Preliminary Vegetation Management Plan, 54 Pullen Street, Woolgoolga

Prepared for

Precise Planning, Northbridge

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Introduction

Background

Mr Jeff Bulfin of Precise Planning has engaged Greg Elks of Idyll Spaces Environmental Consultants to a Preliminary Vegetation Management Plan (VMP) for proposed Lot 29 (the site) in a subdivision of 54 Pullen Street Woolgoolga (Lot 12 DP 1059040) (the property) (**Figure 1**).

Location

The property is located on urban land on the western edge of Woolgoolga, between Pullen Street and Woolgoolga Creek Woolgoolga Creek.

The site identified for the VMP is located on the northern and western boundaries of the property, adjoining existing riparian vegetation along Woolgoolga Creek (northern boundary) and an unnamed first order stream (western boundary). It is separated from the proposed residential area by a perimeter road (**Figure 2**).

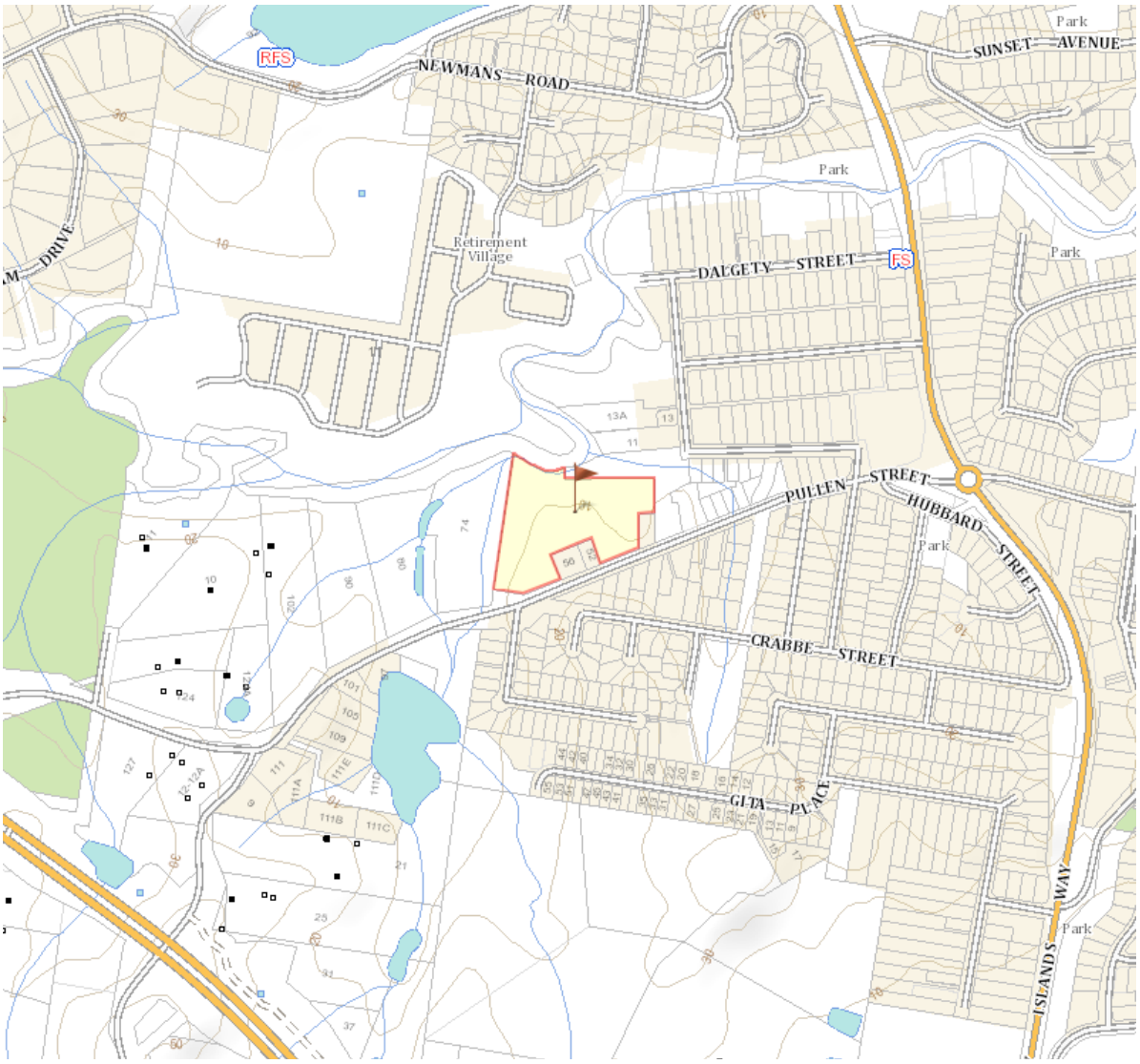


Figure 1. Location of 54 Pullen Street

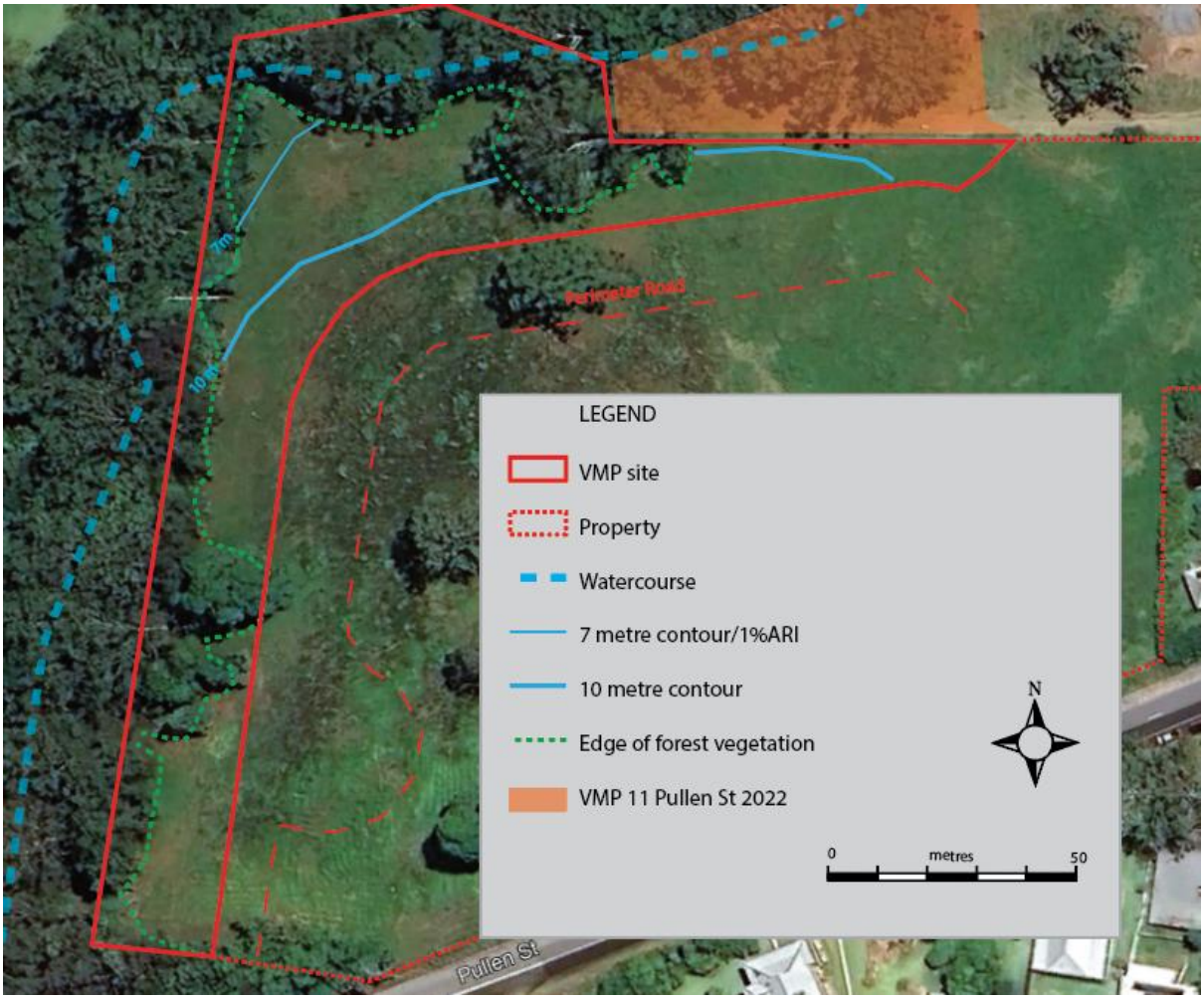


Figure 2. Recent aerial image showing main features of VMP site

LEP 2013 Landuse Zone

The property is zoned R2 Low Density Residential (**Figure 3**). R5 large Lot residential and a small area of C2 Environmental Conservation associated with riparian vegetation of Woolgoolga Creek adjoin the western boundary. W2 Waterway adjoins part of the northern boundary along Woolgoolga Creek.

Prescribed Vegetation

On the northern boundary of the property a 20 metre wide buffer to Woolgoolga Creek is mapped as Prescribed Vegetation under the Coffs Harbour DCP 2015 (**Figure 4**).

CHCC 2012 Class 5 vegetation mapping

Mapped native vegetation on the property occurs as minor intrusions of forest vegetation from forested areas on adjoining properties along the western and northern boundaries. This vegetation is mapped as *WSF01 Coast and Hinterland Riparian Flooded Gum Bangalow Wet Forest* **(Figure 5).**

Figure 3 CHCC LEP 2013 landuse zones

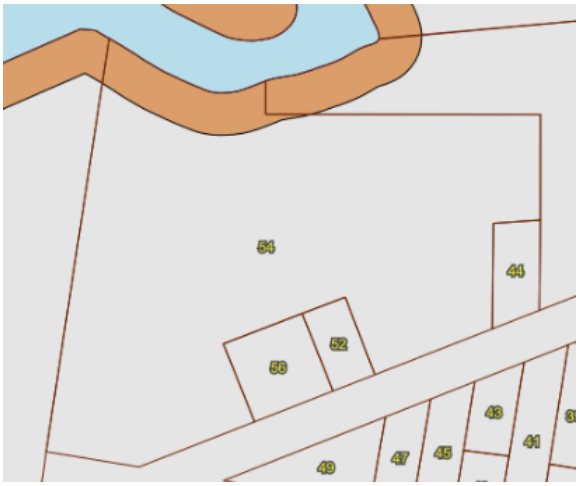


Figure 4 CHCC DCP 2015 Prescribed Vegetation

Figure 5 CHCC 2012 Class 5 vegetation map

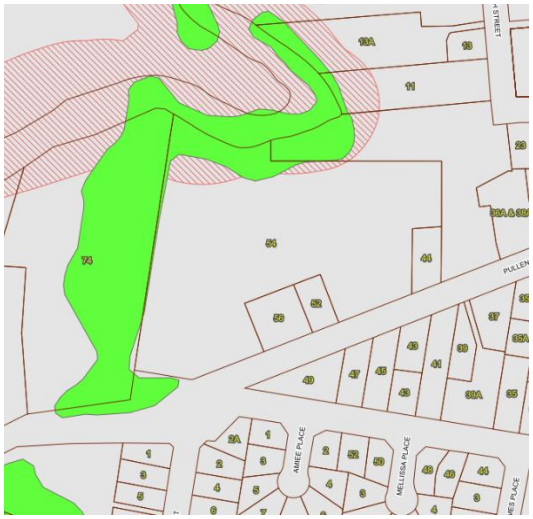


Figure 6CHCC 1995 Tertiary Koala habitat; Urban Links landscape corridor

Figure 7 DPIE 2024 Biodiversity Values map

Figure 8 OEH 2024 PCT map

Koala habitat mapping, Landscape corridor

Tertiary Koala habitat is mapped on properties adjoining to the west and north, extending to the subject property along the northern boundary. (**Figure 6**).

An urban Links landscape corridor is mapped along Woolgoolga Creek (**Figure 6**); this corridor has not been formally adopted by Council.

DPIE Biodiversity Values mapping

An area of High Biodiversity Value is mapped along the northern bank of Woolgoolga Creek but does not extend to the subject property (**Figure 7**).

OEH Statewide Vegetation Type Mapping (SVTM)

The SVTM maps most of the vegetation on and adjoining the property as Plant Community Type (PCT) *3162 - Mid North Lowland Flooded Gum-Palm Wet Forest* (**Figure 8**). All vegetation along the flats and lower slopes associated with Woolgoolga Creek clearly fall within this PCT, described as

"Extremely tall, sclerophyll open forest with a dense, tall to very tall mesic sub-canopy. This PCT occurs on sheltered lower slopes and along creeks, in coastal lowland valleys between Woolgoolga and Macksville, North Coast. The canopy very frequently includes *Eucalyptus grandis*, often with a high cover and sometimes the only canopy species at a local scale. Occasional canopy species include *Corymbia intermedia* and *Lophostemon confertus,* with the palm *Archontophoenix cunninghamiana* almost always present in the sub-canopy or sometimes the canopy and often with a high foliage cover. The sub-canopy or mid-stratum includes trees, very frequently *Wilkiea huegeliana, Synoum glandulosum, Cryptocarya microneura* and *Acmena smithii*; and very frequently the climbing palm *Calamus muelleri*. The shrub *Cordyline stricta* occurs very frequently and occasionally with high cover in the lower mid-stratum, along with palm *Linospadix monostachyos* which occurs commonly. The sparse to mid-dense ground cover very frequently includes the graminoid *Lomandra spicata*, the fern *Blechnum cartilagineum*, commonly the forb *Pseuderanthemum variabile*, and occasionally in poorly drained sites, the sedge *Gahnia clarkei*. This PCT occurs on clay-rich sediments and metasediments, mainly in warm, very wet locations receiving 1560-1730 mm mean annual rainfall, at very low to low elevations of mostly less than 70 metres asl".

Isolated remnants on elevated parts of the study area are mapped as *PCT 3250 - Northern Foothills Blackbutt Grassy Forest,* which is likely to have occurred on upper slopes and ridgelines nearby but is not represented on the property. Extensive areas of PCT 3160 are mapped for nearby areas to the south and west and it appears to be a better fit. PCT 3160 **-** *Lower North Turpentine-Tallowwood-Grey Gum Forest* occupies elevated parts of the study area and is described as

"A tall to extremely tall sclerophyll open forest with a mid-stratum of small trees and a ground layer of forbs and vines, typically found on the margins of rainforests. This PCT occurs on the near coastal hills of the lower and mid North Coast from Myall Lakes to Woolgoolga. The tree canopy almost always includes *Syncarpia glomulifera* and *Eucalyptus propinqua*, very frequently associated with *Eucalyptus microcorys*. Other canopy species commonly include *Eucalyptus siderophloia* and occasionally *Lophostemon confertus, Eucalyptus acmenoides* and *Corymbia maculata*. The mid-stratum is layered and contains small trees of varying stature and scattered shrubs. Species very frequently include *Allocasuarina torulosa, Guioa semiglauca, Breynia oblongifolia* and *Notelaea longifolia,* commonly *Rhodamnia rubescens* and *Trochocarpa laurina,* occasionally with *Acacia maidenii*. The ground layer mainly comprises soft-leaved forbs, ferns, twiners, graminoids and vines, some of which scramble into the upper strata. Ground cover species almost always include *Smilax australis,* very frequently *Pseuderanthemum variabile, Lomandra longifolia* and *Blechnum neohollandicum,* and commonly *Cissus antarctica, Dianella caerulea, Dioscorea transversa, Geitonoplesium cymosum, Gymnostachys*

anceps and *Eustrephus latifolius*. This PCT occurs on coarse and fine-grained sediments, typically at elevations below 230 metres asl in hot, wet environments."

Small patches of PCT 4045 - *Northern Lowland Swamp Turpentine-Paperbark Forest* are mapped in the western part of the study area however the indicative species and their habitats are not present in the study area.

Existing vegetation

Riparian Flooded Gum Bangalow Wet Forest

Existing native vegetation in the VMP site consists predominantly of narrow areas of remnant forest vegetation on low-lying land along the Woolgoolga Creek riparian buffer.

Structure and floristics

The vegetation in wider parts of the riparian buffer consists of a Very Tall Open Forest clearly dominated by Flooded gum *Eucalyptus grandis* but a range of other eucalypt tree species occur occasionally (Grey ironbark *E. siderophloia*, Grey gum *E. propinqua*, Narrow-leaved white mahogany *E. acmenoides* and Brush box *Lophostemon confertus*), especially on elevated stream banks. The largest trees are approaching the late mature growth stage and may be entering the hollow-bearing stage.

There is a very sparse to mid-dense midstratum of rainforest trees and shrubs to around 15 metres tall, commonly including Bangalow palm *Archontophoenix cunninghamiana* and the small trees *Glochidion ferdinandi, Ficus coronata, Elaeocarpus spp, Cryptocarya spp, Guioa semiglauca, Syzygium spp* and *Acacia spp.* Occasional vines include *Gynochthodes jasminoides, Cissus antactica* and *Austrocallerya australis*.

Ground layer vegetation is also sparse to mid-dense and is often dominated by the exotic grass *Paspalum mandiocanum*. Other common species include *Doodia aspera, Adiantum hispidulum, Dioscorea transversa* and *Dichondra repens,* with *Lomandra hystrix* the dominant species on stream banks.

Disturbance Impacts

The original forest cover has obviously been heavily logged or cleared and burnt within the past century or so. Vegetation includes trees in the young, early mature and mature growth a stage, indicating that tree cover has established episodically.

Numerous invasive plant species including L*antana camara, Cestrum spp, Passiflora suberosa, Senna pendula, Solanum seaforthianum, Cinnamomum camphora, Schefflera actinophylla, Ochna serrulata and Murraya paniculata* occur in the ground layer and midstratum, often at high densities. Old plantings of *Cupressus* spp and *Eucalyptus torrelliana* occur on the margin of the forest remnant along the western boundary.

There is no evidence of recent fire and the vegetation appears long unburnt.

Classification & conservation status

The mapped *PCT 3162 - Mid North Lowland Flooded Gum-Palm Wet Forest* and *WSF01 Coast and Hinterland Riparian Flooded Gum Bangalow Wet Forest* are good representations of the site vegetation community.

Broadleaved paspalum – Farmers friends weedy grassland

The remainder of the site is occupied by a dense cover of broadleaf weeds and exotic grasses following close mowing and cultivation. Typically the most common plant species are Farmers friends *Bidens pilosa* and Broadleaved paspalum *P. mandiocanum*, although there are numerous other species of exotic grasses and broadleaf weeds, together with occasional vegetable seedlings, indicating recent use of the land for vegetable production.

Landscape and soils

Most remnant vegetation is mapped as occurring on the Coffs Creek soil landscape, a landscape of level to gently undulating floodplains and terraces formed from unconsolidated gravels, sands, silts and clays of Quaternary age and generally in excess of 3 m deep. Soils are deep, moderately to poorly drained Alluvial Soils, Yellow Podzolic soils and Yellow Earths.

More elevated parts of the site are located on the Megan soil landscape of rolling hills that have developed on the metasediments of the Late Carboniferous Coffs Harbour association. Soils are moderately deep to deep, well drained Red and Brown Earths and Podzols, with well-drained Krasnozems in moister positions.

Fertile soils may occur on parts of both soil landscapes, which seems likely to be the case given the site's previous use for vegetable growing and the vigour of the weeds and grasses occupying the cleared parts of the site.

Proposed Rehabilitation

Identified impacts & offsets

The following impacts on native vegetation have been identified.

- Removal of 1 large hollow tree. Offset category Hollow tree, replacement ratio 1:20
- Removal of 1 large hollow. Offset category Very Large, replacement ratio 1:4
- Removal of 5 isolated mature trees. Offset category Other, ratio required 1:2
- Removal of 75m^2 of understorey vegetation to establish a pedestrian and cycle path to Pullen Street across part of a vegetated road reserve. Offset category Other, ratio required 1:2

Total offset required:

- 30 trees,
- 4 large nesting boxes suitable for arboreal mammal or avian,
- 150m^2 understorey vegetation.

General Terms of Approval under the Water Management Act 2000

General terms of approval will be required to adhere to 'Guidelines for instream works on waterfront land' (NSW Office of Water 2012).

Woolgoolga Creek at the northern boundary of the property is a fourth order stream, the required riparian buffer for installation of fully structured native vegetation is 40 metres, where possible. An averaging scheme is available for the outer 50% of the riparian buffer. The unnamed stream at the western boundary of the site is a third order stream and requires a 30 metre buffer.

The required extent of the riparian buffer has been mapped by De Groot & Benson (2024)(Project 22157, Drawing DA09, Riparian Planting). The encroachment of the proposed development into the outer riparian zone is 790m^2; this is offset by the addition of 1170m^2 of adjoining land to the riparian zone.

The total extent of the proposed riparian zone on the site is approximately 8,100m^2, of which 3,000m^2 is existing native vegetation canopy of *Riparian Flooded Gum Bangalow Wet Forest* and 5,100m^2 is cleared land occupied by *Broadleaved paspalum – Farmers friends weedy grassland*.

Aim of the Preliminary VMP

The aims are to

- utilise techniques of assisted natural regeneration establish the remnant riparian forest vegetation on a 'trajectory to recovery' to an appropriate local reference ecosystem (McDonald, Jonson & Dixon 2016), and
- to fabricate a stable and productive native forest community in the remainder of the Riparian Zone.

To meet the aims the Preliminary VMP proposes to retain all native vegetation on the site, control all weeds on the site, plant native trees and shrubs, install 4 nestboxes and maintain for 5 years.

Objectives of the VMP

- specify initial works.
- specify planting.
- Specify nestboxes.
- specify maintenance works.

Reference Ecosystems

The following reference ecosystems have been used for the purposes of plant species selection and management:

- Areas below the 10 metre contour: *PCT 3162 - Mid North Lowland Flooded Gum-Palm Wet Forest* & *WSF01 Coast and Hinterland Riparian Flooded Gum Bangalow Wet Forest*
- Areas above the 10m contour: *PCT 3160 - Lower North Turpentine-Tallowwood-Grey Gum Forest* & *WSF17 - Foothills Turpentine - Grey Gum - Ironbark Moist Shrubby Forest*

Indicators of success

- All native vegetation is retained.
- Initial treatment controls all woody weeds and installs all plantings.
- Survival of all planted trees to at least 3 metres tall.
- Maintenance treatment continually reduces the cover of weed species.
- The cover of weeds and growth of trees is monitored and recorded annually.
- At the completion of this VMP, weed species cover in any randomly located 10m x 10m quadrat is less than 5% (pasture grasses excluded).

Management Zones

Management objectives on the site differ according to location and have been grouped into the following Management Zones (MZ)(**Figure 9**):

- MZ1 –Weed control in remnant *Flooded Gum Bangalow Wet Forest*. Area: 3,000m^2.
- MZ2 – Planting - *Flooded Gum Bangalow Wet Forest*. Area: 1,500m^2.
- MZ3 – Planting - *Turpentine - Grey Gum - Ironbark Moist Shrubby Forest.* Area: 3,600m^2.

Total extent of rehabilitation: 8,100m^2.

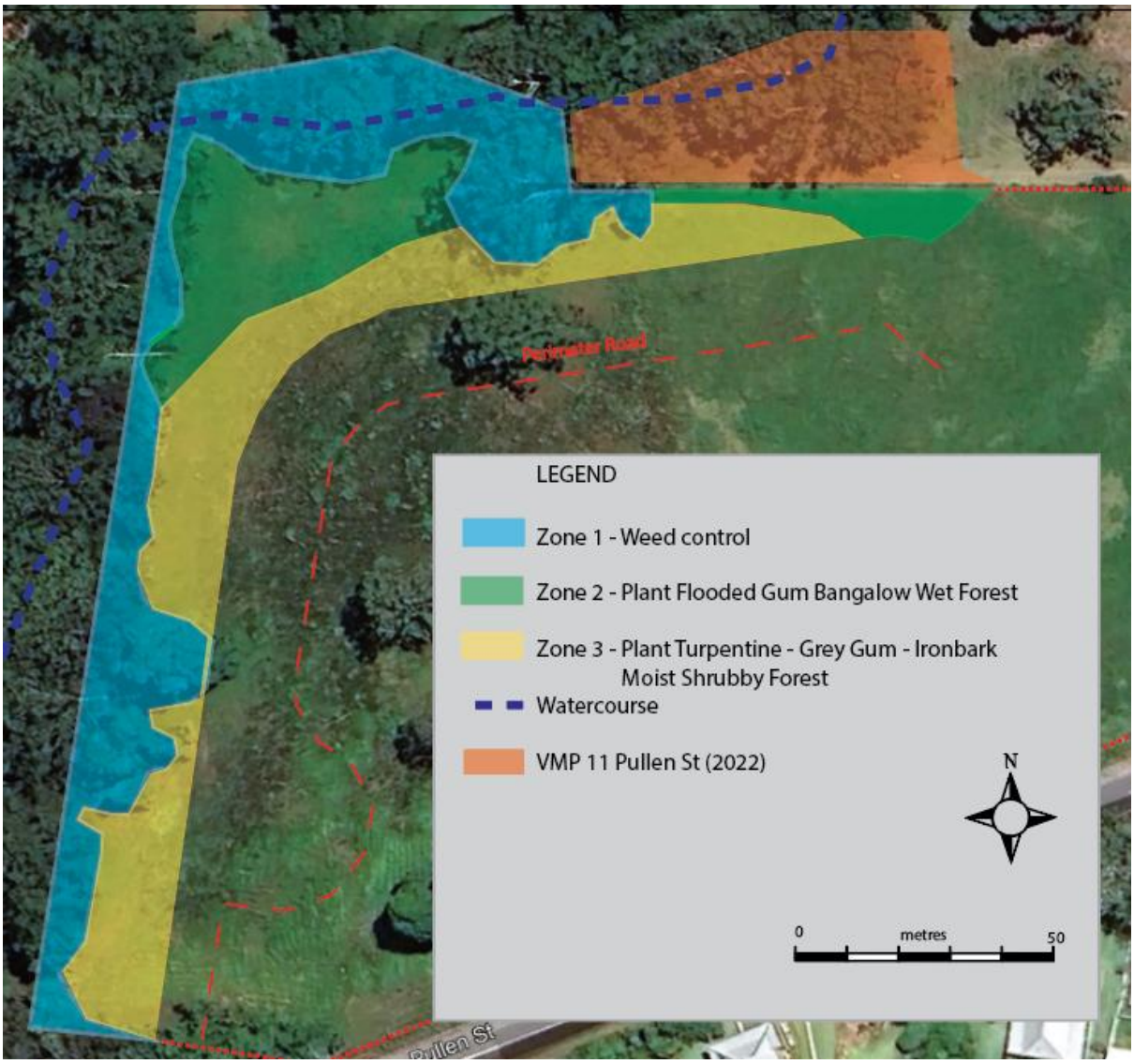


Figure 9. Management Zones

Task List

Initial works

Fence removal

An existing but derelict barbed wire fence along the top of the creek bank is to be removed.

Coral tree removal

Two mature Indian Coral trees near the south bank of Woolgoolga Creek are to be removed at ground level.

Weed control

- **Stem inject** large woody weeds.
- **Cut & paint or spray** Exotic shrubs and vines.
- **Minimise off-target damage** to native trees and shrubs.

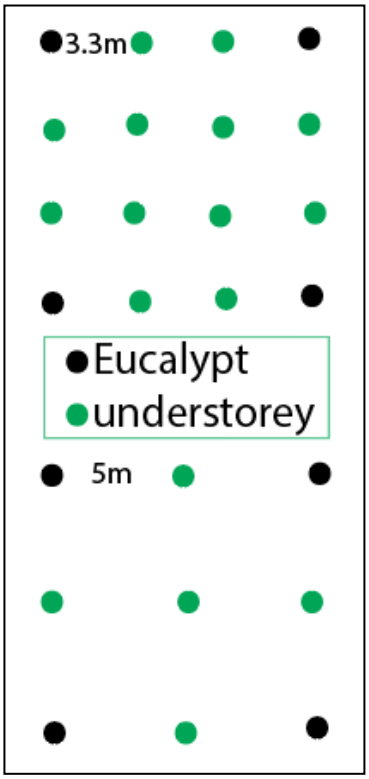
All weed control treatments must be undertaken by persons qualified in Bush Regeneration &/or Weed Control and treatments are to be as specified in Weedwise https://weeds.dpi.nsw.gov.au, Ensbey (2018) https://www.dpi.nsw.gov.au/biosecurity/weeds/weed-control/management-guides/noxious-enviro-weed-control or the appropriate AVMPA permit

Planting -General

It is proposed that a total of 127 trees be planted as per the Planting Schedule (**Table 1**).

Planting is to be undertaken when soil moisture levels are adequate and after initial weed control has been satisfactorily completed. Planting will install healthy seedling tubestock or 150mm pots of local (within 50km) seed provenance into 1m^2 areas cleared of any existing vegetation. Slow-release fertilizer will be placed in the base of the planting hole. Plants will be watered in immediately after planting, staked and mulched with mulch mats or woodchip mulch. Tree guards are required.

An indicative planting schedule is shown in **Table 1**.



Planting details– Zone 2

- Eucalypts and other overstorey species are to be planted at 10 metre centres and not within **5m** of the crowns of existing trees or within **10m** of the roadway.
- Understorey species are to planted at 3.3m centres (inset) and may be planted beneath the crowns of existing trees where required.

Planting details – Zone 3

- Eucalypts and other overstorey species are to be planted at 10 metre centres and not within **5m** of the crowns of existing trees or within **10m** of the roadway.
- Understorey species are to planted at 5m centres (inset) and may be planted beneath the crowns of existing trees where required.

Scientific name	common name	No.	comment
Flooded Gum Bangalow Wet Forest 1500m^2			
Eucalyptus grandis	flooded gum	9	
Eucalyptus microcorys	tallowwood	2	
Corymbia intermedia	pink bloodwood	2	
Lophostemon confertus	brush box	2	
		15	10m centres
Acmena smithii	lillypilly	3	
Archontophoenix cunninghamiana	Bangalow palm	3	
Callicoma serratifolia	blackwattle	3	
Callistemon salignus	willow bottlebrush	3	
Cryptocarya glaucescens	jackwood	3	
Cryptocarya microneura	murrogun	3	
Cryptocarya rigida	forest maple	3	
Elaeocarpus grandis	blue fig	3	
Endiandra discolor	rose walnut	3	
Livistona australis	cabbage palm	3	
Mischocarpus pyriformis	pear fruit	3	
Sarcopteryx stipata	steelwood	3	
Schizomeria ovata	crabapple	3	
Streblus brunonianus	whalebone tree	3	
Synoum glandulosum	scentless rosewood	3	
		31	3.3m centres
Turpentine - Grey Gum - Ironbark Forest 3600m^2			
Syncarpia glomulifera	turpentine	6	
Eucalyptus siderophloia	grey ironbark	6	
Eucalyptus microcorys	tallowwood	8	
Eucalyptus propinqua	grey gum	8	
Eucalyptus acmenoides	narrowleaved white mahogany	4	
Lophostemon confertus.	brush box	4	
		36	10m centres
Acacia binervata	two-veined hickory	3	
Acacia irrorata	green wattle	3	
Acacia maidenii	Maiden's wattle	3	
Acacia melanoxylon	blackwood wattle	3	
Allocasuarina torulosa	forest oak	6	
Alphitonia excelsa	red ash	3	
Callistemon salignus	willow bottlebrush	3	
Cryptocarya rigida	forest maple	3	
Guioa semiglauca	guioa	3	
Jagera pseudorhus	foambark	3	
Livistona australis	cabbage palm	3	
Notelaea longifolia	mock olive	3	
Synoum glandulosum	scentless rosewood	3	
Trochocarpa laurina	tree heath	3	
		45	5m centres

Table 1. Indicative Planting schedule

Nest box installation

Nest boxes suitable for Glossy black cockatoo (x 1) and Yellow-bellied glider (x3) are to be installed in existing trees to meet the requirements of the North Coast Regional Landcare Nest Boxes and Artificial Hollow Guidelines (Leck and Knight 2022) and maintained free of exotic pest species for a period of 5 years.

Maintenance

- The planting arrangement is designed to facilitate occasional inter-row slashing, which is likely to be required to help control weed growth that is likely to be very vigorous on this fertile site.
- Maintenance shall be undertaken for 5 years from the date of completion of initial works.
- Maintenance Intervals are monthly for three months after planting then quarterly for the remainder up to 5 years.
- The initial 3 maintenance events are to focus on facilitating plant survival by monitoring and responding to any plant establishment problems such as dehydration, predation or excessive weed growth.
- Quarterly maintenance events will maintain a clear zone around individual planted trees and continuously reduce weed cover on the site.
- Annual maintenance events will include nest box inspection for use by exotic pest species and an appropriate management response.

Monitoring

- The percentage cover of weed species in each plant community will be recorded annually.
- Photographs will be taken from 3 established photopoints annually.
- A brief annual progress report will be provided to the landowners showing the results of monitoring and any change in circumstances such as new weed species or infestations.

Fire

Application of fire to the site should be avoided.

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Appendix 1. Flora inventory

Native flora species

Scientific name	common name	status	PCT 3162	PCT 3160
Tall trees				
Corymbia intermedia	pink bloodwood	n	r	r
Eucalyptus acmenoides	narrow-leaved white mahogany	n	o	c
Eucalyptus grandis	flooded gum	n	vc	
Eucalyptus microcorys	tallowwood	n	r	o
Eucalyptus propinqua	small-fruited grey gum	n	o	o
Eucalyptus siderophloia	grey ironbark	n	o	o
Lophostemon confertus	brush box	n	c	r
Syncarpia glomulifera	turpentine	n		o
Midstratum trees and vines				
Acacia binervata	two-veined hickory	n	o	
Acacia melanoxylon	blackwood wattle	n	o	
Acronychia oblongifolia	white aspen	n	o	
Alectryon subcinereus	native quince	n	o	
Alphitonia excelsa	red ash	n	o	
Archidendron grandiflorum	fairy's paintbrush	n	r	
Archontophoenix cunninghamiana	Bangalow palm	n	c	
Austrocallerya australis	native wisteria	n	o	
Cissus antarctica	kangaroo vine	n	o	
Clerodendrum floribundum	smooth clerodendrum	n	o	
Cryptocarya microneura	murrogun	n	c	o
Cupaniopsis anacardioides	tuckeroo	n	c	
Elaeocarpus obovatus	hard quandong	n	o	r
Eleocarpus reticulatus	blueberry ash	n	o	
Endiandra muelleri subsp muelleri	Rose walnut	n	r	
Eupomatia laurina	bolwarra	n	c	
Ficus coronata	sandpaper fig	n	c	
Ficus rubiginosa	rusty fig	n	r	
Glochidion ferdinandi	cheese tree	n	c	
Guioa semiglauca	guioa	n	c	o
Jagera pseudorhus	foambark	n	o	o
Notelea longifolia	large mock-olive	n	c	o
Pittosporum undulatum	sweet pittosporum	n	o	r
Psychotria spp	psychotria	n	r	
Quintinia spp	possumwood	n	r	
Rapanea variabilis	muttonwood	n	o	
Synoum glandulosum	scentless rosewood	n	c	
Syzygium australe	woolgoolga lillypilly	n	o	
Syzygium spp	a lillypilly	n	r	
Trophis scandens	burny vine	n	o	
Wilkiea hugeliana	veiny wilkiea	n	o	

Ground layer ferns, herbs grasses, shrubs				
Adiantum hispidulum	harsh maidenhair fern	n	o	
Aneilema acuminata		n	c	
Asparagus aethiopicus	asparagus fern	n	o	c
Blechnum cartilagineum	gristle fern	n	o	c
Calochlaena dubia	rainbow fern	n		c
Dichondra repens	kidney weed	n	c	
Dioscorea transversa	native yam	n	c	o
Doodia aspera	rasp fern	n	c	c
Entolasia stricta	wire grass	n		c
Eustrephus latifolius	wombat berry	n	o	c
Gynochthodes jasminoides	sweet morinda	n	c	
Imperata cylindrica	blady grass	n		c
Lomandra hystrix	stream lomandra	n	c	
Pseuderanthemum variabile	pastel flower	n	c	c
Smilax australis	prickly smilax	n	c	c
Tylophora paniculata	thin-leaved tylophora	n	r	
Viola hederacea	Native violet	n	c	

Exotic & introduced

Overstorey trees				
Corymbia torelliana	cadagi	W	o	
Midstratum trees and vines				
Cupressus spp	a cypress		o	
Cinnamomum camphora	camphor laurel	A	o	o
Erythrina x sykesii	coral tree	A	o	
Murraya paniculata	mock orange	A	c	c
Passiflora suberosa	corky passionflower	A	o	o
Passiflora subpeltata	white passionflower	A	o	o
Solanum seaforthianum	climbing nightshade	A	o	
Syagrus romanzoffiana	cocos palm	A	o	o
Schefflera actinophylla	umbrella tree	A	o	o
Shrubs, herbs, grasses				
Ardisia crenata	ardisia		o	o
Paspalum mandiocanum	broadleaf paspalum		vc	c
Plectranthus verticillatus	plectranthus		c	
Cestrum nocturnum	white cestrum	A	o	
Desmodium uncinatum	silverleaf desmodium	A	o	c
Lantana camara	lantana	A	c	o
Ligustrum lucidum	broadleaved privet	A	o	
Ochna serrulata	mickey mouse bush	A	vc	c
Rhaphiolepis indica	Indian hawthorn	W	o	o
Senna pendula	winter senna	W	o	o