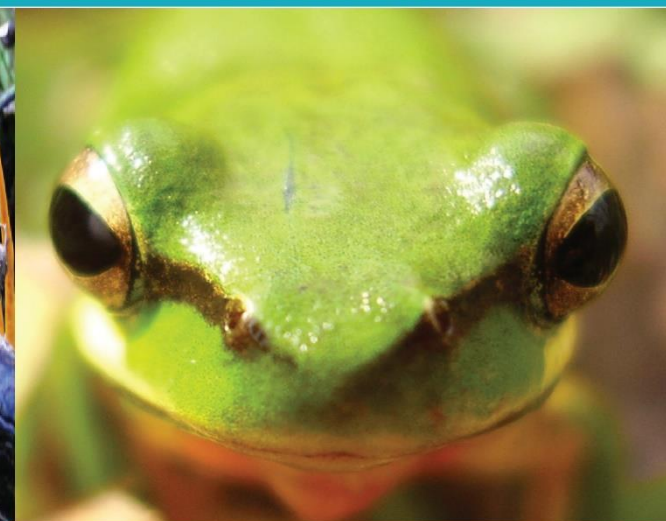




**TRAVERS
BUSHFIRE
& ECOLOGY**
A TBE ENVIRONMENTAL COMPANY



VEGETATION MANAGEMENT PLAN

Lot B DP 370222
4 Forest Road
Warriewood

28 January 2025
(REF: BMN02.4)

VEGETATION MANAGEMENT PLAN

Lot B DP370222, 4 Forest Road, Warriewood

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Contents

Vegetation Management Aims3
Management Zones3
Site Preparation & Protection of Native Vegetation3
Tree Protection3
Project Management, Reporting and Auditing3
Revegetation Specifications (ROADSIDE BATTER)3
Restoration Species List.....3
Restoration Performance Targets4
Non-Conformance with VMP4
Onsite Vegetation & Condition4
Threatened Entities4
Light Reduction5
Sediment and Erosion Control.....5
Rubbish Removal5
Weed Control5
Herbicide Use5
Asset Protection Zone Management5
Restoration Monitoring6
Pathogen Control and Management.....6
Fauna Management6
Nest Box Installation.....7

Tables

Table 1 – Revegetation species for planting of roadside batter with PCT 3595 Sydney Coastal Sandstone
Gully Forest.....3
Table 2 – Weed species identified within the site5
Table 3 – APZ management requirements (from Appendix 4 – Planning for Bushfire Protection 2019)5
Table 4 – Typical nest box dimensions for various fauna.....7
Table 5 – Table of works and responsibilities.....9
Table 6 - Typical restoration timeline.....9

Figures

Figure 1 – Proposed VMP area (green).....2
Figure 2 – Proposed subdivision plan2
Figure 3 – Example of temporary tree protection3
Figure 4 – Examples of outdoor wildlife friendly lighting for accessways5
Figure 5 – Rubbish piles within the site5
Figure 6 – Myrtle rust on paperbark leaf (*Melaleuca quinquenervia*) (Source Department of Primary
Industries- DPI)6
Figure 7 – Installed microbat box8
(Source: Ausbats <https://www.ausbats.org.au/install-a-microbat-house.html>).....8
Figure 8 – Anti-Myna baffle8
Figure 9 – A Generic nest box design8
Figure 10 – Microbat roost box detail8
Figure 11 – Typical dimensions for large parrot box.....8
Figure 12 – Augmented hollow using a hollow log of low structural risk8
Figure 13 – Augmented hollow using inserted entrance and prepared cavity8

Attachments

- Schedule 1 - Vegetation Management Works Plan
- Attachment 1 – Restoration Works Costing (5 Years)
- Attachment 2 – Audit and Compliance Certification Table



Figure 1 – Vegetation Management Area,

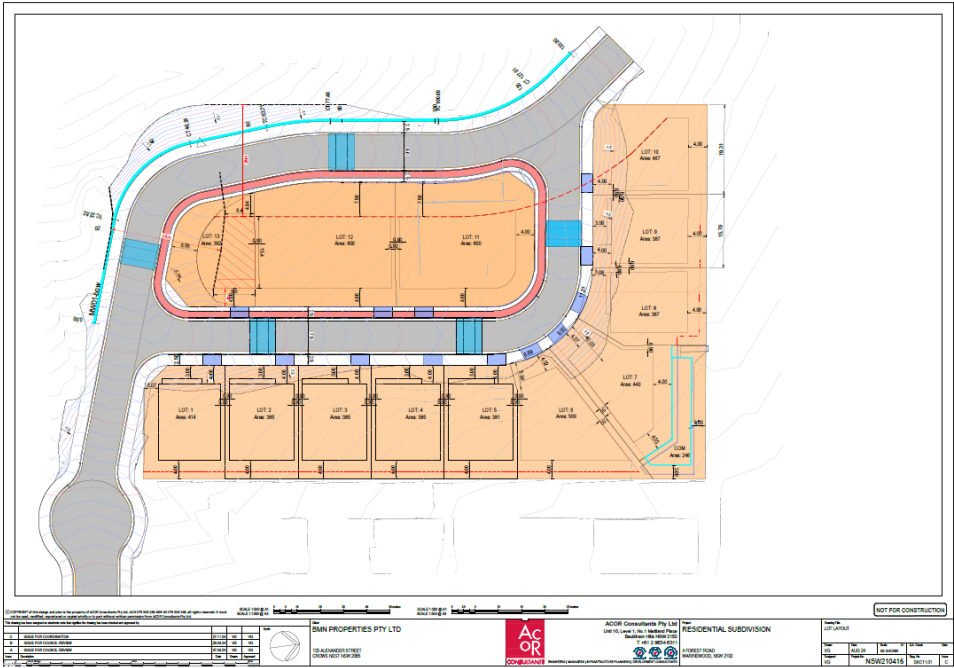


Figure 2 – Proposed subdivision plan



VEGETATION MANAGEMENT AIMS

The purpose of this Vegetation Management Plan (VMP) is to define and document the actions required to provide a managed interface of (716 m²) Plant Community Type (PCT) 3595 Sydney Coastal Sandstone Gully Forest within Lot B DP370222, 4 Forest Road, Warriewood.

The aims of this VMP include:

- To define vegetation management works at the interface of the proposed perimeter road and the adjoining road corridor.
- Install temporary tree protection fencing during construction for all native remnant trees to be retained, bordering the proposed development (see Schedule 1).
- Sediment fencing is to be installed immediately adjacent or in conjunction with construction proof fencing for the duration of the construction period to capture waste and windblown seeds in compliance with *Soils & construction Managing Urban Stormwater* (Landcom 2004).
- Undertake weed control within the whole site prior to commencing planting / enrichment works
- Undertake Bush regeneration, revegetation and maintenance for a total period of 5 years post practical completion of revegetation and landscaping works.
- Ensure compliance with Asset Protection Zones (APZs) maintenance requirements.
- Outline the supervisory, monitoring and auditing requirements to achieve a high-level restoration outcome.

MANAGEMENT ZONES

The VMP has been designated as one zone for management as described below and shown on Schedule 1:

Road batter and managed road corridor

This zone encompasses the area between the remnant bushland and the development proposal with. After cut and fill operations this area is to be managed as an APZ with revegetation to occur after these works to create an enriched community interface.

This zone is to comply with the recommendation of the Bushfire Protection Assessment. This zone will require maintenance through weed control and maintenance of the APZ. To reduce fuel loads to comply with APZ management, all bush regeneration within this area will be completed by hand removal.

Guidance for planting densities within the APZ zone is as follows and are to be adjusted to comply with the recommendations of the Bushfire Protection Assessment or to achieve AAPZ compliance.

- Canopy – 1 per 200-400m² and maximum 15% canopy cover
- Sub-canopy – 1 per 200-400m² and maximum 15% canopy cover
- Shrubs – 1 per 50m² and maximum 10% by cover
- Groundcovers – 2 per 1m² · managed groundlayer
- Climbers/Vines - 1 per 80m² – controlled regrowth if extensive

SITE PREPARATION & PROTECTION OF NATIVE VEGETATION

The following site preparation must be undertaken:

- Install temporary tree protection fencing during construction for all native remnant trees to be retained, bordering the proposed development (see Schedule 1).
- Sediment fencing is to be installed immediately adjacent or in conjunction with the permanent protection fencing along the boundary of VMP management area where it borders the construction zone for the duration of the construction period in compliance with *Soils & construction Managing Urban Stormwater* (Landcom 2004).
- Commence weed control within the whole of the VMP management area prior to construction works removing high threat weeds subject to stripping of soil for construction purposes.
- All litter and any other waste material on site is to be removed prior to restoration works. Ongoing rubbish removal throughout the maintenance period is to be undertaken.

TREE PROTECTION

A project arborist is to be appointed to supervise construction works close to trees marked for retention. The project arborist along with the site manager will be responsible for marking trees for retention and ensuring tree protection measures including fencing and signage are put in place prior to any clearing.

In summary, temporary tree protection fencing will need to be put in place for marked retained trees before any site construction works are commenced (including demolition and bulk earthworks). The protection fencing must be established at the locations specified in the AIA report (*Naturally Trees December 2024*) and cannot be removed or

altered in any way without the approval of the project arborist. An example of tree protection fencing can be viewed in Figure 3.

All protective fencing is to remain in place until construction is complete to prevent accidental damage or felling of non-target trees. Signage will be placed on the fencing to inform workers that the tree is marked for retention, access is restricted, and no works are to be conducted which could impact the health of the tree without consulting the project arborist.



Figure 3 – Example of temporary tree protection

PROJECT MANAGEMENT, REPORTING AND AUDITING

The following project management tasks are to be undertaken:

- Engagement of qualified and experienced bushland regeneration contractors to undertake all restoration works (Supervisor - *Certificate III/IV in Conservation and Land Management* or equivalent, with at least three (3) years of field experience);
- All plant stock is to be certified as local provenance from the supplier, with preference for seeds collected from similar community types within the locality;
- Engagement of an independent project ecologist to undertake auditing, reporting and compliance certification;
- Photo points and monitoring quadrats are to be set up prior to contract work to establish a baseline and these are to be monitored at least annually for 5 years; and
- A compliance statement is to be submitted to council upon completion of the revegetation works (practical completion) and at the end of each year for the 5-year maintenance period assessing compliance with the stipulated restoration performance targets.

REVEGETATION SPECIFICATIONS (ROADSIDE BATTER)

Table 1 provides a recommended revegetation species list for the road side batter. Only plant species typically occurring within PCT 3595 Sydney Coastal Sandstone Gully Forest are to be utilised for revegetation purposes, any variation from Table 1 must be approved by the project ecologist.. All plant stock selected for restoration are to be sourced from the local area, preferably within the Northern Beaches Council LGA.

Revegetation planting is to be undertaken preferably in March / April or September / October to avoid mid-summer heat and potential frosts. Revegetation works shall include the planting of native tree, shrub and groundcover species commensurate with PCT 3595 – Sydney Coastal Sandstone Gully Forest as indicated in Table 1.

The planting and regeneration must achieve the densities nominated. The estimated number of plants required are calculated within Table 1. As a minimum, holes for tree planting are to be twice the depth and twice the width of the pot size of the plant. Apply mulch lightly (less than 20mm) around individual plants, to avoid large contiguous patches of mulch with the APZ management zone.

Revegetation Maintenance

All installed plantings are to be protected with a 2L cardboard box or corflute guards with small supporting stakes to protect from frost and grazing animals such as rabbits if required. If rabbit baiting is to occur, Pindone or 1080 can be utilised. Baiting is to be undertaken 4 week prior to revegetation and throughout the entire maintenance period (subject to Local Government Guidelines).

Weed control works, bush regeneration and restoration are to be undertaken over a minimum maintenance period of five (5) years which begins at the end of the construction phase. Weed control and restoration works are to be monitored and audited by an appointed project ecologist over 5 years to achieve the restoration performance targets.

Any installed plants that fail will be replaced if any plants are observed to die or be destroyed. If the success rate is less than 95%, contingency planting is to be undertaken to re-establish the performance targets required.

Watering of all revegetated areas is to be undertaken a minimum of once a week for the for the first 6-8 weeks post planting, or as required in the event of a dry spell. A 15 % contingency budget and plant stock allocation is to be set aside for all works to ensure compliance with the performance targets.

RESTORATION SPECIES LIST

Table 1 – Revegetation species for planting for the roadside batter derived from PCT 3595 Sydney Coastal Sandstone Gully Forest

Scientific Name	Common Name	Development interface 716 m²
Canopy plantings		1 per 200m²= 4
<i>Angophora costata</i>	Sydney Red Gum	2
<i>Corymbia gummifera</i>	Red Bloodwood	2
Sub-canopy plantings		1 per 200m²= 4
<i>Banksia serrata</i>	Old-man Banksia	2
<i>Ceratopetalum gummiferum</i>	NSW Christmas Bush	2
Shrub plantings		1 per 50m²=15
<i>Acacia terminalis</i>	Sunshine Wattle	2
<i>Persoonia levis</i>	Broad-leaved Geebung	8
<i>Banksia ericifolia</i>	Heath-leaved Banksia	5
Ground-cover plantings		2 per 1²=1432
Grass and Grasslike		955
<i>Entolasia stricta</i>	Wiry Panic	200
<i>Lepidosperma laterale</i>	-	200
<i>Lepyrodia scariosa</i>	-	200
<i>Anisopogon avenaceus</i>	Oat Speargrass	178
<i>Microlaena stipoides</i>	Weeping Grass	177
Forb		477
<i>Dianella caerulea</i>	Blue-flax Lily	150
<i>Lobelia purpurascens</i>	White Root	150
<i>Commelina cyanea</i>	Scurvy Weed	89
<i>Dichondra repens</i>	Kidney Weed	88
Climber		1 per 80m²= 9
<i>Smilax glyciophylla</i>	Sweet Sarsparilla	5
<i>Billardiera scandens</i>	Hairy Apple Berry	2
<i>Hardenbergia violacea</i>	False Sarsparilla	2
TOTAL		1464



Lot B DP 370222
4 Forest Road
Warriewood

28 January 2025
Ref: BMN02.4

Page 3 of 12

Vegetation Management Plan

PERFORMANCE TARGETS

The following restoration performance targets are to be audited, and compliance certificate issued by the project ecologist demonstrating satisfactory completion of the works in accordance with the VMP and as shown on Schedule 1:

1. Temporary tree protection and signage to be put in place around all tree to be retained within and adjacent to the proposal, as shown on Schedule 1.
2. Priority weed species for the Greater Sydney within the *Biosecurity Act* (2015) should be completely eradicated by the end of Year 5.
3. Final weed coverage will not exceed more than 15% coverage at the end of Year 1 and less than 5% coverage of the end of Year 5.
4. Native vegetation plant density within the development interface restoration zone is to comply with the revegetation specifications as specified in Table 1.
5. A minimum of 95% plant survival is to be achieved foal all planted native vegetation, and natural grown rates and plant cover is typical of PCT 3595 after 5 years.
6. Three (3) nest boxes/augmented hollows installed to provide habitat for hollow dependant fauna.
7. Selective APZ management on the road batter to reduce fine fuel build up and to trim low branches hand low to the ground prior to commencement of the bushfire season (September of each year) and maintained in perpetuity.
8. No stockpiles or vegetation debris are to be kept onsite.
9. No external lighting is to be directed into adjoining habitat areas and external lights baffled to direct lighting to the ground. Refer to lighting specifications within VMP.
10. An audit inspection will be undertaken by the project ecologist at a minimum every (12) months for the duration of the VMP following an initial baseline monitoring inspection at the first six (6) month interval. A compliance certificate will be issued at the completion at each stage of works, detailing the performance target tasks undertaken.

NON-CONFORMANCE WITH VMP

Non-conformance VMP requirements, specified monitoring and restoration performance targets are to be assessed and reported within the annual compliance audit. Non-compliance is to be rectified on an annual basis to ensure the specified monitoring and restoration performance targets are met.

Contingency restoration works may also include:

- Additional target weed control to reach the target weed coverage;
- Additional enrichment plantings to rectify areas of low diversity or cover that do not meet benchmark conditions;
- Rectification of fencing;
- Removal of waste or soil;
- Removal of litter;
- Rectify damage to roots of trees; and
- Sediment and erosion control.

ONSITE VEGETATION & CONDITION

The vegetation on site was identified as PCT 3595 – Sydney Coastal Sandstone Gully Forest from the southwest to northwestern boundaries, with the site being generally cleared and containing a high level of exotic species.

Canopy: *Angophora costata* (Sydney Red Gum), *Allocasuarina littoralis* (Black She-oak) *Eucalyptus piperita* (Sydney Peppermint), *Syncarpia glomulifera* (Turpentine).

Mid-storey: *Pultenaea flexilis* (Graceful Bush-pea), *Dodonaea triquetra* (Large-leaf Hop-bush), *Acacia ulicifolia* (Prickly Moses), *Acacia longissima* (Long-leaf Wattle), *Xylomelum pyriforme* (Woody Pear).

Ground-storey: *Themeda triandra* (Kangaroo Grass), *Entolasia stricta* (Wiry Panic), *Pomax umbellata*, *Lomandra longifolia* (Spiky-headed Mat-rush), *Pteridium esculentum* (Common Bracken), *Phyllanthus hirtellus* (Thyme Spurge), *Cynodon dactylon* (Couch), *Lepidosperma laterale*.

Exotics: *Araujia sericifera* (Moth Vine), *Ligustrum lucidum* (Broad-leaved Privet), *Lantana camara* (Lantana), *Coreopsis lanceolata* (Coreopsis), *Eragrostis curvula* (African Lovegrass), *Cestrum parqui* (Green cestrum), *Thunbergia alata* (Black-eyed Susan), *Syagrus romanzoffiana* (Queen Palm), *Phoenix canariensis* (Canary Island Date Palm).



Site Photo 1 – PCT 3595 – Sydney Coastal Sandstone Gully Forest (west)



Site Photo 2 – Exotic dominated vegetation throughout the site (southwest)

THREATENED ENTITIES

Threatened Flora

No threatened flora species were identified onsite during survey (*TBE 2025, Kingfisher Ecology 2022*).

Proximal records (1.5 km radius - *BioNet 2025*) indicate the following species have the potential to occur:

- *Eucalyptus nicholii* (Narrow- leaved Black Peppermint) – as a planted specimen
- *Callistemon linearifolius* (Netted Bottle Brush)
- *Microtis angusii* (Angus’s Onion Orchid)
- *Syzygium paniculatum* (Magenta Lilly Pilly) – as a planted specimen.
- *Rhodamnia rubescens* (Scrub Turpentine)
- *Tetradlea glandulosa*

No Threatened ecological communities were identified onsite.

Recorded threatened fauna

No threatened fauna species were identified onsite during survey (*Kingfisher Ecology 2022*).

Targeted ecological surveys and assessments have been undertaken between for the detection of threatened fauna and flora in January 2025.

Two (2) threatened fauna species, Eastern Cave Bat (*Vespadelus troughtoni*) and Little Bent-winged Bat (*Miniopterus australis*), were recorded by TBE using Anabat detection.

Proximal records (1.5km radius – *Bionet 2025*) indicate that the following species have potential to occur:

- Eastern Pygmy Possum (*Cercartetus nanus*)
- Grey-headed Flying-fox (*Pteropus poliocephalus*)
- Large Bent-winged Bat (*Miniopterus magnater*)
- Large-eared Pied Bat (*Chalinolobus dwyeri*)
- Little Bent-winged Bat (*Miniopterus australis*)
- Swift Parrot (*Lathamus discolor*) – important mapped habitat
- Powerful Owl (*Ninox strenua*)

Threatened Fauna Considerations

As potential threatened fauna may occur onsite, the following factors should be considered for mitigation:

- Lighting elements to limit light pollution emanating from adjacent development.
- Landscape planting of a visual barrier within each lot bordering the restoration area to filter light and over time create ‘night’ shading.
- Progressive weeding of exotic shrub layer which currently provides foraging habitat. Natives should be planted and exotics replaced gradually only once the natives have achieved a reasonable level of growth.
- Installation of nest boxes/salvaged hollows/augmented hollows in the restoration area to provide replacement roosting habitat for potentially displaced microbats.
- Installation of nest boxes/salvaged hollows to encourage arboreal mammals and birds, and subsequently prey items for raptors and owls.



Lot B DP 370222
4 Forest Road
Warriewood

28 January 2025
Ref: BMN02.4

Page 4 of 12

Vegetation Management Plan

LIGHT REDUCTION

Artificial light from the proposed development impacts fauna species in terms of behaviour and/or physiology, alter the availability of habitat or food resources and can attract predators and invasive pests. To minimise light pollution within the conserved bushland, particularly to encourage Eastern Pygmy Possum foraging, the adjacent development will have building design to limit artificial lighting.

- Light spill from traffic can be addressed by providing street side strategic planting that intercepts direct light.
- Window film on buildings will be installed to reduce light export by 75% (30% tint).
- Light baffles, deflectors and shields are to be used on light sources to direct light away from protected habitat.
- Non-reflective dark-coloured surfaces should be used where possible.
- Access pathways are to use low lumen and restricted height lighting (<0.5m) with directional shields. Light fixtures are to be located as close to the ground as possible and shielded (Figure 4).
- There is to be no use of external lighting on buildings facing the protected restoration area.
- Strategic native species or hedge planting to create a dark night space for nocturnal fauna.
- All external light is to have a warm yellowish colour which have a low Correlated Colour Temperature (CCT), between 1000 K and 3000 K.

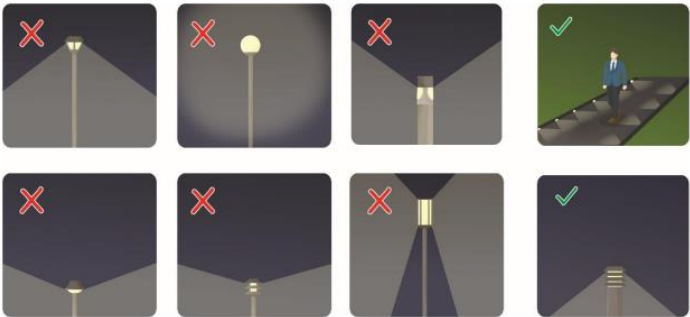


Figure 4 – Examples of outdoor wildlife friendly lighting for accessways (National Pollution Guidelines for Wildlife - DEE 2020)

SEDIMENT AND EROSION CONTROL

Sediment and erosion control is to be installed in accordance with the “Blue Book” (Landcom 2004) and in accordance with an approved sediment and erosion control plan. Sediment fencing is to be placed on the boundary of all earth works and a permanent fence of stable pathways are to protect the conservation areas from trampling, damage and unauthorised access. Sediment and erosion control measures are to be monitored on a monthly basis for the first 6months, then every 6 months for the maintenance period.

RUBBISH REMOVAL

All waste and rubbish on site are to be removed. If hazardous materials are located on site the landholder must ensure the material is disposed of at the appropriate facilities prior to commencement of weed control and bush regeneration works. Small scale rubbish removal can be completed by the bush regeneration contractors where practical. Continuous monitoring and removal of waste and rubbish is to occur throughout the preconstruction, construction and maintenance phases to prevent illegal dumping and/or rubbish build up as this will undermine restoration efforts.



Figure 5 – Rubbish piles within the site

WEED CONTROL

The site contains pre-existing weed species from historical disturbances, located throughout the entire site. It is expected that the proposal may result in greater disturbance, with increased edge effects, thus providing a greater opportunity for weedy species to establish or invade the residual bushland remnant. Continued weed management works are to be undertaken across between the development interface and remnant bushland in perpetuity but managed under this document for the minimum maintenance period of 5 years.

Table 2 – Weed species identified within the site

	Common name	Weed control priority
TREES		
<i>Cinnamomum camphora</i>	Camphor Laurel	HIGH
<i>Phoenix canariensis</i>	Phoenix Palm	HIGH
<i>Schefflera actinophylla</i>	Umbrella Plant	HIGH
<i>Syagrus romanzoffiana</i>	Queen Palm	HIGH
<i>Aesculus hippocastanum</i>	Hores-chestnut	MEDIUM
<i>Cupressus glabra</i>	Smooth Arizona Cypress	MEDIUM
<i>Diospyros kaki</i>	Persimmons	MEDIUM
<i>Eriobotrya japonica</i>	Loquat	MEDIUM
<i>Lagerstroemia indica</i>	Crepe Myrtle	MEDIUM
<i>Malus pumila</i>	Apple	MEDIUM
<i>Mangifera indica</i>	Mango	MEDIUM
<i>Morus alba</i>	Mulberry	MEDIUM
<i>Punica granatum</i>	Pomegranate	MEDIUM
SHRUBS		
<i>Lantana camara</i> *	Lantana	VERY HIGH
<i>Ligustrum lucidum</i>	Broad-leaf Privet	HIGH
<i>Senna pendula</i>	Eater Cassia	HIGH
<i>Monstera deliciosa</i>	Fruit Salad Plant	MEDIUM
<i>Nerium oleander</i>	Oleander	MEDIUM
<i>Solanum mauritanium</i>	Wild Tobacco	MEIDUM
<i>Strelitzia nicolai</i>	Bird of Paradise Tree	MEDIUM
GROUNDCOVERS		
<i>Asparagus aethiopicus</i> *	Asparagus Fern	VERY HIGH
<i>Asparagus asparagoides</i> *	Bridal Creeper	VERY HIGH
<i>Cestrum parqui</i> *	Green Cestrum	VERY HIGH
<i>Ageratina adenophora</i>	Crofton Weed	HIGH
<i>Cenchrus clandestinus</i>	Kikuyu	HIGH
<i>Ehrharta erecta</i>	Panic Veldt Grass	HIGH
<i>Eragrostis curvula</i>	African Love Grass	HIGH
<i>Nephrolepis cordifolia</i>	Fishbone Fern	HIGH
<i>Stenotaphrum secundatum</i>	Buffalo Grass	HIGH
<i>Agapanthus praecox</i>	Blue Lily	MEDIUM
<i>Bidens pilosa</i>	Cobbler's Pegs	MEDIUM
<i>Briza maxima</i>	Quaking Grass	MEDIUM
<i>Briza minor</i>	Shivery Grass	MEDIUM
<i>Paspalum dilatatum</i>	Dallis Grass	MEDIUM
<i>Paspalum urvillei</i>	Vasey Grass	MEDIUM
<i>Setaria parviflora</i>	Pigeon Grass	MEDIUM
<i>Verbena bonariensis</i>	Purpletop	MEDIUM
<i>Hypochaeris radicata</i>	Flatweed	LOW
<i>Plantago lanceolata</i>	Plantain	LOW
Climbers		
<i>Anredera cordifolia</i> *	Madeira Vine	VERY HIGH
<i>Araujia sericifera</i>	Moth Vine	HIGH
<i>Thunbergia elata</i>	Black-eyed Susan	HIGH

*Denotes high priority weeds for the Greater Sydney DPI 2025

Primary (initial) weed control is to be undertaken prior to any site works to remove highly invasive weed propagules and the bulk of exotic ground layer grasses. All ground and shrub layer weed control works are to be undertaken by qualified personnel from an experienced bushland regeneration company utilising low impact and best practice weed control, restoration, revegetation and bush regeneration methods.

In accordance with the *Biosecurity Act* 2015, all pest plants are regulated with a general biosecurity duty to prevent, eliminate or minimize any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented,



eliminated or minimised, so far as is reasonably practicable.

HERBICIDE USE

Highly invasive or priority weeds may need to be treated with herbicide rather than by manual methods. Applying herbicides near waterbodies or in areas of existing native vegetation is to be avoided due to the sensitivity of waterways and native flora and fauna species.

The use of low residue and low toxicity herbicides is recommended in accordance with the manufacturer's labels. Only operators with *Chemcert* or equivalent training must undertake the spraying of weeds. The operator must evaluate the success of each treatment after a set period of time according to the labelled effective method of treatment of each species for each herbicide.

All herbicides must be applied according to the herbicide usage label and provisions of the *Protection of the Environmental Operations Act* (NSW). Weeding within the restoration areas is to be undertaken by hand, through cut and paint or paint and scape, or where unavoidable via spot spraying. No heavy machinery is to be used for weed control.

ASSET PROTECTION ZONE MANAGEMENT

In accordance with Appendix 4 of Planning for Bushfire Protection, the following vegetation management standards apply for Asset Protection Zones in inner and outer protection areas.

Table 3 – APZ management requirements (from Appendix 4 – Planning for Bushfire Protection 2019)

	Inner Protection Area	Outer Protection Area
Trees	➤ Tree canopy cover should be less than 15% at maturity; ➤ Trees at maturity should not touch or overhang the building; ➤ Lower limbs should be removed up to a height of 2m above the ground; ➤ Tree canopies should be separated by 2 to 5m; and ➤ Preference should be given to retaining smooth barked and evergreen trees.	➤ Tree canopy cover should be less than 30%; and ➤ Canopies should be separated by 2 to 5m.
Shrubs	➤ Large discontinuities or gaps in the vegetation should be provided to slow down or break the progress of fire towards buildings; ➤ Shrubs should not be located under trees; ➤ Shrubs should form less than 10% ground cover; and ➤ Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.	➤ Shrubs should not form a continuous canopy; and ➤ Shrubs should form less than 20% of ground cover.
Grass and Leaf Litter	➤ Grass should be kept mown to a height of less than 100mm; and ➤ Leaves and other debris should be removed	➤ Grass should be kept mown to a height of less than 100mm; and ➤ Leaf and other debris should be removed.

	All Management Zones
Weeds	➤ All weeds should be removed in accordance with best practice guidelines, and measures taken to prevent their further spread

Lot B DP 370222
4 Forest Road
Warriewood

28 January 2025
Ref: BMN02.4

Page 5 of 12

Landscaping	➤ Suitable impervious areas being provided immediately surrounding the building such as courtyards, paths and driveways; ➤ Restrict planting in the immediate vicinity of the building which may over time and if not properly maintained come into contact with the building; ➤ When considering landscape species consideration needs to be given to estimated size of the plant at maturity; ➤ Avoid species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopies; ➤ Use smooth bark species of trees species which generally do not carry a fire up the bark into the crown; ➤ Avoid planting of deciduous species that may increase fuel at surface / ground level (i.e. leaf litter); ➤ Avoid climbing species to walls and pergolas; ➤ Locate combustible materials such as woodchips / mulch, flammable fuel stores away from the building; ➤ Locate combustible structures such as garden sheds, pergolas and materials such timber garden furniture way from the building; and ➤ Use of low flammability vegetation species.
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An experienced restoration and bushfire consultant is to assess compliance and recommend any required rectification works as part of the sites existing Fuel Management Plans

RESTORATION MONITORING

Prior to commencement of works a minimum of ten (10) photo locations are to be established, GPS recorded and marked with a coloured wooden stake (dumpy peg). Sites to be established when undertaking the initial baseline monitoring. Star pickets can be a hazard in the long term and should be avoided. Baseline vegetation condition assessment and regular monitoring reports and photos are to be sent to Council. The vegetation condition at the time of survey can be viewed in Schedule 1.

The monitoring of vegetation within the site will be completed through general condition assessment:

Monitoring activities will include:

- A photographic record for comparative purposes taken on an annual basis.
- Overall vegetation condition map based on standard bush regeneration condition assessment methodology.
- Sediment and erosion fencing control
- Tree protection fencing control
- Waste control
- Watering and vegetation

Monitoring is to focus on the presence/absence of exotic species, revegetation success and monitoring of any sediment fencing and protective fencing.

PATHOGEN CONTROL AND MANAGEMENT

Two types of pathogens are at risk of being introduced to the site and affect the outcomes for restoration works and tree plantings.

- **Root Rot Disease** (*Phytophthora cinnamomi*)
- **Myrtle Rust** (*Austropuccinia psidii*)

Phytophthora cinnamomi

Phytophthora cinnamomi is a soil-borne plant pathogen that attacks the roots of susceptible plants—destroying the root system and reducing the ability of the plant to absorb water and nutrients. This causes symptoms referred to as ‘dieback’ which can lead to plant death.

Under favourable conditions *Phytophthora* spp. can spread easily and quickly, destroying plants and plant communities. These guidelines to help minimise the risk of spreading *Phytophthora cinnamomi* also apply to other species of *Phytophthora* present in Australia, as the management of those species is similar. Thousands of Australian native plant species are susceptible to *Phytophthora cinnamomi*, and several of those species may be at risk of extinction due to its impacts. The dramatic impact of *Phytophthora* spp. infestations on plant communities may also lead to major declines in some insect, bird and animal species due to the loss of shelter, nesting sites and food sources.

Phytophthora cinnamomi thrives in warm, moist conditions with temperatures between 15°C and 30°C, and with rainfall greater than 400 millimetres a year. Its impact is greatest in Western Australia, Victoria, Tasmania and South Australia. The Northern Territory remains the only jurisdiction unaffected, as its environmental conditions are generally unfavourable to the pathogen.

Phytophthora cinnamomi spreads through soil, water, and organic matter. It can remain dormant for long periods during dry weather and is impossible in most situations to eradicate from infested areas, which means limiting further spread is critical. Any activity that moves soil, water or plant material can spread the disease. This includes soil on tools, footwear, and vehicles.

Myrtle Rust

Myrtle rust is a disease caused by the fungus *Austropuccinia psidii*. It affects trees and shrubs in the Myrtaceae plant family—attacking young, soft, actively-growing leaves, shoot tips and young stems, as well as fruits and flower parts.

The first signs of rust infection are tiny, raised spots or pustules on infected leaves. After a few days, the pustules erupt into distinctive bright yellow spore masses. Left untreated, the disease can cause deformed leaves, heavy defoliation of branches, dieback, stunted growth and plant death.

Plants susceptible to myrtle rust are those in the Myrtaceae family, which includes bottle brush (*Callistemon* spp.), tea tree (*Melaleuca* spp. and *Leptospermum* spp.), Lilly pillies (*Syzygium* spp.) and eucalypts (*Eucalyptus* spp., *Angophora* spp. and *Corymbia* spp.). The Myrtaceae family in Australia is ecologically important, accounting for about 10% of Australia’s native flora, with many Australian plant communities dominated by myrtaceous species.

- Arrive clean, leave clean – ensuring all clothing, hats, footwear, tools, equipment, machinery and vehicles are free of weed seeds, mud, soil and organic material before entering and leaving bushland;
- Schedule works for dry soil conditions where possible;
- Minimise soil disturbance;
- **Do not** remove any plant material from sites infested with myrtle rust.
- If using seedlings, purchase them from a supplier that can guarantee high standards of hygiene – such as NIASA-accredited businesses; and
- Ensure transport and disposal of plant material does not introduce weeds to new areas.

Procedures to Minimise Risk of Pathogen Transmission

When conducting works on site the following steps will help stop the spread of invasive species:

- If a site is infested with myrtle rust, **do not** remove any plant material from that site. Instead, dispose of plant waste by burial. If this is not possible, seal the waste in a plastic bag, seal the bag in a second bag and spray the outside of the bag with a solution of 70% ethanol or methylated spirits in 30% water before responsible disposal offsite;
- Ensure all materials taken onto site – such as seedlings, mulch, soil, gravel, rock, and sand – are certified free of weeds and pathogens. You can do this by purchasing from Nursery Industry Accreditation Scheme Australia (NIASA) accredited businesses, and ensuring materials conform to Australian Standards—for example, *AS3743–2003 Potting mixes* or *AS4454–2012 Composts, soil conditioners and mulches*;
- Create a checklist of hygiene procedures for project managers and participants to use;
- Ensure equipment is cleaned and disinfected with a solution of 70% ethanol or methylated spirits in 30% water. This includes footwear, tools, equipment, machinery, vehicles, backpacks, walking sticks, tent pegs and personal items; and
- Remove all weed seeds, mud, soil and organic matter from any items or equipment which comes into contact with plants or the ground. Stay as clean as possible while in the bush.

Disinfecting Clothing, Footwear, Equipment, and Personal Items

The following procedures apply to the disinfection of vehicles and machinery:

- Carry a hard brush and a spray bottle of disinfectant—made up of a solution of 70% ethanol or methylated spirits in 30% water. If you are able to carry more, assemble a simple hygiene kit;
- Set up a wash-down area for participants to wash and dry their face and hands and clean their footwear before entering and exiting the site;
- To clean footwear, first use a hard brush or stick to remove as much mud, soil and organic matter as possible before disinfecting with a solution of 70% ethanol

or methylated spirits in 30% water—applied through a spray bottle or a footbath;

- Seal all personal rubbish in a bag and spray the outside of the bag with a solution of 70% ethanol or methylated spirits in 30% water before responsible disposal offsite;
- Collect all removed mud, soil and organic matter in a bag or bucket, and keep it out of clean bushland;
- Where myrtle rust is present, disposable overalls and caps is to be worn over clothing upon entering a site and removed when leaving the site. However, in high-risk cases, also shower and change into clean clothes (including hats, gloves and footwear); and
- Wash all clothing, hats and gloves between site visits using warm or hot machine wash with detergent.

Disinfecting Vehicles and Machinery

The following procedures apply to the disinfection of vehicles and machinery:

- Use a wash-down facility for vehicles and machinery if available, or wash-down on a hard, well-drained surface, for example a road, and on ramps if possible;
- Pay particular attention to cleaning mud flaps and tyres;
- Dispose of wash-down water so that it drains back into a low area of the infested zone away from waterways. If this is not possible, empty it into a waste container for responsible disposal offsite;
- Don’t allow wash-down water to drain into clean bushland; and
- Don’t drive through wash-down water.

The Australian Government, Department of the Environment (2015) has published a more comprehensive guide to the management of invasive plant diseases and weeds. The Title of this document is “*Arrive Clean, Leave Clean*” and can be found at the following website:

<https://www.agriculture.gov.au/sites/default/files/documents/arrive-clean-leave-clean.pdf>



Figure 6 – Myrtle rust on paperbark leaf (*Melaleuca quinquenervia*) (Source Department of Primary Industries- DPI)

FAUNA MANAGEMENT

The proposed development will involve the demolition of derelict building sand structures onsite. These features are potential habitat for threatened fauna species including birds and microbats.

Removal of derelict buildings/ structures

The buildings and other man-made structures present within the site provided potential roosting habitat within wall or ceiling cavities that have small openings to external foraging airspace. No microbat roosts were located within these structures during surveys and the surrounding bushland would be considered to have better quality breeding and roosting habitat. However, as the microbat species were found to have probable presence onsite, prior to demolition these structures should be re-checked by a fauna ecologist as a precautionary measure to ensure no fauna are impacted by the demolition. If microbats are found to be occupying the building/structures, a fauna ecologist will be



**Lot B DP 370222
4 Forest Road
Warriewood**

**28 January 2025
Ref: BMN02.4**

Page 6 of 12

Vegetation Management Plan

required to relocate them into an area outside of the development footprint. The timing of this must be completed just prior to demolition to avoid any microbats returning to the roosting location and being harmed during clearing.

Irrespective of whether microbats are located during the pre-clearing survey, it is highly recommended the fauna ecologist be present during the demolition in case any fauna are uncovered during the process. Any fauna injured during clearing will be handed to WIRES or a veterinarian for care and rehabilitation.

Tree removal

No hollow bearing trees are being removed as part of the development proposal, however should any hollows be found, they are to be removed and re-attached to retained trees with the VMP area according to the following procedures.

Pre-clearing Inspection of Trees

At least two (2) weeks’ notice will be needed prior to the planned date for clearing of any hollow bearing trees. This is required so as to allow for time for inspections of trees for use by fauna and to plan for the safe felling of the tree/removal of fauna if present. After notice is given of the planned removal of trees a fauna ecologist will inspect the trees for use by fauna. This may include inspection of trees at sunset (stag watching) that allows for the detection of diurnal fauna returning to hollows or nocturnal fauna leaving for the night. Inspections may also require camera probe inspection. All hollow-bearing trees proposed for removal shall be clearly marked with a ‘H’ Symbol to indicate removal under supervision by a fauna ecologist. A fauna ecologist is to be present at the removal of each habitat tree.

Hollows of high quality or with fauna recorded residing within are to be sectionally dismantled for relocation and all hollows are to be inspected for occupation, signs of previous activity and potential for reuse.

Subsequent to felling, hollows suitable for re-use are to be relocated within remaining bushland areas within the retained VMP area. After modification for reinstallation the hollow section is to be reattached to a recipient tree within the nearby retained areas as selected and directed by the fauna ecologist. The welfare and temporary holding of the residing animal(s) is at the discretion of the fauna ecologist. The hollow section should be well secured in the recipient tree in a manner that will not compromise the current or future health of that tree.

Where retained hollows are placed as on ground habitat and are not reattached to a new recipient tree then they are to be replaced with appropriately sized, high quality, long-life nest boxes. A minimum of two (2) microbat nest boxes/salvaged hollows are to be installed.

During Clearing

Where fauna is identified within a hollow and the risk of death or injury as a result of machine felling of the tree is high, the tree may need to be felled in sections. This will involve the removal of hollow limbs or sections by chainsaw with the hollow limb lowered to the ground for removal/relocation of fauna.

All hollow limbs will be inspected after felling for occupation by fauna. Any fauna will be removed and relocated to adjoining bushland. Where young fauna is identified within a hollow whose survival will be at risk as a result of the removal of the hollow or the felling of the tree, then clearing will not be carried out until those young are old enough to leave the hollow and the care of the parents. It is suggested therefore that clearing is not carried out during breeding times when young are likely to be present within hollows (spring-early summer).

Where possible, hollow limbs removed from trees will be collected by the fauna ecologist for re-erection in retained bushland on site. Any fauna injured during clearing will be handed to WIRES or a veterinarian for care and rehabilitation.

Hollow Modification for Relocation (Augmented Hollows)

Hollows that have been selected for relocation are to be modified to provide a dry, enclosed nest. Modifications may include:

- Attaching a 17+ millimetre thick marine ply/structural ply at the base which has been cut to provide a good seal and fixing with construction glue and galvanised screws.
- Attaching metal brackets or hardwood timber support batten to allow hollows to be screwed into a suitable branch or trunk.
- Entrance hollows to be positioned on installation to minimise water entry, located as per the ‘nest box specifications.
- Hollow to be painted externally with a non-toxic wood preservative or external paint.

Alternatively augmented hollows can be installed into suitable trees of high structural integrity or dead trees by the insertion of an augmented hollow, or prepared cavity with entrance. These works are undertaken by a specialist hollow carpenter/ecologist that will design and install the appropriately sized cavity and entrance for the locally occurring species.

NEST BOX INSTALLATION

Three (3) next boxes/ augmented hollows (minimum of two (2) microbat boxes) will be installed within the restoration area or under the guidance of a fauna ecologist.. Constructed nest boxes should replace good quality hollows being removed where salvaged hollows are not suitable.

For any nest boxes being installed, the nest box designs Re to be designed for the local identified species (typical examples give in table 4) as follows:

- 1-2cm sized entry, suitable for microchiropteran bats;
- 2.5-3 cm entries suitable for small birds (little lorikeet);
- 10-20cm entries suitable for medium to large parrot species; and
- 20-25cm entries suitable for small arboreal marsupial species (ringtail possums and sugar gliders).

Table 4 – Typical nest box dimensions for various fauna

(Source: Birds Australia Supplement No. 5 – Nest Boxes for Natives)

SPECIES	INTERNAL SIZES	DEPTH/ LENGTH	ENTRY DIAMETER	VERT/ HOR	HEIGHT	REF
Bat sp.	70-100 x 150-240 mm	200-250 mm	15-20 mm slit	v	-	BFNC (n.d.)
Bat, Chocolate Wattled, Gould’s Wattled & Lesser Long-eared	-	-	10 mm slit	v	-	Trainor (1995)
Little Lorikeet	120 mm	600 mm	25-30mm	h	-	Trainor (1995)
Ringtail Possum	250mm	400mm	60-80mm	V	-	BFNC (n.d.)
Sugar glider	200mm	450mm	35-40mm	v	-	BFNC (n.d.)

Nest Box Design

The following specifications apply to the construction of the nest boxes (refer to the generic diagrams in Figures 6, 7, 8 and 9)

- Timber is to be of high-grade ply 17+ mm thick (MDF, particle board and low-grade ply are not acceptable).
- The lid is to be hinged at the rear side of the box that is affixed to the tree to allow internal inspections from the front side. Lids are to be well sloped to the front to allow runoff by rain. Hinges are to be robust (not small) and made of brass, stainless steel or galvanised. Lids are to be larger than the overall cross-sectional size of the box and placed so that a small eave exists on all sides to prevent entry of rain.
- Two vertical timber supports (approximately 30x30mm timber strips 150 mm apart) are to be attached down the rear face of the box so that there are two points of attachment to the trunk on a curved surface and the box does not rock in the wind. This will also provide easy attachment points to the trees without having to screw through the inside of the box. These are to be made of treated pine and any screws into this (for hinges etc.) should be manufactured for use in treated pine or stainless. Holes at both ends of both supports are to be predrilled for easy attachment to trees. Timber supports should not be placed directly onto the box but with small timber spacers so that an eave is permissible along this side of the roof.
- Joints are to be glued and screwed for strength. Glue should be labelled as non-toxic wood glue.
- All fasteners used are to be weather resistant stainless steel, galvanised or other. Screws into the treated pine supports are to be stainless steel
- All fasteners for tree attachment are to be supplied (stainless steel or treated pine coach screws). These are to be a suitable gauge depending on the size of bow and suitable length to pass through the vertical timber supports, and into a sufficient extent of heartwood. Heartwood penetration will depend on the size of the box.Screws for small boxes should extend a minimum of 20mm into the heartwood of hardwood eucalypts and medium boxes ~40mm. All boxes are to be screwed so that a small distance for growth exists between the timber supports and the trunk. This can be achieved with a small stainless sleeve over the screw.
- 5 mm drainage holes are to be drilled in each corner at the base of each nest box.

- Exterior of the boxes (including treated pine supports) are to be painted with a primer and then a minimum of two coats of external non-alcohol based acrylic paint. The colour selected should be consistent with the colour of the recipient trunk and therefore recipient trees should ideally be prior selected.

Nest Box Placement

- Nest boxes are to be erected by a qualified arborist under the supervision of the project ecologist or fauna ecologist. A fauna ecologist is to locate appropriate trees and locations for installing the nest boxes.
- All replacement nest boxes are to be secured to trees at a minimum height of four metres above ground level facing the east to northeast direction. Place nest boxes as high as physically possible within a tree preferably using a cherry picker or tree climber/arborist - generally the higher the better for consideration to most species.
- Nest boxes and re-erected limbs are not to be placed near locations where public access is planned.
- The larger and more mature tree are to be selected to be nest box recipients where available. This will comparatively reduce the weighted stress on the tree, make the box less visible and result in less change in growth ratio affecting the selected attachment method. Boxes are preferably to be placed on the trunk for structural stability and protection from falling branches.
- Place nest boxes away from continual direct mid-day summer sun.
- Place nest boxes with large entry holes away from any prevailing winds when close to open water-bodies. E.g., protect from strong southerly winds close to the ocean and contrastingly cool-hot westerly winds in different seasons.
- Attach nest boxes securely so that they do not shift or shake in response to strong winds or being knocked by the movements of heavier animals, e.g. Possums and goannas.
- To ensure nest boxes are inaccessible to cats and rats or to also assist native species by exclusion of possums, the base of the trunk or branches may also require the installation of tree guards or exclusion collars.
- Nest boxes should ideally be placed in such a way that they are accessible for management but concealed from interference.
- These artificial nest boxes / structures must be accessible for maintenance purposes with an expected life span of 20 years.

Nest Box Attachment

Nest boxes are to be appropriately affixed to a recipient tree under the guidance of a fauna ecologist. Different methods of attachment to the tree are available. *Travers bushfire & ecology* generally recommends that the boxes should be fixed with robust stainless steel or treated pine coach screws that penetrate through the cambium and into the heartwood of the tree to ensure a very secure attachment. Provided that any cambium damage to a tree is not left as an open wound then the chance of fungal infection or insect attack is significantly reduced and the tree will grow around the screw. Any other method of attachment selected should also ensure the box is secured to prevent movement or fall and allows for the future growth of the tree without any cambium constriction over the entire life of the nest box.

Nest Box Maintenance

The expected life span of a nest box is 5 years and replacement will be required as part of maintenance. Augmented hollows are preferred for longevity reasons and have a higher uptake by fauna. The following maintenance is required:

- All nest boxes and re-erected limbs will be inspected annually for a minimum of five (5) years and any damaged, or in danger of falling, are to be repaired or replaced.
- Deterring mynas and starlings from re-nesting is not easy; these pests are very persistent, and constant vigilance is necessary. This also means that you must have convenient regular access to the nest-box, and that you must be aware of what creatures are using it for what purposes.
- Nest boxes found to be utilised by threatened or otherwise significant fauna may be prioritised for ongoing management to ensure their longevity and replicate their design/placement characteristics.



Lot B DP 370222
4 Forest Road
Warriewood

28 January 2025
Ref: BMN02.4

Page 7 of 12

Vegetation Management Plan



Figure 7 – Installed microbat box

(Source: Ausbats <https://www.ausbats.org.au/install-a-microbat-house.html>)

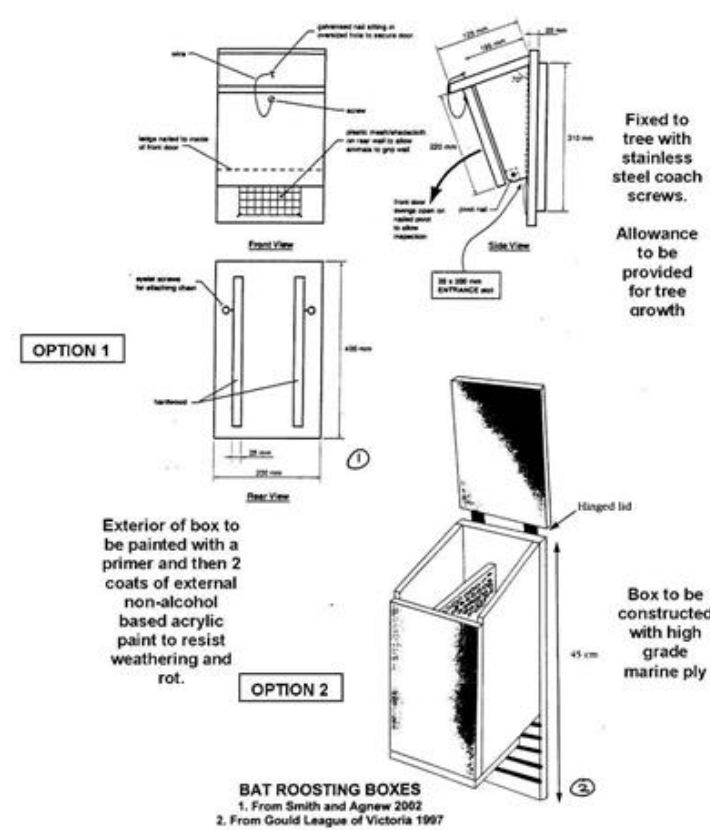
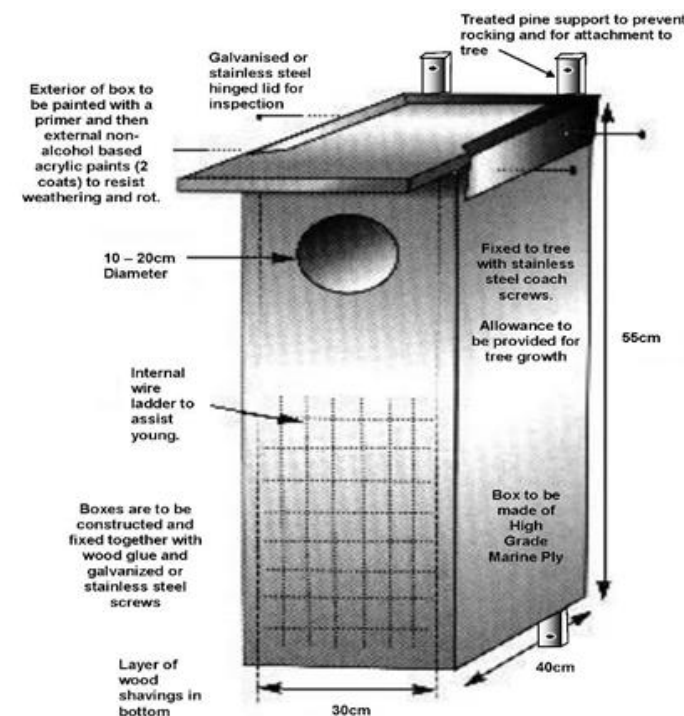


Figure 10 – Microbat roost box detail



Example 1 - DIMENSIONS APPLIED FOR A LARGE PARROT ROOSTING / NESTING BOX

Note: Small parrot nest boxes will require a reduced entry hole size of 5 – 10cm in diameter

Figure 11 – Typical dimensions for large parrot box



Figure 12 – Augmented hollow using a hollow log of low structural risk

(Source: Sustainable McCleod <https://sustainablemacleod.org.au/creating-hollows-for-wildlife-with-chainsaws/>)

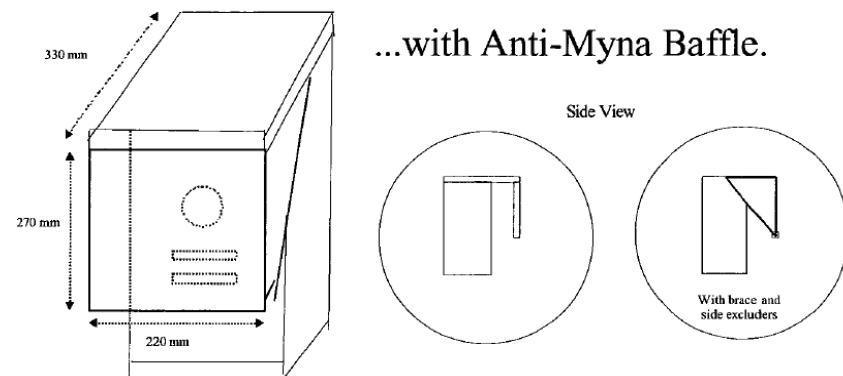


Figure 8 – Anti-Myna baffle

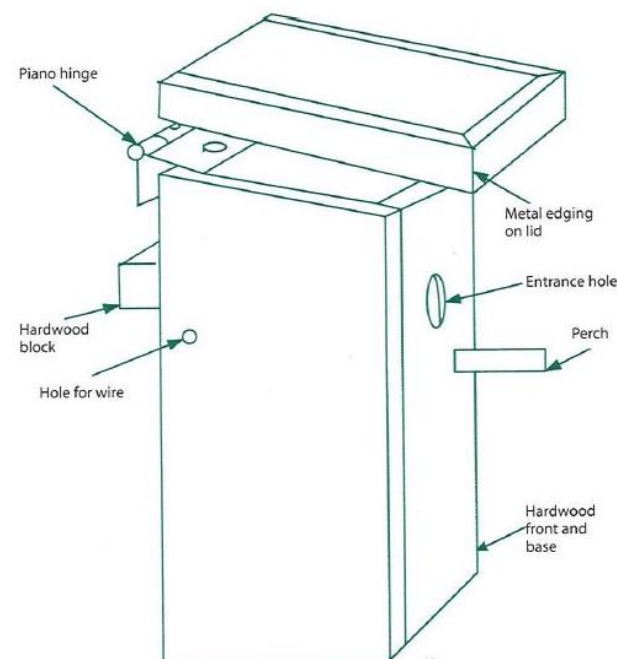


Figure 9 – A Generic nest box design

(Source - From Alan and Stacey Franks, 2003)



Figure 13 – Augmented hollow using inserted entrance and prepared cavity

(Source: Sustainable McCleod <https://sustainablemacleod.org.au/creating-hollows-for-wildlife-with-chainsaws/>)

PROGRAM OF WORKS

The program of works (Table 5), maintenance, monitoring and review works required for the site. Site rehabilitation, including weed control works is to be undertaken in accordance with the Schedule 1 – Vegetation Management Works. A typical timeline of works is shown on Figure 1. For the purposes of the program of works, the listed tasks are divided into the following stages.

Pre-construction Works (Post construction certificate being issued) - All site preparation activities prior to the commencement of vegetation restoration works on site and generally excludes any landscaping and planting works.

During construction (Completed prior to issuance of the Subdivision Certificate) - Period during which primary restoration works are completed. *Primary Restoration Works*, as defined under this VMP, include the completion of primary and secondary weed control, protective fencing and planting works. Practical completion of the primary restoration phase is determined by the project ecologist at which point all primary restoration actions need to have been completed.

Table 5 – Table of works and responsibilities

Action	Responsibility
Stage 1 – Pre-restoration works	
Formation of site management team and establish supervision and consultation processes – minimum project ecologist, qualified bushland restoration contractor and site manager	Site project manager
Erection of erosion control fencing	Site manager / project ecologist
Installation of primary exclusion / protection fencing and access gates	Project manager
Baseline vegetation condition assessment and establishment of monitoring plots	Project ecologist
Commencement of primary weed control	Suitably qualified bushland restoration contractor
Commencement of seed collection and propagation contracts	Bushland restoration contractor / project ecologist
Provide certificates of compliance to the appointed project certifier and council	Project ecologist
Stage 2 – Restoration Works	
Supervision of any vegetation and management works	Site project manager in association with the project ecologist
Monitor erosion control measures (monthly – especially after heavy rain) and replace if required	Contractor with advice of project manager
Waste removal and soil amelioration works to control weed infestations and provide suitable restoration soil base.	Bushland restoration contractor
Complete revegetation works	Bushland restoration contractor / project manager
Commencement of secondary weed control and maintenance weed control	Contractor / bushland restoration contractor
Maintenance of fencing and signage around protected vegetation	Contractor
Continuation of primary restoration and revegetation works	Contractor / suitably qualified bushland regenerator
Provide certificates of compliance at practical completion	Project ecologist
Stage 3 – Post Restoration Works	
Further enrichment planting within revegetation areas if required.	Bushland restoration contractor with advice of project ecologist
Continuation of regeneration and weed control maintenance.	Contractor / bushland regenerator
Monitoring of retained vegetation at six (6) months, twelve (12) months and annually for five (5) years post construction stage.	Project ecologist
Conduct maintenance beyond five (5) years if required	Site manager with advice of project ecologist
Provide certificates of compliance at end of each year during the 5-year maintenance period	Project ecologist

Post Construction Works (Commences upon practical completion being achieved)- Consist of maintenance activities, unless further contingency works are identified by the project ecologist for auditing, fulfilment of the performance targets, or other purposes. Maintenance will be undertaken by a fully qualified bush regeneration crew for a minimum of five (5) years post completion of primary restoration works.

The following typical timeline (Table 6) is provided to indicate a possible overall timing of restoration works. The commencement of the maintenance period of five (5) years is subject to the completion of primary restoration works as certified by the project ecologist. A certificate of practical completion will be required as evidence of satisfactory completion prior to the commencement of the maintenance period. The successful implementation of restoration works may affect the release of any required bonds as required. Upon engagement, contractors are expected to meet the following typical schedule of works.

Table 6 – Typical Restoration timeline

ID	Task Name	Duration	Primary Restoration Works												Year 1 Maintenance												Year 2 -5 (in perpetuity post year 5)														
			1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12			
	STAGE 1 - PRECOMMENCEMENT (Pre Construction Certificate)																																								
1.0	PROJECT INITIATION	1 month																																							
1.1	Confirm funding	1 month																																							
1.2	Preparation of contract schedules	1 month																																							
1.3	Submission of fee proposals	1 month																																							
1.4	Contractor approvals, engagement of project ecologist & bushland restoration contractor	1 month																																							
2.0	SITE PREPARATION AND PROPAGATION																																								
2.1	Pre-commencement vegetation condition assessment and establish photo monitoring points	1 day																																							
2.2	Seed collection	12 months																																							
2.3	Plant propagation (initial & contingency)	8 months																																							
2.4	Installation of protective fencing and signage	2 weeks																																							
2.5	Obtain permit & undertake pest control (if necessary)	6 weeks																																							
2.6	Commence Primary weed control	1-6 months																																							
	STAGE 2 DURING CONSTRUCTION WORKS (post Construction Certificate and pre subdivision certificate)																																								
3.0	WEED CONTROL																																								
3.1	Complete primary weed control																																								
3.2	Secondary weed control	3-6 months																																							
4.0	REVEGETATION WORKS																																								
4.1	Site preparation - sediment and erosion control, removal of waste	1-5 days																																							
4.2	Revegetation works	6 months																																							
4.4	Initial watering & maintenance	9 months																																							
4.5	Pest Control (if required)	3 months																																							
4.6	Installation of any nest boxes/salvaged hollows (if required)	2 weeks																																							
	STAGE 3 - POST CONSTRUCTION WORKS (from Practical completion of Stage 2)																																								



Lot B DP 370222
4 Forest Road
Warriewood

28 January 2025
Ref: BMN02.4

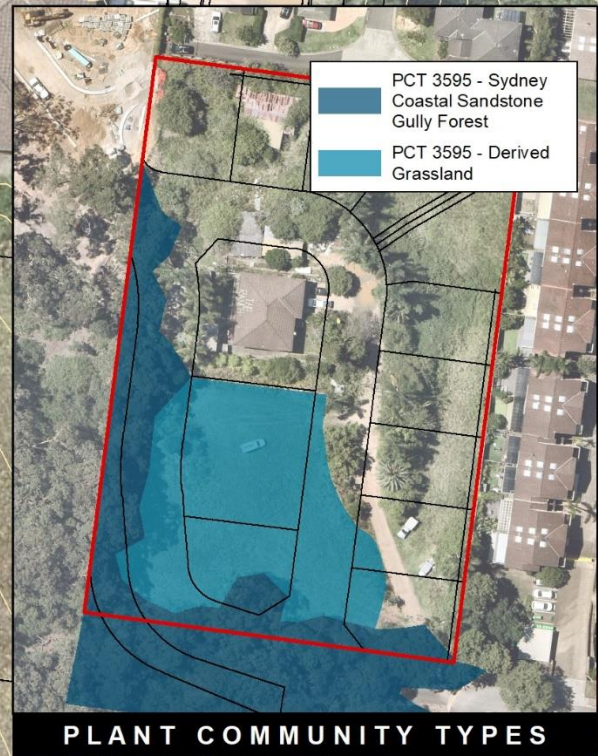
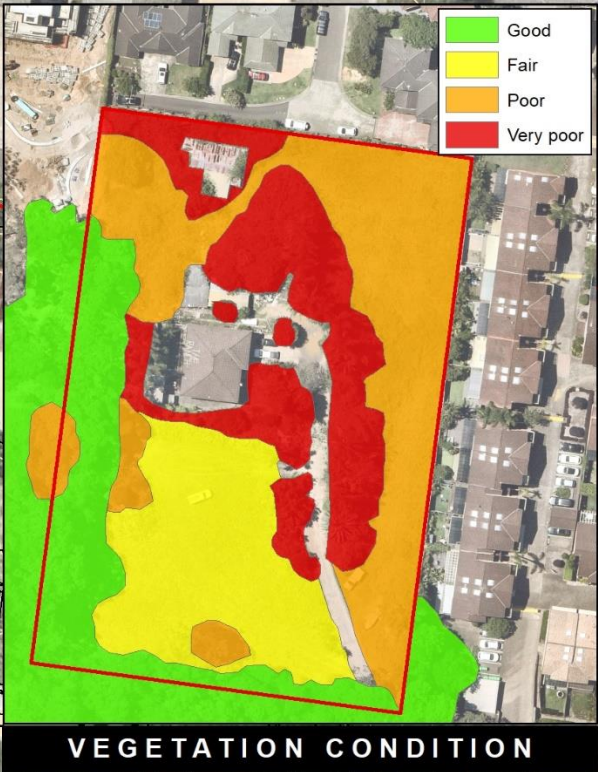
Page 9 of 12

RESTORATION TARGETS

The following restoration performance targets are to be audited, and compliance certificate issued by the project ecologist demonstrating satisfactory completion of the works in accordance with the VMP and as shown on Schedule 1:

- 1. Temporary tree protection and signage to be put in place around all tree to be retained within and adjacent to the proposal, as shown on Schedule 1.
- 2. Priority weed species for the Greater Sydney within the *Biosecurity Act* (2015) should be completely eradicated by the end of Year 5.
- 3. Final weed coverage will not exceed more than 15% coverage at the end of Year 1 and less than 5% coverage of the end of Year 5.
- 4. Native vegetation plant density within the development interface restoration zone is to comply with the revegetation specifications as specified in Table 1.
- 5. A minimum of 95% plant survival is to be achieved foal all planted native vegetation, and natural grown rates and plant cover is typical of PCT 3595 after 5 years.
- 6. Three (3) nest boxes/augmented hollows installed to provide habitat for hollow dependant fauna.
- 7. Selective APZ management on the road batter to reduce fine fuel build up and to trim low branches hand low to the ground prior to commencement of the bushfire season (September of each year) and maintained in perpetuity.
- 8. No stockpiles or vegetation debris are to be kept onsite.
- 9. No external lighting is to be directed into adjoining habitat areas and external lights baffled to direct lighting to the ground. Refer to lighting specifications within VMP.
- 10. An audit inspection will be undertaken by the project ecologist at a minimum every (12) months for the duration of the VMP following an initial baseline monitoring inspection at the first six (6) month interval. A compliance certificate will be issued at the completion at each stage of works, detailing the performance target tasks undertaken.

Scientific Name	Common Name	Development interface 716 m ²
Canopy plantings		1 per 200m ² = 4
<i>Angophora costata</i>	Sydney Red Gum	5
<i>Corymbia gummifera</i>	Red Bloodwood	1
Sub-canopy plantings		1 per 100m ² = 4
<i>Banksia serrata</i>	Old-man Banksia	3
<i>Ceratopetalum gummiferum</i>	NSW Christmas Bush	2
Shrub plantings		1 per 50m ² =15
<i>Acacia terminalis</i>	Sunshine Wattle	8
<i>Persoonia levis</i>	Broad-leaved Geebung	8
<i>Banksia ericifolia</i>	Heath-leaved Banksia	6
Ground-cover plantings		2 per 1 ² = 1432
Grass and Grasslike		955
<i>Entolasia stricta</i>	Wiry Panic	200
<i>Lepidosperma laterale</i>	-	200
<i>Lepyrodia scariosa</i>	-	200
<i>Anisopogon avenaceus</i>	Oat Speargrass	178
<i>Microlaena stipoides</i>	Weeping Grass	177
Forb		477
<i>Dianella caerulea</i>	Blue-flax Lily	150
<i>Lobelia purpurascens</i>	White Root	150
<i>Commelina cyanea</i>	Scurvy Weed	89
<i>Dichondra repens</i>	Kidney Weed	88
Climber		1 per 80m ² = 9
<i>Smilax glycyphylla</i>	Sweet Sarsparilla	5
<i>Billardiera scandens</i>	Hairy Apple Berry	2
<i>Hardenbergia violacea</i>	False Sarsparilla	2
TOTAL		1464



Legend

- Site boundary (source:LPI)

Contour 1m (source:LiDAR)

Existing driveway

Nestbox/augmented hollows (x3)
Indicative location

Retain tree (source: Naturally Trees)

Remove tree (source: Naturally Trees)

Tree protection fencing (142m)

Management Zones

Asset Protection Zone (APZ) (0.26ha)

Development interface - APZ management and revegetation (716.2m²)

Remnant Managed Land (Road Corridor) – Weed control only (0.04ha)

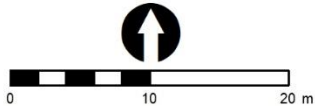
Aerial source: Neamap



PROJECT & MXD REFERENCE
4 Forest Rd, Warriewood
BMN02.4_VMW001

DATE & ISSUE NUMBER
28/01/2025
Issue 1

SCALE & COORDINATE SYSTEM
1:500 @ A3
GDA2020 MGA Zone 56



Disclaimer: The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.

Schedule 1 - Vegetation Management Works

Document Path: N:\GIS STORAGE\N Drive\1_GDA2020_MappingProjects\BMN02_ForestRd_Warriewood\MXDs\BMN02.4_VMW001.mxd

ATTACHMENT 1 – VMP WORKS COSTING (5 YEARS)

Task	Description	Labour						Materials/Subcontractors					Total Personnel/ Subcontractor/ Supply Costs
		Quantity	work rate	Unit	Hours	Rate	Total	Unit	Quantity	rate	Risk Factor	Subtotal	
1	Site Preparation												
1.1	Mulching, supply and install -	716	20 mm thick	m ²				mulch m ³	14.32	\$40.00		\$572.80	
1.2	Supply and install temporary tree protection fencing	142		Lm				Fence	142	\$11.00		\$1,562.00	
	Subtotal												\$2,134.80
2	Primary Weed Control												
2.1	Entire site & development impact zone	716	20	hr	35.8	\$75.00	\$2,685.00						\$2,685.00
3	Secondary Weed Control												
3.1	Entire site & development impact zone	716	30	hr	23.9	\$75.00	\$1,790.00						\$1,790.00
4	Pest Control (only if required) -Pindone Baiting	750	60	m ²	12.5	\$8.00	\$100.00						\$100.00
6	Revegetation (1800m²)												
6.1	Planting of emergent trees - Forestry Tubes	4	20	units/hr	0.2	\$75.00	\$15.00	tube	4	\$1.25		\$5.75	\$9.50
6.2	Planting of sub-canopy - Forestry Tubes	4	20	units/hr	0.2	\$75.00	\$65.00	tube	4	\$1.25		\$5.75	\$22.00
6.3	Planting of shrubs - Forestry Tubes	15	20	units/hr	0.8	\$75.00	\$56.25	tube	15	\$1.25		\$21.56	\$25.31
6.4	Planting of groundcovers a- Forestry Tubes	1432	50	units/hr	28.6	\$75.00	\$2,148.00	tube	1432	\$1.25		\$2,058.50	\$2,060.00
6.5	Planting of climbers - Forestry Tubes	9	50	units/hr	0.2	\$75.00	\$13.50	tube	9	\$1.25		\$12.94	\$14.44
6.6	Watering and maintenance	1085	250	units/hr	4.3	\$75.00	\$325.50						
6.7	Subtotal	1464			34.3		\$2,623.25					\$2,104.50	\$4,727.75
7	Nest Boxes or Augmented hollows												
7.1	Supply and install	3	1	units/hr	3.0	\$390.00	\$1,170.00	unit	5	\$350.00		\$1,750.00	\$2,920.00
8	Maintenance Weeding												
8.1	Year 1 - 12 sessions	716	150	hr	57.3	\$75.00	\$4,296.00						
8.2	Year 2 - 12 sessions	716	150	hr	57.3	\$77.25	\$4,424.88						
8.3	Year 3 - 12 sessions	716	200	hr	43.0	\$79.57	\$3,418.22						
8.4	Year 4 - 12 sessions	716	250	hr	34.4	\$81.95	\$2,816.61						
8.5	Year 5 - 12 sessions	716	300	hr	28.6	\$84.41	\$2,417.59						
7.6	APZ management	716	200	hr	43.0	\$86.95	\$3,735.18						
8.7	Subtotal				291.0		\$23,653.56						\$23,653.56
	TOTAL OF ALL RESTORATION WORKS												\$40,142.36
9	Contingency Restoration works												
9.1	15% additional weed control												\$3,950.78
9.2	15% additional planting												\$709.16
9.3	15% Replacemnet Next Boxes												\$438.00
9.4	Miscelanneous contingency works												\$923.41
	Subtotal												\$6,021.35
10	Compliance Reporting, Monitoring & Auditing (5 years)												
10.1	Certification to Council - inspection and certification letter, annually	5 sessions	16	hr	80.0	\$195.00	\$15,600.00						\$15,600.00
11	TOTAL COSTS												\$61,763.71

ATTACHMENT 2 – AUDIT & COMPLIANCE CERTIFICATION TABLE

Audit items	Timing	Responsibility	Rectification works required? Yes/No	Works required	Completion Date	Compliant Yes/No
Preconstruction works (Prior to CC)						
Practical completion of all preconstruction works – weed control, local provenance seed collection, sediment erosion control, protective fencing, installation of nest boxes prior to construction	0-3 months	Bush Regeneration Contractor				
During Construction (Post issuance of CC)						
Practical completion of all primary restoration works (Prior to Issuance of Subdivision Certificate –Plant establishment of PCT 3595 (1464 plants) as per the revegetation species list, 3 nest boxes, watering, litter removal, temporary tree protection fencing	3-12 months	Bush Regeneration Contractor				
3-12 months – Establish photo points to assess whether contingency works are required to achieve practical completion and satisfaction of performance targets	3-12 months	Project Ecologist				
12 months – submission of first audit and compliance certificate demonstrating practical completion and compliance with Performance Targets	12 months	Project Ecologist				
Year 1 Maintenance						
Commence year 1 Maintenance works – Monthly maintenance session with submission of works report to Project Ecologist	Year 1 maintenance	Bush Regeneration Contractor				
Biannual review with Project Ecologist to determine need for contingency works	Every 6 months	Bush Regeneration Contractor with Project Ecologist				
Annual Audit report demonstrating compliance with Performance targets	Every 12 months	Project Ecologist				
Year 2 Maintenance						
Commence year 2 Maintenance works – Monthly maintenance session with submission of works report to Project Ecologist	Year 2 maintenance Period	Bush Regeneration Contractor				
Biannual review with Project Ecologist to determine need for contingency works	Every 6 months	Bush Regeneration Contractor with Project Ecologist				
Annual Audit report demonstrating compliance with Performance Targets	Every 12 months	Project Ecologist				
Year 3 Maintenance						
Commence year 3 Maintenance works – Monthly maintenance session with submission of works report to Project Ecologist	Year 3 maintenance	Bush Regeneration Contractor				
Biannual review with Project Ecologist to determine need for contingency works	Every 6 months	Bush Regeneration Contractor with Project Ecologist				
Annual Audit report demonstrating compliance with Performance Targets	Every 12 months	Project Ecologist				
Year 4 Maintenance						
Commence year 4 Maintenance works – Monthly maintenance session with submission of works report to Project Ecologist	Year 4 maintenance	Bush Regeneration Contractor				
Biannual review with Project Ecologist to determine need for contingency works	Every 6 months	Bush Regeneration Contractor with Project Ecologist				
Annual Audit report demonstrating compliance with Performance targets	Every 12 months	Project Ecologist				
Year 5 Maintenance						
Undertake a review of the Vegetation Management Plan and make adjustment for any site conditions for updated methodologies to improve restoration outcomes	During year 5	Project Ecologist				
Commence year 5 Maintenance works – Monthly maintenance session with submission of works report to Project Ecologist	Year 5 maintenance	Bush Regeneration Contractor				
Biannual review with Project Ecologist to determine need for contingency works	Every 6 months	Bush Regeneration Contractor with Project Ecologist				
Annual Audit report demonstrating compliance with Performance Targets	Every 12 months	Project Ecologist				
Handover or extended maintenance period						
Meet with receiving organization and determine readiness for hand over	Midway through year 5 maintenance	Project Manager with Project Ecologist				
On going maintenance until hand over occurs	Every Month	Bush Regeneration Contractor				
Biannual review with Project Ecologist to determine need for contingency works	Every 6 months	Bush Regeneration Contractor with Project Ecologist				
Annual Audit report demonstrating compliance with Performance Targets	Every 12 months	Project Ecologist				