
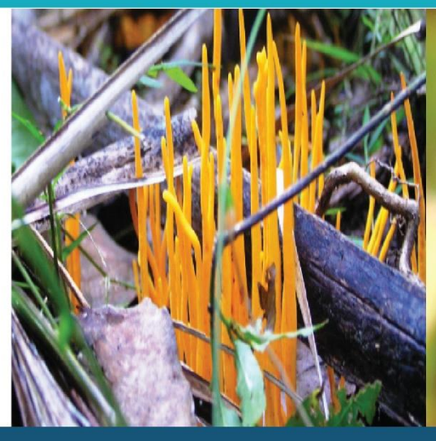

TRAVERS BUSHFIRE & ECOLOGY

A TBE ENVIRONMENTAL COMPANY

VEGETATION AND HABITAT MANAGEMENT PLAN

Proposed Residential Subdivision

Lot 123 DP 1063557

598 Gresford Road

Vacy

11 December 2024

VEGETATION AND HABITAT MANAGEMENT PLAN

Lot 123 DP 1063557, 598 Gresford Road, Vacy

Prepared for:	**Cornish Group No. Six Pty Ltd**
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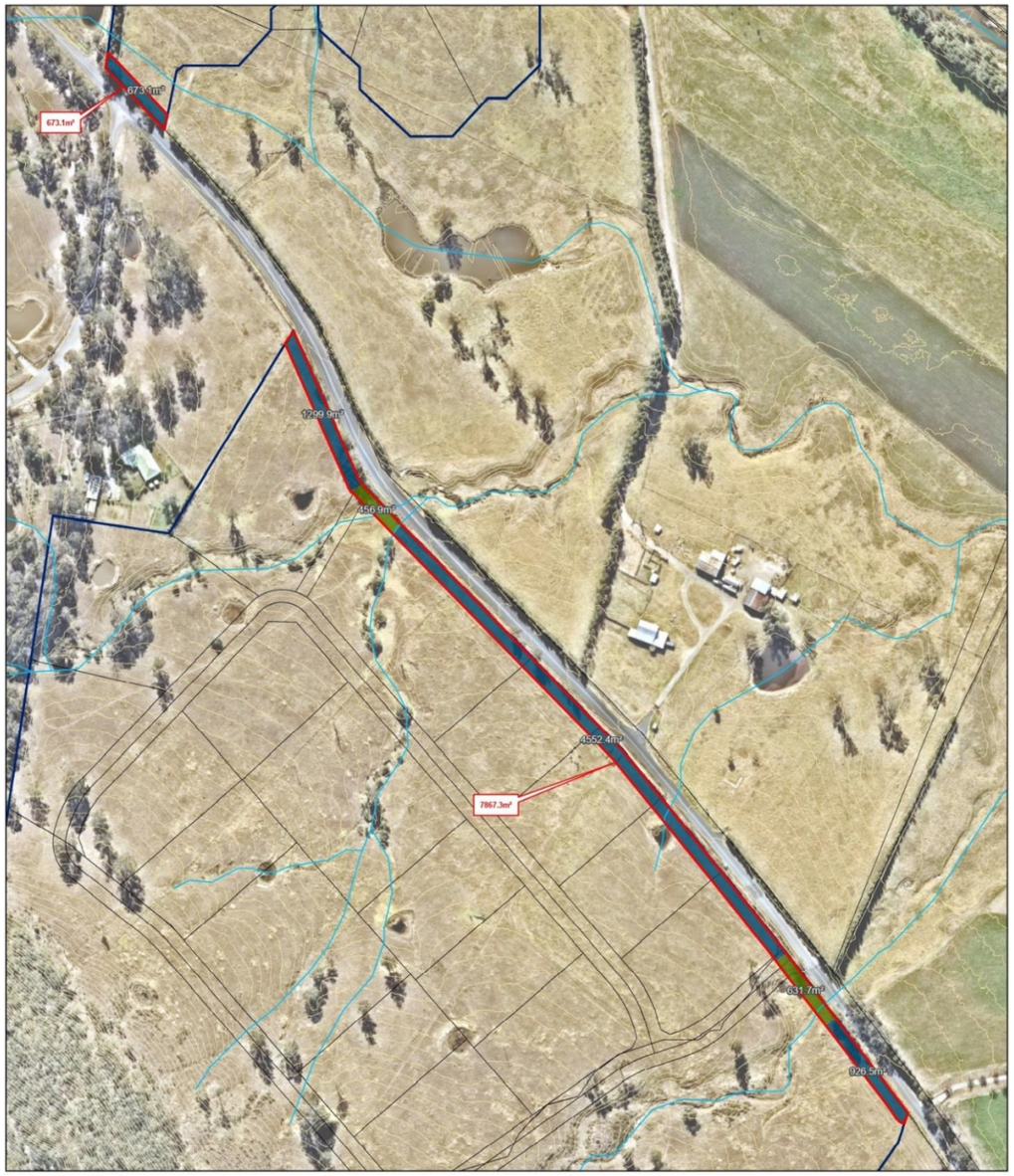

Figure 1 – Vegetation Management Restoration Area

VEGETATION MANAGEMENT AIMS

The purpose of this Vegetation Management Plan (VMP) is to define and document the actions required to restore Plant Community Type PCT 3433 – Hunter Coast Foothills Spotted Gum Ironbark Forest and PCT 4042 – Lower North River flat Eucalypt – Paperbark Forest at Lot 123 DP 1063557 598 Gresford Road, Vacy.

The aims of this VMP include:

- Identifying ongoing management of habitat resources, weeds, future landscaping, and site works within revegetation areas situated parallel to Gresford Road.
- Installation of permanent protective fencing for revegetation zones.
- Engagement of an independent project ecologist to undertaken ongoing monitoring, compliance inspections and certifications.
- Engagement of a suitably qualified bushland regeneration team.
- Maintain and rehabilitate the retained PCT 3433 vegetation within the undeveloped portions of the site with fully structured native vegetation.
- Weed control and maintenance of replanted areas for a period of not less than 3 year.
- Cleared logs to be used as log enrichment and fauna habitat.
- Management of the restored vegetation is required for a period of 1 year,
- Monitoring by Project Ecologist and compliance certificate sent to Council.
- Erosion control throughout revegetation zones.

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).
- Installation of permanent protective fencing with four (4) locked access gates and signage around the entire development to prevent public access and limit domestic animals entering the site as shown in 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 commencing planting / enrichment works.
- 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.

FENCING AND SIGNAGE

Permanent protective fencing of 1.2m high black ring lock or chain link fence with either timber or steel posts and rail is to be installed (Figure 3). This fence is to remain in perpetuity to limit domestic pets such as dogs or grazing stock such as cattle from entering the site. Signage will be placed along the fence line to inform the public that the retained bushland is an environmental protection area with restricted access (Figure 4).

REVEGETATION SPECIFICATIONS

Table 1 provides a recommended revegetation species list. Only plant species typically occurring within PCT 3433 are to be utilised for revegetation purposes, any variation from Table 1 must be approved by the project ecologist.

Figure 2 – Fencing Example

Figure 3 – Signage Example

Groundcovers will have some variation within the constructed scour protection area as moisture tolerant species will be required for revegetation. All plant stock selected for restoration are to be sourced from the local area, preferably within the Greater Hunter region. A minimum of 28 native species shall be used as part of the PCT 3433 revegetation works.

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 3433 as indicated in Table 1.

The planting and regeneration of the VMP management areas must achieve the densities nominated. The estimated numbers of plants required are calculated within Table 1 and Table 2. As a minimum, holes for tree planting are to be twice the depth and twice the width of the pot size of the plant.

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 weeks prior to revegetation and throughout the entire maintenance period (subject to Local Government guidelines). Caution should be used if 1080 is to be applied, due to the urban nature of the site, and appropriate signage restricting domestic animals should be put in place, to minimise impacts to residents' pets.

Weed control works, bush regeneration and restoration are to be undertaken over a minimum maintenance period of three (3) 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 3 years to achieve the restoration performance targets.

It is expected that at least 95% of plantings will survive and will be progressively 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 first six to eight weeks post planting, or as required in the event of a dry spell. A 15% contingency allocation is to be set aside for all works to ensure compliance with the performance targets.

Revegetation zones

PCT 3433 and PCT 4042 – Full Revegetation Zone

This zone in poor condition with very high weed coverage and little native vegetation cover due to the historical grazing and canopy clearance. The following planting densities and numbers are to be achieved within the fully structured revegetation zone:

- Canopy – 1 per 50m^2
- Sub-canopy – 1 per 50m^2
- Shrubs – 1 per 10m^2
- Groundcovers – 3 per 1m^2
- Other (climbers) – 1 per 40m^2

DOMESTIC PETS

The restoration area will be designed to limit access from domestic animals entering the site. The area is to have a 1.2m high chainlink or ringlock fence, with locked gates to discourage both the public, and domestic animals, from disturbing resident native fauna. The fence is to have signage indicating that it is a protected environmental area, and activities which will impact the ecological community and hinder its recovery are prohibited.

PROJECT MANAGEMENT, REPORTING AND AUDITING

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). 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 VMP area will be completed through general condition assessment and using Biodiversity Assessment Method (BAM) vegetation plots.

The following project management tasks are to be undertaken:

1. 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);
2. 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;
3. Engagement of an independent project ecologist to undertake auditing, reporting and compliance certification;
4. 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 3 years; and
5. 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 3-year maintenance period assessing compliance with the stipulated restoration performance targets.

NON-CONFORMANCE WITH VMP

Non-conformance with the restoration performance targets are to be identified and reported within the annual compliance audit. Non-compliance is to be rectified on a needs basis to ensure the specified BAM composition scores and restoration performance targets are met. A contingency plan specifying corrective actions to be prepared by the project ecologist with the method and timing of actions.

Contingency works are to be specified on a 6 monthly basis by the appointed project ecologist to ensure that the restoration works achieve the benchmarks for restoration of PCT 3433 – Hunter Coast Foothills Spotted Gum Ironbark Forest and PCT 4042 – Lower North River Flat Eucalypt – Paperbark Forest**.** Reference is made to the **Audit table** as contained in this VMP which contains the benchmark criteria. Should the benchmark criteria not be met at any time as assessed by a BAM Accredited Assessor, then contingency or rectification works are to be completed.

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.

RESTORATION SPECIES LIST

Table 1 - Revegetation species for enrichment revegetation Planting PCT 3433 – Hunter Coast Foothills Spotted Gum Ironbark Forest

Scientific Name	Common Name	Enrichment Revegetation 7451.9m²
Canopy Planting (7451.9m²)		**1 per 50m² = 149**
Corymbia maculata	Spotted Gum	65
Eucalyptus fibrosa	Red Ironbark	42
Eucalyptus umbra	Broad leaved white mahogany	20
Angophora globoidea	White stringy bark	20
Shrub Planting (7451.9m²)		**1 per 10m² = 745**
Daviesia ulicifolia	Gorse bitter pea	130
Acacia ulicifolia	Prickly moses	130
Persoonia linearis	Narrow leafed geebung	125
Leucopogon juniperinus	Prickly beard heath	125
Acacia falcata	Sickly wattle	118
Breynia oblongifolia	Coffee bush	117
Groundcovers (7451.9m²)		**3 per 1m² = 22356**
Microlaena stipoides	Weeping Grass	3000
Entolasia stricta	Bordered Panic	3000
Lomandra longifolia	Spiny-headed Mat-rush	3000
Dianella caerulea	Blue Flax-lily	3000
Themeda triandra	Kangaroo grass	2300
Aristida vagans	Common Rush	2300
Dianella revoluta	Blue berry-lily	2300
Oplismenus aemulus	Basket Grass	1500
Brunoniella australis	Blue Trumpet	1500
Cheilanthes sieberi	Mulga Fern	456
Climber Planting (7451.9m²)		**1 per 40m² = 186**
Billardia scandens	Apple Berry	60
Geitnoplesium cymosum	Scrambling Lily	60
Desmodium varians	Slender Tick Trefoil	33
Hardenbergia violacea	Purple Coral Pea	33
	Subtotal	23,436

RESTORATION PERFORMANCE TARGETS

The following restoration performance targets are to be audited, and compliance

1. Install a 1.2m high permanent protective fence is to be installed around the proposed development footprint as shown in Schedule 1.
2. Final weed coverage will not exceed more than 15% coverage at the end of Year 1 and less than 5% at the end of Year 3.
3. Priority weed species listed for the Hunter Region within the NSW *Biosecurity Act* (2015) are to be completed eradicated by the completion of year 3 maintenance.
4. Native vegetation plant density within the restoration zone is to comply with the revegetation specifications in Table 1 and Table 2. A minimum of 26,868 tube stock installed
5. A minimum of 90% plant survival is to be achieved for all planted native vegetation, and natural growth rates and plant cover is to be typical of PCT 3433 & 4042 after 3 years.
6. Stormwater and constructed swale design should be in accordance with the NRAR 'Guidelines for outlet structures (2018)'

Table 2 - Revegetation Species list for PCT 4042 – Lower North River Flat Eucalypt-Paperbark Forest

Scientific Name	Common Name	Enrichment Revegetation 1088m²
Canopy Planting (1088.6 m²)		**1 per 50m² = 22**
Eucalyptus tereticornis	Forest Red Gum	8
Angophora floribunda	Rough Barked Apple	8
Acmena Smithii	Lilly Pilly	6
Sub Canopy Planting (1088.6 m²)		**1 per 30m² = 36**
Melaleuca linarifolia	Snow in Summer	12
Allocasuarina littoralis	Black Sheoak	12
Melaleuca stypheloides	Prickly leaved Paperbark	12
Shrub Planting (1088.6 m²)		**1 per 10m² = 108**
Persoonia linearlis	Narrow leafed geebung	18
Acacia maidenii	Maidens Wattle	18
Daviesia ulicifolia	Gorse bitter pea	18
Leucopogon juniperinus	Prickly beard heath	18
Acacia falcata	Sickly wattle	18
Callistemon salignus	Willow Bottlebrush	18
Groundcovers (1088.6 m²)		**3 per 1m² = 3,266**
Juncus usitatus	Common Rush	500
Juncus effusus	Soft Rush	500
Carex appressa	Knob Sedge	500
Lomandra longifolia	Spiny-headed Mat-rush	500
Gahnia sieberiana	Red-fruit Saw-sedge	500
Microlaena stipoides	Weeping Grass	300
Entolasia marginata	Bordered Panic	300
Oplismenus aemulus	Basket Grass	166
	Subtotal	3,432

BIODIVERSITY ONSITE

The following vegetation communities were identified within the subject site through ground truthing.

PCT 3433 – Hunter Coast Foothills Spotted Gum Ironbark Forest and PCT 4042 – Lower North River flat Eucalypt – Paperbark Forest were identified as indicative within the VMP area.

PCT 3433 – Hunter Coast Foothills Spotted Gum Ironbark Forest

A tall to very tall sclerophyll open forest with dry and soft-leaved shrubs and a grassy ground cover on undulating foothills of the Hunter coast hinterland from Tuggerah to Stratford, and the lower Hunter valley around Cessnock. The canopy almost always includes Corymbia maculata accompanied by one or more ironbarks (Eucalyptus fibrosa or Eucalyptus siderophloia). Mahoganies (Eucalyptus umbra or Eucalyptus acmenoides) are also commonly present in the canopy. The sparse mid-stratum almost always includes one or more Acacia species, of which Acacia falcata and Acacia ulicifolia are the most frequent and abundant. The shrubs and small trees that complete the mid-stratum very frequently include Daviesia ulicifolia, commonly Bursaria spinosa, Persoonia linearis and rarely Pultenaea villosa, Leucopogon juniperinus or patches of Melaleuca nodosa.

PCT 4042 – Lower North River flat Eucalypt – Paperbark Forest

A very tall to extremely tall sclerophyll open forest with a sub-canopy of Melaleuca trees and a grassy and herbaceous ground cover found on low-lying coastal alluvial soils between Wyong and Nambucca, Central Coast and north coast. The tree canopy includes a range of eucalypt species, with no single species consistently recorded across all sites and each being occasional or rarely occurring. Collectively however, species are mostly from Angophora, red gum, mahogany and ironbark eucalypt groups.

Pasture / modified grassland describes the existing vegetation within the VMP area. There is little ecological value in these areas and no real ecological constraints (as shown in Photo 1). Occasional canopy and native shrubs are present along the roadside boundary of the study area.

Photo 1 – VMP area facing west

Photo 2 – VMP area facing east

Photo 3 – VMP area facing east

Photo 5 – VMP area facing west

Photo 7 – VMP area facing east

Photo 4 – VMP area facing east

Photo 6 – VMP area facing east

Photo 8 – VMP area facing east

Table 3 - Weed species identified within the site

Scientific name	Common name	Weed Control Priority
Cenchrus clandestinus	Kikuyu	VERY HIGH
Senecio	Fireweed	VERY HIGH
*Panicum maximum**	Guinea Grass	VERY HIGH
Chloris gayana	Rhodes grass	HIGH
*Hypericum perforatum**	St John's wort	HIGH
Sporobolus africanus	Parramatta grass	HIGH
Paspalum urvillea	Vasey grass	HIGH
Paspalum dilatatum	Paspalum	HIGH
Sida rhombifolia	Paddys lucerne	HIGH
Plantago lanceolata	Ribwort	HIGH
Heliotropium	Blue heliotrope	HIGH
Bidens pilosa	Cobbler's Peg	MEDIUM
Briza maxima	Greater quaking-	MEDIUM
Cirsium vulgare	Spear Thistle	MEDIUM
Cyperus congestus	Dense Flat sedge	MEDIUM
Gomphocarpus fruticosus	Narrow-leaved	MEDIUM
Phytolacca octandra	Inkweed	MEDIUM
Plantago lanceolata	Ribwort	MEDIUM
Sida rhombifolia	Paddys lucerne	MEDIUM
Solanum nigrum	Black Nightshade	MEDIUM
Tradescantia albiflora	River Spiderwort	MEDIUM
Eragrostis curvala	African lovegrass	MEDIUM
Trifolium repens	White Clover	MEDIUM
Verbena bonariensis	Purpletop	MEDIUM
Carduus spp.	Thistle	MEDIUM
*Ludwigia longifolia**	Long leaf willow	MEDIUM
Trifolium repens	White clover	LOW

*Denotes priority weeds for the Hunter (DPI 2023)

WEED CONTROL

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.

Priority weeds

Priority weeds in the Hunter Region are specified in the Weeds of Significance in Australia – Hunter Regional Weeds. Priority weeds that are listed as "State Priority Weeds" and "Regional Priority Weeds" have specific measures for the control of individual weed species no matter the land ownership or location. Weed treatment is to be undertaken on both government and private lands.

Fauna habitat and weed control

There is a significant amount of exotic shrub species including *Lantana*, *Panicum maximum* (Guinea grass) and *Rubus fruticosus sp. agg.* (Blackberry) on the site. Although these species are generally considered very high priority for removal as stated in Table 3, these weeds currently provide habitat and foraging resources for native fauna. Since there are few native shrubs present on site, the removal of these weedy shrub and ground cover species must be completed in a staged manner and by hand, with care taken not to accidentally remove nests in densely vegetated areas. Native tree and shrub species should reach a reasonable level of growth for weeds to be removed and replaced over time (DECC 2008). Additional fauna habitat can also be created using piles/rafts of dead weeds such as *Lantana* for shelter if required.

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.

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.

The VMP area north of Gresford Road will require the use of Ecologs installed with hardwood stakes as the extensive lower stratum of weeds is removed to prevent any erosion from occurring. This area is quite steep in some areas and when ground cover weeds are removed it has the potential to be quite hazardous with a high risk of the earth slipping away into the Paterson River.

The VMP area south of Gresford Road encompasses a hydroline that has historically been incorporated into the overall grazing area within the property (as shown in photo 6 & 7). This area will require specific revegetation and monitoring over time to ensure that the periodic movement of water down the slope does not lead to further erosion.

Photo 9: Example of the hydroline PCT 4042.

Scour zones

The scour zones are to be stabilised and pasture and moisture tolerant species are to be established

Photo 10 – Example of area within PCT 4042 susceptible to scouring.

Site Photo 11 – Location of PCT 4042 hydroline to roadside.

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). 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 VMP area will be completed through general condition assessment and using Biodiversity Assessment Method (BAM) vegetation plots.

Target Vegetation Integrity Scores for compliance reporting

Two (2) BAM plots are to be undertaken within each of the full revegetation areas (PCT 4042 – Lower North Riverflat Eucalypt – Paperbark Forest & PCT 4073 – Lower North Hinterland River Oak Forest) and (1) BAM plot to be undertaken within the Enrichment Revegetation Planting (PCT 3433 – Hunter Coast Foothills Spotted Gum Ironbark Forest).

The location of the BAM monitoring plot is to be permanently marked and completed in accordance with the Biodiversity Assessment Method 2020, with monitoring performance to be based on Composition, Structural, Function Condition Score to demonstrate compliance with the target aggregate Vegetation Integrity Score.

The target benchmarks have been determined in accordance with reference to the benchmark BAM scores recorded for each PCT from the Bionet Vegetation Classification (DCCEEW 2024).

Given this is a 3-year project (minimum), the expected VI score at the end of the maintenance period should be close to: Composition: 40, Structure 45, Function 25, with an overall score of at least 35.

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;
- 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;
- 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, **d**isposable 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

Photo 4 – Myrtle rust on paperbark leaf (Melaleuca quinquenervia) *(Source Department of Primary Industries- DPI)*

PROGRAM OF WORKS

The program of works (Table 4) is aimed at providing a management framework for enacting works such as undertaking revegetation, 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 Table 5. For the purposes of the program of works, the listed tasks are divided into the following stages.

Pre-restoration 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

Table 5 - Program of works

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 three (3) years post construction stage.	Project ecologist
Monitoring of powerful owl	Project ecologist
Conduct maintenance beyond three (3) years if required	Site manager with advice of project ecologist
Provide certificates of compliance at end of each year during the 3-year maintenance period	Project ecologist

Restoration Works (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 and the installed plants are well established only requiring periodic maintenance or watering. Should there be a delay in the completion of works, for any reason, then the vegetation restoration works phase may be extended.

Post Restoration 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 three (3) years post completion of primary restoration works.

The following typical timeline (Table 5) is provided to indicate a possible overall timing of restoration works. The commencement of the maintenance period of three (3) 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 4 - Typical restoration timeline

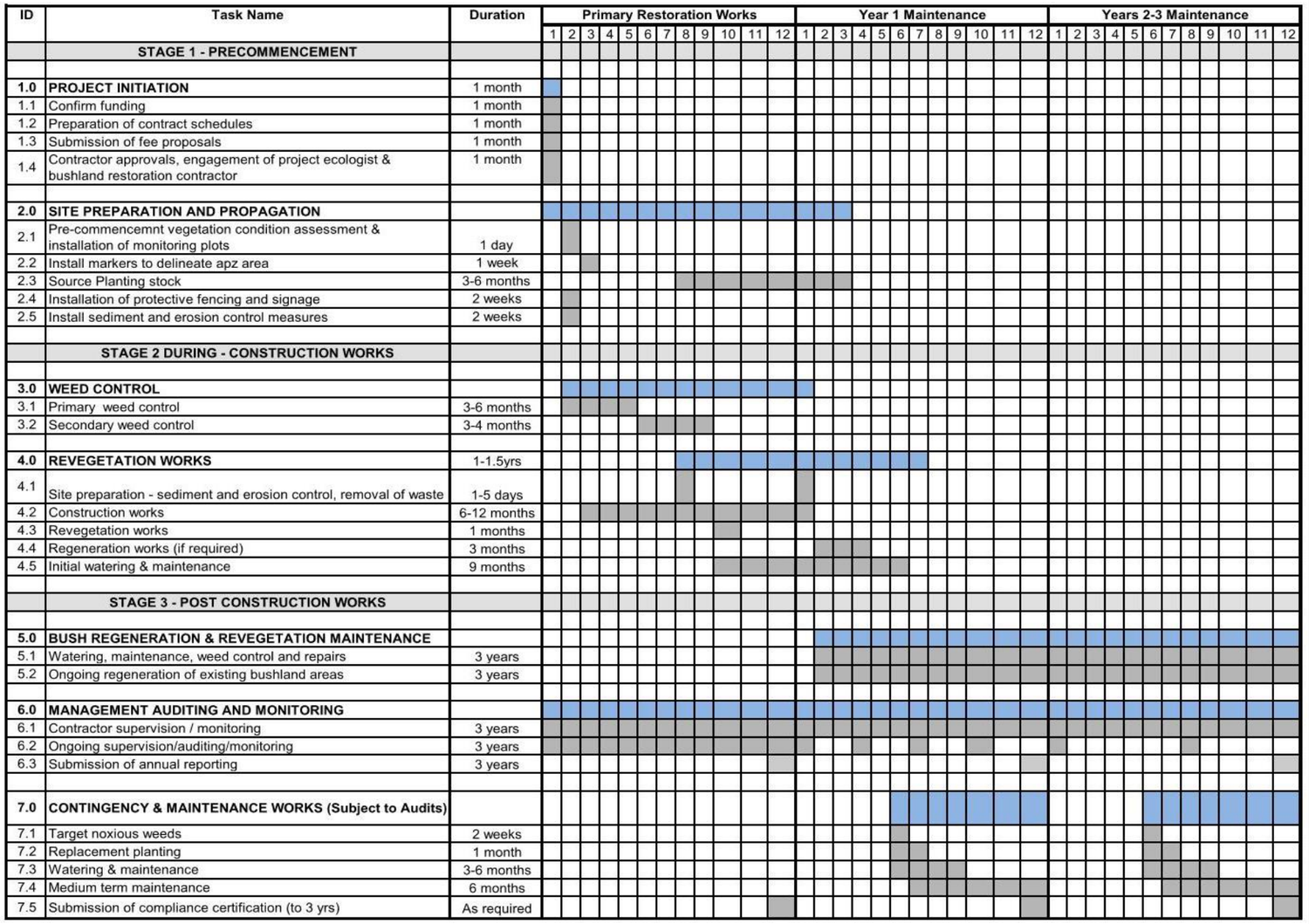

Table 1 - Revegetation species for enrichment revegetation Planting PCT 3433 – Hunter Coast Foothills Spotted Gum Ironbark Forest

Scientific Name	Common Name	Enrichment Revegetation 7451.9m²
Canopy Planting (7451.9m²)		**1 per 50m² = 149**
Corymbia maculata	Spotted Gum	65
Eucalyptus fibrosa	Red Ironbark	42
Eucalyptus umbra	Broad leaved white mahogany	20
Angophora globoidea	White stringy bark	20
Shrub Planting (7451.9m²)		**1 per 10m² = 745**
Daviesia ulicifolia	Gorse bitter pea	130
Acacia ulicifolia	Prickly moses	130
Persoonia linearis	Narrow leafed geebung	125
Leucopogon juniperinus	Prickly beard heath	125
Acacia falcata	Sickly wattle	118
Breynia oblongifolia	Coffee bush	117
Groundcovers (7451.9m²)		**3 per 1m² = 22,356**
Microlaena stipoides	Weeping Grass	3000
Entolasia stricta	Bordered Panic	3000
Lomandra longifolia	Spiny-headed Mat-rush	3000
Dianella caerulea	Blue Flax-lily	3000
Themeda triandra	Kangaroo grass	2300
Aristida vagans	Common Rush	2300
Dianella revoluta	Blue berry-lily	2300
Oplismenus aemulus	Basket Grass	1500
Brunoniella australis	Blue Trumpet	1500
Cheilanthes sieberi	Mulga Fern	456
Climber Planting (7451.9m²)		**1 per 40m² = 186**
Billardia scandens	Apple Berry	60
Geitnoplesium cymosum	Scrambling Lily	60
Desmodium varians	Slender Tick Trefoil	33
Hardenbergia violacea	Purple Coral Pea	33
	Subtotal	**23,436**

Table 2 - Revegetation Species list for PCT 4042 – Lower North River Flat Eucalypt-Paperbark Forest

Scientific Name	Common Name	Enrichment Revegetation 1088m²
Canopy Planting (1088.6 m²)		**1 per 50m² = 22**
Eucalyptus tereticornis	Forest Red Gum	8
Angophora floribunda	Rough Barked Apple	8
Acmena Smithii	Lilly Pilly	6
Sub Canopy Planting (1088.6 m²)		**1 per 30m² = 36**
Melaleuca linarifolia	Snow in Summer	12
Allocasuarina littoralis	Black Sheoak	12
Melaleuca stypheloides	Prickly leaved Paperbark	12
Shrub Planting (1088.6 m²)		**1 per 10m² = 108**
Persoonia linearlis	Narrow leafed geebung	18
Acacia maidenii	Maidens Wattle	18
Daviesia ulicifolia	Gorse bitter pea	18
Leucopogon juniperinus	Prickly beard heath	18
Acacia falcata	Sickly wattle	18
Callistemon salignus	Willow Bottlebrush	18
Groundcovers (1088.6 m²)		**3 per 1m² = 3,266**
Juncus usitatus	Common Rush	500
Juncus effusus	Soft Rush	500
Carex appressa	Knob Sedge	500
Lomandra longifolia	Spiny-headed Mat-rush	500
Gahnia sieberiana	Red-fruit Saw-sedge	500
Microlaena stipoides	Weeping Grass	300
Entolasia marginata	Bordered Panic	300
Oplismenus aemulus	Basket Grass	166
	Subtotal	**3,432**

RESTORATION TARGETS

The following restoration performance targets are to be audited, and compliance

1. Install a 1.2m high permanent protective fence is to be installed around the proposed development footprint as shown in Schedule 1.
2. Final weed coverage will not exceed more than 15% coverage at the end of Year 1 and less than 5% at the end of Year 3.
3. Priority weed species listed for the Hunter Region within the NSW *Biosecurity Act* (2015) are to be completed eradicated by the completion of year 3 maintenance.
4. Native vegetation plant density within the restoration zone is to comply with the revegetation specifications in Table 1 and Table 2. A minimum of 26,868 tube stock installed
5. A minimum of 90% plant survival is to be achieved for all planted native vegetation, and natural growth rates and plant cover is to be typical of PCT 3433 & PCT 4042 after 3 years.
6. Stormwater and constructed swale design should be in accordance with the NRAR 'Guidelines for outlet structures (2018)'

673.1m²
673.1m²
1299.9m²
456.9m²
4552.4m²
7867.3m²
631.7m²
926.5m²

Legend

- Study area (source:CAD)
- VMP area (0.85ha)
- Creeklines
- Contour 1 m (Source: LiDAR)

Restoration areas

- PCT 3433 - Hunter Coast Foothills Spotted Gum Ironbark Forest - Full revegetation (0.75ha)
- PCT 4042 - Lower North River Flat Eucalypt - Paperbark Forest - Full revegetation (0.11ha)

TRAVERS BUSHFIRE & ECOLOGY
A TBE ENVIRONMENTAL COMPANY

PROJECT & MXD REFERENCE
598 Gesford Rd
CORN06_VMP001

DATE & ISSUE NUMBER
11/12/2024
Issue 1
SC

SCALE & COORDINATE SYSTEM
1:3,600 @ A3
GDA2020 MGA Zone 56

0 50 100 m

TITLE
Schedule 1- Vegetation Management Plan

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.

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