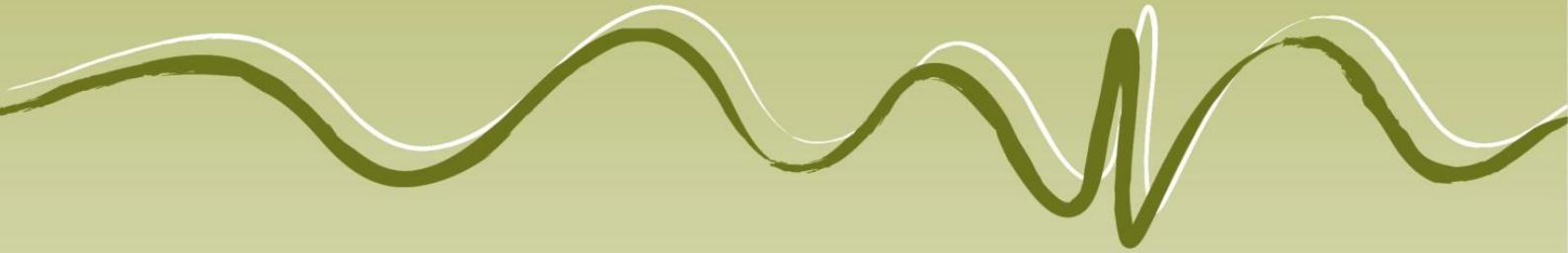


Vegetation Management Plan

Lot 46 DP751395 Miles Street Yamba



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Prepared for: Garrard Building Pty Ltd
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<i>UPR</i>	<i>Description</i>	<i>Date Issued</i>	<i>Issued By</i>
3041-1050	First Issue	17/08/2020	ILC
3041-1055	Second Issue	25/08/2020	ILC

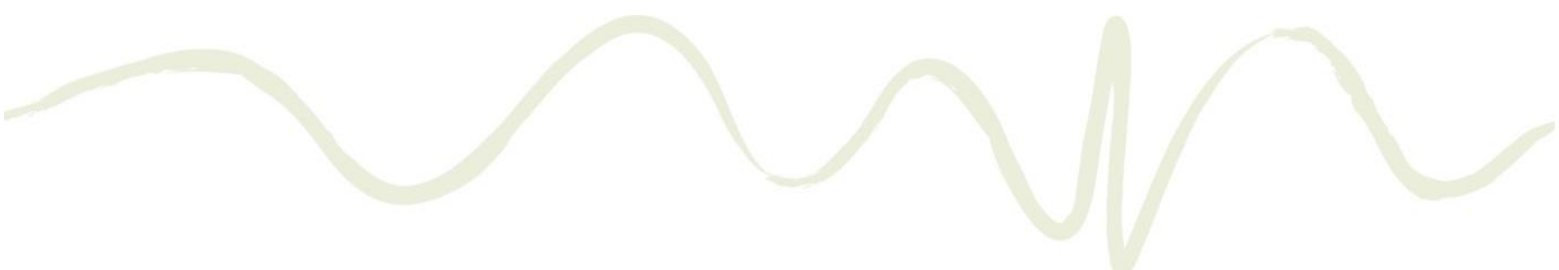
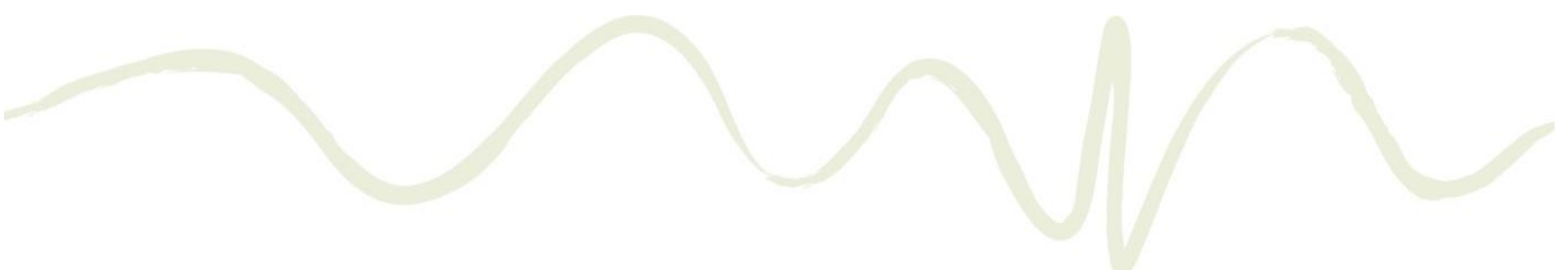


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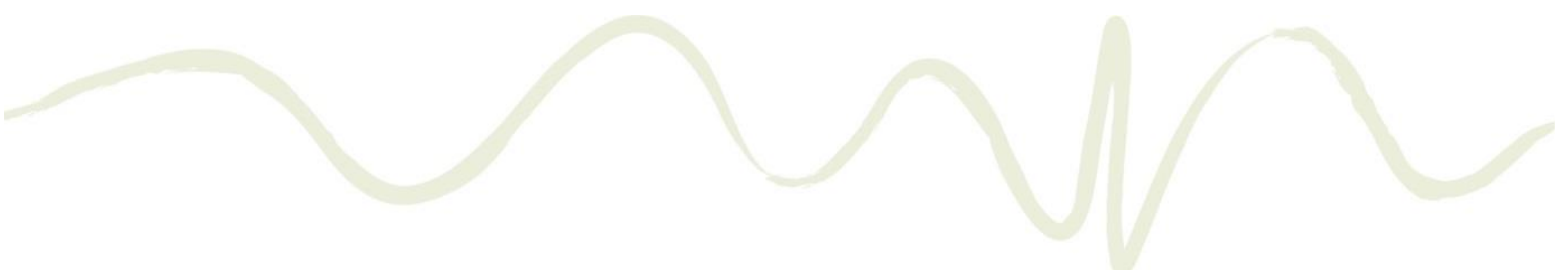
Appendix A Approved Filling Plan

Appendix B GTA (NRAR)

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1. Site Description

1.1 Introduction and Background

GeoLINK has prepared this Vegetation Management Plan (VMP) on behalf of Garrard Building Pty Ltd with regard to the future subdivision and development of Lot 46 DP751395 Miles Street, Yamba in the Clarence Valley Local Government Area (LGA). The northern part of Lot 46 has consent from Clarence Valley Council (CVC) for filling works under DA2018/0553 as modified by MOD2019/0019 (granted 30 April 2019). Since that approval, a further application has been lodged for the filling of an additional 20,000m³ of land at the site, under DA2019/0492 (refer to plan at **Appendix A**). The DA2019/0492 application was approved 12 June 2020, with condition 7 stating:

A Controlled Activity Approval is to be obtained and provided to Council prior to any works commencing on-site under this approval.

The requirement for the preparation of a Controlled Activity Approval (CAA) under the *Water Management Act 2000* (WM Act) was provided to CVC by the Natural Resources Access Regulator (NRAR) in their General Terms of Approval (GTA), as advised by letter (11/05/2020). GTA condition GT005 specifically notes that the application for a controlled activity approval must include the following plan(s):

1. *Revised riparian plan detailing a Vegetated Riparian Zone for the full width of the required riparian corridors and offset areas.*
2. *Detailed civil and drainage construction plans.*
3. *Erosion and sediment control plans.*
4. *Vegetation Management Plan.*

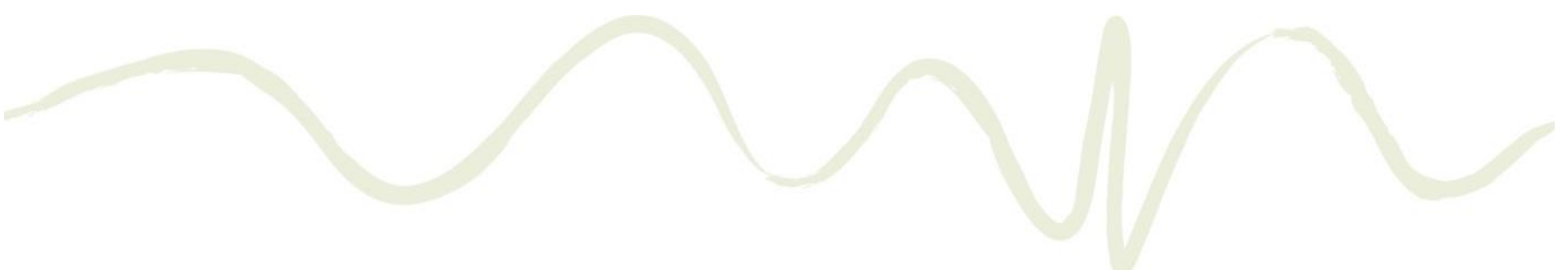
This VMP fulfills the requirements of items 1 and 4 of GT005 and has been prepared in accordance with guidelines prepared by NSW Office of Water (2012a). The GTA are attached at **Appendix B**.

1.2 Site Description

The site consists of Lot 46 DP751395 Miles Street Yamba and occurs within an area of agricultural land west of Yamba township (refer to **Illustration 1.1**). The site (~ 21 ha) comprises land which has been historically cleared and modified (refer to **Illustration 1.2**). The site is currently grazed by cattle and has been under this management regime for many years. The majority of the site comprises improved pasture, with several scattered patches of native vegetation occurring. The northern portion of the site comprises consolidated fill as permitted under DA2018/0553; all vegetation has been removed within this area. No infrastructure occurs.

A narrow, forked drainage line occurs in the west of the site and appears to receive surface flows funnelled down the eastern side of Carrs Drive (refer to **Illustration 1.2**). One branch of the drainage line flows into a small wetland within an isolated patch of swamp sclerophyll forest before draining surface flow into adjacent land to the south (second order stream). A minor watercourse (first order stream) branches off the east and terminates within the site.

While estuarine systems occur in the immediate locality, no estuarine waters enter the site.



1.3 The Proposal

The proposal is for the further filling of the site (20,000m³), consistent with that completed under DA2018/0553. In the longer term, subdivision for residential development is proposed at the site. GeoLINK completed a *Biodiversity Development Assessment Report* (BDAR) to support a Statement of Environmental Effects (SEE) for the subdivision application, which was lodged with CVC under SUB 2019/0492.

Since lodgement of the DA, the subdivision concept has been revised and an amended application is in progress. The amended application will significantly differ from the previous concept by retaining the second order stream and associated vegetation in the south-west corner of the site. The minor branch watercourse (first order stream) will be filled and regrowth vegetation removed.

A draft concept plan is provided at **Appendix C**.

1.4 Biodiversity Values

The following biodiversity values were identified at the site as part of the BDAR prepared by GeoLINK (2019) to support SUB 2019/0492.

1.4.1 Vegetation

Three native vegetation communities occur at the site (refer **Table 1.1**). The balance of the site either comprises fill (north), or pasture (south). Native vegetation at the site is depicted at **Illustration 1.3**. Areas of woody native vegetation are generally in good condition with low levels of woody weeds (minor Winter Senna, Lantana, Camphor Laurel) and few introduced vines or herbs. Lippia (*Phyla nodiflora*) occurs in some parts of paperbark swamp forest (PCT 1064) and sedgeland areas (PCT 780). The introduced herb Cuphea (*Cuphea carthagenensis*) is common within parts of PCT 780.

Sedgeland areas (PCT 780) are highly disturbed from grazing stock and previous landuse (slashing) and host pasture grasses and the introduced herb Cuphea (*Cuphea carthagenensis*) at low densities. Sedgeland areas show high resilience and would be expected to regenerate with ease once cattle are removed from the site. High levels of resilience have been noted within similar areas of sedgeland within adjacent Lot 47.

1.4.2 Threatened flora

One threatened flora species has been recorded at the site. A single individual of *Rotala tripartita* was recorded in the west of the site in association with disturbed sedgeland (refer to **Illustration 1.3**). *Rotala* is a short-lived perennial species and this plant has not been observed since recorded on 30/10/2018.

Table 1.1 Native Vegetation Communities

Plant Community Type	Comments	Area (ha)
<i>PCT 1064: Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion</i> Dominated by Broad-leaved Paperbark (<i>Melaleuca quinquenervia</i>) with occasional Swamp Oak (<i>Casuarina glauca</i>). Midstorey sparse. Groundcover of patchy Bare Twigrush (<i>Baume juncea</i>). An open wetland area is dominated by Spike-rush (<i>Eleocharis acuta</i>) and Water Spinach (<i>Enydra woollsi</i>).	Good condition – some cattle disturbance.	0.975
<i>PCT 1235: Swamp Oak swamp forest of the coastal lowlands of the NSW North Coast Bioregion (derived)</i> Dominated by Swamp Oak, with infrequent Broad-leaved Paperbark. Midstorey absent. Groundcover of Couch (<i>Cynodon dactylon</i>) and bare Twigrush. Central drain contains a low incidence of mixed aquatic species: <i>Baumea articulata</i>, <i>Eleocharis acuta</i>, <i>Ludwigia peploides</i> <i>Philydrum lanuginosum</i>, <i>Cycnogeton procerum</i>, <i>Schoneplectiella mucronata</i>.	Narrow linear regrowth along drainage line. High edge to core ratio, low species diversity.	0.292
<i>PCT 780: Coastal floodplain sedgeland, rushlands, and forblands of the North Coast (derived)</i> Disturbed ephemeral wetland (slashed, grazed). Trees and shrubs absent. Typical species: <i>Baumea articulata</i>, <i>Eleocharis acuta</i>, <i>Persicaria strigosa</i>, <i>Philydrum lanuginosum</i>, <i>Ludwigia peploides</i>, <i>Bacopa monnieri</i>. <i>Cuphea</i>* (<i>Cuphea carthagenensis</i>) is a common weed species.	Small disjunct disturbed patches associated with drainage areas. Scattered regeneration of Swamp Oak < 1m height.	0.564
*Introduced species		

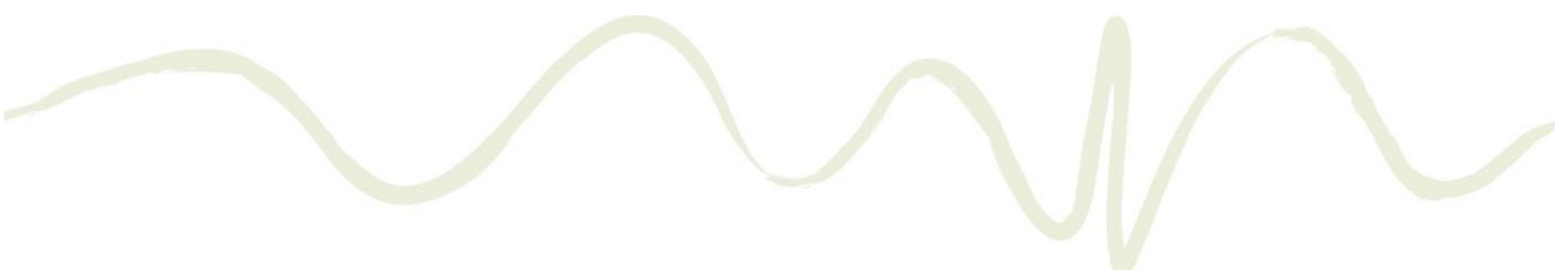
1.4.3 Threatened ecological communities

Native vegetation at the site is floristically characteristic of four threatened ecological communities (TECs) associated with alluvial floodplains listed in the BC Act:

- Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion (floristically analogous with PCT 837).
- Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South-East Corner Bioregions (floristically analogous with PCT 1064).
- Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South-East Corner Bioregions (floristically analogous with PCT 1235).
- Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South-East Corner Bioregions (floristically analogous with PCT 780).

However, the site occurs within an aeolian landscape characterised by Quaternary sand sheets (as part of the Iluka soil landscape). As the site does not occur on an alluvial landscape, none of these TECs apply.

While Swamp Oak forest is also listed in the EPBC Act (as the TEC *Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland*) it is subject to condition thresholds, where a minimum patch size of 0.5 ha applies. The small patch of Swamp Oak at the site is <0.5 ha and hence does not meet condition thresholds as per the EPBC Act listed community.



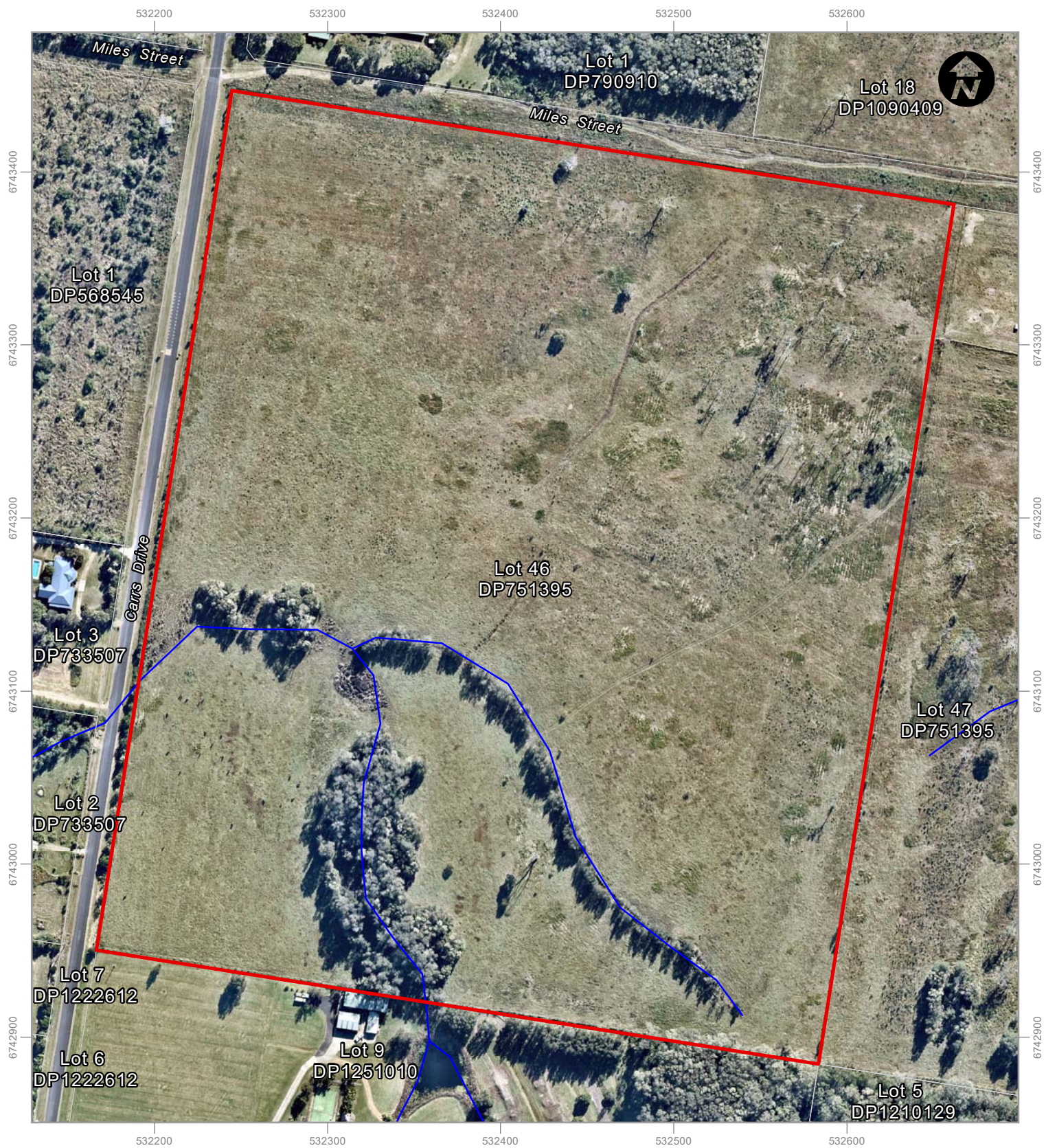
1.4.4 Threatened fauna

No threatened fauna were recorded as part of the BDAR. While Eastern Osprey have historically nested at the site, the tree which hosted the old nest has been removed as part of approved clearing under DA2018/0553. Due to the disturbed nature of the site and the paucity of habitat, the site does not provide suitable habitat for any resident threatened fauna.



OpenStreetMap (and) contributors, CC-BY-SA

0 1 Km



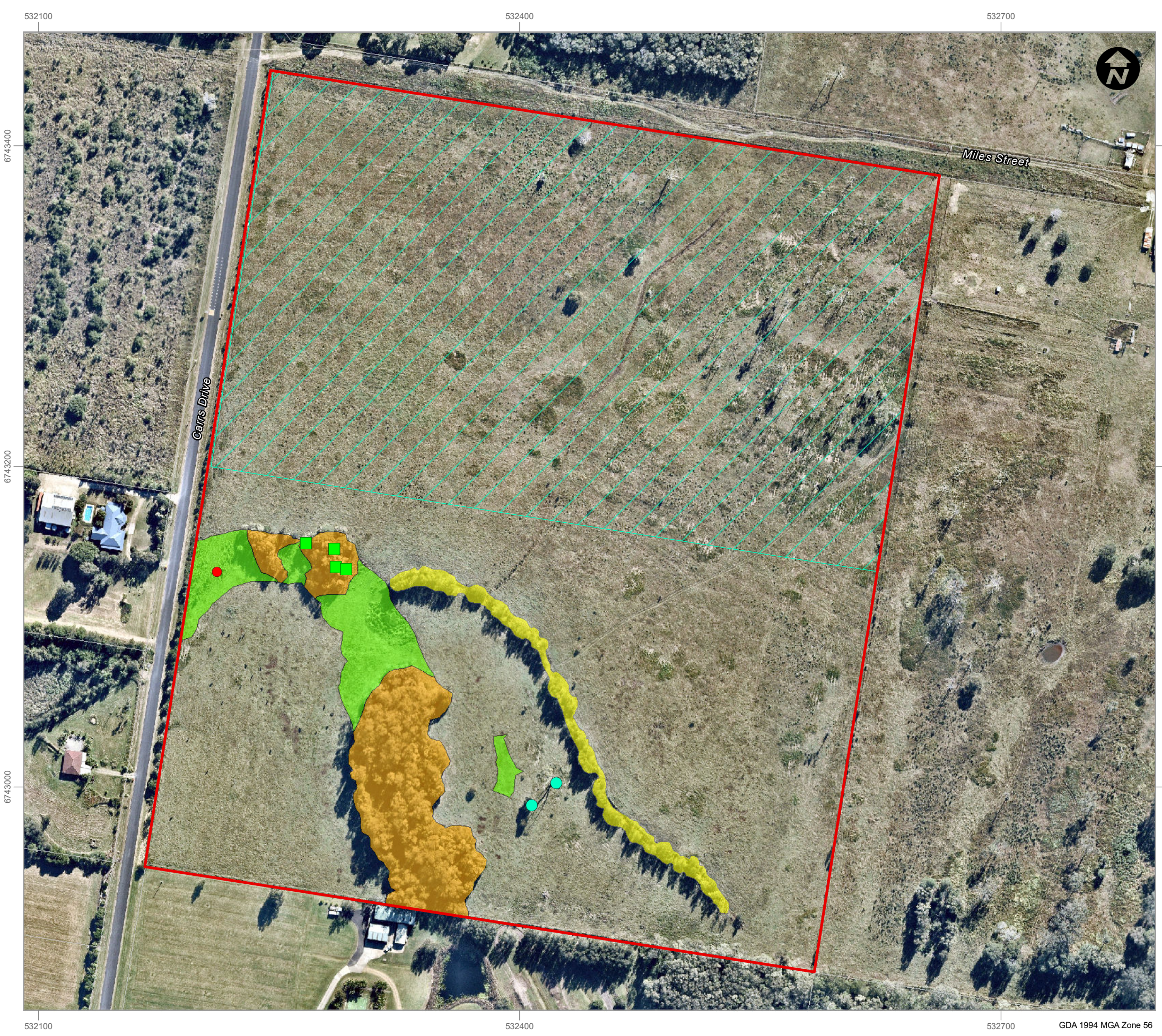
GDA 1994 MGA Zone 56

LEGEND

- The site
- Cadastre
- Watercourse

0 60 Metres

The Site - Illustration 1.2



LEGEND

- The site
- Cadastre
- Consolidated fill (all vegetation removed)
- PCT 780: Coastal floodplain sedgeland, rushland, and forblands (derived)
- PCT 1235: Swamp Oak swamp forest (derived)
- PCT 1064: Paperbark swamp forest
- Forest Red Gum
- Hollow-bearing tree

Threatened Flora

- Rotala tripartita (recorded 30/10/2018)

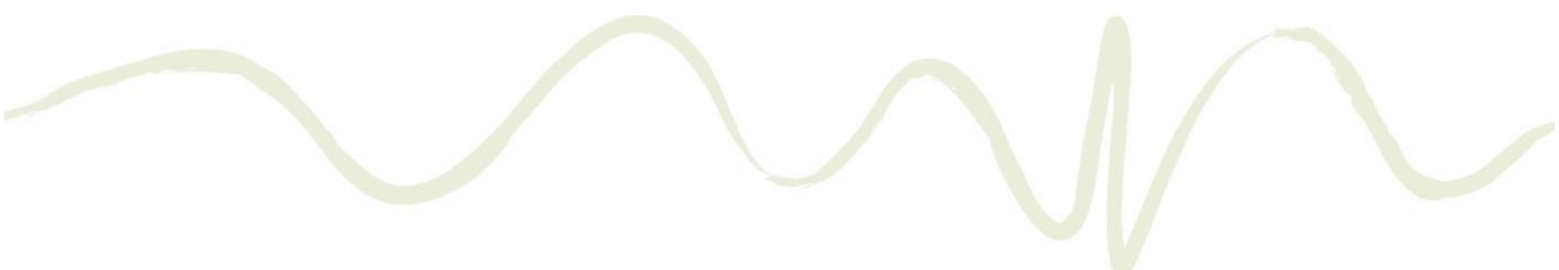
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Vegetation Management Plan - Lot 46 DP751395 Miles Street Yamba
3041-1053

Vegetation Plan - Illustration 1.3

Information shown is for illustrative purposes only
Drawn by: AB Checked by: RE Reviewed by: ILC
Source of base data: Nearmap
Date: 07/08/2020



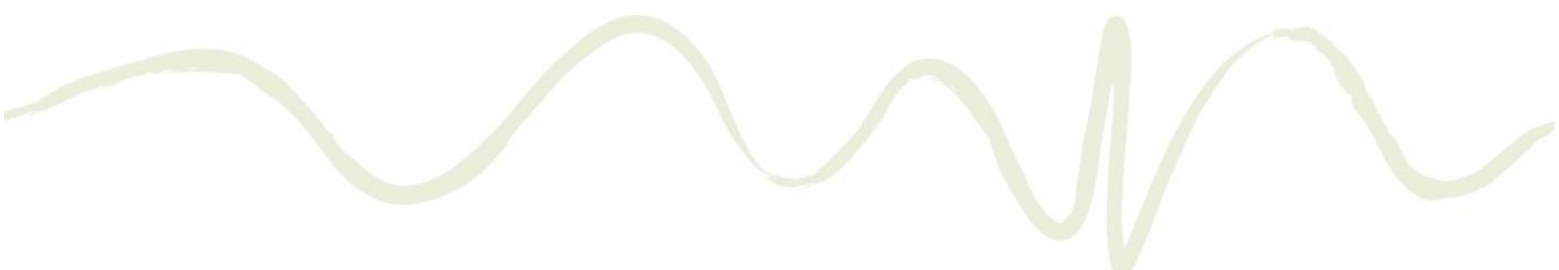
2. Statutory Matters

This VMP is required under consent conditions relating to DA2019/0492. The SEE for the DA has addressed relevant environmental legislation including:

- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- *Biodiversity Conservation Act 2016* (BC Act).
- State Environmental Planning Policy (SEPP) 44 – Koala Habitat Protection¹.
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The works prescribed in this VMP fulfil the requirements of a controlled activity approval, as directed by the GTA and in accordance with guidelines issued by NSW Office of Water (2012a, 2012b).

¹ Since repealed and replaced by SEPP (Koala Habitat Protection) 2019.



3. Aims, Objectives and Performance Criteria

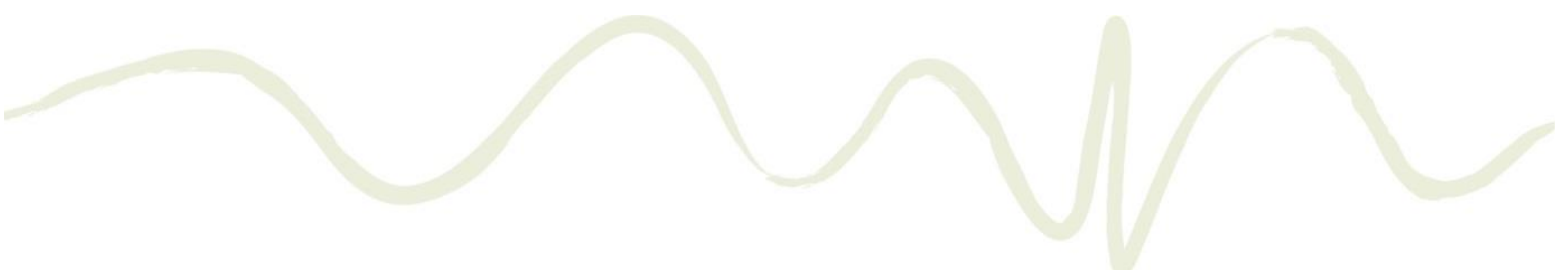
3.1 Aims and Objectives

The aim of this VMP is to prescribe a range of vegetation restoration measures to comply with CAA requirements and hence:

- Protect and manage retained vegetation and threatened flora habitat.
- Control weeds within areas of retained vegetation and threatened species habitat.
- Enhance and expand riparian zones by infill planting.

3.2 Performance Criteria

To determine whether restoration measures have been successful and result in desired outcomes (as above), performance criteria have been nominated. The *Guidelines for vegetation management plans on waterfront land* (NSW Office of Water 2012a) state that a minimum 80% survival rate for all plantings should be achieved, with a maximum 5% weed cover; these criteria have been adopted for this plan.



4. Project Work Plan, Schedule and Budget

4.1 Introduction

As noted, this VMP seeks to protect and restore the second order stream. No works are proposed for the minor branch that comprises the first order stream as this will be removed as part of a future development application to Council. The removal of the first order stream has been supported by NRAR (Gina Potter; email of 22/06/2018) and Clarence Valley Council as part of the future development of the site.

NSW Office of Water guidelines (2012b) require a Vegetated Riparian Zone (VRZ) of 20 metres for second order streams on either side of the watercourse. As per the averaging rule (NSW Office of Water 2012b), rather than provide a VRZ of an equal 20 metres on either side of the watercourse, the VRZ will be averaged to account for approved filling within 10 m of the watercourse in the north only. In this section a 10m VRZ will apply on the northern side of the watercourse and a 30 m VRZ on the southern side, to achieve a total VRZ width of 40 metres (refer **Appendix D**). For the balance of the VRZ, a standard width of 20 metres either side applies. A rationale for the VRZ is provided in the notes on the VRZ plan at **Appendix D**.

The proposed VRZ is based on survey of the top of bank of either side of the watercourse in accordance with NSW Office of Water guidelines (2012b).

Parts of the proposed VRZ (refer **Appendix D**) are already established with native vegetation (typically Broad-leaved Paperbark *Melaleuca quinquenervia* or Swamp Oak *Casuarina glauca*). Outside of these areas, where pasture already occurs, additional plantings of woody vegetation will be completed. Existing areas of sedgeland (refer Vegetation Plan at **Illustration 1.3**) will be retained and assisted regeneration and establishment will be achieved by cattle exclusion and weed management. The outer boundary of the entire VRZ will be protected from grazing stock by installation of stock fencing so the VRZ cannot be browsed, trampled or degraded.

The balance of land in the south-west corner of the site (pasture) will remain in its current state and managed by slashing; no stock will be permitted in this area.

4.2 Management Zones

4.2.1 Introduction

Three Management Zones have been nominated for restoration actions (refer to **Table 4.1** and **Illustration 4.1**). Management Zones have largely been determined based on species composition (PCTs) and land condition.

Prescriptions for all weed control and planting requirements (including planting schedules) are provided at Appendix E. These prescriptions shall inform all vegetation restoration and weed control works at the site.

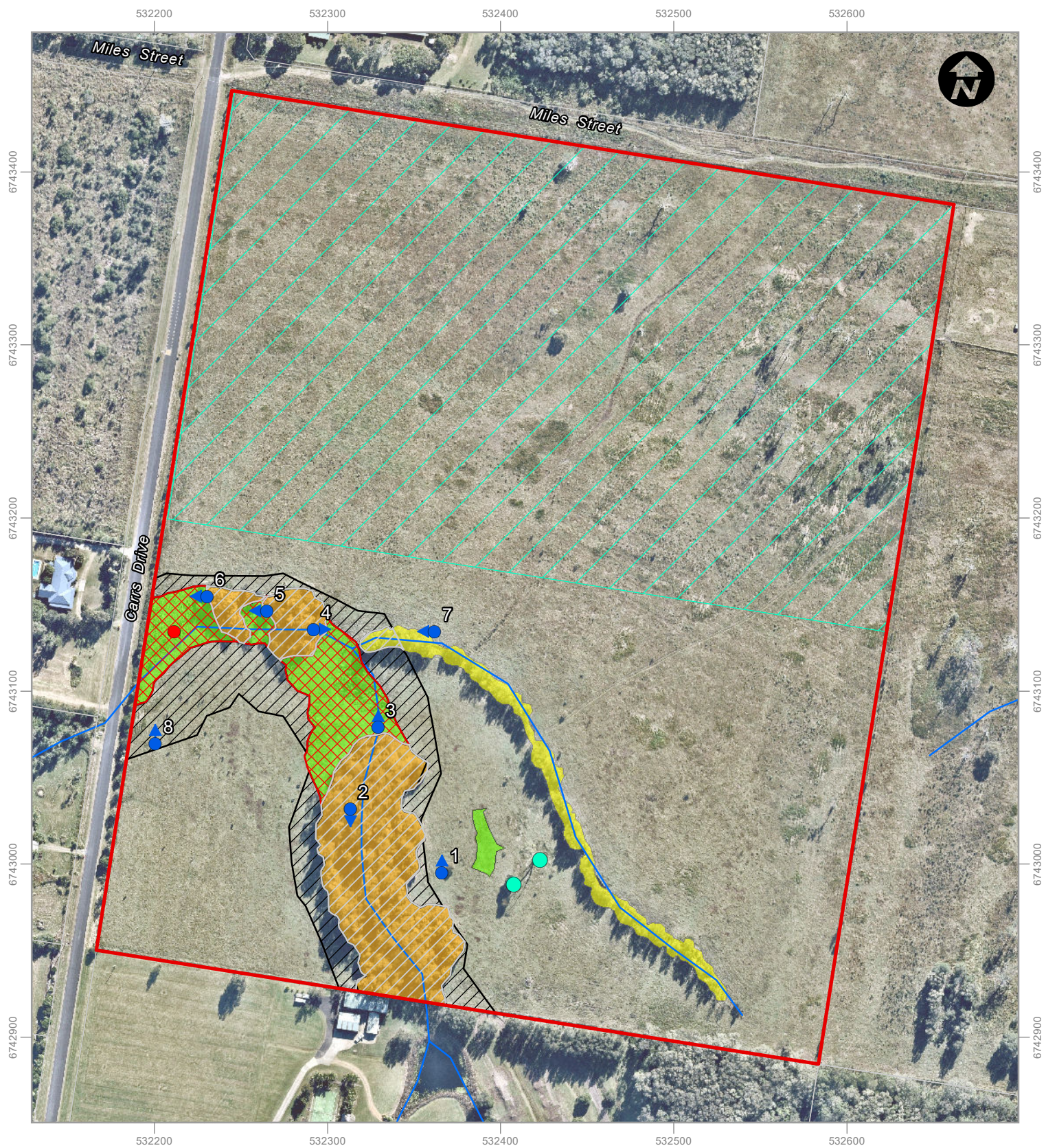
Table 4.1 VMP Management Zones

Zone	Management Zone	Management Zone Description
1	Paperbark and Swamp Oak zone (PCT1064 and PCT1235)	Existing patches of paperbark and swamp oak swamp forest where weed control will be completed.
2	Sedgeland (PCT780)	Existing degraded sedgeland. Restored via weed control and cattle exclusion (no planting proposed).
3	Planting zone	Grazing land with little native vegetation to be planted as VRZ.

The following sections discuss the actions required to complete vegetation restoration within each Management Zone from site preparation and weed control to planting and aftercare (where relevant).

As noted in the VMP prescriptions (refer to **Appendix E**), prior to weed control or planting works, a registered surveyor must identify and clearly peg/ mark the VRZ boundaries consistent with those depicted at **Appendix D**. No planting should commence until cattle are excluded from the site by either fencing or appropriate land management measures (eg. all cattle are restricted to adjacent Lot 47 only).

Photographs have been taken within each Management Zone (refer to **Illustration 4.1** for photo points and **Plates 4.1 - 4.8**).



GDA 1994 MGA Zone 56

LEGEND

- | | | |
|---|--|---|
| The site | Vegetation management zone 1 | — Watercourse |
| Cadastre | Vegetation management zone 2 | ● <i>Rotala tripartita</i> (recorded 30/10/2018) |
| | Vegetation management zone 3 | ● Forest Red Gum |
| | PCT 780: Coastal floodplain sedgelands, rushlands, and forblands (derived) | ● Photo point |
| | PCT 1235: Swamp Oak swamp forest (derived) | → Photo direction |
| | PCT 1064: Paperbark swamp forest | |
| | Consolidated fill (all vegetation removed) | |

0 60 Metres

Vegetation Management Zones - Illustration 4.1



Plate 4.1 Photo point 1 looking north to pasture and Swamp Oak flanking the first order stream



Plate 4.2 Photo point 2 looking south to wetland basin within swamp paperbark forest (PCT 1064)



Plate 4.3 Photo point 3 looking north to regenerating sedgeleand (PCT 780) within vegetation gap



Plate 4.4 Photo point 4 looking east across regenerating sedgeleand (PCT 780) to Swamp Oak (PCT 1235) on first order stream



Plate 4.5 Photo point 5 looking west across regenerating sedgeleand (PCT 780) to patch of swamp paperbark forest (PCT 1064)



Plate 4.6 Photo point 6 looking west across regenerating sedgeleand (PCT 780) to Carrs Drive



Plate 4.7 Photo point 7 looking west across edge of PCT 1235 on north side of watercourse; this area will be planted out over a width of 10 metres



Plate 4.8 Photo point 8 looking north across pasture to regenerating sedgeleand (PCT 780); areas of pasture will be planted out over a width of 30 metres in this location

4.2.2 Management Zone 1

Management Zone 1 includes existing swamp sclerophyll forest dominated by Broad-leaved Paperbark and or Swamp Oak. Works within Management Zone 1 are limited to minor weed control (Camphor Laurel, Winter Senna). Infill planting of gaps between patches (from previous historical clearing) is not proposed as these are already well vegetated by macrophytes and will regenerate naturally.

Prescribed actions within Management Zone 1 are summarised at **Table 4.2**.

Table 4.2 Prescribed Actions - Management Zone 1

Action	Requirement	Timing	Responsibility
Weed control	Weed removal (Camphor Laurel, Winter Senna, Lippia, Cuphea); refer to prescriptions at Appendix E .	At any time following approval of the VMP	Appointed bush regenerator
Follow up weed control	Follow up weed control for three years following initial works.	Three years from plant establishment (refer to Maintenance Schedule at Section 4.4).	Appointed bush regenerator

4.2.3 Management Zone 2

Management Zone 2 comprises disturbed sedgeland which has been impacted by grazing and occasional slashing. Works within Management Zone 2 include minor weed control (Groundsel, Cuphea, Lippia) and assisted regeneration. Infrequent regeneration of Swamp Oak (and to a lesser extent Broad-leaved Paperbark) is present throughout this community and adjacent pasture. It is anticipated that over time, regeneration will increase and establish. In this instance, a non-interventionist approach will be adopted and regeneration of any woody trees or shrubs will be retained in-situ.

Management Zone 2 provides habitat for the threatened herb *Rotala tripartita* (refer to **Section 1.4** and **Illustration 1.3**). Prescribed actions within Management Zone 2 are summarised at **Table 4.3**.

Table 4.3 Prescribed Actions - Management Zone 2

Action	Requirement	Timing	Responsibility
Weed control	Weed control (Groundsel, Lippia, Cuphea, pasture grasses) refer to prescriptions at Appendix E .	At any time following approval of the VMP	Appointed bush regenerator
Follow up weed control	Follow up weed control for three years following initial works. This is unlikely to require much effort following primary works and annual follow up is sufficient.	Three years from plant establishment (refer to Maintenance Schedule at Section 4.4).	Appointed bush regenerator

4.2.4 Management Zone 3

Management Zone 3 comprises disturbed pasture adjacent to established native vegetation. Infrequent regeneration of Swamp Oak (and to a lesser extent Broad-leaved Paperbark) is present in some areas. While it is anticipated that over time, woody native regeneration will increase and establish, these areas will be planted to accelerate the re-establishment of native vegetation in these disturbed areas. Management Zone 3 includes an additional area east of the southern patch of swamp forest (PCT 1064) to consolidate irregularities along the edge and provide additional buffering (refer red hatched area depicted at **Appendix D**).

Prescribed actions within Management Zone 3 are summarised at **Table 4.4**.

Table 4.4 Prescribed Actions - Management Zone 3

Action	Requirement	Timing	Responsibility
Weed control	Weed control (Groundsel, Lippia, Cuphea, pasture grasses) refer to prescriptions at Appendix E .	At any time following approval of the VMP	Appointed bush regenerator
Planting	Planting outer areas of the VRZ.	Following appropriate preparation.	Appointed bush regenerator
Follow up weed control/maintenance	Follow up weed control for three years following initial works. This is unlikely to require much effort following primary works and annual follow up is sufficient.	Three years from plant establishment (refer to Maintenance Schedule at Section 4.4).	Appointed bush regenerator

4.3 Work Plan Summary

Based on the actions prescribed in **Section 4.2**, a summary of all works within all Management Zones is provided at **Table 4.5**. Note that the ability to complete works may be impeded by various factors including delays in approvals, survey, fencing and inclement weather. As such, the timing of prioritised works in **Table 4.5** is a guide only.

Table 4.5 Summary of Works Schedule

Mgmt Zone	Retain Vegetation	Fencing	Threatened Flora Habitat Protection	Weeding	Planting	Maintenance
1	✓	✓		✓		✓
2	✓	✓	✓	✓		✓
3		✓		✓	✓	✓

4.4 Works Schedule

The works prescribed in this VMP may only commence following approval of this plan by NRAR.

Weed control and site preparation for supplementary plantings shall be implemented within 12 months following written approval of this VMP.

4.5 Maintenance Schedule

Maintenance of the plantings and environmental weed control is required for a period of three years following installation and/ or commencement. Maintenance requirements of plantings in Management Zone 3 will include:

- Watering (initial planting aftercare only)
- Weed control
- Re-mulching
- Plant replacement (if required).

Table 4.6 provides a summary of maintenance requirements for plantings within Management Zone 3.

Table 4.6 Summary of Maintenance Requirements – Management Zone 3

Requirement	Timing	Actions
Watering	Three weeks following initial establishment – watering for 3 consecutive days following planting, then once weekly for 3 weeks.	Watering: Total of 6 watering events
Mulching	At end of year 1	Mulching: 1 event only
Weed control	Year 1: at 3, 6, 9 and 12 months (quarterly) Year 2: at 16, 20 and 24 months (every 3 months) Year 3: at 28, 32 and 36 months (every 3 months)	Weed control: Total of 10 weed control events
Plant replacement	Assessed and completed at each weed control event.	Plant replacement (if required)

4.6 Budget

A cost estimate for the proposed works as has been prepared (refer to **Table 4.7**) based on the maintenance requirements in **Section 4.5** and the cost of plants as per the planting schedule at **Appendix E**. All costs will be borne by the proponent.

Labour for weed control, plant installation and maintenance tasks has been assumed at \$60/ hr (ex GST). Monitoring and reporting has been assumed at \$120/ hr (ex GST). Fencing costs are not included.

Note: the costs in Table 4.7 are an estimate only, however may be used as a basis for determining the security bond for the works (if required). Costs for weed control are based on broad assumptions - control of Lippia and Cuphea can be difficult in the long term and several treatments may be required. A quote from a professional and experienced bush regenerator following assessment of the site is the best means of gauging potential weed control and maintenance costs.

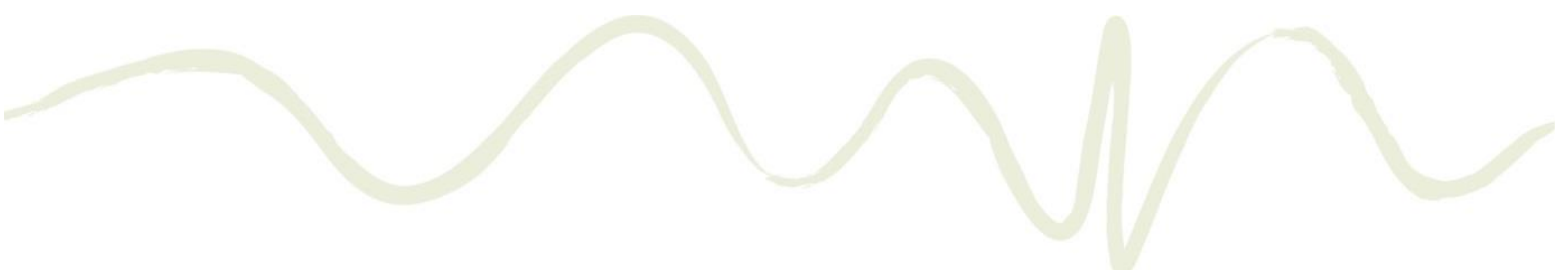
Total costs for the works (excluding the omissions noted below) are estimated at approximately \$28,092 (ex GST).

Notes:

- Costings are inclusive of weed control, site preparation, the supply and installation of plants, mulch, tree guards and maintenance and monitoring over a three year period.
- Costings do not include fencing.
- Costings do not include the services of a registered surveyor.
- Costings do not account for the replacement of dead trees, as this is an unknown quantity.

Table 4.7 Estimated Costs for Vegetation Establishment, Maintenance and Monitoring

Treatment	Unit Cost	Total Cost	Notes
PRIMARY WEED CONTROL			
Weed control (woody weed control, foliar spray)	\$960/ day (2 persons)	\$960	Preliminary weed control (2 persons, est. 1 day)
Follow up weed control (foliar spray)	\$960/ day (2 persons)	\$960	One days follow up from preliminary works
PLANTING PREPARATION			
Mgmt. Zone 3 (initial)	\$960/ day (2 persons)	\$960	Foliar spray of introduced grasses and herbs (2 persons, est. 1 day)
PLANTING			
Trees x 1111 units	\$12 per plant (installed, mulched, fertilised and with tree guard)	\$13332	Supplied & installed – 1111 trees
MAINTENANCE (PLANTINGS AND EXISTING VEGETATION)			
Watering (initial)	\$240 per event	\$1440	Initial watering post planting over 4 weeks (1 person for 4 hrs) – 6 events)
Weed control	\$360 per treatment	\$3600	3 years maintenance – total of 10 weed control events (est. 6 hrs/1 person per treatment)
Mulch replacement (one year after planting)	\$10/bale	\$1860	186 bales required
Mulch replacement (labour)	\$1920/ day (2 persons)	\$1920	One event (4 people, 1 day)
MONITORING			
Monitoring and reporting	\$600/ event	\$3060	3 years monitoring – total of 3 monitoring events and reports <u>plus</u> post planting assessment & brief email report
TOTAL		\$28,092 (ex GST)	



5. Monitoring and Reporting

5.1 Monitoring

5.1.1 General monitoring

Formal monitoring shall be restricted to planting areas only and would commence following the initial planting within Management Zone 3. Formal monitoring would require:

- Installation (and survey by GPS) of permanent photo points at one location within each planting area.
- Preparation of a brief summary report following completion of the plantings, including:
 - Notes on site preparation (including herbicide use).
 - The success of the planting (including photographs).
 - Details of any aftercare which have been completed.
- Inspection of plantings at 12 month intervals (ie. a total of three monitoring events), with tasks including:
 - Inspection of plants.
 - Assessment of weed cover.
 - Photographs from permanent photo points.
 - Assessment of mulch cover.
- Preparation of a brief annual report for a three year period with notes on:
 - Weed control requirements during the maintenance period.
 - Details of any plant loss and replacement.
 - Recommendations for any other additional works (eg. further weed control or supplementary planting).

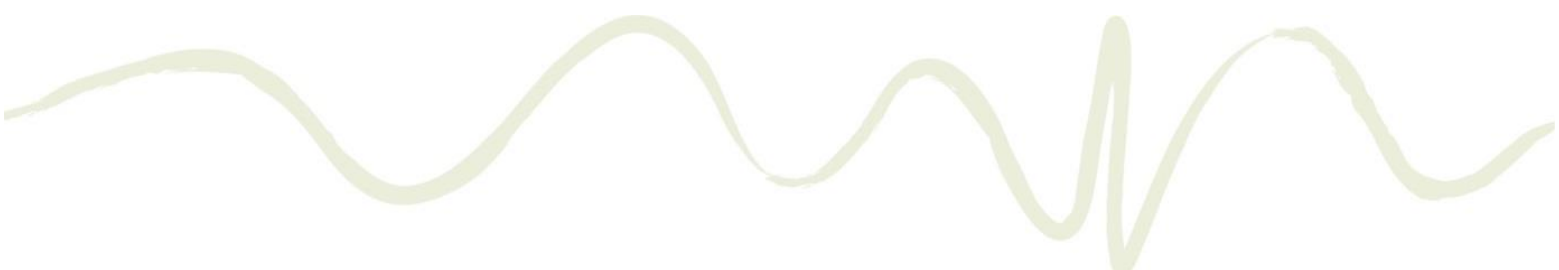
It is preferable that all plantings are completed at the same time, both for efficiencies during the planting process, and so aftercare and monitoring are completed at the same intervals. Informal annual monitoring shall be completed for Management Zone 3 with regard to assessing sedgeland regeneration, and weed issues, a description and photographs (where relevant).

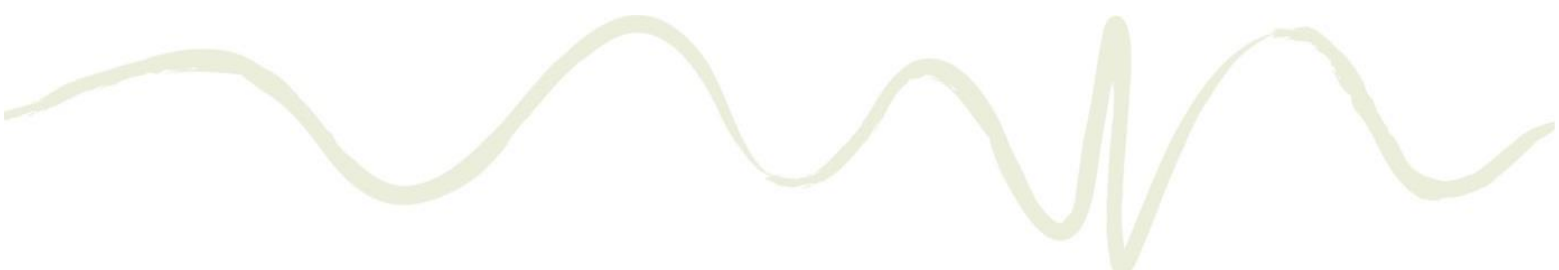
5.2 Reporting

5.2.1 General reporting

Annual monitoring reports are to be completed and supplied to Council and shall include the following information:

- A timetable of maintenance works completed in that year for all Management Zones.
- Details on the replacement of any dead or unhealthy stock within planting areas (Management Zone 3 only).
- Results of the monitoring completed with regard to performance criteria.
- Comments on any problems at the site (eg. wallaby browsing, stock access etc) and how these have been managed.
- Photographs from fixed photo points showing the progress of the plantings.

- 
- A log of herbicide use during all maintenance operations.
 - Any other relevant information or recommendations for future maintenance.

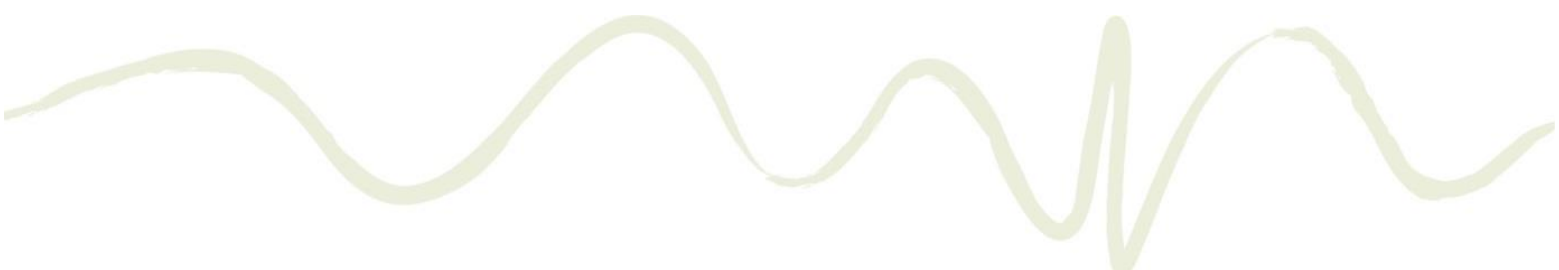


References

GeoLINK (2019). *Biodiversity Development Assessment Report Lot 46 DP751395 Miles Street Yamba*. Report prepared for Garrard Building Pty Ltd.

NSW Office of Water (2012a). *Guidelines for vegetation management plans on waterfront land*. NSW Office of Water through the Department of Trade and Investment, Regional Infrastructure and Services.

NSW Office of Water (2012b). *Guidelines for riparian corridors on waterfront land*. NSW Office of Water through the Department of Trade and Investment, Regional Infrastructure and Services.



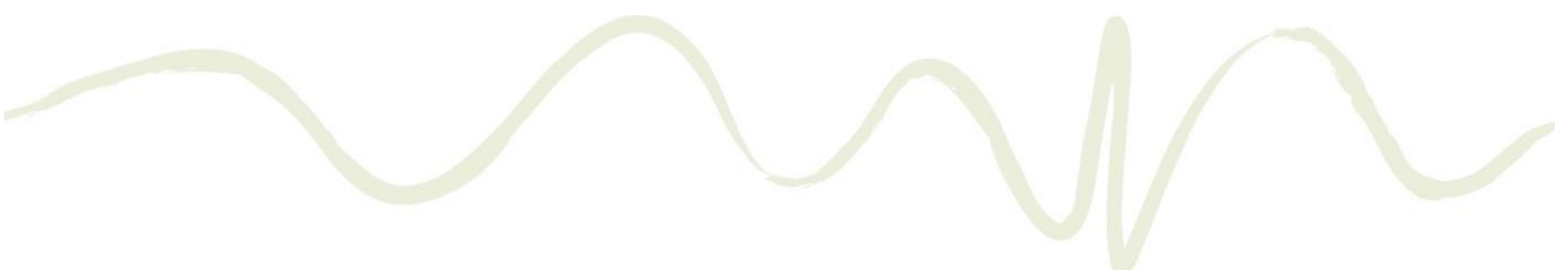
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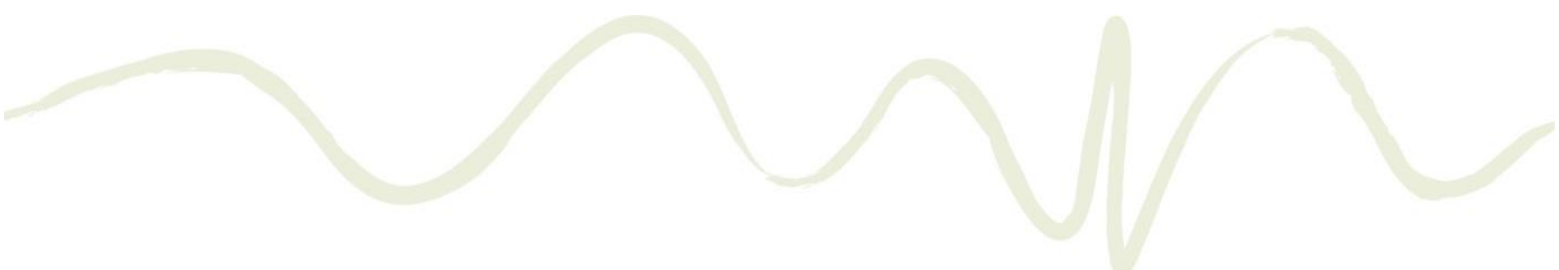
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Appendix A

Approved Filling Plan



Appendix B

GTA (NRAR)



Contact: Jeremy Morice
Phone: 02 4275 9320
Email: jeremy.morice@nrar.nsw.gov.au

Our ref: IDAS1120700
Your ref: DA2019/0492

11/05/2020

General Manager
Clarence Valley Council
Locked Bag 23
GRAFTON NSW 2460

Attention: James Hamilton

Dear Sir

Re: Integrated Development Referral – General Terms of Approval
Dev Ref: DA2019/0492
Description: Earthworks (filling of land) - additional 20,000 cubic metres of fill within 40 metres to a natural watercourse
Location: 52-54 MILES STREET YAMBA 2464

I refer to your recent letter regarding an integrated Development Application (DA) proposed for the above location. Attached, please find Natural Resources Access Regulator's General Terms of Approval (GTA) for part of the proposed development requiring a Controlled Activity approval under the *Water Management Act 2000* (WM Act), as detailed in the subject DA.

Please note Council's statutory obligations under section 4.46 of the *Environmental Planning and Assessment Act 1979* (EPA Act) which requires consent, granted by a consent authority, to be consistent with the general terms of any approval proposed to be granted by the approval body.

If the proposed development is approved by Council, NRAR requests these GTA be included (in their entirety) in Council's development consent. Please also note NRAR requests notification:

- if any plans or documents are amended and these amendments significantly change the proposed development or result in additional works or activities (i) in the bed of any river, lake or estuary; (ii) on the banks of any river lake or estuary, (iii) on land within 40 metres of the highest bank of a river lake or estuary; or (iv) any excavation which interferes with an aquifer.

NRAR will ascertain from the notification if the amended plans require review of or variation/s to the GTA. This requirement applies even if the amendment is part of Council's proposed consent conditions and do not appear in the original documentation.

- if Council receives an application under s4.46 of the EPA Act to modify the development consent and the modifications change the proposed work or activities described in the original DA.
- of any legal challenge to the consent.

As the proposed work or activity cannot commence before the applicant applies for and obtains an approval, NRAR recommends the following condition be included in the development consent:

The attached GTA issued by NRAR do not constitute an approval under the *Water Management Act 2000*. The development consent holder must apply to NRAR for a Controlled Activity approval **after consent** has been issued by Council **and before** the commencement of any work or activity.

A completed application form must be submitted to NRAR together with any required plans, documents, application fee and proof of Council's development consent. Finalisation of an approval can take up to eight (8) weeks from the date the application and all required supporting documentation is received.

Application forms are available from the NRAR website at:

<https://www.industry.nsw.gov.au/water/licensing-trade/approvals/controlled-activities>

NRAR requests that Council provide a copy of this letter to the development consent holder.

NRAR also requests a copy of the determination for this development application be provided by Council as required under section 4.47(6) the EPA Act.

Yours Sincerely



For

Alison Collaros

Manager Licensing & Approvals

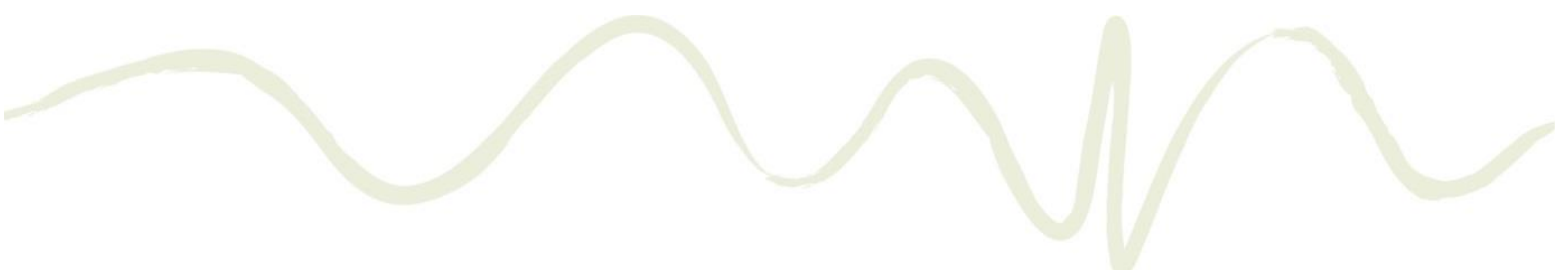
Water Regulatory Operations

Natural Resources Access Regulator

Reference Number:	IDAS1120700
Issue date of GTA:	11/05/2019
Type of Approval:	Controlled Activity
Location of work/activity:	52-54 MILES STREET YAMBA 2464
Waterfront Land:	Tributaries of Oyster Channel
DA Number:	DA2019/0492
LGA:	Clarence Valley Council

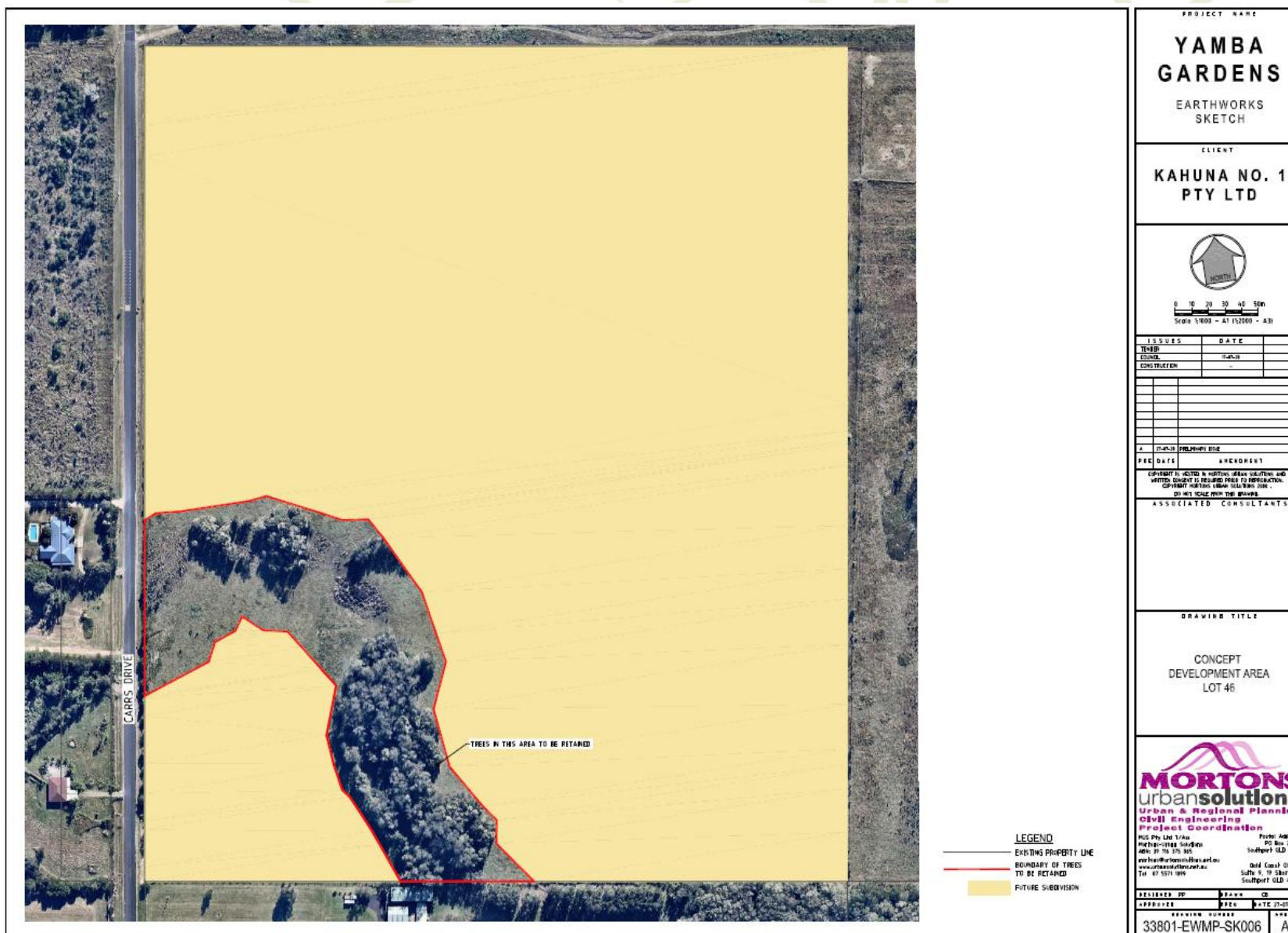
The GTA issued by NRAR do not constitute an approval under the *Water Management Act 2000*. The development consent holder must apply to NRAR for the relevant approval **after** development consent has been issued by Council **and before** the commencement of any work or activity.

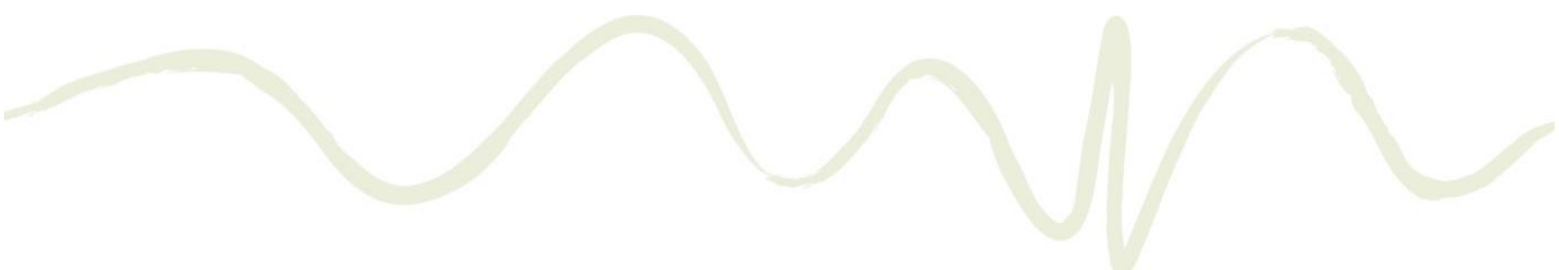
Condition Number	Details
GT0009	Before commencing any proposed controlled activity on waterfront land, an application must be submitted to Natural Resources Access Regulator, and obtained, for a controlled activity approval under the Water Management Act 2000.
GT0002	A. This General Terms of Approval (GTA) only applies to the proposed controlled activity described in the plans and associated documents found in Schedule 1, relating to Development Application DA2019/0492 provided by Council to Natural Resources Access Regulator. B. Any amendments or modifications to the proposed controlled activity may render the GTA invalid. If the proposed controlled activity is amended or modified, Natural Resources Access Regulator, Parramatta Office, must be notified in writing to determine if any variations to the GTA will be required.
GT0005	A. The application for a controlled activity approval must include the following plan(s): 1. Revised riparian plan detailing a Vegetated Riparian Zone for the full width of the required riparian corridors and offset areas. 2. Detailed civil and drainage construction plans; 3. Erosion and sediment control plans; 4. Vegetation Management Plan B. The plan(s) must be prepared in accordance with Natural Resources Access Regulator's guidelines located on the website https://www.industry.nsw.gov.au/water/licensingtrade/approvals/controlled-activities.
GT0004-00003	A. A security deposit must be provided, if required by Natural Resources Access Regulator. B. The deposit must be: i. a bank guarantee, cash deposit or equivalent, and ii. equal to the amount required by Natural Resources Access Regulator for that controlled activity approval.



Appendix C

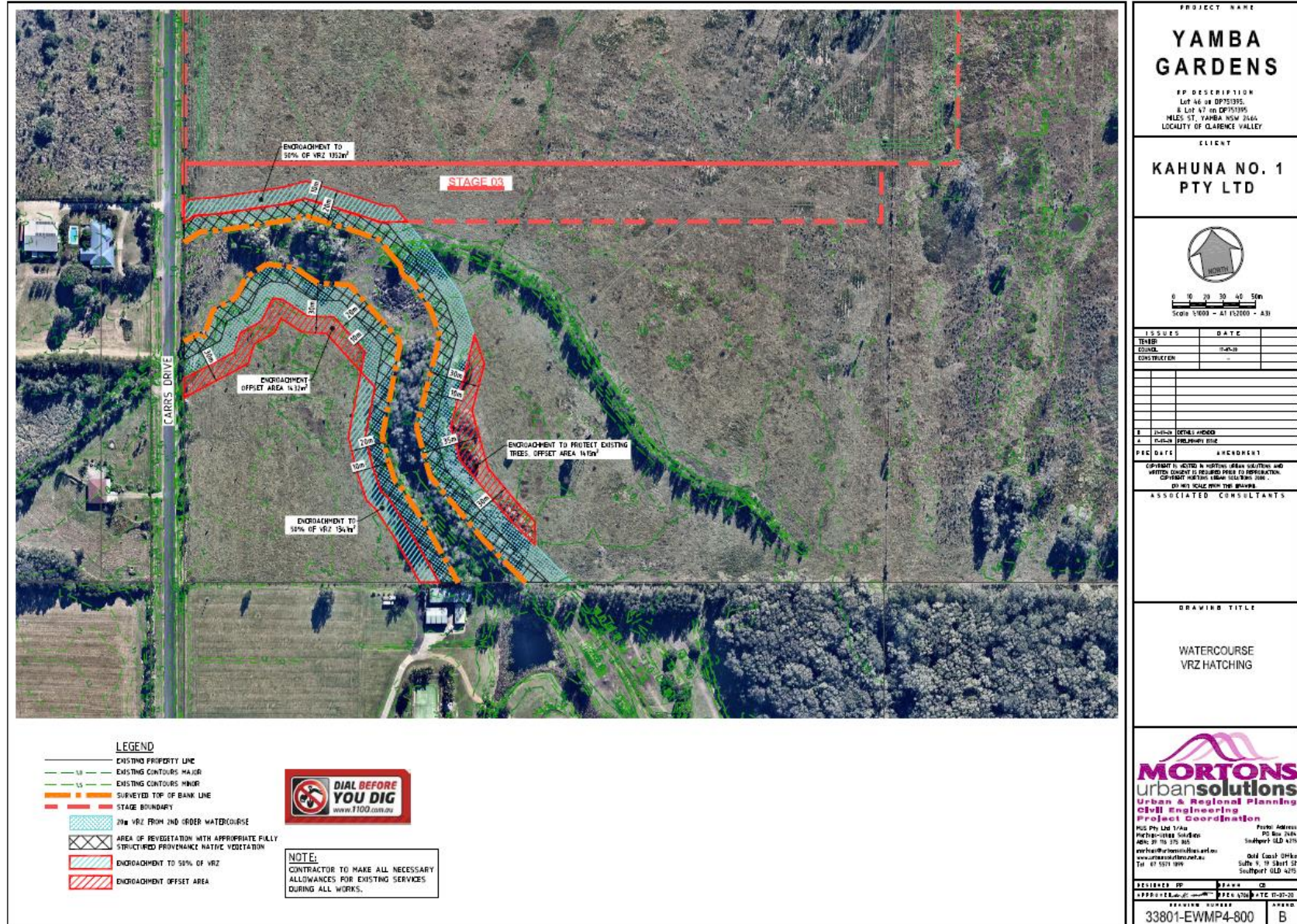
Revised Concept

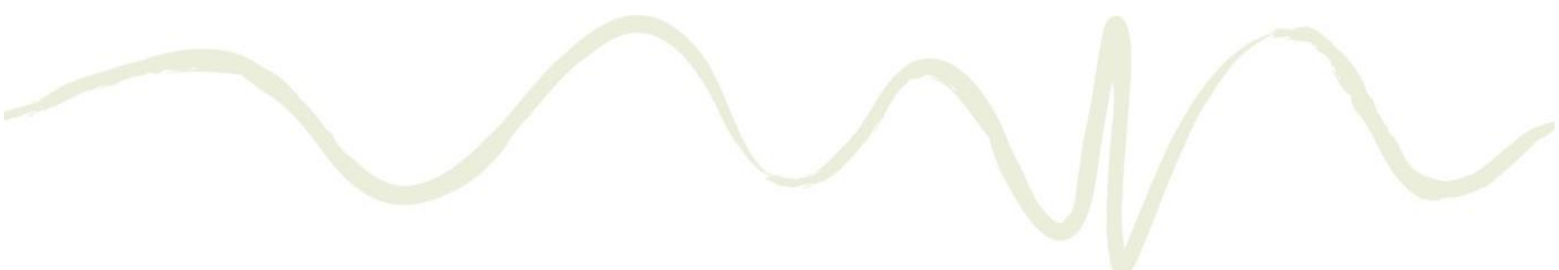




Appendix D

Proposed VRZs





Appendix E

VMP Prescriptions

Lot 46 DP751395 - PRESCRIPTIONS FOR VEGETATION RESTORATION

NOTE: These prescriptions are to apply to all vegetation restoration works at Lot 46 DP751395. Significant variation to any of these methodologies or planting schedule requires agreement from Clarence Valley Council/NRAR.

Site Identification

Prior to weed control or planting works, a registered surveyor must identify and clearly peg/mark out the extent of the VRZ.

Weed Control and Site Preparation

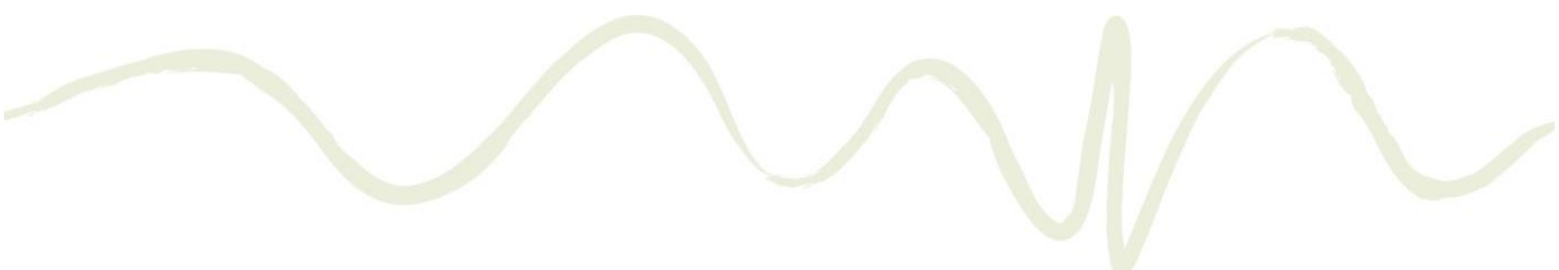
The following weed control actions are prescribed:

- Poisoning established woody weeds (Camphor Laurel, Winter Senna, Lantana, Groundsel) in-situ.
- Remove exotic vines (Coastal Morning Glory) using standard bush regeneration techniques (eg. the 'cut, scrape and paint' technique).
- Use of foliar spray to control areas of pasture grasses and aquatic herbs (Lippia, Cuphea). Weed control and preparation in grassland areas must be sensitive to regenerating woody native species (eg, Swamp Oak, Broad-leaved Paperbark, Willow Primrose, Eclipta).

Weed control works apply, (but may not be limited to) to introduced species recorded at the site within **Table E.1**. Following initial works, ongoing weed control will be required over a three year period to control pasture grasses and exotic herbs (eg. Cuphea, Lippia) in the ground layer.

TABLE E.1 ENVIRONMENTAL WEEDS RECORDED AT THE SITE

Scientific name	Common name	Biosecurity Act 2015
<i>Ageratum houstonianum</i>	Billygoat Weed	
<i>Asclepias curassavica</i>	Red-head Cotton Bush	
<i>Axonopus fissifolius</i>	Carpet Grass	
<i>Baccharis halimifolia</i>	Groundsel Bush	Regional Recommended Measure Land managers should mitigate the risk of spread/establishment of the plant from their land.
<i>Bidens pilosa</i>	Farmer's Friends	
<i>Cenchrus clandestinum</i>	Kikuyu	
<i>Chloris gayana</i>	Rhodes Grass	
<i>Cinnamomum camphora</i>	Camphor Laurel	
<i>Cuphea carthagenensis</i>	Cuphea	
<i>Ipomoea cairica</i>	Coast Morning Glory	
<i>Lantana camara</i>	Lantana	Prohibition on dealings Must not be imported into the State or sold
<i>Ochna serrulata</i>	Ochna	
<i>Paspalum mandiocanum</i>	Paspalum	
<i>Paspalum urvillei</i>	Vasey Grass	
<i>Passiflora suberosa</i>	Corky Passionfruit	
<i>Passiflora subpeltata</i>	White Passionflower	
<i>Phyla nodiflora</i>	Lippia	
<i>Polygala paniculata</i>	Milkwort	
<i>Psidium cattleianum</i>	Cherry Guava	



Scientific name	Common name	Biosecurity Act 2015
<i>Senecio madagascariensis</i>	Fireweed	Prohibition on dealings Must not be imported into the State or sold
<i>Senna pendula</i> var. <i>glabrata</i>	Winter Senna	
<i>Setaria sphacelata</i>	Pigeon Grass	

Weed control notes:

- Weed control must be completed by professional, experienced contractors only.
- Contractors must be advised on the need to complete works sensitively to avoid damaging any native vegetation and threatened flora habitat (eg. Rotala habitat).
- Due to wetland environments frog habitat, foliar spraying should use 'frog friendly' forms of Glyphosate and be completed outside of any flood events where water levels may be higher than usual.
- Foliar spraying should not occur if rain is predicted in the coming 48 hours and should be completed in dry, still conditions.
- A minimum of two weeks (three weeks in winter) should be allowed for dieback of pasture grasses prior to planting being completed.

Planting

Following weed control works, planting may commence within Management Zone 3 as below:

- All trees and shrubs shall be spaced at a minimum distance of 3 metres (this allows opportunities for regeneration to infill gaps).
- No groundcovers are proposed for planting, as native regeneration will occur naturally over time.

A total area of 1 ha has been calculated for Management Zone 3.

Planting methodology for all Management Zone 3 is as follows:

- The size of the planting hole should be at least twice the size of the plant root-ball.
- The planting hole should be heavily watered immediately prior to planting and filled with enough soil to ensure root-soil contact.
- Slow release fertiliser should be applied in accordance with the manufacturer's instructions.
- A slight depression or raised lip should be made around the plant to assist in trapping and infiltration of water.
- All plants should be heavily mulched with straw following installation.

To prevent browsing by macropods and assist in establishment, tree guards shall be installed around all planted trees and shrubs.

Watering is required for initial establishment and during early stages of the maintenance period (or as required) to maintain healthy plant growth. A schedule for watering is provided in **Table 4.6**. Water requirements provided are indicative and should be assessed on a day to day basis. A deep, drenching watering regime is preferred over frequent light watering, to encourage a deep root system. Soaked water crystals provide a good alternative if planting occurs during particularly hot conditions.

Planting Schedule

A planting schedule for Management Zone 3 is provided at **Table E.2** and provides planting frequencies based on typical assemblages within prescribed vegetation types, based on a total area of 1 ha. All plants prescribed are common locally occurring species and should be readily available from local nursery suppliers. All plants specified shall be planted as standard tubestock.

Planting notes:

- All plants must be sourced from a reputable nursery specialising in native plants. Where possible, native plants and seed sources of local provenance should be used.
- If some species are unavailable, numbers of other species should be adjusted as required, or an appropriate replacement species should be utilized.
- All plants must be healthy, sun-hardened and free of pests and diseases.
- All plants must be well-watered in at the time of planting; follow up watering must be completed for three consecutive days following plant installation, and then as prescribed in the watering schedule at **Table 4.6**.

TABLE E.2 Management Zone 3 Planting Schedule (1 ha)

Scientific Name	Common Name	Frequency	No. Plants
<i>Callistemon salignus</i>	Willow Bottlebrush	5%	56
<i>Casuarina glauca</i>	Swamp Oak	25%	278
<i>Eucalyptus tereticornis</i> *	Forest Red Gum	2%	22
<i>Glochidion sumatranum</i>	Umbrella Cheese Tree	3%	33
<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark	60%	666
<i>Melaleuca styphelioides</i>	Prickly Paperbark	5%	56
TOTAL		100%	1111

*plant around margins of southern patch of PCT1064 only

