National Park (NSW Scientific Committee 2002).

2.2 Priority and Environmental Weeds

Weed infestations are concentrated along the fringes of the Subject Site with localised occurrences scattered throughout the centre of the property. The most severe woody weed infestations occur along the western boundary of the Subject Site within the riparian corridor of Neverfail Gully as well as in select areas along the southern boundary of the property. These weed infestations also contain dense herbaceous, vine and graminoid weed infestations.

Within the areas containing native vegetation, weed density decreases however scattered exotic species remain at low levels. This issue is further discussed in **Section 3.3.**

Figure 2. Field Validated Vegetation Communities within the Subject Site (Narla 2018).

2.3 Habitat Values

A thorough assessment of fauna habitat availability across the Subject Site was conducted. The habitat assessment provided an understanding of the fauna species (including threatened species) that may potentially occur on the Subject Site during part of their lifecycle. Abundant sheltering habitat for a wide range of local and highly-mobile fauna was identified throughout the Subject Site.

Hollow-bearing trees may provide habitat for reptiles, frogs, arboreal mammals and microchiropteran bats (microbats). A total of twenty-seven (27) hollow-bearing trees were situated throughout the Subject Site, within these trees, a total of forty-nine (49) potential tree hollows were identified during survey comprising:

- Thirty (30) small hollows (2.5cm-5cm);
- Thirteen (13) medium hollows (5-10cm); and
- Six (6) large hollows (>10cm).

The subject site may be utilised by a number of threatened insectivorous microchiropteran bats for roosting and foraging. Multiple hollow-bearing trees were identified within the Subject Site. These provided suitable habitat for threatened hollow-roosting microchiropteran bats including:

- *Mormopterus norfolkensis* (Eastern Freetail-bat);
- *Saccolaimus flaviventris (*Yellow-bellied Sheathtail-bat);
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle);
- *Miniopterus australis* (Little Bentwing-bat);
- *Miniopterus schreibersii oceanensis* (Eastern Bentwing Bat)
- *Myotis macropus* (Southern Myotis); and
- *Scoteanax rueppellii* (Greater Broad-nosed Bat).

Coarse woody debris, large logs and leaf-litter, that may provide foraging habitat for invertebrates, small reptiles and frogs, however it is not expected that any threatened species would utilise such habitat on the Subject Site.

A suite of foraging habitat, including fruit and flower-bearing trees provide foraging habitat for local and nomadic fauna, including:

- *Pteropus poliocephalus* (Grey-headed Flying Fox) (vulnerable BC Act and EPBC Act)
- *Anthochaera phrygia* (Regent Honeyeater) (critically endangered BC Act and EPBC Act)
- *Lathamus discolor* (Swift Parrot) (endangered BC Act and critically endangered EPBC Act)
- *Glossopsitta pusilla* (Little Lorikeet) (vulnerable BC Act).

Rough-barked woodland trees and dense woodland shrubs provided potential foraging and nesting for the following vulnerable, insectivorous bird species:

- *Daphoensitta chrysoptera* (Varied Sittella)
- *Artamus cyanopterus* (Dusky Woodswallow)

However, the paucity of local records of either species, and the abundance of aggressive Noisy Miner and predatory birds renders the Subject Site largely unsuitable for these two sensitive woodland birds.

A scattering of *Allocasuarina littoralis* (Black She-oak) provide potential, intermittent foraging habitat for *Calyptorhynchus lathami* (Glossy Black Cockatoo) across the subject site.

Small-medium sized mammals and birds within the site are likely to attract large predatory birds including:

- *Ninox connivens* (Barking Owl);
- *Tyto novaehollandiae* (Masked Owl);
- *Ninox strenua* (Powerful Owl);
- *Haliaeetus leucogaster* (White-bellied Sea Eagle);
- *Lophoictinia isura* (Square-tailed Kite); and
- *Hieraaetus morphnoides* (Little Eagle).

2.4 Riparian Habitat

The extent of the riparian habitat is situated along the western boundary of the Subject Site and is considered to represent low quality vegetation. This riparian corridor follows the Neverfail Gully watercourse which flows in a southerly direction and is a tributary of Kierans Creek line that flows into the Ku-ring-gai Chase National Park. The vegetation community associated with this riparian buffer has been identified as Duffys Forest EEC. The riparian corridor of Neverfail Gully is not expected to be impacted as a result of the proposed development.

Weeds species formed a majority of the vegetation biomass along the riparian corridor. There were few native trees, shrubs and groundcovers scattered amongst the dense weed infestations of this corridor.

Intensive, ongoing management of both environmental and priority weed species within this corridor is to form a key recommendation and action of this BMP and will contribute to the biodiversity gains expected across the subject site.

3. Biodiversity Management Measures

Some of the management issues discussed in this report are already in action within the Subject Site; and others have the potential to occur as a result of the proposed works.

This section of the report details:

- The nature and extent of any proposed construction activities (e.g. soil excavation, vegetation clearing, etc.)
- The nature and extent of any proposed operational activities (e.g. landscaping, materials storage, on-site wastewater/effluent disposal).

3.1 Vegetation Management Zones

Management of the Biodiversity within the Subject Site has been divided into the following Management Zones which were created based on proposed vegetation community or habitat type (**Figure 3**).

- Management Zone 1: Duffys Forest EEC Revegetation Area
- Management Zone 2: Duffys Forest EEC Revegetation Area (Riparian)

3.2 Vegetation Clearing

The proposed development will require clearing of a small area of native vegetation from the Subject Site. Out of the total of 0.28ha of native vegetation that occurred on the subject at the time of preparing this report, a maximum of 0.09ha of native vegetation is expected to be removed from the Subject Site to allow for the construction of the proposed development and ancillary structures (inclusive of all hard landscaping, landscaped stormwater disposal, effluent disposal pathways and driveways).

All native vegetation required to be removed as a result of the proposed development is representative of Duffys Forest EEC. To compensate for this, at least 0.591ha of native vegetation will be replaced across the Subject Site through active revegetation with local provenance flora representative of the vegetation communities required to be removed. The revegetation effort is detailed in this report.

Figure 3. Management (Work) Zones identified within the Subject Site (Arterra 2019a)

3.3 Priority and Environmental Weeds

At the time of the survey, the primary management issue was the presence of weeds throughout the vegetated areas of the Subject Site. The riparian corridor of Neverfail Gully was identified as a particular point of concentration for weed infestation within the Subject Site.

Five Priority Weed species were identified within the Subject Site (**Table 1**) as listed within the Northern Beaches LGA (DPI 2018). All noxious weed infestations were largely concentrated within the margins of the property as well as the riparian corridor in the western extent of the Subject Site.

All of the identified Priority Weed species besides *Cestrum parqui* are also listed as Weeds of National Significance (WoNS) and as such, are to be controlled where possible.

The Subject Site also contains a suite of commonly occurring environmental weeds that are dispersed throughout the entirety of the Subject Site (**Appendix A**).

Table 1. Summary of priority weeds recorded within the Subject Site.

Species	Priority Weed Duty	Management Requirement
Rubus fruticosus species aggregate (Blackberry)	Prohibition on dealings	Must not be imported into the State or sold
Cestrum parqui (Green Cestrum)	Regional Recommended Measure	Land managers should mitigate the risk of new weeds being introduced to land used for grazing livestock. Land managers should mitigate spread from their land. Plant should not be bought, sold, grown, carried or released into the environment
Asparagus aethiopicus (Ground Asparagus)	Prohibition on dealings	Must not be imported into the State or sold
Senecio madagascariensis (Fireweed)	Prohibition on dealings	Must not be imported into the State or sold
Lantana camara (Lantana)	Prohibition on dealings	Must not be imported into the State or sold

3.4 General Management Recommendations

3.4.1 Assigning a Project Ecologist

Prior to commencement of any vegetation clearing, weed removal or construction works on the Subject Site, a Project Ecologist must be assigned to oversee relevant works and ensure the proponent is adhering to the recommendations of this BMP and the corresponding FFA (Narla 2018). The Project Ecologist must as a minimum:

- Have a relevant tertiary degree in Science, Biology, Ecology, Environmental Science, Environmental Management or Natural Resource Management,
- Be fully licensed under the *National Parks and Wildlife Act 1974* (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

3.4.2 Vegetation Protections

A qualified Ecologist must attend the Subject Site in the presence of a surveyor, qualified Consulting Arboriculturalist and the construction contractor to mark-out the boundaries of the proposed construction works (i.e. with flagging tape) in order to delineate where to erect temporary fencing or flag-rope / safety bunting which is required to prevent inadvertent clearing or other harm to all native trees and vegetation located outside of the construction zone. Larger, more contiguous areas to be revegetated in the southern and western extents of the site are to be protected by permanent post and rail fencing on all sides (Figure 6). Gates are to be installed at regular intervals along the fencing to allow for access and egress into the revegetation areas.

This is separate to Tree Protection Fencing (TPZ) which will be addressed independently by a Consulting Arboriculturalist.

3.4.3 Assigning a Bushland Restoration Contractor / Bush Regenerator

All works associated with native vegetation and or flora providing habitat, including weed management are to be implemented by a fully qualified and experienced Bush Regeneration Contractor.

The Bushland Restoration Practitioner selected to complete the project works must:

- Provide a statutory declaration stating their compliance with provisions of the national Gardening & Landscape Services Award 2010;
- Provide completed and signed Subcontractor Statement regarding payment of worker's compensation, payroll tax and remuneration;
- Provide established Workplace Health & Safety and Environmental Management Systems. Preferably the company has third-party accredited systems in place;
- Demonstrate implementation of safe workplace and appropriate environmental management practices and procedures (e.g. appropriate transport and management of herbicides);
- Provide Public Liability (min. $10M) and Workers Compensation Insurance;
- Have previous experience undertaking bushland restoration works within the local area, particularly within Duffys Forest EEC. Contractor references are to be contacted;
- Provide supervisor with minimum qualifications and experience including Certificate III Conservation & Land Management and two years full-time equivalent experience as a trained bush regenerator;
- Provide a minimum of two trained bush regenerator per team (minimum qualifications and experience including Certificate III Conservation & Land Management and one year full-time equivalent experience as a bush regenerator);
- Provide a minimum of one trained bush regenerators per team of four (minimum qualifications and experience including Certificate III Conservation & Land Management and one year full-time equivalent experience as a trained bush regenerator);
- Schedule appropriately resourced regular site visits for the duration of contract period;

- All herbicide usage, including storage and transport, to be in accordance with WorkCover NSW (2006) and all relevant legislation.

3.4.4 Weed Management

All weed removal works undertaken in bushland, riparian and revegetation areas are to be implemented by a fully qualified and experienced Bush Regeneration Contractor.

The proponent must assign an experienced and qualified Ecologist to regularly monitor weed incursions and maintain a regular weed management control program for the Bush Regeneration Contractor to follow.

All 'priority' weeds should be removed from the Subject Site over time, with on-going weed control efforts made by Bush Regeneration Contractors on a regular basis for the lifetime of this BMP.

Some weeds on the Subject Site such as may currently provide prey, nectar, fruit or shelter for fauna such as small birds. Since they are environmental weeds, these plants should still be removed from the Subject Site. In order to reduce any potential negative influence on fauna, weeds should be progressively removed and replaced with ecological-equivalent indigenous native indigenous flora species known to occur naturally within the area.

All weed removal, bushland restoration, and landscape planting works carried out within the Subject Site must be undertaken by qualified Bushland Restoration Professionals with the required qualifications, as discussed in **Section 3.5.** All site supervisors should have the ability to identify any additional threatened flora which may emerge during the weed management works.

3.4.5 Vegetation Clearing

Care must be taken to avoid accidental clearing or disturbance to any vegetation located outside the 'maximum limit of disturbance'. This limit is to be delineated to all site contractors by installing temporary fencing or 'flag-rope' / 'safety bunting', erecting signs indicating 'Vegetation Protection Area' as well as permanent post and rail fencing (**Section 3.4.2**).

Native vegetation/tree removal/clearing can be delivered by a qualified Arborist Contractor and can only take place in Management Zone 1 (not Management Zone 2) (**Figure 3**). Clearing may take place using chainsaw-rope-pulley procedures or heavy machinery under the supervision of an Ecologist who will capture and relocate any displaced fauna. Tree protection measures as per **Section 3.5.1.1.1** should be implemented and adhered to during all construction and development works.

Vegetation removal in Management Zone 2 will be restricted to removal of exotic trees/shrubs/groundcovers and only delivered by Qualified Bush Regeneration Contractors using hand methods (not machinery).

During clearing, contractors should stockpile logs or hollow limbs for use as habitat during revegetation efforts in Management Zone 2 (**section 3.5.2.5**).

3.4.6 Pathogen Controls

Phytophthora and Myrtle Rust are pathogens which can be spread through infected soil, with potentially large detrimental impact. The risk to biodiversity related to each pathogen has resulted in them being listed as Key Threatening Process (KTP) under the BC Act. Although these pathogens were not observed within the Subject Site, as a precautionary measure, hygiene procedures are essential.

Such hygiene protocols have the additional benefit of limiting the potential to facilitate the introduction or spread of weed propagules to the Subject Site, which can be costly to manage later.

Basic principles include avoiding transport of sediment onto and off site by cleaning all work clothing, gloves, tools and machinery. In some cases, a solution of 70% ethanol or methylated spirits in 30% water may be sufficient to disinfect equipment prior to use.

The report, 'Arrive Clean, Leave Clean' (Commonwealth of Australia 2015) provides further information and best practice methods to reduce spread of these pathogens between work Subject Sites.

3.4.7 Stormwater and Sewage

The proposed development is likely to modify the current stormwater flow from within the Subject Site into the adjoining Neverfail Gully, west of the proposed development. The introduction of increased hard surface development and landscaping within the Subject Site is expected to increase the volume of stormwater discharge entering the waterway.

In order to protect the adjoining waterway from the potential impacts of increased stormwater discharge, the proposed stormwater capture system will store and treat stormwater runoff prior to releasing it into Neverfail Gully in order to maintain and/or improve the nature of runoff discharging from the site via the creek. (Martens 2018). The proposed stormwater outlets will be designed and installed in accordance with the appropriate *Guidelines for Outlet Structures on Waterfront Land* (DPI 2012) in order to reduce the potential impact of the increased stormwater accumulation and runoff. Riparian revegetation efforts undertaken will ensure stability and prevent bank erosion/ scour/ failure (Martens 2018). No barriers between existing waterways and floodplains are proposed and as such, there will be no modification to the existing flood regime of Neverfail Gully (Martens 2018).

All proposed construction and site works are to be done so with the appropriate sediment and erosion mitigation measures in place as per the relevant guidelines of *Managing Urban Stormwater: Soils and construction* (Landcom 2004).

Ensuring adherence to the recommendations outlined within the corresponding Water Way Impact Statement and Riparian Management Plan (Martens 2018) and Flora and Fauna Impact Assessment Report (Narla 2018), the proposed development is expected to have a positive impact on the waterway environment of Neverfail Gully (Martens 2018).

3.4.8 Water Contaminants

The proposed development does not represent an ongoing contamination risk. Use of chemicals (fertilisers, insecticides etc), where required, will be carefully managed to prevent leaching into groundwater and waterways (Martens 2018). Examples of methods may be the use of cutting and painting larger weeds as an alternative to spraying.

All chemicals used on site should be stored appropriately, according to their relevant Material Safety Data Sheet (MSDS), away from the riparian corridor at all times and adequate spill kits should be made available.

3.5 Zone Specific Management and Impact Mitigation Actions

3.5.1 Management Zone 1: Duffys Forest Revegetation Area

Areas and planting densities proposed for the vegetation management in Management Zone 1 are listed in the Landscape Plan (Arterra 2018). All calculations and costings should be determined based on the dimensions and densities put forward in the Landscape Plan.

3.5.1.1 Preclearing Survey & Fauna Habitat Management

During the clearing or thinning of any vegetation, it is important that landowners are aware of potential for indirect harm to native animals and loss of their natural habitat (regardless of whether vegetation is native or exotic). Landowners who clear trees and vegetation are not exempt from prosecution under the BC Act, *National Parks and Wildlife Act 1974* for harm to protected fauna, or for cruelty to animals under the *Prevention of Cruelty to Animals Act 1979*.

All personnel (including contractors) working on the site in relation to the pre-clearing of vegetation are to undertake site inductions relating to environmental matters including but not limited to, fauna handling and protection, implementing adequate hygiene protocols in order to reduce the transfer of environmental diseases and pathogens as well as the management of erosion control and the protection of the integrity of the Neverfail Creek line that runs along the Western boundary of the Subject Site.

A qualified Ecologist with experience in handling wildlife should be present on the Subject Site to conduct a pre-clearing survey prior to the removal of any shrubs and/or trees to check for the presence of fauna that may be utilising vegetation as habitat.

An Ecologist pre-clearing assessment should occur no more than 1-2 weeks prior to the commencement of clearing works, and at least 12 hours prior to commencement of clearing works.

The Project Ecologist will identify and delineate which of the trees (including dead trees) scheduled for removal from the proposed development area contain fauna habitat. This will take place during a pre-clearing survey of the Subject Site prior to any tree removal works taking place. All tree hollows removed are to be replaced within suitable vegetation elsewhere within the Subject Site at the compensatory ratio of 1:2 (two nest boxes per tree hollow removed).

An Ecologist should be present during felling of any dense shrubbery, or hollow-bearing trees in order to capture and relocate and displaced fauna. In the event any fauna is displaced during vegetation clearing, the Ecologist will advise the best course of action. This may involve transportation of injured wildlife to a carer for care and rehabilitation.

3.5.1.1.1 Tree Protection Measures

All trees that are identified for retention during the pre-clearing assessment are to be protected by the installation of temporary fencing and any additional tree protection measures deemed necessary by the consulting arborist (eg. tree guards).

3.5.1.2 Erosion

There is limited potential for erosion to occur across the riparian corridor as there is sufficient ground cover vegetation. No ground disturbance is expected to be undertaken within the mapped riparian corridor and as such, it is unlikely that riparian areas around Neverfail Gully or the creek bank will become unstable as a result of the construction works as they are a significant distance apart.

Within the wider Subject Site, erosion risk will be moderate to high due to historic clearing and the earthworks proposed. In pre-emptive action, adequate erosion and sediment measures will be in place at all times during construction activities (Martens 2018) in case of minor sediment run off and/or disruption to soil profiles. Sediment transport can result in imbalances in nutrient levels across the site and provide a source of contamination and siltation in down slope waterways (**Figure 5**).

Preceding construction works, the 'Blue Book' (Landcom 2004) should be consulted to ensure any additional necessary erosion controls are adequately installed. This may also involve mitigation measures to control any changes to stormwater flow over the construction site.

3.5.1.3 Duffys Forest EEC Revegetation

All revegetation efforts undertaken within Management Zone 1 should be representative of the naturally occurring Duffys Forest EEC. All plants installed are to be sourced from locally indigenous stock of known provenance that are representative of the Duffys Forest EEC revegetation list (**Appendix B**) or the equivalent list from community '3*) Silvertop Ash-Brown Stringybark Forest*' in the Warringah Natural Areas Survey (Warringah Council 2005). No non-indigenous 'native', cultivars or exotic species are to be planted in this zone at any time.

Revegetation of Duffys Forest EEC within this Management Zone is to adhere to the planting densities listed in the Landscape Plan (Arterra 2018).

All revegetation and rehabilitation within this Management Zone is to be undertaken by suitably qualified, experienced Bush Regeneration Contractors with a history of work within Duffys Forest EEC.

Plantings must only be undertaken in autumn, winter or early spring after adequate rainfall. Plantings should never be undertaken in summer.

3.5.1.4 Weed Control & Ongoing Management

As part of the implementation of the proposed development, all priority and environmental weeds identified within this management zone are to be actively removed by suitably qualified and experienced Bush Regeneration Contractors. Ongoing monitoring and management of weeds within this zone is to be undertaken for the life of the BMP to ensure weed coverage targets identified in **Table 4**. All weeds removed are to be bagged, removed from site and disposed of at a registered waste facility.

3.5.2 Management Zone 2: Duffys Forest Revegetation Area (Riparian Corridor)

For the purpose of vegetation management in Management Zone 2, this zone covers an area of approximately 1770m². All calculations, plant densities and costings should be based on this area measurement.

3.5.2.1 Preclearing Survey & Fauna Habitat Management

No native vegetation or identified fauna habitat is to be removed within this zone as a result of the proposed works.

All exotic/weed vegetation within this zone is to be removed over time, and replaced with locally indigenous, native vegetation representative of the Duffys Forest EEC by qualified Bush Regeneration Contractors.

In the event any fauna is displaced during weed removal clearing, the Project Ecologist should be notified immediately to provide expert advice on the best course of action. This may involve an Ecologist attending site to capture and relocate any displaced, healthy animals, or transport any injured wildlife to a carer for care and rehabilitation.

3.5.2.1.1 Tree Protection Measures

All trees that are identified for retention during the pre-clearing assessment are to be protected by the installation of temporary fencing and any additional tree protection measures deemed necessary by the consulting arborist (eg. tree guards).

3.5.2.1.2 Exclusionary Fencing

Prior to any construction works or vegetation clearing being undertaken, permanent fencing is to be erected along the Riparian Corridor boundary in which no construction work is to be undertaken. Signage should be erected along the fencing to indicate the presence of the Riparian Corridor and to reinforce the protection of this area (**Figure 5**).

3.5.2.1.3 Tree Hollow Identification

During vegetation pre-clearing, the Project Ecologist is to assess all vegetation proposed to be cleared and identify all potential tree hollows present within that vegetation. Once cleared, and the tree hollows are confirmed, these hollows are to be replaced at the compensatory ratio of 2:1 (two nest boxes installed per tree hollow removed) within suitable vegetation to be retained. Tree Hollow replacement is discussed further within **Section 3.5.3.4 below.**

3.5.2.2 Duffys Forest EEC Revegetation

All revegetation efforts undertaken within Management Zone 2 should be representative of the naturally occurring Duffys Forest EEC. All plants installed are to be sourced from locally indigenous stock of known provenance that are representative of the Duffys Forest EEC revegetation list (**Appendix B**) or the equivalent list from community '*3) Silvertop Ash-Brown Stringybark Forest*' in the Warringah Natural Areas Survey (Warringah Council 2005). No non-indigenous 'native', cultivars or exotic plant species are to be planted in this zone at any time.

All revegetation and rehabilitation within this Management Zone is to be undertaken by suitably qualified, experienced Bush Regeneration Contractors with a history of work within Duffys Forest EEC.

Revegetation of Duffys Forest EEC within this Management Zone is to adhere to the proposed planting densities (**Table 2**) derived from revegetation of similar communities in the Sydney Water *Storm Water Connections to Natural Waterways Guidelines* (Sydney Water 2014).

Plantings within this zone are to be comprised primarily of midstorey shrubs/trees and groundcover strata. Canopy trees may have extensive root systems that could damage creek banks over time, furthermore, most Duffys Forest EEC trees do not tolerate soils prone to waterlogging, therefore if canopy trees are planted, they should be planted away from the stream bed toe and mid-bank (**Figure 4**).

All revegetation and rehabilitation of Duffys Forest EEC within this Management Zone is to be undertaken by suitably qualified, experienced Bush Regeneration Contractors with a history of work within Duffys Forest EEC.

Plantings must only be undertaken in autumn, winter or early spring after adequate rainfall. Plantings should never be undertaken in summer. Tubestock or hiko cells are adequate for planting in this zone. Planting of advanced stock is not necessary. Wherever possible plants should be installed into holes cut within erosion-control matting (e.g woven jute mat), so as to continue providing erosion control, weed suppression and protection to the plants. If deemed necessary to aid in planting, crushed sandstone (clean) may be imported and spread over the soil surface. An appropriate amount of fertiliser and wetting agent should be applied to each hole to maximise plant survival. Plants must be watered regularly as required for the first three weeks following planting, then weekly for the next 5 weeks.

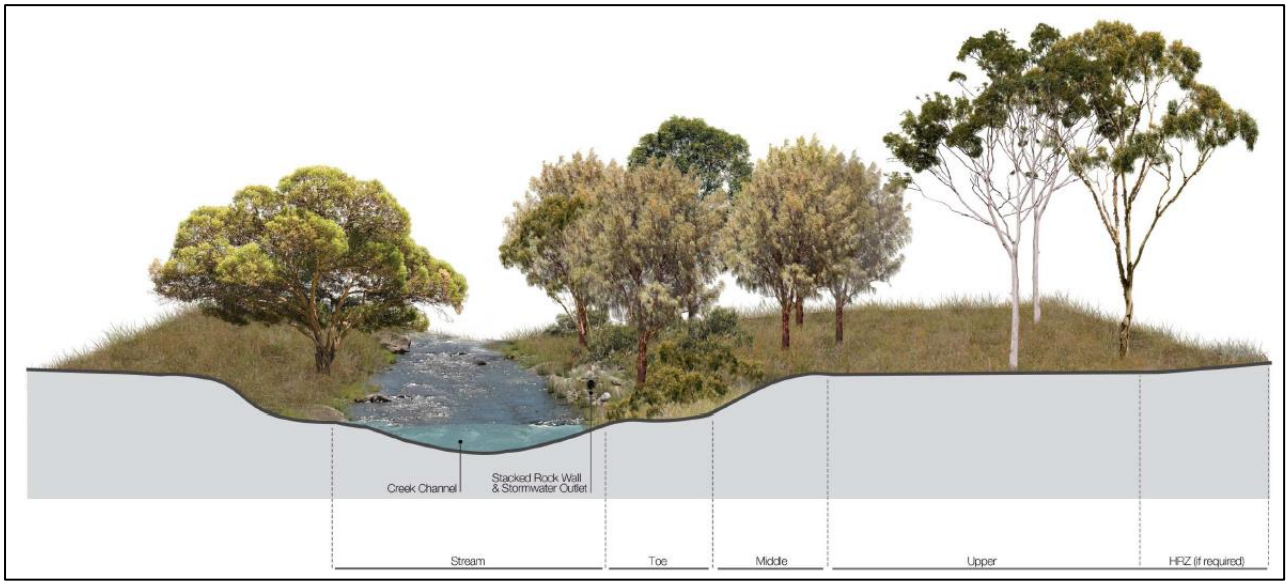

Figure 4. Plantings should be undertaking using a transitional method with sedges, and rushes on the stream bed -toe, shrubs and small trees on the banks with canopy trees only being planted on the outer edges of the upper bank and floodplain (Sydney Water 2004)

Table 2: Proposed Duffys Forest EEC revegetation planting densities within Management Zone 2

Growth Strata	Estimated Height at Maturity	Planting Density	Number of Plants (tubestock/hiko) Required
Canopy trees	>6m	One plant per 10m2	177
Mid-storey trees and shrubs	>2m and <6m	One plant per 10m^2	177
Low / groundcover shrubs, sedges, herbs and grasses	<2m	Five plants per 1m^2	8850

3.5.2.3 Weed Control & Ongoing Management

Prior to any revegetation efforts taking place in the riparian corridor, all weed and exotic trees, shrubs and groundcovers must be removed using such methods as chainsaw, cut / paint, brush cutting or hand removal. No heavy machinery is permitted in this zone. All waste material is to be bagged and deposited at a licensed green waste facility (evidence of appropriate disposal must be retained by the Contractor).

Weeds must be controlled progressively over a period of one year prior to revegetation efforts in this zone. During this time, the Bush Regeneration Contractor must undertake at least six visits (more if considered necessary by the Contractor) to the site in order to remove all weed material, treat all emerging propagules and prepare the site for planting efforts. If revegetation is attempted prior to adequate site preparation (weed removal) the efforts will have little chance of success.

As part of the implementation of the proposed development, all priority and environmental weeds identified within this management zone are to be actively removed by suitably qualified and experienced Bush Regeneration Contractors. Ongoing monitoring and management of weeds within this zone is to be undertaken for the life of the BMP to ensure weed coverage targets identified in **Table 4.** All weeds removed are to be bagged, removed from site and disposed of at a registered waste facility.

3.5.2.4 Application of Erosion / Weed Control Matting

The removal of dense weed cover is likely to result in bare soil exposure. To reduce chances of erosion, the Bush Regeneration contractor must apply erosion control matting (e.g. woven jute mat) to the bare soil surface following best practice methodology.

Wherever possible plants should be installed into holes cut within the matting, so as to continue providing erosion control, weed suppression and protection to the plants.

3.5.2.5 Habitat Log Retention

Where dead trees (native or exotic) are felled, trunks and hollow limbs should be transported into this zone for strategic placement, so these items can continue to provide habitat for fauna. This must be undertaken after weed control and before planting. Plantings can be undertaken around such habitat structures.

3.5.2.6 Re-establishment of Riparian Corridor and Buffer

In its current state, the riparian corridor of Neverfail Creek within the western extent of the Subject Site is in a poor condition as the vast majority of the vegetation present is comprised of dense weeds and contains areas of historically cleared, exotic grasslands subject to constant traffic from horses kept within the existing facility. As a result of the implementation of this BMP the native vegetation within the Riparian Corridor is to be completely restored to the planting densities identified in **Table 2**. The successful restoration of the Riparian Corridor is expected to result in a positive biodiversity gain for the Subject Site as well as improve the filtration and quality of surface runoff entering Neverfail Creek. The entirety of the Riparian Corridor (Work Zone 2) is to be revegetated alongside the complete floristic revegetation of Work Zone 1 (**Figure 3**).

3.5.3 Vegetation Clearing

3.5.3.1 Provision of an Ecologist

All vegetation clearing works are to be supervised be either a licensed wildlife carer or suitably qualified Project Ecologist.

Prior to vegetation being cleared, the Project Ecologist is to undertake a thorough final pre-clearing fauna survey in order to identify any resident fauna species or their habitat species present.

3.5.3.2 Weed Removal and Disposal

All weed and vegetation waste created on site through the required vegetation clearing and weed management is to be removed and taken to an appropriate waste management facility approved by Northern Beached Council to allow for the correct disposal of the green waste.

Where sections of trees removed may provide habitat value in the form of logs (as determined by the Project Ecologist), they are to be relocated to areas that are scheduled to be revegetated with native vegetation.

3.5.3.3 Bushland Clearing

All areas of vegetation to be cleared are to be done so by hand (using chainsaws and pulleys for trees) in order to reduce the potential for unnecessary impacts to both vegetation to be retained and the potential sedimentation of Neverfail Creek through the unnecessary disturbance and mobilisation of soil within the Subject Site.

Stockpiles of cleared vegetation to be removed from site are to be located toward the centre of the Subject Site within areas of historically cleared lands.

3.5.3.4 **Tree Hollow Relocation/ Replacement**

Once each identified hollow bearing tree within the proposed development footprint has been felled and each potential tree hollow has been either confirmed or annulled, a total number, type and location of replacement augmented tree hollows (nest boxes) will be finalised. Each tree hollow removed will be required to be replaced by a minimum of two of the following augmented tree hollow options within native vegetation to be retained:

- artificial nest boxes (constructed of marine ply),
- capped hollow logs, or
- tree hollow excision (performed only by an experienced and qualified arborist with a chainsaw).

Figure 5. Map indicating the native vegetation to be removed, vegetation condition and location of proposed riparian corridor and sediment fencing

4. Work Schedule

Narla propose the following schedule to manage the preparation of the Subject Site for construction, the implementation of construction, the remediation of the site (e.g. exposed soils) and the on-going management of weeds across the Subject Site.

Table 3. Work Schedule over the five-year period of this BMP

Action	Work Zone Affected	Phase	Estimated Time Frame	Responsible Party	Requirements	Scheduling of Works		
						Year 1	Years 2-3	Years 4-5
Implement Hygiene Protocols	Zone 1 and Zone 2	Preceding Construction Phase	Entire length of proposed development and life of this BMP	All involved parties	Implementation of Hygiene Protocols as per the 'Arrive Clean, Leave Clean' guidelines (Commonwealth of Australia 2015)			
Engagement of Project Ecologist	Zone 1 and Zone 2	Preceding Construction Phase	No later than one month prior to construction commencement.	-Project Coordinator -Project Ecologist	Provide written evidence that a Qualified Ecologist has been engaged in the position of 'Project Ecologist' to implement this BMP.			
Establishment of permanent post and rail fencing around trees/ native vegetation located outside of clearing/construction footprint. *(*not including TPZ which will be addressed separately by an Arboriculturalist)*	Zone 1 and Zone 2	Preceding Construction Phase	1 x 8 hour day	-Project Coordinator -Qualified Arboriculturalist -Project Ecologist	Effectively ensure protection of any native vegetation at risk of adverse impact from construction by marking-out 'maximum limit of disturbance' required for the construction activities with flag-rope/safety bunting or temporary fencing. Prevent accidental impact to native bushland and adjoining riparian corridor by containing construction work in designated areas.			
Establishment of erosion and stormwater controls	Zone 1 and Zone 2	Preceding Construction Phase	Up to 5 x 8 hour days	-Project Coordinator -Construction Contractor -Project Ecologist	Implement all necessary erosion and sediment controls prior to any vegetation clearing, excavation or construction as guided by 'The Blue Book' (Landcom 2004) and Martens (2018). Mitigate indirect impacts by controlling sedimentation transport or changes to stormwater flow during construction			
Engagement of Qualified Bush Regeneration Contractor	Zone 1 and Zone 2	PreceedingConstruction Phase	No later than one month prior to completion of construction.	Project Coordinator Project Ecologist	Provide written evidence that a Qualified Bush Regeneration Contractor has been engaged to the satisfaction of this BMP and the Project Ecologist.			

Action	Work Zone Affected	Phase	Estimated Time Frame	Responsible Party	Requirements	Scheduling of Works		
						Year 1	Years 2-3	Years 4-5
Removal of Vegetation from within proposed Construction Area	Zone 1	During Construction Phase	Up to 5 x 8 hour days	-Project Coordinator -Construction Contractor -Contract Arborist -Project Ecologist	Removal of small trees and shrubs using chainsaw rope and pulley or heavy machinery under the presence of an Ecologist to capture, treat/relocate any displaced fauna. Ensure no damage to surrounding trees/vegetation located outside of the 'maximum limit of disturbance'. Stockpile logs or hollow limbs for use as habitat during revegetation efforts.			
Construction of proposed development	Proposed Development Footprint, Zone 1	During Construction Phase	According to work scheduling	-Project Coordinator -Construction Team	Contain work within designated zones. Prevent any direct impact on surrounding native vegetation and riparian corridor as well as mitigate indirect impacts such as erosion and changed stormwater flow.			
Management of weeds from within all Management Zones	Zone1 and Zone 2	Post construction Phase - Ongoing	6 x 8 hour days annually for the life of the BMP	-Qualified Bush Regenerators (team of 4 crew including supervisor)	Suppression of priority and environmental weeds to less than 5% total cover within both management zones. A qualified Ecologist is to confirm the 5% cover limit is upheld by undertaking monitoring on an annual basis.			
Revegetation of Duffys Forest EEC	Zone1	Post Construction Phase	10 x 8 hour days	-Qualified Bush Regenerators (team of 4 crew including supervisor) -Project Ecologist	Revegetation of both Management Zones with vegetation representative of Duffys Forest EEC to the satisfaction of the Project Ecologist. The installation of regenerative plantings are to be undertaken as per the suggested planting densities outlined **Table 2.**			
Removal of all Weeds/Exotic Flora and Complete Replacement with Native Vegetation (Duffys Forest EEC)	Zone 1 and Zone 2	During Construction Phase	12 months from engagement of Bush Regeneration Contractor(team of 4 crew including supervisor)	-Project Ecologist Qualified Bush Regeneration Contractor (team of 4)	Removal of all weeds by the Bush Regeneration Contractor on a progressive basis to ensure complete removal and replacement with native vegetation within 12 months of engagement.			
On-going Management of Plantings	Zone 1 and Zone 2	Post Construction Phase	A minimum of 8 watering days to be applied by Qualified Bush Regenerators. Watering as required for the first 3 weeks then weekly for the next 5 weeks. (watering time may be reduced depending on when plants are installed)	-Qualified Bush Regeneration Contractor (team of 4)	Repeat visits to planting sites to ensure plants are adequately watered and protected from herbivory, weed encroachment, disease or pests.			

Action	Work Zone Affected	Phase	Estimated Time Frame	Responsible Party	Requirements	Scheduling of Works		
						Year 1	Years 2-3	Years 4-5
Monitoring of Fauna Habitat Installed (nest boxes)	Zone1 and Zone 2	Post construction - Ongoing	1 site visit by a Qualified Ecologist in late Spring, conducted annually.	Project Coordinator Project Ecologist	Monitor fauna habitat to ensure features such as hollow-bearing trees, soaks and course woody debris are retained and protected.			
Monitoring of native vegetation condition within the Subject Site (including both retained and newly planted vegetation)	Zone1 and Zone 2	Post construction- Ongoing	Once annually for two years.	Project Coordinator Project Ecologist	Evaluate bush management on overall biodiversity within the Subject Site. Identify room for improvement incl. any impacts upon native vegetation assemblage and riparian zones.			

5. Monitoring and Reporting

Monitoring timings have been included within work scheduling and are recommended to include annual monitoring by a Qualified Ecologist as per Northern Beaches Council requirements. Monitoring must take place for five years from the date of adoption of this BMP.

Monitoring must be supported by an 'Annual Biodiversity Monitoring Report' and records kept by the client to ensure site management efforts are contributing to the overall aim of mitigating any biodiversity impacts associated with the proposed development and achieving a long-term net gain in biodiversity for the Subject Site and surrounding locality.

Performance criteria to be assessed during site assessments required to complete the monitoring reports should focus on the primary target factors given in **Table 4**.

In the event that the survival rate of native plantings drops below the prescribed target of 90%, replacement plantings are to be installed by Qualified Bush Regenerators in order to ensure this minimum survival rate target is achieved. Replacement plantings installed are to be representative of those plants lost (Duffys Forest EEC species only).

Copies of the routing monitoring reports are to be provided to the Natural Environment Unit of Northern Beaches Council.

Table 4. Performance evaluation targets to be assessed during annual monitoring of the Subject Site for five years from BMP adoption.

Performance Evaluation Targets			
Management Zone	**Performance Criteria**	**Target (after 1 year)**	**Target (year 2 - onwards)**
Management Zone 1	Reduction in Priority Weeds Cover	<5% weed cover	Maintenance of Levels <5%
	Reduction in Environmental Weed cover	<5% weed cover	Maintenance of Levels <5%
	Survival rate of native plantings	>90% native planting survival rate	>90% native planting survival rate
Management Zone 2	Reduction in Priority Weeds Cover	<5% weed cover	Maintenance of Levels <5%
	Reduction in Environmental Weed cover	<5% weed cover	Maintenance of Levels <5%
	Survival rate of native plantings	>90% native planting survival rate	>90% native planting survival rate

5.1 Review of this BMP

This BMP document is to be reviewed by a qualified Restoration Ecologist every five (5) years from the date of its adoption (i.e. the date on Council's Conditions of Consent).

During the review period, the Ecologist may make changes to planting efforts, weed control measures and other management actions where relevant, under the provision that they can provide adequate evidence to support the reasons for this change.

Changes to management recommendations must only be undertaken once it has been proven that the specific management action has been adequately managed to the extent that it no longer applies or requires less attention than previous.

6. Conclusion

Narla Environmental have produced a comprehensive Biodiversity Management Plan (BMP) to accompany the proposed development at 58 Laitoki Road, Terrey Hills (Lot 368/ DP752017). The BMP is designed to assist the proponent in identifying, protecting and successful management of native flora and fauna habitat occurring within the Subject Site. The aim of the plan is to provide a schedule of impact mitigation measures along with ongoing conservation, restoration and maintenance activities for the bushland to be retained on the site.

Through the implementation of this BMP, the proponent will undertake:

- The management of both environmental and priority weed species from within the Subject Site to below a minimum of 5% coverage in relation to the overall coverage of native vegetation
- The complete floristic revegetation of the Riparian Corridor within the western extent of the Subject Site with locally indigenous native vegetation representative of the Duffy's Forest Endangered Ecological Community
- The exclusionary and sediment fencing of the Riparian Corridor to ensure the area is not damaged pre, during and post construction.
- The floristic revegetation of all native vegetation areas to be retained, outside of the proposed development footprint, with locally indigenous native vegetation representative of the Duffy's Forest Endangered Ecological Community
- The engagement of a suitably qualified Bush Regeneration Contractor to undertake all wee management and native revegetation works and maintenance
- The engagement of a suitably qualified Project Ecologist to undertake all required pre-clearing surveys, clearing supervision and routine monitoring surveys in order to report on the progress of the BMP to Northern Beaches Council as required.
- The installation of compensatory fauna habitat within retained vegetation at the minimum rate of 2:1 (two nest boxes installed per tree hollow removed)

The successful implementation of this BMP will result in an overall gain in biodiversity values present within the property including an increase in the amount of native vegetation representative of the Duffy's Forest Endangered Ecological Community.

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Appendices

Appendix A: Flora species identified within the Subject Site

Appendix B: Duffys Forest EEC Revegetation List

Appendix C: Suggested Sediment Control Details

Appendix A: Flora species identified within the Subject Site

Scientific Name	Exotic/Non-indigenous	Canopy	Midstory	Groundcover
Acacia parramattensis		x		
Angophora costata		x		
Banksia serata		x		
Ceratopetalum gummiferum		x		
Corymbia gummifera		x		
Eucalyptus sieberi		x		
Pittosporum undulatum		x		
Acacia floribunda			x	
Allocasuarina littoralis			x	
Callistemon citrinus			x	
Cissus antarctica				x
Cynodon dactylon				x
Dianella caerulea				x
Digitaria parviflora				x
Entolasia stricta				x
Eucalyptus capitellata		x		
Eucalyptus oblonga		x		
Eucalyptus haemastoma		x		
Ficus benjamina				
Geranium homeanum				x
Grevillea linearifolia			x	
Hakea salicifolia				
Homalanthus populifolius			x	
Lomandra longifolia				x
Microlaena stipoides				x
Oxalis perennans				x
Petrophile pulchella				x
Syncarpia glomulifera			x	
Themeda triandra				x
Xylomelum pyriforme			x	
Eucalyptus scoparia	x	x		
Cinnamomum camphora	x	x		
Corymbia citriodora	x			
Acetosa sagittata	x			x
Ageratina adenophora	x			x
Andropogon virginicus	x			x
Araujia sericifera	x			x
Araucaria columnaris	x	x		
Asparagus aethiopicus	x			x
Bidens pilosa	x			x

Scientific Name	Exotic/Non-indigenous	Canopy	Midstory	Groundcover
Capsella bursa-pastoris	x			x
Cardamine hirsuta	x			x
Cenchrus clandestinus	x			x
Cestrum parqui	x		x	
Chlorophytum comosum	x			x
Cordyline sp (cultivar)	x			x
Cotoneaster glaucophyllus	x			
Delairea odorata	x			x
Ehrharta erecta	x			x
Euphorbia peplus	x			x
Freesia sp	x			x
Hedera helix	x			x
Hedychium gardnerianum	x			x
Ipomoea indica	x			x
Lantana camara	x			x
Ligustrum sinense	x		x	
Modiola caroliniana	x			x
Passiflora edulis	x			x
Paspalum dialatatum	x			x
Pennisetum clandestinum	x			x
Phytolacca octandra	x			x
Plantago lanceolata	x			x
Poa annua	x			x
Rhoicissus rhombidea	x			x
Rubus fruticosus agg.	x			x
Rumex obtusifolius	x			x
Senecio madagascariensis	x			x
Senna pendula	x		x	
Sida rhombifolia	x			x
Solanum nigrum	x			x
Solanum mauritianum	x		x	
Soliva sessilis	x			x
Sonchus oleraceus	x			x
Stachys arvensis	x			x
Taraxacum officinale	x			x
Tradescantia fluminensis	x			x
Trifolium repens	x			x
Urtica urens	x			x
Verbena bonariensis	x			x
Vinca major	x			x

Appendix B: Duffys Forest EEC Revegetation List (NSW TSSC 2002)

Scientific Name	Canopy	Midstory	Groundcover
Angophora costata	X		
Banksia serrata	X		
Ceratopetalum gummiferum	X		
Eucalyptus capitellata	x		
Corymbia gummifera	X		
Eucalyptus haemastoma	X		
Eucalyptus sieberi	X		
Acacia linifolia		X	
Acacia myrtifolia		X	
Acacia suaveolens		X	
Acacia ulicifolia		X	
Allocasuarina littoralis		x	
Banksia ericifolia		X	
Banksia spinulosa		X	
Boronia ledifolia		X	
Boronia pinnata		X	
Bossiaea heterophylla		X	
Bossiaea obcordata		X	
Dillwynia retorta		X	
Dodonaea triquetra		X	
Epacris pulchella		x	
Gompholobium grandiflorum		X	
Gonocarpus teucrioides		X	
Grevillea buxifolia		X	
Grevillea caleyi		X	
Grevillea linearifolia		X	
Hakea dactyloides		x	
Hakea sericea		X	
Hakea teretifolia		X	
Hovea linearis		X	
Lambertia formosa		X	
Lasiopetalum ferrugineum		X	
Leptospermum trinervium		X	
Lomatia silaifolia		X	
Micrantheum ericoides		X	
Persoonia levis		X	
Persoonia pinifolia		X	
Petrophile pulchella		X	
Phyllota phylicoides		X	
Pimelea linifolia		X	

Scientific Name	Canopy	Midstory	Groundcover
Platysace linearifolia		X	
Pultenaea daphnoides		X	
Pultenaea elliptica		X	
Pultenaea linophylla		X	
Telopea speciosissima		X	
Xanthorrhoea media		X	
Xanthosia tridentata		X	
Xylomelum pyriforme		x	
Actinotus minor			X
Anisopogon avenaceus			X
Austrostipa pubescens			x
Billardiera scandens			X
Brunoniella pumilio			X
Cassytha pubescens			X
Conospermum longifolium			X
Comesperma ericinum			X
Cyathochaeta diandra			X
Dampiera stricta			X
Dianella caerulea			X
Entolasia stricta			X
Hibbertia bracteata			X
Lepidosperma laterale			x
Lindsaea linearis			X
Lindsaea microphylla			X
Lomandra glauca			X
Lomandra longifolia			X
Lomandra multiflora			X
Lomandra obliqua			X
Patersonia glabrata			X
Patersonia sericea			X
Phyllanthus hirtellus			X
Pteridium esculentum			X
Tetrarrhena juncea			x

Appendix C: Suggested Sediment Control Details