COFFS HARBOUR CITY COUNCIL (COUNCIL)

JAMES ROBERT AULD AND MARGARET DAWN AULD (APPLICANTS)

THIS DEED is made the day of 2014

1. PARTIES

1.1 Coffs Harbour City Council ABN 79 126 214 487 of Cnr Coff and Castle Streets, Coffs Harbour, NSW 2450 ("**Council**")

1.2 James Robert Auld and Margaret Dawn Auld of 29 Orlando Street, Coffs Harbour, NSW 2450 ("**the Applicants**").

2. BACKGROUND

2.1 The Applicants are the Registered Proprietors of the Land.

2.2 The Applicants have sought a change to an environmental planning instrument and have lodged the Planning Proposal with Council in support of the Rezoning.

2.3 The Applicants have voluntarily offered to enter into a planning agreement with Council under section 93F of the Act to provide for a material public benefit by enhancement of the natural environment by implementing vegetation management of the Land in accordance with the VMP.

2.4 Council accepts the above offer.

2.5 The Applicants have voluntarily agreed to enter into this Agreement.

3. DEFINED TERMS

In this document the following definitions apply:

3.1 **Act** means the *Environmental Planning and Assessment Act 1979* (NSW).

3.2 **Agreement** means this Agreement and includes any schedules, annexures and appendices to this Agreement.

3.3 **Bond or Bank Guarantee** means either a cash bond or a Guarantee drawn on an Australian bank from the Applicants to the Council for the sum of $10,000.00.

3.4 **Coffs Harbour LEP 2013** means Coffs Harbour Local Environmental Plan 2013.

3.5 **Council** means Coffs Harbour City Council.

3.6 **Development Site** means that part of the Land being the "cleared area" identified on the plan set out in Schedule 1 of this Agreement.

3.7 **GST** has the same meaning as in the GST Law.

3.8 **GST Law** has the meaning given to that term in *A New Tax System (Goods and Services Tax) Act 1999* (Cth) and any other Act or regulation relating to the imposition or administration of the GST.

3.9 **Land** means Lot 13 DP 591220 and Lot 6 DP 714455 known as Cook Drive, Coffs Harbour NSW 2450.

3.10 **Planning Proposal** means the proposal to rezone the Development Site to B5 Business Development Zone under Coffs Harbour LEP 2013.

3.11 **Registered Proprietor** means the registered proprietor of the Land from time to time.

3.12 **Rezoning** means the rezoning of the Development Site to B5 Business Development Zone under Coffs Harbour LEP 2013.

3.13 **VMP** means the Vegetation Management Plan set out in Schedule 2 to this Agreement.

4. OFFER

This document, executed only by the Applicants, is to be read and construed as containing the Applicants' irrevocable offer to enter into this Agreement to cause vegetation management of the Land to be provided in accordance with the VMP, on the terms set out in this Agreement, once the Rezoning has been effected.

5. OPERATIVE PROVISIONS

5.1 The parties agree that this Agreement is a planning agreement governed by Subdivision 2 of Division 6 of Part 4 of the Act.

5.2 This Agreement takes effect on the date of execution by both parties.

5.3 This Agreement applies to the Land.

6. REGISTERED PROPRIETOR'S OBLIGATIONS

6.1 Words used in this clause which are defined in the VMP have the same meaning given in that plan.

6.2 Upon the Rezoning being effected the Registered Proprietor must (unless other arrangements acceptable to Council are made):

6.2.1 Immediately pay the bond or bank guarantee;

6.2.2 cause the VMP to be implemented, including by causing the following to be done (without limitation):

- completion of all Initial Works required for each of the 4 "Vegetation Management Zones" – within 100 days of the Rezoning being effected;

- provision to Council of a report (Statement of Completion) upon satisfactory completion of the Initial Works – within 28 days of such completion;
- undertaking of the 5 year maintenance programme and Follow Up weed control – every 8 weeks for the first 2 years after completion of the Initial Works, followed by every 4 months for the remaining 3 years; and
- provision to Council of yearly reports throughout the five year Follow-up Works period.

7. APPLICATION OF S94, S94A AND S94EF OF THE ACT TO THE DEVELOPMENT

7.1 The application of sections 94, 94A and 94EF of the Act to any development on the Land is not excluded under this Agreement.

8. REGISTRATION OF THIS AGREEMENT

8.1 The Applicants represent and warrant that they are the registered proprietors of the Land.

8.2 The Applicants agree that they will procure the registration of this Agreement, under the *Real Property Act 1900* (NSW) against the title to the Land in accordance with section 93H of the Act.

8.3 The Applicants will, at their expense, promptly after this Agreement comes into operation, take all practical steps, and otherwise do anything that Council reasonably requires, to procure:

8.3.1 the consent of each person who has an estate or interest in the Land;

8.3.2 an acceptance of the terms of this Agreement and an acknowledgment in writing from any existing mortgagee in relation to the Land that the mortgagee will adhere to the provisions of this Agreement if it takes possession of the Land as mortgagee in possession;

8.3.3 the execution of any documents; and

8.3.4 the production of the relevant duplicate certificate of title,

to enable the registration of this Agreement in accordance with clause 8.2.

8.4 The Applicants will, at their expense, take all practical steps and otherwise do anything that Council reasonably requires:

8.4.1 to procure the lodgement of this Agreement with Land and Property Information as soon as reasonably practicable after this Agreement comes into operation but in

any event, no later than 90 business days after that date; and

8.4.2 to procure the registration of this Agreement against the title to the Land as soon as reasonably practicable after this Agreement is lodged for registration.

8.5 Council will provide a release and discharge of this Agreement so that it may be removed from the folios of the register for the Land (or any part of it) provided that the Registered Proprietor has provided Council with a Statement of Completion by Coffs Coast Bush Regeneration or some other suitably qualified consultant that the VMP has been materially satisfactorily completed.

8.6 The Applicants acknowledge and agree that:

8.6.1 this Planning Agreement creates an equitable estate and interest in the Land for the purpose of section 74F(1) of the Real Property Act 1900 (NSW);

8.6.2 Council has a sufficient interest in the Land in respect of which to lodge with Land and Property Information a caveat notifying that interest;

8.6.3 they will raise no objection to Council entering a caveat in the relevant folio of the register for the Land provided the caveat does not prevent registration of any dealing other than a transfer of the Land; and

8.6.4 they will obtain the consent to the lodgement of the caveat of each person who has an estate or interest in the Land.

9. REVIEW OF THIS AGREEMENT

This Agreement is not subject to review, other than in accordance with clause 21.

10. DISPUTE RESOLUTION

10.1 This clause applies to any dispute under this Agreement.

10.2 Such a dispute is taken to arise if one party gives another party a notice in writing specifying particulars of the dispute.

10.3 If a notice is given under clause 10.2 the parties are to meet within 14 days of the notice in an attempt to resolve the dispute.

10.4 If the dispute is not resolved within a further 28 days, the parties must mediate the dispute in accordance with the Mediation Rules of the Law Society of New South Wales published from time to time and must request the President of the Law Society, or the President's nominee, to select a mediator.

10.5 If the dispute is not resolved by mediation within a further 28 days, or such longer period as may be necessary to allow any mediation process which has been commenced to be completed, then the parties may exercise their legal rights in relation to the dispute, including by the commencement of legal proceedings in a court of competent jurisdiction in New South Wales.

11. ENFORCEMENT

11.1 Without limiting any other remedies available to the parties, this Agreement may be enforced by the parties in any court of competent jurisdiction.

11.2 For the avoidance of doubt, nothing in this Agreement prevents:

11.2.1 a party from bringing proceedings in the Land and Environment Court to enforce any aspect of this Agreement or any matter to which this Agreement relates; or

11.2.2 Council from exercising any function under the Act or any other Act or law relating to the enforcement of any aspect of this Agreement or any matter to which this Agreement relates, including cashing the Bond or Bank Guarantee.

12. NOTICES

12.1 Any notice, consent, information, application or request that must or may be given or made to a party under this Agreement is only given or made if it is in writing and sent in one of the following ways:

12.1.1 delivered or posted to that party at its address set out below,

12.1.2 faxed to that party at its fax number set out below, or

12.1.3 emailed to that party at its email address set out below.

Coffs Harbour City Council
Attention: The General Manager
Address: Locked Bag 155 Coffs Harbour NSW 2450
Phone: (02) 6648 4000
Fax Number: (02) 6648 4199
Email: coffs.council@chcc.nsw.gov.au

James Robert Auld and Margaret Dawn Auld
Attention: James Robert Auld and Margaret Dawn Auld
Address: 29 Orlando Street Coffs Harbour NSW 2450
Phone: (02) 6650 0845
Fax Number: Nil
Email: jamauld@bigpond.net.au

12.2 If a party gives the other party 3 business days' notice of a change of its address or fax number, any notice, consent, information, application or request is only given or made by that other party if it is delivered, posted or faxed to the latest address or fax number.

12.3 Any notice, consent, information, application or request is to be treated as given or made at the following time:

12.3.1 if it is delivered, when it is left at the relevant address;

12.3.2 if it is sent by post, 2 business days after it is posted;

12.3.3 if it is sent by fax, as soon as the sender receives from the sender's fax machine a report of an error-free transmission to the correct fax number.

12.4 If any notice, consent, information, application or request is delivered, or an error-free transmission report in relation to it is received, on a day that is not a business day, or if on a business day, after 5pm on that day in the place of the party to whom it is sent, it is to be treated as having been given or made at the beginning of the next business day.

13. ASSIGNMENT AND DEALINGS

13.1 The Applicants must procure from any mortgagee in relation to the Land an acceptance of the terms of this Agreement and an acknowledgement that the mortgagee will adhere to the provisions of this Agreement if it takes possession of the Land as mortgagee in possession.

13.2 Unless the matters specified in clause 12.3 are satisfied, the Applicants are not to do any or the following:

13.2.1 transfer, assign or dispose of the whole or any part of their right, title or interest in the Land to any person; or

13.2.2 assign or novate to any person the Applicants' rights or obligations under this Agreement.

13.3 The matters required to be satisfied for the purposes of clause 12.2 are as follows:

13.3.1 Council being satisfied, acting reasonably, that the proposed transferee is financially capable of complying with the Applicants' obligations under this Agreement;

13.3.2 Council being satisfied that its rights will not be diminished or fettered in any way;

13.3.3 The Applicants have, at no cost to Council, first procured the execution, by the person to whom the Applicants' rights or obligations under this Agreement are to be assigned or novated, an agreement in favour of Council under which that person agrees to comply with all the outstanding obligations of the Applicants under this Agreement; and

13.3.4 Any default by the Applicants under the provisions of this Agreement have been remedied by the Applicants or waived by Council.

13.4 The Applicants and the proposed transferee must pay Council's reasonable costs in relation to any assignment or novation of their rights and obligations under this Agreement.

14. COSTS

The Applicants are to pay Council's reasonable legal costs of preparing, negotiating and executing this Agreement.

15. ENTIRE AGREEMENT

This Agreement contains everything to which the parties have agreed in relation to the matters it deals with. No party can rely on an earlier document, or anything said or done by another party, or by a director, officer, agent or employee of that party, before this Agreement was executed, except as permitted by law.

16. FURTHER ACTS

Each party must promptly execute all documents and do all things that another party from time to time reasonably requests to effect, perfect or complete this Agreement and all transactions incidental to it.

17. GOVERNING LAW AND JURISDICTION

This Agreement is governed by the law of New South Wales. The parties submit to the non-exclusive jurisdiction of its courts and courts of appeal from them. The parties will not object to the exercise of jurisdiction by those courts on any basis.

18. NO FETTER

Nothing in this Agreement shall be construed as requiring Council to do anything that would cause it to be in breach of any of its obligations at law, and without limitation, nothing shall be construed as limiting or fettering in any way the exercise of any statutory discretion or duty.

19. REPRESENTATION AND WARRANTIES

The parties represent and warrant that they have power to enter into this Agreement and comply with their obligations under the Agreement and that entry into this Agreement will not result in the breach of any law.

20. SEVERABILITY

20.1 If a clause or part of a clause of this Agreement can be read in a way that makes it illegal,

unenforceable or invalid, but can also be read in a way that makes it legal, enforceable and valid, it must be read in the latter way.

20.2 If any clause or part of a clause is illegal, unenforceable or invalid, that clause or part is to be treated as removed from this Agreement, but the rest of this Agreement is not affected.

21. MODIFICATION

No modification of this Agreement will be of any force or effect unless it is in writing and signed by the parties to this Agreement.

22. WAIVER

22.1 The fact that a party fails to do, or delays in doing, something the party is entitled to do under this Agreement does not amount to a waiver of any obligations of, or breach of obligation by, another party.

22.2 A waiver by a party is only effective if it is in writing. A written waiver by a party is only effective in relation to the particular obligations or breach in respect of which it is given. It is not to be taken as an implied waiver of any other obligation or breach, or as an implied waiver of that obligation or breach in relation to any other occasions.

23. GST

23.1 Words used in this clause which are defined in the GST Law have the meaning given in that legislation.

23.2 If GST is payable on a Taxable Supply made under, by reference to or in connection with this Agreement, the party providing the Consideration for that Taxable Supply must also pay the GST Amount as additional Consideration. This clause does not apply to the extent that the Consideration for the Taxable Supply is expressly agreed to be GST inclusive.

23.3 Unless otherwise expressly stated, all prices or other sums payable or Consideration to be provided under or in accordance with this Agreement are exclusive of GST.

23.4 Any reference in the calculation of Consideration or of any indemnity, reimbursement or similar amount to a cost, expense or other liability incurred by a party, must exclude the amount of any Input Tax Credit entitlement of that party in relation to the relevant cost, expense or other liability.

23.5 This clause will continue to apply after expiration or termination of this Agreement.

24. INTERPRETATIONS

24.1 A reference to person includes a reference to a natural person, a company or other legal entity whether acting as a trustee or not.

24.2 A reference to a party in this Agreement is a reference to that party in its personal capacity as well as in its capacity as trustee of a trust (if any) and a party is obligated in terms of this Agreement in its personal capacity and in its capacity as trustee for a trust (if any).

24.3 A reference to:

24.3.1 a person includes the person's executors, administrators, successors, substitutes, including persons taking by novation and assigns; and

24.3.2 a group of persons includes them collectively and each of them individually.

24.4 An agreement, representation or warranty:

24.4.1 in favour of 2 or more persons is for the benefit of them jointly and severally; and

24.4.2 on the part of 2 or more persons binds them jointly and severally.

24.5 A reference to a gender includes any gender.

24.6 The singular includes the plural and vice versa.

24.7 The word 'person' includes a firm, a body corporate, an unincorporated association or an authority.

24.8 A reference to a document includes any amendment or supplement to or replacement or novation of the document.

24.9 Headings are for convenience only and do not affect the interpretation of this Agreement.

24.10 References to a statute or statutory provision include that statute or statutory provision as amended, extended, consolidated or replaced by subsequent legislation and any orders, regulations, documents or other subordinate legislation made under the relevant statute.

24.11 A clause number means the respective clause of this Agreement.

24.12 President of a body or authority includes a person acting in that capacity.

24.13 A thing includes the whole and each part of it.

24.14 A reference in this Agreement to a business day means a day other than a Saturday or Sunday on which banks are open for business generally in Sydney.

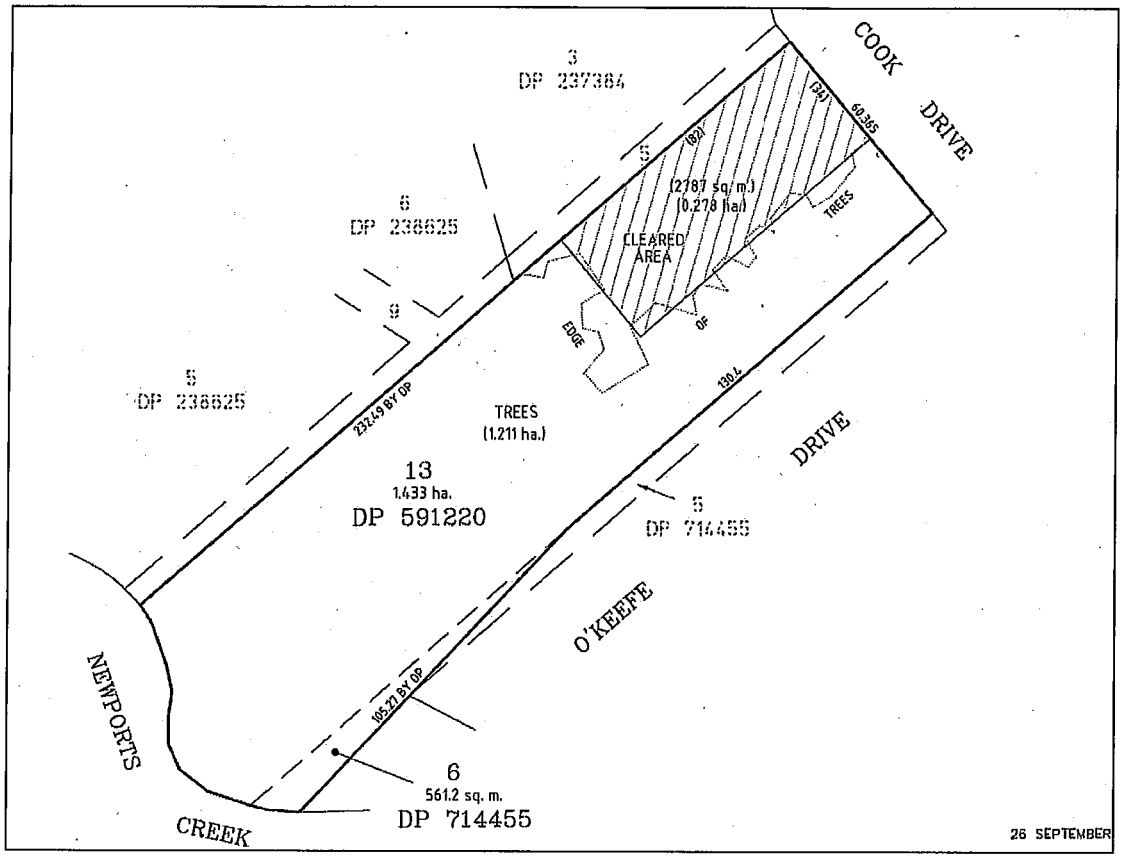
24.15 'Include' or 'including' when introducing a list of items does not limit the meaning of the

words to which the list relates to those items or to items of a similar kind.

24.16 If a party is required to do something, that includes a requirement to cause that thing to be done. If a party is prohibited from doing anything, it is also prohibited from doing or omitting to do anything which allows or causes that thing to be done.

24.17 No rule of construction applies to the disadvantage of a party because that party was responsible for the preparation of this Agreement.

SCHEDULE 1 – PLAN IDENTIFYING THE DEVELOPMENT SITE



SCHEDULE 2 – VEGETATION MANAGEMENT PLAN (VMP)

Executed as an Agreement

Executed for and on behalf of Coffs Harbour City Council by its authorised delegate, in accordance with a resolution of the Council dated :

Signature of authorised delegate

STEPHEN CHARLES McGRATH
Name of authorised delegate

Signature of witness

BRONWYN DANIELLE KEENAN
Name of witness

Executed by James Robert Auld in the presence of:

Signature of Witness

Angela Laise Hunt
Name of Witness

59 Raleigh St, Coffs Harbour
Address of Witness

Signature of James Robert Auld

Executed by Margaret Dawn Auld in the presence of:

Signature of Witness

Angela Laise Hunt
Name of Witness

59 Raleigh Street, Coffs Harbour
Address of Witness

Signature of Margaret Dawn Auld

ABN: 18 825 055 289
263 Korora Basin Rd Korora NSW 2450
Phone: 02 6653 6781
Email: coffscoastbushregeneration@bigpond.com
Eco Restoration Specialists

Vegetation Management Plan

Lot 13 DP 591220 and Lot 6 DP 714455 Cook Drive Coffs Harbour 2450

Feb 2014

Personnel

This Vegetation Management Plan was prepared by Ricky Crane of Coffs Coast Bush Regeneration Ltd, accredited member of the Australian Association of Bushland Regenerators (AABR)

Acknowledgements

Document Tracking

Revision History							
Version	**Date**	**Author**		**Reviewer**			
		Name	**Initials**	**Name**	**Initials**		
DRAFT	24/7/13	Rick Crane	RC	"	RC		
Client Issue							
Issue	**Version**	**Draft/Final**	**Date Sent**	**Distributed To**	**Copies**	**Media**	**Delivery**
1	1	Draft	24/7/13	Rick Bennell	1	elec	email

Disclaimer

This report has been prepared for the use of the stated client and for the specific purpose described in the introduction and is not to be used for any other purpose or by any other person or corporation. Coffs Coast Bush Regeneration accepts no responsibility for any loss or damage suffered howsoever arising to any person or corporation who may use or rely on this report in contravention of the terms of this disclaimer.

Due consideration has been given to site conditions and to appropriate legislation and documentation available at the time of preparation of the report. As these elements are liable to change over time, the report should be considered current at the time of preparation only.

The report relies on information supplied by the client and on findings obtained using accepted survey and assessment methodology. While due care was taken during field survey and report preparation, Coffs Coast Bush Regeneration accepts no responsibility for any omissions that may have occurred due to the nature of the survey methodology.

Conclusions to the report are professional opinions and Coffs Coast Bush Regeneration cannot guarantee acceptance or consent of the relevant determining/ consent authorities. Subsequent requests for further work or information will be subject to additional fees.

Introduction

Background

This Vegetation Management Plan (VMP) has been prepared by Coffs Coast Bush Regeneration (CCBR) following a request from Bennell and Associates consultant for Jim and Margaret Auld owners of the subject property at Lot 13 DP 591220 and Lot 6 DP 714455 which is situated at Cook Drive Coffs Harbour.

This VMP has been prepared to support a rezoning application to allow development on the cleared part of this land. This VMP is to provide strategies for vegetation management on the site and to fulfil Coffs Harbour City Council's (CHCC) requirements for VMP preparation.

CCBR or a suitably qualified consultant shall provide the land holder/ land manager with a copy of this VMP and undertake a site inspection with the landholder prior to initial works programme being implemented to explain or clarify the requirements of the works programme.

CCBR or a suitably qualified consultant shall provide a report (Statement of Completion) upon satisfactory completion of the Initial works described in this VMP. CCBR shall also provide to CHCC yearly reports throughout the five year Follow-up Works period.

Aim

- Creation of self-sustaining vegetation communities.
- To provide improved habitat connectivity by restoration of habitat corridors.
- To reduce the presence and spread of environmental/noxious weeds in the local area.
- Enhance the visual amenity of the site

Objectives

- To retain, rehabilitate and enhance existing native vegetation with weed control.
- To map proposed areas requiring weed control.
- To outline the methodology for removal of environmental/noxious weeds and ongoing management detailing the Initial and Follow up Maintenance works required.
- Provide table of costing for all works.

Site Description

Site Location

The property is located approximately 2. 8 kilometres southwest of Coffs Harbours CBD on Cook Drive, Coffs Harbour NSW 2450.

Latitude 30°18'51 76"S, Longitude 153°05'45 48"E

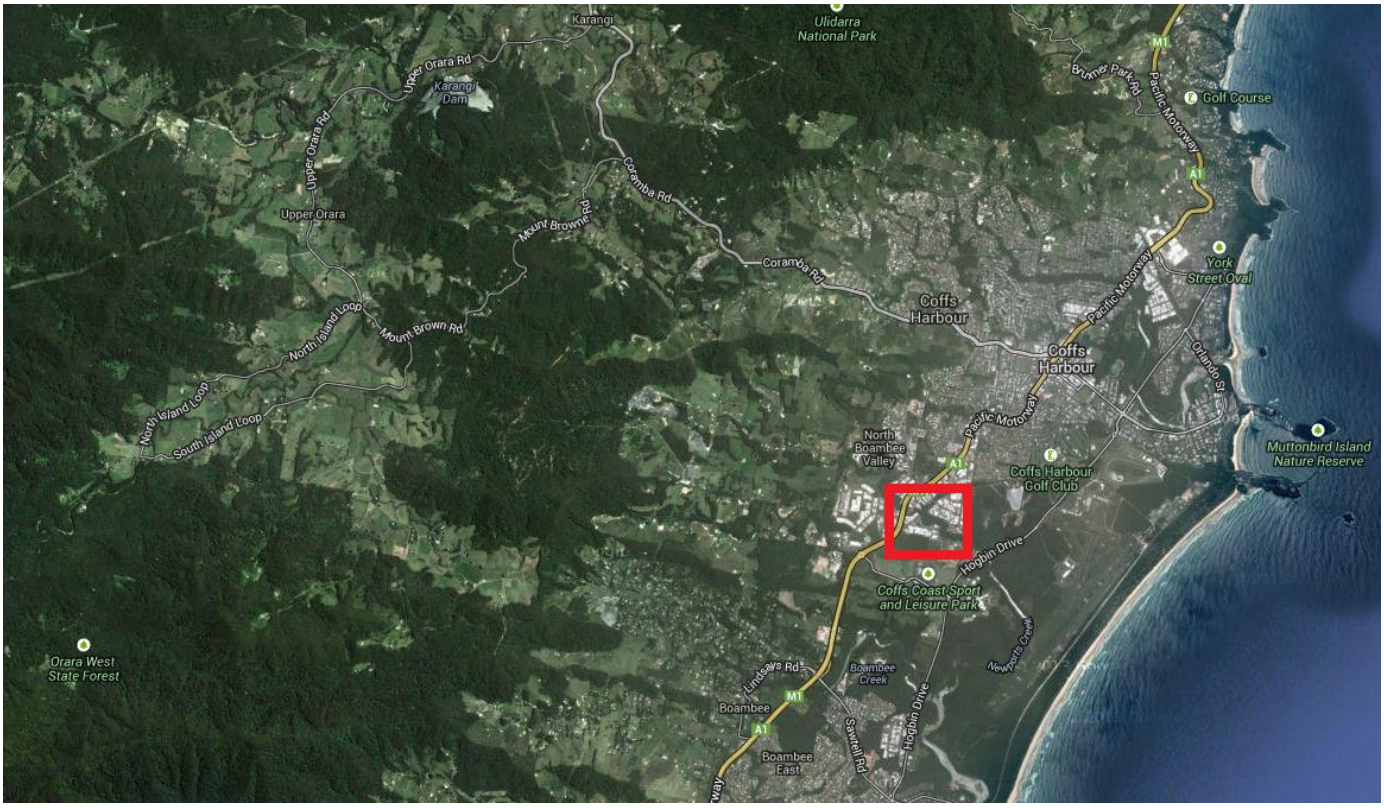


Figure 1. Site Location

Figure 2. Detailed property location

Site Details

The site known as Lot 13 DP 591220 and Lot 6 DP 714455 is a property owned by Jim and Margaret Auld. It has a total area of approximately 1.2 hectares and is bounded to the north by Cook Drive.

The area covered by this VMP is north of the creek that divides the property; this area shall be referred to as the subject site (see Site Plan Appendix 1 for detail).

Development Outline

The proposal is for a rezoning application to allow development on the cleared part of this land.

The subject land is zoned 7A Environmental Protection (Appendix 3 – Coffs Harbour City Council LEP 2000 Land Zoning) under the provisions of the Coffs Harbour City Local Environmental Plan 2000.

Mapped Koala Habitat is present throughout the majority of the site and is deemed to be Primary Koala Habitat under the Koala Plan of Management (KPoM, 2000).

Site History

The subject site appears to have been utilised as a storage and/or waste area in the past. Scrap metal including car parts, building waste and machinery parts are found across the site.

Most of the subject site seems to have remained without major disturbance in the recent past with moderately resilient vegetation covering much of the site.

Figure 3. Building waste in zone 1

Landforms, geology and soils

Geology

Holocene clayey and silty alluvium (generally <1m total thickness) overlying Pleistocene mottled grey estuarine clays, which were deposited in all major coastal inlets in the Coffs Harbour area. (Leitch, E.C., Neilson, M.J., Hobson, E., 1971) or (Leitch et al 1971)

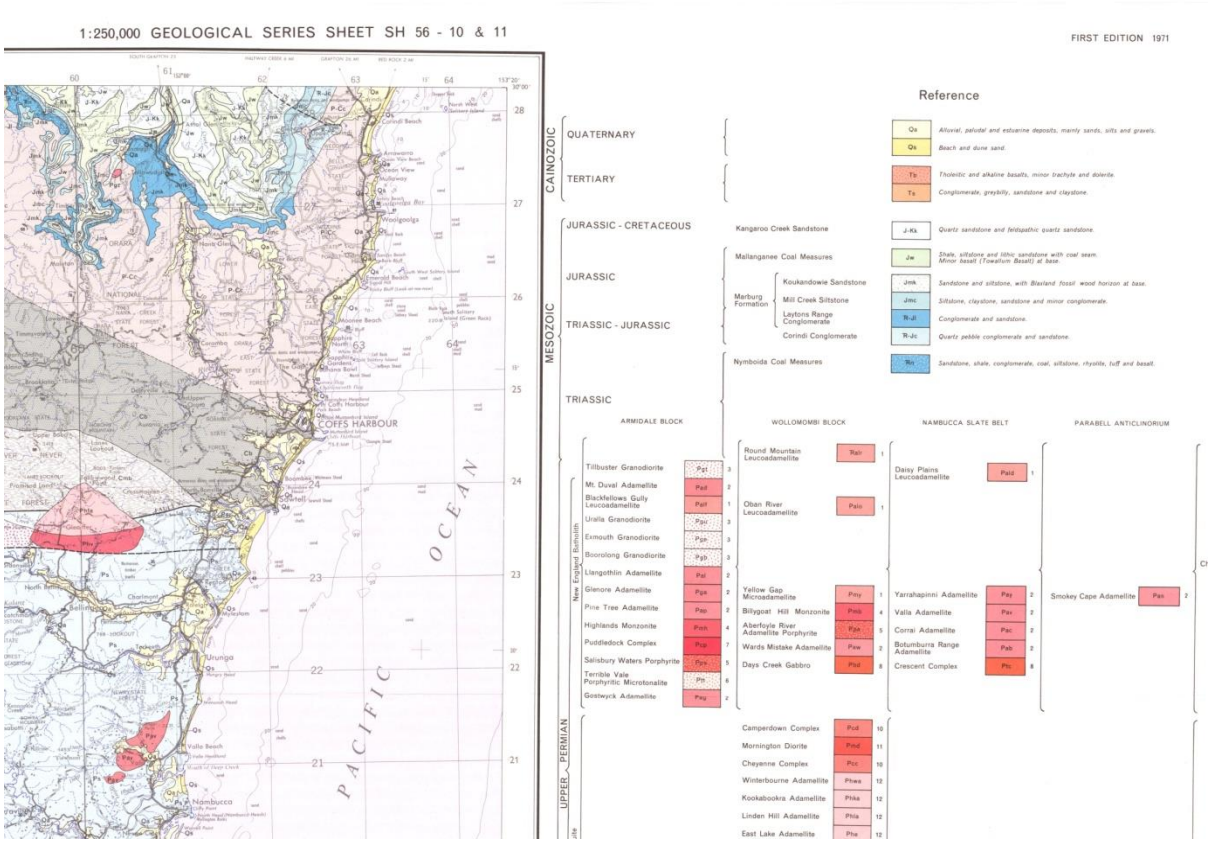


Figure 4: Detail from 1:250,000 Geological Series Dorrigo Sheet (source *www.geoscience.gov.au)*

Soil Type

The property is located on soil type: "*Newports Creek*" (np) Milford (1999).

The Newports Creek soil landscape possesses the following qualities:

- **Topography:** low, level to gently undulating coastal back barrier floodplains on Pleistocene estuarine sediments. Local relief <5m slopes, < %2 elevation.
- **Soils:** deep poorly drained Yellow Podsolic soils and humic clays.
- **Qualities and limitations:** Strongly to very strongly acid, strongly sodic (localised) strongly saline(localised) with high aluminium potential, low to very low wet bearing strength, slow deep topsoil permeability, high topsoil organic matter and low fertility.

Project Summary

Total area of retained vegetation-Approximately 1.1ha
Area of revegetation-1000m2

Total requirements of site
Number of trees- 100
Weed mass to be removed-100%

Assessment of Existing Vegetation

Vegetation Communities

The native vegetation on this property is described as containing the following vegetation types (Figure 4) under the CHCC Class 5 Vegetation Mapping system:

1. **(CH_FW 01) Broad-leaved Paperbark - Swamp Oak – Willow Bottle Brush Forested Wetland on Floodplain.**

2. **(CH_DOF 01) Blackbutt - Turpentine - Pink Bloodwood Grassy Dry Open to Tall Open Forest.**

3. **(CH_WSF 03) Turpentine – Sydney Blue Gum –Tallowwood Sheltered Wet Shrubby Forest of Metasedimentary Hinterland Foothills and Escarpment.**

On ground assessments of the vegetation communities onsite found the vegetation represented by these map units to contain the following species composition:

Broad-leaved Paperbark - Swamp Oak – Willow Bottle Brush Forested Wetland on Floodplain.

- Canopy species-Dominated by Swamp Mahogany *(Eucalyptus robusta)*.
- Mid stratum layer- Dominated by Willow Bottlebrush (*Callistemon salignus)*.
- Ground layer- dominated by Saw Sedge (Gahnia clarkei).

Blackbutt - Turpentine - Pink Bloodwood Grassy Dry Open to Tall Open Forest.

- Canopy species-Dominated by Tallowwood *(Eucalyptus microcorys)* and Blackbutt (*E. pilularis)* with Pink Bloodwood (*Corymbia intermedia)*, White Mahogany (*E. acmenioides*), Red Mahogany (*E. resinifera*) and Turpentine (*Syncarpia glomulifera*) also present.
- Mid stratum layer- contains Willow Bottlebrush (*Callistemon salignus*) with other rainforest tree species such as Forest Maple (*Cryptocarya rigida*), Guioa (*Guioa semiglauca*) and Cheese Tree *(Glochidion ferdinandi)*.
- Ground layer- contains Rasp Fern (*Doodia aspera*), Gristle Fern (*Blechnum cartilagenium*), Ottochloa (*Ottochloa gracillima) and* Common Ground Fern *(Calochlaena dubia)*.

Turpentine – Sydney Blue Gum –Tallowwood Sheltered Wet Shrubby Forest of Metasedimentary Hinterland Foothills and Escarpment.

- Canopy species-Dominated by Tallowwood *(Eucalyptus microcorys)* with Flooded Gum (*Eucalyptus grandis)* and Brush Box (*Lophostemon confertus*).

- Mid stratum layer- is dense with diverse rainforest trees and vines including Yellow Pear Fruit (*Mischocarpus pyriformis*), Murrogun (*Cryptocarya microneura*), Muellers Walnut (Endiandra muelleri) and Water Vines (*Cissus* sp.).

- Ground layer- is sparse with rainforest tree regeneration amongst small vines and ferns.

Figure 5. Forested Wetland (Swamp Sclerophyll EEC) within Zone 1 of the subject site

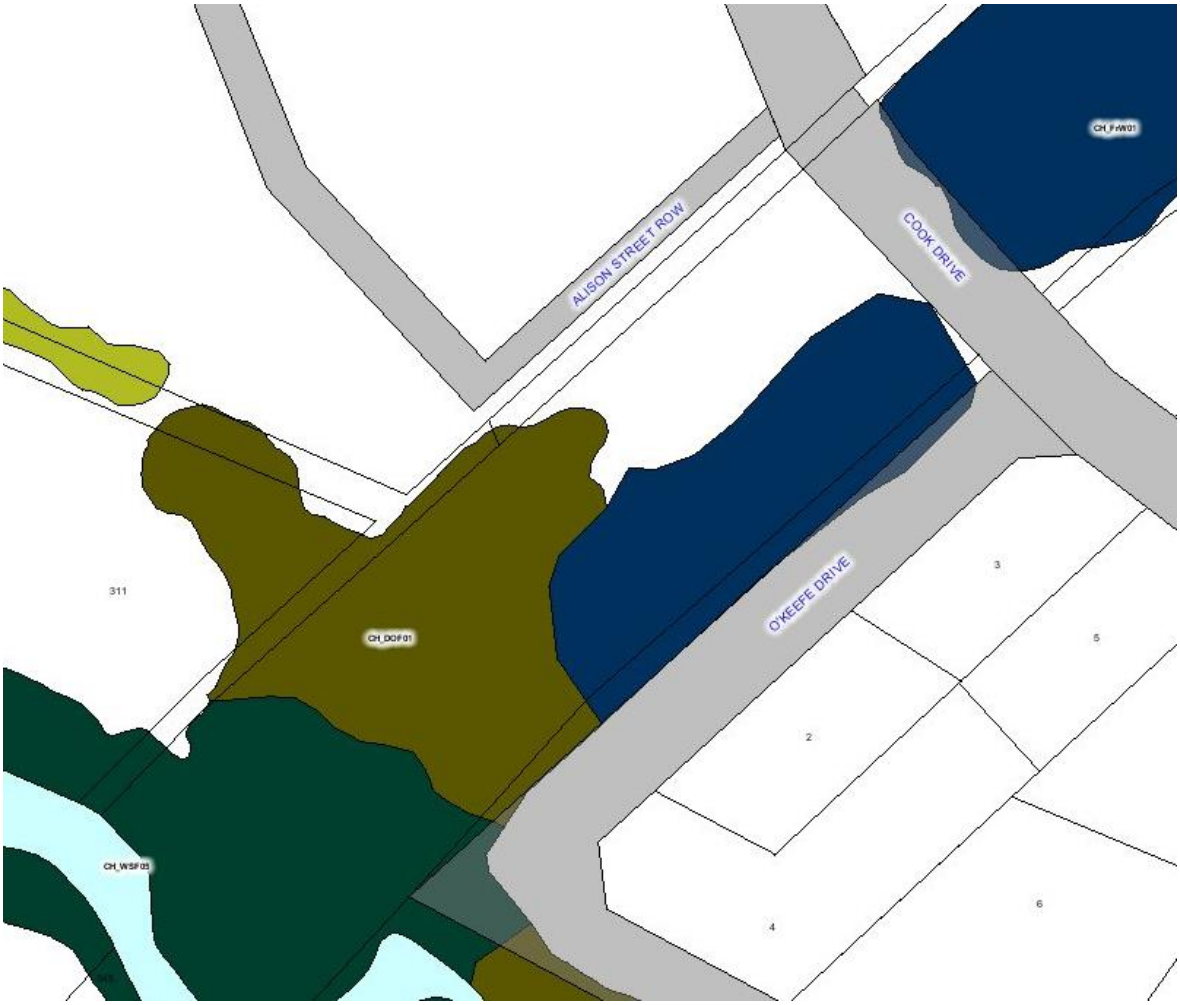


Figure 6: Vegetation Communities
(According to CHCC Fine Scale class 5 Vegetation Mapping)

(CH_FW 01) Broad-leaved Paperbark - Swamp Oak – Willow Bottle Brush Forested Wetland on Floodplain.

(CH_DOF 01) Blackbutt - Turpentine - Pink Bloodwood Grassy Dry Open to Tall Open Forest.

(CH_WSF 03) Turpentine – Sydney Blue Gum –Tallowwood Sheltered Wet Shrubby Forest of Metasedimentary Hinterland Foothills and Escarpment.

Conservation Significance

Endangered Ecological Communities (EEC's)

Elements of vegetation within the subject site fall within the categories of "Swamp Sclerophyll Forest on Coastal Floodplain" and "Subtropical Floodplain Forest" which are both Endangered Ecological Communities within the NSW North Coast Bioregion (listed on the Threatened Species Conservation Act 1995 (TSC Act).

Threatened Flora Species

A search of the NSW NPWS Wildlife Atlas revealed 50 threatened flora species with the potential to occur within the site, being recorded within a 5 kilometre radius of the site.

	Common name	Scientific name	NSW status	Comm. status
Plantae Flora Apiaceae	Mountain Angelica	^^Gingidia montana	E1,P,3	E
Apocynaceae	White-flowered Wax Plant	Cynanchum elegans	E1,P	E
	Slender Marsdenia	Marsdenia longiloba	E1,P	V
	Milky Silkpod	Parsonsia dorrigoensis	V,P	E
	Cryptic Forest Twiner	Tylophora woollsii	E1,P	E
Araceae	Stinky Lily	^^Typhonium sp. aff. brownii	E1,P,3	
Asteliaceae	Silver Sword Lily	Neoastelia spectabilis	V,P	V
Casuarinaceae	Dwarf Heath	Allocasuarina	E1,P	E

	Casuarina	defungens		
Corynocarpaceae	Glenugie Karaka	Corynocarpus rupestris subsp. rupestris	V,P	V
Cyperaceae	Square-stemmed Spike-rush	Eleocharis tetraquetra	E1,P	
Ebenaceae	Red-fruited Ebony	Diospyros mabacea	E1,P	E
Euphorbiaceae	Sand Spurge	Chamaesyce psammogeton	E1,P	
Fabaceae (Caesalpinioideae)	Rainforest Cassia	Senna acclinis	E1,P	
Fabaceae (Faboideae)	Coast Headland Pea	Pultenaea maritima	V,P	
	Silverbush	Sophora tomentosa	E1,P	
Fabaceae (Mimosoideae)	Newry Golden Wattle	Acacia chrysotricha	E1,P	
Haloragaceae	Tall Velvet Sea-berry	Haloragis exalata subsp. velutina	V,P	V
Lauraceae	Crystal Creek Walnut	Endiandra floydii	E1,P	E
	Rusty Rose Walnut	Endiandra hayesii	V,P	V
Lindsaeaceae	Slender Screw Fern	^^Lindsaea incisa	E1,P,3	

Menispermaceae	Tinospora Vine	Tinospora smilacina	E1,P	
Myrtaceae		Kardomia silvestris	E1,P	
	Peach Myrtle	Uromyrtus australis	E1,P	E
Orchidaceae	Spider orchid	^Dendrobium melaleucaphilum	E1,P,2	
	Rough Doubletail	^Diuris praecox	V,P,2	V
	Veined Doubletail	^Diuris venosa	V,P,2	V
	Yellow-flowered King of the Fairies	^Oberonia complanata	E1,P,2	
	Red-flowered King of the Fairies	^Oberonia titania	V,P,2	
	Brown Fairy-chain Orchid	^Peristeranthus hillii	V,P,2	
	Southern Swamp Orchid	^Phaius australis	E1,P,2	E
	Lady Tankerville's Swamp Orchid	^Phaius tancarvilleae	E1,P,2	E
	Ravine Orchid	^Sarcochilus fitzgeraldii	V,P,2	V
Poaceae	Floyd's Grass	Alexfloydia repens	E1,P	

	Hairy Jointgrass	Arthraxon hispidus	V,P	V
Polygonaceae	Tall Knotweed	Persicaria elatior	V,P	V
Proteaceae	Nightcap Oak	^Eidothea hardeniana	E1,P,2	CE
	Big Nellie Hakea	^^Hakea archaeoides	V,P,3	V
	Red Boppel Nut	Hicksbeachia pinnatifolia	V,P	V
	Rough-shelled Bush Nut	Macadamia tetraphylla	V,P	V
Rhamnaceae	Scant Pomaderris	Pomaderris queenslandica	E1,P	
Rubiaceae	Trailing Woodruff	Asperula asthenes	V,P	V
Rutaceae	Scented Acronychia	Acronychia littoralis	E1,P	E
	Orara Boronia	Boronia umbellata	V,P	V
	Headland Zieria	Zieria prostrata	E1,P	E
	Low growing form of Z. smithii, Diggers Head	Zieria smithii	E2	
Santalaceae	Austral Toadflax	Thesium australe	V,P	V
Sapindaceae	Small-leaved Tamarind	Diploglottis campbellii	E1,P	E

Sapotaceae	Rusty Plum, Plum Boxwood	Niemeyera whitei	V,P	
Simaroubaceae	Moonee Quassia	Quassia sp. Mooney Creek	E1,P	E
Winteraceae	Fragrant Pepperbush	Tasmannia glaucifolia	V,P	V

Table 1: Threatened species within 5 km radius according to the NSW NPWS Wildlife Atlas.

During site vegetation surveys:

No *Schedule 1* plant species under the *Threatened Species Conservation Act 1995(NSW)* were encountered.

No plant species from *Schedule 2* under the *Threatened Species Conservation Act 1995(NSW) were* encountered.

No threatened flora species from Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) were encountered.

No Rare plant species from the ROTAP (Rare or Threatened Australian Plants) list were encountered.

Although no Rare or Threatened Australian Plant (ROTAP) was located the following species may be present:

- *Senna acclinis* (Native Cassia)
- *Marsdenia longiloba*
- *Tylophora woollsii*
- *Niemeyera whitei* (Rusty Plum)

Senna acclinis could be confused with the exotic *Senna pendula.*

The same confusion could occur between *Marsdenia longiloba* and the exotic weed Moth Vine *Araujia hortorum*. The later having a milky sap and the former a clear sap, although there are other native Marsdenia sp. that are not ROTAP yet have a milky sap as the exotic Moth Vine.

It is recommended that any persons undertaking weed control activities in the Eucalypt Open Forest of the study area be informed of the presence of potential habitat for the threatened species *Marsdenia longiloba, Niemeyera whitei, Senna acclinis* and *Typhonium sp aff brownii* and be able to demonstrate an ability to recognise these species in the field.

Conservation Status

- Contains two EEC's 'Swamp Sclerophyll' and 'Subtropical Coastal Floodplain'.
- Mapped as Sub-regional Corridor and Key Habitat in the CHCC LGA as identified by: 'Scotts, D. (2003) Key habitats and corridors for forest fauna'.
- Protected by SEPP 14 Coastal Wetlands.
- Protected by SEPP 44 Koala Habitat.
- Primary Koala habitat (CHCC KPoM 2000).

Restoration Methodology

Outline

The aim of Bushland Regeneration work is to restore native vegetation, degraded by weed infestations, to a healthy intact and diverse ecosystem or to re-establish an area devoid of native vegetation.

To achieve this, two approaches may be taken:

- **Natural Regeneration:** - weed control is carried out but no planting of native species takes place relying on the inputs of seed from surrounding bushland (brought in by birds or other fauna, wind and water). It requires some form of native canopy to be present on the site. It also requires that there be a healthy area of bushland in close proximity or adjacent to the site.

- **Revegetation:** - planting of native species on site approximately 2- 3 metres apart. This is most applicable to areas that have severe weed infestations or that are devoid of native vegetation (eg grass paddocks)

A restoration works programme has two distinct phases that comprises a weed control component and, if applicable to the site, revegetation.

- **Primary treatment**: - Initial treatment of area.

  Weed control is undertaken to assist natural regeneration or in conjunction with revegetation. Weed control may involve control of all weed species present within the site or may be a staged process where a percentage is retained within the initial phase and controlled in subsequent secondary stages (e.g. canopy weed species). Low priority weed species may not require any control until the secondary phase(s). Revegetation in the initial works phase will generally focus on the planting of canopy and midstorey species with understory species generally planted after canopy establishment.

- **Secondary treatment**- Follow up work- consolidation of initial works.

  The aim is for this work to be timed as to prevent germinating weeds from reaching seeding stage as well as reducing the competition for natural regeneration or revegetation that has taken place following the initial works. To be most effective Follow-up work must be undertaken on a regular basis.

  Also may involve the completion of staged weed removal that was initiated in the primary control phase or control of low priority weed species.

It may take up to 10 years before the native vegetation is stable enough to out compete weed species/ and or the weed seed bank has been exhausted.

Replacement of any revegetation plantings that did not survive is required in this phase and also may involve planting of supplementary groundcover species.

Weed Control

Overview

The weed control works that are presented in this VMP have been designed to address a range of requirements and issues that exist across the subject site. All works shall be carried out following the guidelines and techniques as recommended by the Australian Association of Bushland Regenerators (AABR).

Due to the abundance of native vegetation of medium and high ecological value and the possible presence of undetected threatened species (*Senna acclinis*, *Marsdenia longiloba, Neimeyera whitei*) environmentally sensitive weed control techniques are required.

Machinery and Powerspray units shall **not be used** for the control of weeds at this site.

All weed species present are listed in *Appendix 6.* Profiles of the weed species and control techniques are included in *Appendix 7.*

Initial Works Programme

The initial weed control programme shall target all weeds outlined for each of the Management zone categories.

During the initial phases of the weed control works, Tobacco Bush (*Solanum mauritianum*) shall be considered as a pioneer species and left untreated to assist with natural regeneration. Wild Tobacco shall be treated as a native pioneer species until the native vegetation is established and providing an intact canopy cover, at which time it may then be controlled.

Follow-up Works Programme

Follow up weed control works shall include the continued suppression and removal of identified weed species for each zone. Any opportunistic weed species not already identified shall be incorporated into the follow up weed control works for treatment.

Follow up works shall involve continued weed control targeting the main weed species and any opportunistic weeds.

This shall involve the periodic manual removal and spot spraying of weeds (before seed set). Follow up work shall involve regular weed control and this shall take place every 8 weeks for 2 years and thereafter every 4 months for the following 3 years.

Newly emerging weeds may be species that are not currently occurring on this site. Weed species that are present in the local area and therefore may germinate on the site in the future and shall require control are outlined in *Appendix 7*.

Natural Regeneration

- Natural regeneration shall be assisted by not targeting, within the scope of the weed control programme, specific exotic species that assist natural regeneration (e.g. Tobacco Bush and annuals such as Farmers Friends and Ragweed)

Koala Habitat

The CHCC Koala Plan of Management (KPoM) has identified most of the subject site as Primary Habitat, and therefore any operations under development must comply with the KPoM directions of habitat restoration.

Commercial Availability of Local Provenance

The commercial availability of some species is an issue as there is a limited diversity of species available (unless of course specifically propagated for a particular project).

This is especially relevant for Eucalypt species that, unlike rainforest species, cannot be held in nurseries for extended periods of time prior to planting. Many groundcover species are not commercially available.
Possible solutions to lack of commercial availability of required species include:

- Project planning to be undertaken over a longer period of time to allow for the collection of local provenance seed and its propagation. This would require landholders/ land managers/developers being made aware of this requirement.
- Purchase of non provenance sources.
- Reduce the diversity of species planted initially and enrich over time(with associated follow up works) as species propagated from locally sourced seed become available.

Promote natural regeneration

Initial weed control work will target ground, mid-storey and canopy weed species. The weed control program addresses the required treatments for the suppression of the targeted weed species and will result in promoting natural regeneration to occur with the aim of establishing a more self-sustaining environment.

Monitoring

Monitoring will be undertaken in conjunction with the Follow-up Works Programme, and will comprise the following:

- Check for survival rates.
- Check soil moisture and undertaken watering if required.
- Check for encroaching weeds and native vines to ensure seedling growth is not adversely affected. Vine species shall be cut back to a reasonable distance.

Vegetation Management Strategy

Vegetation Management Zones

The site has been divided into 4 "Vegetation Management Zones" that are displayed on the Site Map in Appendix 1.

Zone 1: is located in the north east corner of the site. It is occupied by the swamp sclerophyll vegetation and is zoned 7A. Dominant canopy species are Swamp Mahogany; midstorey/understorey is dominated by Willow Bottlebrush and Saw Sedge with occasional environmental weeds.

Zone 2: is located in the south-western corner of the subject site. Dominant canopy species are Tallowwood and Blackbutt. Midstorey/understorey contains rainforest tree species interspersed with low densities of environmental weeds including Cocos Palm and Broad Leaved Paspalum.

Zone 3: is located along the northern and western edges of zone 1 and zone 2. This zone is a thin strip of dense environmental weeds containing Lantana, Senna, Guinea Grass, Paspalum sp., Crofton Weed and Japanese Sunflower among others.

Zone 4: is located in a band that stretches down into the centre of zone 2 and is occupied by dense Broad Leaved Paspalum. Dominant canopy species are Tallowwood and Blackbutt.

Management Zone 1

Outline

Resilience

The vegetation in this area is dominated by Swamp Mahogany forested wetland. This vegetation is intact and resilient with a dense canopy of native species however it is a narrow strip exposed on three sides and shall remain under pressure from weed invasion especially in the vicinity of the edges. Environmental weeds present are diverse and well distributed throughout the zone however their densities are generally low.

Restoration Techniques

The zone shall require all environmental weeds to be controlled with regular follow up undertaken to achieve eradication. This shall be achieved by qualified Professional Bushland Regenerators (PBRs) sweeping through the zone with the aim of treating all individuals of environmental weeds located within the zone.

Sensitive weed control undertaken at regular intervals shall allow for the retention of site resilience by carefully treating environmental weeds without harming native vegetation.

Methods to be used shall involve manual removal, cut and paint technique, stem injection and foliar application of herbicide.

Follow up weed control shall be undertaken at regular intervals and aim at controlling environmental weeds at the seed ling stage. Undertaken over a 5 year period this follow up weed control shall allow for the eradication of all environmental weeds from the zone.

Restoration Goals

- Control and eventual eradication of all environmental weeds.
- Increase in site resilience.

Threatening Processes

- Shade tolerant environmental weeds such as Asparagus Fern, Cocos Palm and Broad Leaved Paspalum continuing to disperse throughout the zone and impeding the regeneration of native vegetation and thus restricting the development of site resilience.

Mitigation Strategies

- The site shall be subject to a weed control programme utilising regular waves of targeted weed control to eradicate all environmental weeds from the site.

Figure 7. Resilience Swamp Sclerophyll vegetation in Zone 1, showing Cocos Palm in foreground.

Initial Works

Initial works required include weed control and revegetation works

Weed Control and Site Preparation

This shall involve the control of all Environmental and Noxious weeds in this zone as shown in *Table 2* and listed in *Appendix 6*.

Botanical Name	Common Name	Legal or Risk Status	Population Structure
Syagrus romanzoffiana	*Cocos Palm*	Med. Risk Env. weed	Lightly scattered across zone
Lantana camara	Lantana	Class 3 noxious	Lightly scattered across zone
Senna pendula	Senna	Med. Risk Env. weed	Lightly scattered across zone
Paspalum mandiocanum	Broad-leaf Paspalum	Med. Risk Env. weed	Lightly scattered across zone
Asparagus aethiopicus	Asparagus Fern	WoNS	Lightly scattered across zone

Table2: Weed species present Zone 1

This shall involve treatments as outlined in *Table 3*. Detailed bushland regeneration weed control techniques including relevant herbicides and application rates are given in *Appendix 7*.

Technique	Species	Life Stage	Comments	Optimal Control Period
Cut & Paint	Senna	Mature		Prior to flowering in April
	Cocos Palm	Juvenile		
	Lantana	sapling		
Direct Inject	Cocos Palm	mature		
Manual Removal	Senna	seedlings		
	Lantana	Seedling/mature		
	Asparagus	mature	Remove where climbing on native seedlings	
	Paspalum	mature	Remove within 50cm from native grasses prior to spraying	Late Summer/ Autumn
Spraying	Paspalum	mature	Refer above	Late Summer/ Autumn
	Asparagus	mature		Before fruiting in Autumn

Table 3: Weed Control Requirements

Management Zone 2

Outline

Resilience

The vegetation in this area is Tallowwood/ Blackbutt dry open forest. This vegetation is intact and relatively resilient with a dense canopy of native species however it is suffering from a degree of weed infestation with woody weeds such as Senna and Lantana present and grasses especially Broad Leaved Paspalum requiring control. Weed densities are generally low.

Restoration Techniques

The zone shall require all environmental weeds to be controlled with regular follow up undertaken to achieve eradication. This shall be achieved by qualified Professional Bushland Regenerators (PBRs) sweeping through the zone with the aim of treating all individuals of environmental weeds located within the zone.

Sensitive weed control undertaken at regular intervals shall allow for the retention of site resilience by carefully treating environmental weeds without harming native vegetation.

Methods to be used shall involve manual removal, cut and paint technique, stem injection and foliar application of herbicide.

Follow up weed control shall be undertaken at regular intervals and aim at controlling environmental weeds at the seed ling stage. Undertaken over a 5 year period this follow up weed control shall allow for the eradication of all environmental weeds from the zone.

Restoration Goals

- Control and eventual eradication of all environmental weeds.
- Increase in site resilience.

Threatening Processes

- Shade tolerant environmental weeds such as Asparagus Fern, Cocos Palm and Broad Leaved Paspalum continuing to disperse throughout the zone and impeding the regeneration of native vegetation and thus restricting the development of site resilience.

Mitigation Strategies

- The site shall be subject to a weed control programme utilising regular waves of targeted weed control to eradicate all environmental weeds from the site.

Figure 8. Broad Leaved Paspalum in Zone 2

Initial Works

Initial works required include weed control and revegetation works

Weed Control and Site Preparation

This shall involve the control of all Environmental and Noxious weeds in this zone as shown in *Table 4* and listed in *Appendix 6*.

Botanical Name	Common Name	Legal or Risk Status	Population Structure
Syagrus romanzoffiana	*Cocos Palm*	Med. Risk Env. weed	Lightly scattered across zone
Lantana camara	Lantana	Class 3 noxious	Lightly scattered across zone
Senna pendula	Senna	Med. Risk Env. weed	Lightly scattered across zone
Paspalum mandiocanum	Broad-leaf Paspalum	Med. Risk Env. weed	Lightly scattered across zone
Asparagus aethiopicus	Asparagus Fern	WoNS	Lightly scattered across zone
Cinnamomum camphora	Camphor Laurel	High risk env. weed	Lightly scattered across zone

Table 4: Weed species present Zone 2

This shall involve treatments as outlined in *Table 5*. Detailed bushland regeneration weed control techniques including relevant herbicides and application rates are given in *Appendix 7*.

Technique	Species	Life Stage	Comments	Optimal Control Period
Cut & Paint	Senna	Mature		Prior to flowering in April
	Cocos Palm	Juvenile		
	Camphor Laurel	Juvenile		
	Lantana	sapling		
Direct Inject	Cocos Palm	mature		
	Camphor Laurel	mature		
Manual Removal	Senna	seedlings		
	Lantana	Seedling/mature		
	Asparagus	mature	Remove where climbing on native seedlings	
	Paspalum	mature	Remove within 50cm from native grasses prior to spraying	Late Summer/ Autumn
Spraying	Paspalum	mature	Refer above	Late Summer/ Autumn
	Asparagus	mature		Before fruiting in Autumn

Table 5: Weed Control Requirements

Management Zone 3

Outline

Resilience

The vegetation in this area is dominated by environmental weeds. Canopy species of the native communities are present however this zone is an edge along the north west of zone1 and zone 2 and as such has exposure to drying and high light levels. This zone appears to have undergone recent disturbance. The vegetation is lacking in resilience and high densities of weed infestation are present with woody weeds such as Senna and Lantana present amongst grasses such as Broad Leaved Paspalum, Setaria, Torpedo Grass and Guinea Grass with Japanese Sunflower and Crofton weed also present.

Restoration Techniques

The zone shall require all environmental weeds to be controlled with regular follow up undertaken to achieve eradication. This shall be achieved by qualified Professional Bushland Regenerators (PBRs) sweeping through the zone with the aim of treating all individuals of environmental weeds located within the zone.

Sensitive weed control undertaken at regular intervals shall allow for the development of site resilience by carefully treating environmental weeds without harming native vegetation.

Methods to be used shall involve manual removal, cut and paint technique, stem injection and foliar application of herbicide.

Follow up weed control shall be undertaken at regular intervals and aim at controlling environmental weeds at the seed ling stage. Undertaken over a 5 year period this follow up weed control shall allow for the eradication of all environmental weeds from the zone.

Restoration Goals

- Control and eventual eradication of all environmental weeds.
- Canopy establishment.
- Understorey and midstorey development.
- Restoration of site resilience.

Threatening Processes

- Dense environmental weed infestation restricting the regeneration of native vegetation.
- Dense environmental weed infestation providing seed sources to disperse throughout the remainder of the site.

Mitigation Strategies

- Initial weed control shall remove all weeds in preparation for revegetation.
- Revegetation shall be undertaken to begin lowering light levels to aid in reducing the density of environmental weeds.
- Densely foliaged edge species compatible with the vegetation communities present shall be utilised to screen the edge.
- The site shall be subject to a weed control programme utilising regular waves of targeted weed control to eradicate all environmental weeds from the site.

Figure 9. Dense Crofton Weed in Zone 3

Initial Works

Initial works required include weed control and revegetation works

Weed Control and Site Preparation

This shall involve the control of all Environmental and Noxious weeds in this zone as shown in *Table 6* and listed in *Appendix 6.*

Botanical Name	Common Name	Legal or Risk Status	Population Structure
Syagrus romanzoffiana	*Cocos Palm*	Med. Risk Env. weed	Lightly scattered across zone
Lantana camara	Lantana	Class 3 noxious	Dense infestations throughout zone
Senna pendula	Senna	Med. Risk Env. weed	Dense infestations throughout zone
Paspalum mandiocanum	Broad-leaf Paspalum	Med. Risk Env. weed	Lightly scattered across zone with occasional dense infestations.
Asparagus aethiopicus	Asparagus fern	WoNS	Lightly scattered across zone
Cinnamomum camphora	Camphor Laurel	High risk env. weed	Lightly scattered across zone
Ageratina adenophora	Crofton Weed	Class 4 noxious	Scattered across zone
Tithonia diversifolia	Japanese Sunflower	Med. Risk Env. weed	Occasional dense infestations.
Philodendron sp.		Low Risk Env. weed	Localised infestation.
Megathursis maximus	Guinea Grass	Med. Risk Env. weed	Occasional dense infestations.
Panicum repens	Torpedo Grass	Med. Risk Env. weed	Occasional dense infestations.
Ipomoea purpurascens	Morning Glory	Med. Risk Env. weed	Small infestation
Melicope eleryana	Pink Euodia	Low Risk Env. weed	Occasional individuals
Koelruteria paniculata	Golden Rain Tree	Low Risk Env. weed	Occasional individuals
Setaria sphacelata	Setaria	Med. risk env. weed	Scattered across zone

Table 6: Weed species present Zone 3

This shall involve treatments as outlined in *Table 7*. Detailed bushland regeneration weed control techniques including relevant herbicides and application rates are given in *Appendix 7*.

Technique	Species	Life Stage	Comments	Optimal Control Period
Cut & Paint	Senna	Mature		Prior to flowering in April
	Cocos Palm	Juvenile		
	Camphor Laurel	Juvenile		
	Lantana	sapling		
Direct Inject	Cocos Palm	mature		
	Camphor Laurel	mature		
Manual Removal	Senna	seedlings		
	Lantana	Seedling/mature		
	Asparagus	mature	Remove where climbing on native seedlings	
	Paspalum	mature	Remove within 50cm from native grasses prior to spraying	Late Summer/ Autumn
Spraying	Paspalum	mature	Refer above	Late Summer/ Autumn
	Asparagus	mature		Before fruiting in Autumn

Table 7: Weed Control Requirements

Revegetation methodology

Revegetation shall been undertaken across the zone with the aim of closing the canopy whilst boosting diversity. Trees shall be planted at spacing of 3m centres throughout the zone.

Direct planting

It is an approximate area 500^2.

This shall involve the planting of 50 indigenous native tree species at plant spacings of 3 metre centres in all areas devoid of canopy. Planting shall be done following initial weed control as described above.

Detailed revegetation methodology.

Detailed site preparation and planting requirements are given in *Appendix 8.*

Revegetation Species

Species required shall be a mixture of Midstorey:

Midstorey Species		
Botanical Name	**Common Name**	
Acronychia oblongifolia	Common Acronychia	5
Acacia melanoxylon	Blackwood	10
Cryptocarya microneura	Murrogun	5
Elaeocarpus obovatus	Hard Quandong	5
Endiandra discolor	Rose Walnut	5
Eucalyptus microcorys	Tallowwood	10
Euroshinus falcattus	Ribbonwood	5
Syncarpia glomulifera	Turpentine	5

Table 8: Zone 3 revegetation species list

These native indigenous species shall:

- Be tubestock grown from local provenance seed (i.e. seed collected within a 50 kilometres radius of Coffs Harbour)
- Be planted using slow release fertiliser and water retention crystals,
- Have jute weed mats for weed control.
- Have large plastic tree guards installed for protection against Wallaby predation.
- Be watered on installation and depending on the soil moisture during the plant establishment phase, additional watering may be required.

Revegetation Follow up works

- Follow up weed control works shall include the continued suppression and removal of identified weed species in each Zone. Any opportunistic weed

species not already identified shall be incorporated into the follow up weed control works for treatment.
- Any plant losses shall be replaced.
- Emergent seedlings of native species introduced to the site by fauna, shall require monitoring and identification. Native species that are not consistent with the vegetation community shall be removed.
- It may be necessary to prune native vines that are in close proximity to native seedlings. Pruning of the vines will allow for uninhibited growth of the native seedlings, until such time as they are established.

Any revegetation plantings that die within the 5 year plan period shall be replaced within the scope of the Follow-up Works programme at the owner's expense.

Management Zone 4

Outline

Resilience

The vegetation in this area is dominated by the Tallowwood/Blackbutt dry open forest community. Canopy species are present however disturbance and increased light levels have allowed for the invasion of the zone by Broad Leaved Paspalum. The vegetation is somewhat resilient owing to the canopy species present although further reductions in light levels by revegetation would facilitate the eradication of Broad Leaved Paspalum and thus aid the enhancement of site resilience.

Restoration Techniques

The zone shall require Broad Leaved Paspalum to be controlled with regular follow up undertaken to achieve eradication. This shall be achieved by qualified Professional Bushland Regenerators (PBRs) sweeping through the zone with the aim of treating all Broad Leaved Paspalum located within the zone.

Sensitive weed control undertaken at regular intervals shall allow for the retention of site resilience by carefully treating environmental weeds without harming native vegetation.

Methods to be used shall involve manual removal, wick wiping and foliar application of herbicide.

The establishment of a dense layer of native grasses shall be encouraged by sensitive weed control. This ground layer shall aid in reducing large germinations from the seed bank and facilitate the eventual eradication of Broad Leaved Paspalum

Follow up weed control shall be undertaken at regular intervals and aim at controlling Paspalum before seeding in autumn. A minimum 5 year period of comprehensive follow up weed control shall be required to achieve the eradication of Broad Leaved Paspalum from the zone.

Restoration Goals

- Control and eventual eradication of Broad Leaved Paspalum.
- Canopy closure/consolidation.
- Understorey and midstorey development.
- Restoration of site resilience.
- Increased floristic diversity.
- Establishment of dense native ground cover.

Threatening Processes

- Dense Broad Leaved Paspalum infestation restricting the regeneration of native vegetation.
- Dense Broad Leaved Paspalum providing seed sources to disperse throughout the remainder of the site.

Mitigation Strategies

- Initial weed control shall remove Broad Leaved Paspalum in preparation for revegetation.
- Revegetation shall be undertaken to begin lowering light levels and aid in reducing the density of Broad Leaved Paspalum germination.
- Species compatible with the vegetation communities present shall be utilised to aid in boosting floristic diversity and developing site resilience. .
- The site shall be subject to a weed control programme utilising regular waves of targeted weed control to eradicate all environmental weeds from the site.

Figure 10. Zone 4: Dense Broad Leaved Paspalum infestation

Initial Works

Initial works required include weed control and revegetation works

Weed Control and Site Preparation

This shall involve the control of all Environmental and Noxious weeds in this zone as shown in *Table 9* and listed in *Appendix 6.*

Botanical Name	Common Name	Legal or Risk Status	Population Structure
Paspalum mandiocanum	Broad-leaf Paspalum	Med. Risk Env. weed	Lightly scattered across zone with occasional dense infestations.

Table 9: Weed species present Zone 4

This shall involve treatments as outlined in *Table 10*. Detailed bushland regeneration weed control techniques including relevant herbicides and application rates are given in *Appendix 7*.

Technique	Species	Life Stage	Comments	Optimal Control Period
Manual removal	Paspalum	Mature	Remove within 50cm from native grasses prior to spraying	Prior to flowering in April
Wick Wiping	Paspalum	mature	Where understorey of native grasses exists.	Late Summer/ Autumn
Spraying	Paspalum	mature	Refer above	Late Summer/ Autumn

Table 10: Weed Control Requirements

Revegetation methodology

Revegetation shall been undertaken across the zone with the aim of closing the canopy whilst boosting diversity. Trees shall be planted at spacing of 3m centres throughout the zone.

Direct planting

It is an approximate area 500².

This shall involve the planting of 50 indigenous native tree species at plant spacings of 3 metre centres in all areas devoid of canopy. Planting shall be done following initial weed control as described above.

Detailed revegetation methodology.

Detailed site preparation and planting requirements are given in *Appendix 9.*

Revegetation Species

Species required shall be a mixture of Canopy and Midstorey:

Midstorey Species		
Botanical Name	**Common Name**	
Acronychia oblongifolia	Common Acronychia	5
Acacia melanoxylon	Blackwood	20
Cryptocarya microneura	Murrogun	5
Eucalyptus microcorys	Tallowwood	10
Eucalyptus robusta	Swamp Mahogany	5
Euroshinus falcattus	Ribbonwood	5
Pittosporum undulatum	Sweet Pittosporum	5
Syncarpia glomulifera	Turpentine	5

Table 11: Zone 4 revegetation species list

These native indigenous species shall:

- Be tubestock grown from local provenance seed (i.e. seed collected within a 50 kilometres radius of Coffs Harbour)
- Be planted using slow release fertiliser and water retention crystals,
- Have jute weed mats for weed control.
- Have large plastic tree guards installed for protection against Wallaby predation.
- Be watered on installation and depending on the soil moisture during the plant establishment phase, additional watering may be required.

Revegetation Follow up works

- Follow up weed control works shall include the continued suppression and removal of identified weed species in each Zone. Any opportunistic weed species not already identified shall be incorporated into the follow up weed control works for treatment.
- Any plant losses shall be replaced.
- Emergent seedlings of native species introduced to the site by fauna, shall require monitoring and identification. Native species that are not consistent with the vegetation community shall be removed.
- It may be necessary to prune native vines that are in close proximity to native seedlings. Pruning of the vines will allow for uninhibited growth of the native seedlings, until such time as they are established.

Any revegetation plantings that die within the 5 year plan period shall be replaced within the scope of the Follow-up Works programme at the owner's expense.

Maintenance, Monitoring and Reporting

On ground maintenance of restoration/ revegetation works

- The subject site shall require a 5 year maintenance programme.
- Maintenance and Follow Up weed control shall be undertaken every 8 weeks for the first 2 years followed by every 4 months for the remaining 3 years.
- Depletion of the seed bank of Broad Leaved Paspalum shall be a priority across the site.

Monitoring

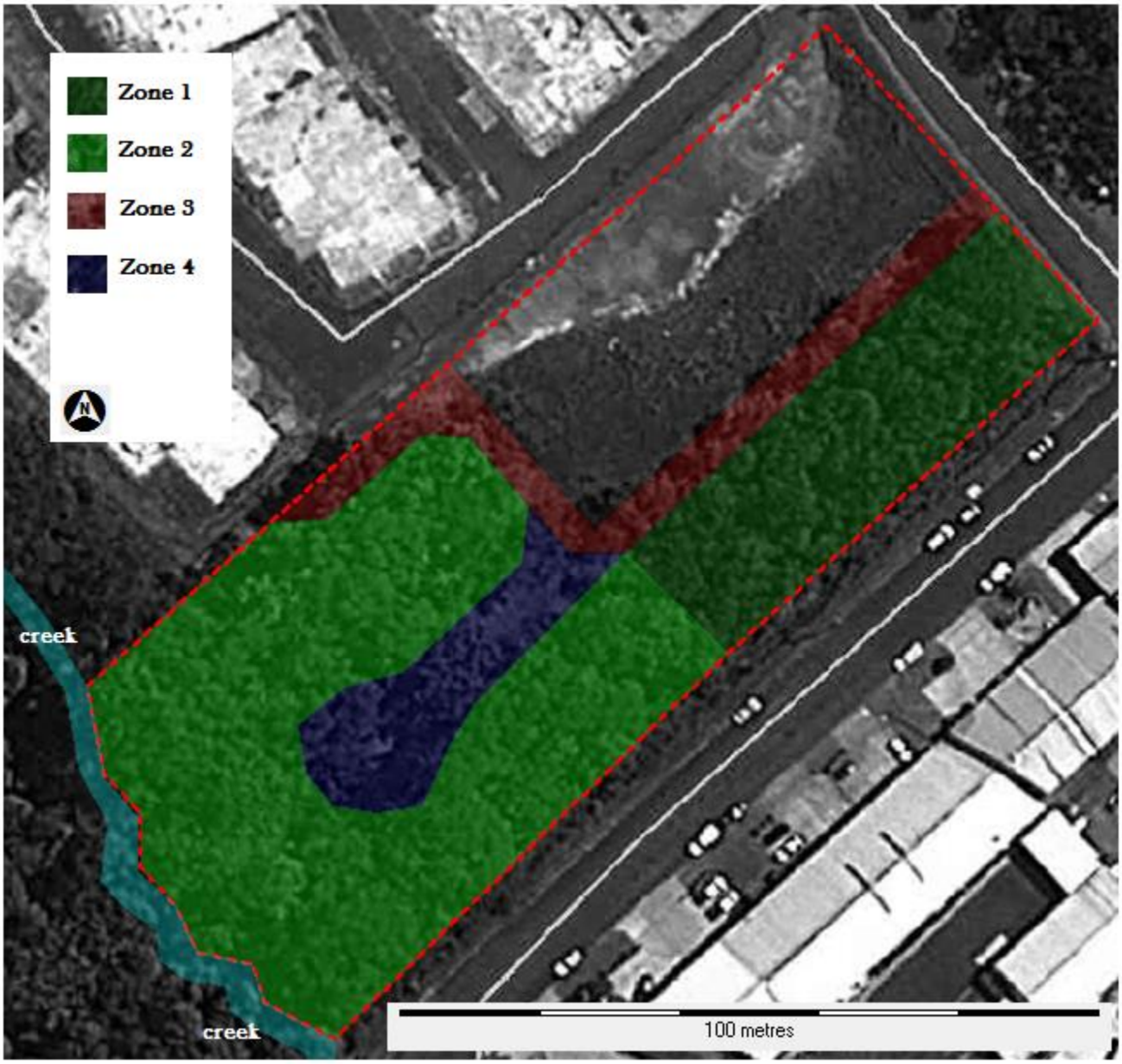
Monitoring will be undertaken in conjunction with follow up weed control works, and will comprise the following:

- Check for survival rates.
- Check soil moisture and undertaken watering if required.
- Check for encroaching weeds and native vines to ensure. seedling growth is not adversely affected. Vine species shall be cut back to a reasonable distance.
- Bag protection is in place correctly
- Check general health of plants – to estimate further fertiliser application requirements.
- Check for human disturbance of the plantings.

Reporting

- This VMP covers a 5 year period.
- CCBR or a suitably qualified consultant shall provide a report (Statement of Completion) upon satisfactory completion of the Initial works described in this VMP.
- CCBR or a suitably qualified consultant shall also provide to CHCC yearly reports throughout the five year Follow-up Works period.

Appendix 1: Site Plan



Appendix 2: Aerial Photo (with 10m contours)

Appendix 3: LEP Mapping

Appendix 4: Koala Habitat Mapping (CHCC KPoM)

Appendix 5: Native Indigenous Flora Species List

Plant Family	*Botanical Name*	Common Name	Habit
FERNS			
Aspleniaceae			
	Asplenium australasicum	Bird's Nest Fern	Epiphytic Fern
Adiantaceae			
	Adiantum hispidulum	Rough Maidenhair	Ground Fern
Blechnaceae			
	Blechnum cartiliagineum	Gristle Fern	Ground Fern
	Doodia aspera	Rasp Fern	Ground Fern
Cyatheaceae			
	Cyathea australis	Rough Tree Fern	Tree Fern
	Cyathea cooperi	Smooth Tree fern	Tree Fern
Dennstaedtiaceae			
	Calochlaena dubia	Soft Bracken Fern	Ground Fern
	Pteridium esculentum	Bracken Fern	Ground Fern
Polypodiaceae			
	Platycerium bifurcatum	Elk Horn Fern	Epiphytic Fern
	Platycerium superbum	Stag Horn	Epiphytic Fern
MONOCOTYLEDONS			
Araceae			
	Gymnostachys anceps	Settlers Flax	Sedge
Arecaceae			
	Archontophoenix cunninghamiana	Bangalow Palm	Feather Palm
Asteliaceae			
	Cordyline stricta	Narrow Leaved Palm Lily	Shrub
Cyperaceae			
	Cyperus difformis	Cyperus	Sedge

	Gahnia aspera	Rough Saw Sedge	Sedge
	Gahnia clarkei	Saw Sedge	Sedge
Dasypogonaceae			
	Lomandra hystrix	Mat Rush	Sedge
	Lomandra longifolia	Mat Rush	Sedge
Flagellariaceae			
	Flagellaria indica	Whip Vine	Vine
Juncaceae			
	Juncus usitatus	Common Rush	Rush
Phormiaceae			
	Dianella caerulea	Blue Flax Lilly	Flax
Poaceae			
	Entolasia stricta	Wiry Panic	Grass
	Imperata cylindrica	Blady Grass	Grass
	Oplismenus aemulus	Basket Grass	Grass
	Oplismenus imbecillis	Creeping Beard Grass	Grass
	Oplismenus undulatifolius	Creeping Beard Grass	Grass
	Ottochloa gracillima	Slender Shade Grass	Grass
Smilacaceae			
	Smilax australis	Austral Sarsaparilla	Vine
	Smilax glyciphylla	Sweet Sarsaparilla	Vine
Typhaceae			
	Typha orientalis	Broadleaf Cumbungi	Aquatic Perennial
DICOTYLEDONS			
Anacardiaceae			
	Euroschinus falcatus	Ribbonwood	Tree
Apiaceae			
	Centella asiatica	Pennywort	Herb
Apocynaceae			
	Marsdenia rostrata	Common Milk Vine	Vine
	Parsonsia straminea	Common Silk Pod	Vine
	Tabernaemontana	Banana Bush	Shrub

	pandacaqui		
Araliaceae			
	Polyscias sambucifolia	Elderberry Panax	Shrub
Asteraceae			
	Ozothamnus diosmifolius	Tick Bush	Shrub
Casuarinaceae			
	Allocasuarina littoralis	Black Oak	Tree
	Allocasuarina torulosa	Forest Oak	Tree
Celastraceae			
	Denhamia celastroides	Orange Boxwood	Tree
Commelinaceae			
	Commelina cyanea	Commelina	Herb
Convolvulaceae			
	Dichondra repens	Kidney Weed	Herb
Cunoniaceae			
	Callicoma serratifolia	Callicoma	Tree
	Schizomeria ovata	Crab-apple	Tree
Dioscoreaceae			
	Dioscorea transversa	Native Yam	Vine
Ericaceae			
	Trochocarpa laurina	Tree Heath	Tree
Elaeocarpaceae			
	Elaeocarpus reticulatus	Blueberry Ash	Tree
Euphorbiaceae			
	Claoxylon australe	Brittlewood	Tree
Eupomatiaceae			
	Eupomatia laurina	Bolwarra	Tree
	Eupomatia bennettii	Small Bolwarra	Shrub
Fabaceae			
Mimosoideae			
	Acacia fimbriata	Fringed Wattle	Tree
	Acacia melanoxylon	Blackwood	Tree

	Archidendron grandiflorum	Pink Lace Flower	Tree
Flacourtiaceae			
	Scolopia braunii	Flintwood	
Lamiaceae			
	Clerodendron floribundum	Smooth Clerodendron	Tree
Lauraceae			
	Cryptocarya microneura	Murrogun	Tree
	Cryptocarya rigida	Forest Maple	Tree
	Cryptocarya triplinervis	Three-veined Laurel	Tree
	Endiandra discolor	Rose Walnut	Tree
	Endiandra muelleri	Green Leaf Rose Walnut	Tree
	Endiandra virens	White Apple	Tree
	Litsea australis		Tree
	Neolitsea dealbata	White Bollygum	Tree
Lobeliaceae			
	Lobelia trigonocaulis	Forest Lobelia	Herb
	Pratia purpurascens	White Root	Herb
Luzuriagaceae			
	Eustrephus latifolius	Wombat Berry	Vine
	Geitonoplesium resinosum	Scrambling Lilly	Vine
Malvaceae			
	Seringia arborescens	Seringia	Shrub
Meliaceae			
	Synoum glandulosum	Scentless Rosewood	Tree
Menispermaceae			
	Stephania japonica	Snake Vine	Vine
Monimiaceae			
	Wilkiea huegeliana	Veiny Wilkiea	
Moraceae			
	Ficus coronata	Creek Sandpaper Fig	Tree

	Ficus rubiginosa	Port Jackson Fig	Tree
	Ficus watkinsiana	Strangler Fig	Tree
	Maclura cochinchinensis	Cockspur Thorn	Vine
Myrtaceae			
	Angophora costata	Smooth-barked Apple	Tree
	Callistemon salignus	Willow Bottlebrush	Tree
	Corymbia intermedia	Pink Bloodwood	Tree
	Eucalyptus grandis	Flooded Gum	Tree
	Eucalyptus microcorys	Tallowwood	Tree
	Eucalyptus pilularis	Blackbutt	Tree
	Eucalyptus robusta	Swamp Mahogany	Tree
	Lophostemon confertus	Brush Box	Tree
	Lophostemon suaveolens	Swamp Box	Tree
	Melaleuca styphelioides	Prickly Leaved Tea Tree	Tree
	Rhodamnia rubescens	Scrub Turpentine	Tree
	Syncarpia glomulifera	Turpentine	Tree
	Syzygium smithii	Lilly Pilly	Tree
	Syzygium oleosum	Blue Lilly Pilly	Tree
Oleaceae			
	Notelaea longifolia	Mock Olive	Tree
Phyllanthaceae			
	Breynia oblongifolia	Coffee Bush	Tree
	Glochidion ferdinandi	Cheese Tree	Tree
Pittosporaceae			
	Pittosporum revolutum	Hairy Pittosporum	Shrub
	Pittosporum undulatum	Sweet Pittosporum	Tree
Rhamnaceae			
	Alphitonia excelsa	Red Ash	Tree
Rousseaceae			
	Cuttsia viburnea	Cuttsia	Tree
Rubiaceae			
	Cyclophyllum	Coast Canthium	Tree

	longipetalum		
	Morinda jasminoides	Morinda	Vine
Rutaceae			
	Acronychia oblongifolia	Common Acronychia	Tree
Sapindaceae			
	Cupaniopsis anacardioides	Tuckeroo	Tree
	Dodonaea triquetra	Hop Bush	Tree
	Guioa semiglauca	Guioa	Tree
	Jagera pseudorhus	Foambark	Tree
	Mischocarpus pyriformis	Yellow Pear Fruit	Tree
Solanaceae			
	Duboisia myoporoides	Soft Corkwood	Tree
Uvulariaceae			
	Tripladenia cunninghamii	Tripladenia	Herb
Vitaceae			
	Cissus antarctica	Kangaroo Grape	Vine
	Cissus hypoglauca	Water Vine	Vine
Violaceae			
	Viola hederacea	Native Violet	Herb

Appendix 6: Weed Species List

Botanical Name	Common Name	Noxious Weed Category
Ageratina adenophora	Crofton Weed	Class 4
Ageratum houstonianum	Blue Billy Goat Weed	Env.
Cinnamomum camphora	Camphor Laurel	Env.
Euodia elleryana	Pink Euodia	Env.
Hibiscus spp.	Hibiscus	Env.
Ipomoea indica	Morning Glory	Env.
Koelreuteria paniculata	Golden Rain Tree	Env.
Lantana camara	Lantana	Class 3
Paspalum urvillei	Giant Paspalum	Env.
Paspalum mandiocanum	Broadleaf Paspalum	Env.
Philodendron spp.	Philodendron	Env.
Asparagus aethiopicus	Ground Asparagus	WoNS
Senna pendula var glabrata	Senna	Env.
Syagrus romanzoffiana	Cocos Palm	Env.
Tithonia diversifolia	Japanese Sunflower	Env.

Appendix 8: Weed Profiles and Control Techniques

The weed species shown in Appendix 8 include those that are currently present on the site as well as those species that are not present at this point in time, but that do occur in the local area.

Weed Profiles

Weeds marked with an * although not currently listed on the CHCC environmental weed list are recognized as being bushland weeds by bushland regenerators/ ecologists.

***Ageratina adenophora* Crofton Weed** erect multi stemmed perennial herbs up to 1-2 metres high grows in full sun or shade but enjoys moist sites especially, and bare soil. Wind dispersed seeds. Forms dense cover inhibiting natural regeneration. **Class 4 noxious weed**
Control: manually remove or; spray seedlings with glyphosate; mature plants can be sprayed with Grazon (following manufacturers recommendations). Metasulfuron-methyl is also effective and results in less off target damage but is not registered for this weed.

***Ageratina riparia* Mistflower**
A scrambling perennial groundcover to 1m in height. White "mists" of flowers. Narrow, opposite toothed leaves. Mostly found in wet areas but not restricted to any soil or aspect. Forms dense mats preventing regeneration of native species. Leachate from leaves and plant litter have a harmful effect on other plants (Alleopathic). The many seeds are easily spread by wind and water. Roots form when stems hit the ground, forming a dense mat. Also spread by contaminated produce. **Class 4 noxious weed**
Control Methods: manually remove ; spray seedlings with glyphosate; mature plants can be sprayed with Grazon (following manufacturers recommendations). Metsulfuron-methyl is also effective and results in less off target damage but is not registered for this weed.

***Ageratum houstonianum* Blue Billy Goat Weed** erect or decumbent annual herb to 1 metre in height. Likes wet sites. Dispersal mechanisms wind, water, animals, machinery. Forms dense cover inhibiting natural regeneration. Mulch / plant out to reduce germination of seed Control manual removal or spray with glyphosate requires follow up.

***Andropogon virginicus* Whiskey Grass** A tufted erect brownish perennial grass with solid stems. Flower/ seed heads are long and narrow.
Control Methods: Spray (100:1)/ wick-wipe with glyphosate.

***Anredera* cordifolia Madeira Vine** Climber with soft fleshy leaves, aerial tubers forms on stems, flowers small greenish/ white and fragrant. Spreads when tubers drop to ground and regrow. Forms very thick infestations, often smothering trees, particularly in rainforest.
Control: Small plants spray with Metsulfuron-methyl and surfactant. Large plants need to be carefully scrape and painted with Metsulfuron-methyl (1g to 1 litre) or Glyphosate. Care needs to be taken as severing the stems will result in the drop of all aerial tubers. Large plants can also be treated by scraping and painting at ground level and then inserting the scraped portion of the stem into a small container of Metsulfuron-methyl (1g to 1 litre) and leave for several days.

***Araujia hortorum* Moth Vine** Climber with twining stems, 5-10m in height. Large grayish green leaves. White milky sap. White flower. Produces choko like fruit encasing feathery (airborne) seeds. Seed longevity high. Smothers native vegetation. Can be confused with the native moth vine (Marsdenia sp.) one of which is on the threatened species list.
Control: Hand remove ensuring all roots removed. Cut /scrape and paint with glyphosate. Bag and remove any fruit.

***Ardisia crenata* Ardisia** Small shrub. Lanceolate oblong dark glossy green leaves with slightly wavy margins. White sweet scented flowers followed by bright red berries. Can grow in full shade.
Control Can be difficult to remove manually due to long taproot. Cut and paint with glyphosate.

***Asparagus aethiopicus* Ground Asparagus** dense ground smothering spiny herb, preventing or discouraging regeneration. Can reach size of up to 2 metres wide Grows in dense shade but prefers areas of higher light. Prefers sandy soils of littoral rainforest. Short thick rhizome and forms mat of tuberous roots- can regrow from rhizome but not from tuberous roots. Produces long-lived bird attractive seed

Control Methods Hand pull small seedlings; manually remove larger plants by removing rhizome from plant no need to remove tuberous roots. Spray with Metsulfuron-methyl.

***Asparagus plumosus* Climbing Asparagus** climber with wiry stems, forms dense layer, which smother plants and inhibit regeneration. Produces bird attractive fruit and has woody rhizome that regrows.

Control Methods small infestation handpull seedlings, larger plants manually remove all rhizomes. Larger infestations cut and paint or cut and allow to reshoot before spaying regrowth. Spray with Metsulfuron-methyl.

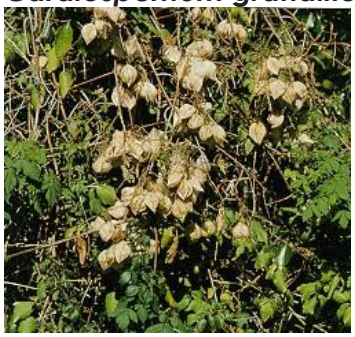
***Baccharis halimifolia* Groundsel Bush** Shrub or small tree. Wind dispersed seeds over short distance. **Class 3 noxious weed**
Control Methods: small plants manual removal larger specimens cut and paint with glyphosate. Spray with Grazon at manufacturers recommended rate.

***Bidens pilosa* Farmers Friends** slender tall annual (or short lived perennial) herb of disturbed areas. Produces large amounts of seed with high longevity. Only germinates on bare soil mulch or plant out to reduce.
Control Methods: Manual removal or spray with glyphosate.

***Bromelia* sp.** Evergreen garden plant. Stem short and tubular. Leaves pale green arching form.
Control Methods Hand Remove.

***Canna indica* Canna Lily** Perennial erect herb with a rhizome. Large light green sheathing leaves. Red flower followed by viable black capsule.
Control Manually remove all of rhizome (difficult). Spray with Metsulfuron-methyl.

***Cardiospernum grandiflorum* Balloon Vine**



A climber with tendrils and stems up to 10m long. Leaves are bright green with 'biternate' arrangement with 3 sets of 3 leaves on each leaf stem. The stems and leaves are covered with soft hairs with the stem often having reddish ribs. Small, white flowers are present summer to autumn. The fruit/seed is a green, papery, inflated capsule, and is produced any time of year. Can grow vegetatively from stem fragments. Vigorous climber that can smother and kill native trees.
Control Methods: Seedlings can be manually removed.
For more mature plants cut, scrape and paint with herbicide (glyphosate). Alternatively cut stems allow to reshoot and then spray the regrowth with glyphosate.

***Celtis sinensis* Chinese Celtis** Deciduous tree to 15 metres. Green serrated leaves. Small reddish brown fruit. Serious environmental weed declared **Class 3 noxious weed** .

Control: Large specimens direct inject with glyphosate. Saplings cut and paint with glyphosate. Small plants hand remove.

***Cestrum parqui* Green Cestrum** Woody shrub up to 3 metres tall. Deep green glossy leaves. Flower greenish to yellow. Fruit a black berry. Class 3 noxious weed

Control methods: Hand weed small plants. Cut and paint larger specimens with glyphosate.

***Cinnamomum camphora* Camphor Laurel** large trees of spreading habit can grow up to 25-30 metres. Abundant seed production dispersed mainly by birds. Can also form dense stands by suckering
Control Methods Direct injection/ cut and paint with glyphosate.

***Chloris gayana* Rhodes Grass** erect tufted stoloniferous grass to 1.2 m high, perennial
Control Methods crown tuft with knife or mattock. Remove stolon, glyphosate in late spring early summer.

***Coffea arabica* Coffee Plant** Large shiny green leaves with wavy margins forms red berries (from which Coffee is produced). Seedlings germinate prolifically.
Control Manually remove or cut and paint with glyphosate.

***Colocasia esculenta* cv. Fontanesii Ornamental Taro:**Robust herb to 1m , large purple leaves (60 cm long 30 cm wide). Large underground tubers. Likes wet open sites. Can colonize sites densely and rapidly.
Control: manual removal (must remove all underground tubers). Can control with herbicide by spraying or injecting with Glyphosate & Metasulfuron-methyl mix ('Cut out'), but this is problematic as species usually inhabits areas that are waterways or wetlands.

***Conyza albida* Fleabane** Single stem, erect annual herb up to 1.5m high. On disturbed sites. Control methods Manual removal or spray with glyphosate.

***Cortaderia selloana* Pampas Grass**Large tussock grass to 2 metres width to 1 metre. Leaves to 2 metres in length and to 3.5cm wide, blue green above darker green below. Flower stem to 6 metres, large silvery white panicle to 80cm. Dense infestations can invade and replace native communities and also provide heavy fuel load for fires.
Control methods: Spray with glyphosate (75:1) with surfactant added. Alternatively to reduce risk of fire, brushcut then manually remove rhizome or spray regrowth

***Delairea odorata* Cape Ivy** vigorous, twining perennial herb with succulent stems many metres long. Forms dense mats smothering low vegetation. Spreads vegetatively, does not set seed in northern NSW.
Control Methods Manual removal or spray with Metasulfuron-methyl.

***Desmodium uncinatum* Velcro Weed**
Herb/scrambler that forms dense smothering mass. Trifoliate leaves. Leaves hairy upper surface with a silver stripe. Stem is densely hairy with hooked hairs. Flowers pink to mauve or white. Seeds contained in pods covered with hooked hairs.

Control Methods Hand remove minor infestations (including root system) bag and remove from site if seeding. Major infestations spray with Metasulfuron-methyl (*Brush-off)*.

***Eriobotrya japonica* Loquat** Evergreen tree with dark glossy green foliage, hairy underneath. Fragrant yellow/white flowers borne on stiff woolly panicles. Yellow fruit.
Control Manually remove small seedlings. Mature specimens cut and paint or direct inject with glyphosate.

***Erythrina crista-galli* Cockscomb Coral Tree** Deciduous tree up to 6 metres in height. Prickles on trunks and branches. Flowers scarlet tube shaped held in clusters. Problem weed in north of NSW and Queensland.
Control Methods direct injection with glyphosate. Cut and paint saplings with Glyphosate. Spray seedlings with Glyphosate and surfactant.

***Erythrina* x *sykesii* Coral Tree** Deciduous tree, hybrid up to 15 metres in height. Easily re grows from sections of stem/ branches, suckers from large sections of roots.
Control Methods direct injection with glyphosate.

***Eucalyptus torelliana* Cadaghi** A native of North Queensland that has been planted for horticultural / plantation purposes in NSW where it has become an invasive species.
Control Methods: Large specimens direct inject (or remove totally in areas where falling branches may create a public safety issue). Seedlings may be sprayed with glyphosate or hand weeded.

***Gleditsia triacanthos* Honey Locust**
Deciduous tree to 10 metres. Flowers in spring producing golden yellow flowers. Stout spines present on branches and trunk. Compound bipinnate leaves. Seed pods 15-40 cm long enclosing large dark brown seeds. Grows readily from seed/ cuttings and suckers freely forming dense thickets. **Class 3 noxious weed**
Control Methods: Direct inject with undiluted glyphosate/ cut and paint smaller specimens.

***Gomphocarpus fruitcosus* Cotton Bush** erect perennial shrub with narrow dull green leaves. Exudes milky sap when damaged. Large green ovoid fruit covered in long silky hairs.
Control Manually remove. Cut and paint/ spray with glyphosate.

***Hedychium gardnerianum* Kahili Ginger** perennial herb to 2.5 metres high. Prefers damp areas on good soil. Large yellow orange flower with red filaments. Produces seed attractive to birds. Thick fleshy rhizome near soil surface.

***Hypoestes phyllostachya* Freckle Face/Polka Dot Plant** herbaceous garden/indoor plant that rapidly infests areas. Long thin dark green leaves with pink spots.
Control Methods Difficult to completely manually remove. Spray with Metasulfuron-methyl

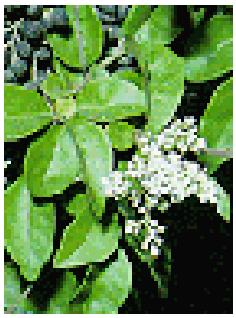
***Inga paterna* Ice-Cream Bean** Evergreen tree to a height of 17 metres. Leaves compound and pinnate with 6-8 leaflets 15cm long with woolly undersurface. Flowers are white & pea shaped. The fruit are pods 15 cm long.
Control Methods: Hand remove small seedlings; cut and paint saplings; direct inject /frill larger specimens.

***Ipomoea cairica* Mile a Minute** Vigorous, perennial with trailing and twining stems. Palmate shaped leaf with pink- purple flowers. Produces seed spread by wind/ gravity, also spreads vegetatively
Control Methods Manual removal by gently pulling up runners, cut and paint larger stems. Spray with glyphosate during period of rapid growth.

***Ipomea indica* Morning Glory** A vigorous vine which can smother trees and whose stolons can penetrate and establish metres into native vegetation. It is widely naturalized in coastal districts of N.S.W.
Control Methods Manual removal by gently pulling up runners, scrape and paint larger stems. Spray with Glyphosate during period of rapid growth.

Koelreuteria paniculata **Golden Rain Tree** Deciduous tree with long pinnate leaves and large terminal panicles of yellow flowers.
Control Methods Cut and paint or direct inject with glyphosate.

Lantana camara **Pink/ Red Lantana** Perennial, scrambling thicket forming shrub to 3m high. Stems multi branched sprawling to 5m long with prickles. Can be vine like and climb trees. Grows best in fertile moist disturbed sites. Black fruit spread by birds. Red flowering form **Class 3 noxious weed** .
Control methods Manual removal of taproot, mechanical removal with follow up. Stems lying on ground may re shoot. Cut and paint base with glyphosate. Spray with glyphosate (Red form needs penetrant added)



Ligustrum lucidum **Large leaf Privet** can grow to large tree. Likes fertile moist sites. Can dominate rainforest and wet sclerophyll forest. Produces masses small berries spread by birds or water. Germinate in even shady conditions. Coppices from base. **Class 4 noxious weed**
Control methods small seedlings manually remove or spray with Metasulfuron-methyl. Cut and paint mature specimens with glyphosate. Direct inject mature specimens with glyphosate.

Ligustrum sinense **Small Leaf Privet** Large shrub small tree to 4m high. Moist fertile sites. Can slowly establish on undisturbed sites in shady conditions. Small berry with short viability spread by birds and water. Coppices from base and suckers from roots **Class 4 noxious weed**
Control methods small seedlings manually remove or spray with Metsulfuron-methyl. Cut and paint mature specimens with glyphosate. Direct inject mature specimens with glyphosate.

Lonicera japonica **Japanese Honeysuckle** Woody twining climber or small shrub with a dense smothering habit. Leaves dark green above lighter below. Flowers tubular 30mm long, white tuning yellow, sweetly fragrant. Fruit is a small black shiny berry, spread by birds. Can regrow from stem nodes.
Control methods Manual removal with care to remove all root forming nodes. Cut and paint or scrape and paint with glyphosate. Spray with herbicide (Metasulfuron-methyl) where no desirable vegetation may be damaged (or cut back then spray regrowth). Follow up needed for all techniques.

***Macfadyena unguis-cati* Cats Claw Creeper** Large woody vine to 30m+, distinguished by three tiny hooked claws on the end of tendrils. Leaves dark green with new foliage being red. From spring to summer, bright yellow flowers with orange lines are present. Produces seed capsule 15-45cm long containing winged seeds that are wind and water dispersed. Can germinate and grow in shade so can easily invade undisturbed bushland. Forms underground tubers. Grows rapidly and totally smother and kill mature trees.
Control Methods: Spray seedlings with glyphosate (100:1). Cut stems and apply glyphosate (undiluted), or pull young stems from tree and spray with glyphosate (100:1)can also drill an inject large stems with glyphosate (undiluted).

***Macroptilium atropurpureum* Siratro** Twining herb with stems 2-3 metres long. Dark purple pea like flower with long slender pods.
Control Methods Care must be taken when removing by hand due to large root system. Seed pod collection and disposal is important to ensure eradication. Scrape and paint with glyphosate is effective.

****Monstera deliciosa* Fruit Salad Plant** Evergreen vine to a height of 5 metres. Glossy large green perforated leaves with deeply incised margins. Flowers are greenish similar to that of an Arum Lily. Fruit are edible cob like spikes.
Control methods: Hand remove

***Nephrolepis cordifolia* Fishbone Fern** endemic to the far north coast of NSW and Queensland but has become an invasive species that develops dense infestations excluding endemic native vegetation. Erect fronds covered with brown spores on the back. Rhizomes are connected by wiry stolons.
Control Methods Manually remove by digging up entire plant including rhizomes and bag and remove from site (dispose of responsibly -garden waste dumping of this weed in bushland is a serious problem). Large infestations may be sprayed with Metasulfuron methyl.

***Ochna serrulata* Mickey Mouse Plant** Shrub 2-3 metres high. Dark green-toothed oblong leaves, new foliage bronze coloured. Conspicuous fruit with bright red sepals holding 5 glossy green fruit that ripens to black. Well-developed taproot, which can reshoot from considerable depth, makes control difficult.
Control Methods Hand remove small specimens (only when soil is moist to prevent root snapping. Scrape and Paint (glyphosate) is generally more effective than cut and paint. Better results achieved by painting bottom third of plant around entire circumference of stem with Starane mixed with diesel @ 5ml Starane to 100ml diesel. Small seedlings can be sprayed with Starane @ 65ml to 10L water.

***Paspalum urvillei* Giant Paspalum** tufted perennial grass, large up to 2.5m high. Distinguished by its long (up to 12cm) and more numerous racemes (12-20)
Control methods Manual removal for minor infestations/ major infestations spray with glyphosate.

***Paspalum mandiocanum* Broad Leaf Paspalum** tufted perennial, which can grow in moderately shady conditions. Can form extensive dense infestations inhibiting or preventing regeneration.
Control methods manual removal (remove crown and adventitious roots) for minor infestations or those surrounding young native specimens. For major infestations spray with glyphosate and follow up with mulching and planting's.

***Passiflora edulis* Edible Passionfruit** A climber with auxillary tendrils glossy green leaves trifoliate shape. Produces edable back/ purple/yellow fruit.
Control methods large specimens manually remove or cut and paint with glyphosate.

***Passiflora subpeltata* White Passionflower** A climber with axillary tendrils. Smothers plants and trees in forest edges and gaps, as well as disturbed sites. Grey/green leaves with waxy coating. Fruit spread by birds and animals. Reshoots from any root part left in ground.
Control methods large specimens manually remove or cut and paint with glyphosate. Spray with penetrant when young or cut and spray when reshoots

***Pennisetum clandestinum* Kikuyu** Rhizomatous and stoloniferous aggressive, creeping coarse perennial grass often mat-forming. Inhibits seedling growth and prevents regeneration.
Control methods Spray with weak rate glyphosate.

***Pennisetum purpureum* Barner Grass** A robust stoloniferous, perennial grass forming large bamboo like clumps to 7m high.

***Phoenix canariensis* Date Palm** characterized by numerous bright yellow spines that arm the short frond stalk.
Control Methods Cut and paint with glyphosate when small. Direct inject larger specimens

***Pinus* sp. (*P. radiata, P. elliottii*) Pine Tree** Evergreen with alternate needle like spreading leaves. Forms cones.
Control Methods Cut tree down or ringbark as cannot regrow from stump.

***Psidium cattleianum* Cherry Guava** Shrub or tree to 6 metres. Purplish red fruit. Has the ability n invade undisturbed native vegetation.
Control: Hand remove small seedlings. Cut and paint larger specimens with glyphosate (cutting close to the ground as possible).

***Rhaphiolepis indica* Indian Hawthorn**
Shrub 1 to 1.5 high. Dark green leathery leaves, slightly toothed. Small white flowers with red centers. Small bluish fruit.
Control Methods: Hand pull small seedlings. Cut and paint larger specimens with undiluted glyphosate.

***Rivina humilis* Coral Berry**
small shrub to 1 metre high. Dark green leaves. Produces small red globular berries
Control Manually remove or cut and paint with glyphosate (remove and bag any berries present). Spray with glyphosate.

Rubus fruticosus **Blackberry**

A perennial scrambling shrub to 3m high. Class 3 noxious weed Hook-spined canes grow to 6m long. New plants form when they meet the ground. Fruit a segmented red berry ripening to black. The many fruits are eaten and spread by birds and foxes. May be confused with native Rubus species which are distinguished by lighter green leaves and finer thorns.

Control Methods: Spray with Metsulfuron-methyl at the manufacturer's recommended rate.

Schefflera actinophylla **Umbrella Tree** Native of North Queensland, tree to 10m high often multi stemmed and sometimes epiphytic. Red fruit dispersed by birds. Adventitious roots form readily from stem segments left in contact with ground.
Control methods Cut and paint or direct inject with glyphosate.

Schinus terebinthifolia Broad-leaf Pepper Tree

Tree to 16m in height with dense spreading crown. Dark glossy green leaves with prominent cream venation. Produces masses of red/pinkish berries in winter/spring. Leaves have a peppery smell when crushed. Has been known to cause allergic reactions in some people care needs to be taking when removing trees as to avoid inhaling toxins that may be released when cutting or wood chipping trunk and branches. Significant environmental weed with a serious large infestation at Sapphire. Class 3 noxious weed
Control Methods: Manually remove small seedlings, cut and paint saplings with glyphosate, larger trees direct inject with glyphosate.

Senecio madagascariensis **(Fireweed)** Spreading herb up to 50cm high with bright yellow daisy like flowers present spring to autumn. Produces numerous white fluffy seeds. Commonly mistaken for a native fireweed Senecio lautus, which is found more commonly on dunes. Identiofication between the two involves counting the involucral bracts. Generally S. madagaascariensis has 20-21 bracts and S. lautua has 15-18 bracts.
Control Methods: Manually remove taking care not to place on ground as will re root(bag and remove from site). Spray with Bromoxynil 1.4-2.8L in 110-220L of water per hectare. Spray young, actively growing plants during autumn/winter.

Use low rate before flower budding, higher rate for early flowering. Will not be effective on mature plants in full flower.

***Senna pendula* var. *glabrata* (Eastern Cassia/Senna)** Large shrub to 3m. Can regrow from larger sections of taproot and main laterals. Seeds dispersed by birds, water, and gravity, germinate prolifically.
Control methods Cut and paint with glyphosate, direct inject larger specimens, spray large infestations of seedlings with glyphosate 9 hand remove small infestations)

***Sida rhombifolia* Paddy's Lucerne** Perennial erect herb to 1m. Grows in sunny or disturbed areas and on compacted soils. Strong deep taproot.
Control methods difficult to remove by hand especially in heavy soils. Cut and paint or spray with glyphosate.

Setaria palmifolia Palm Grass Tufted perennial grass to 1.5 metres high. Leaves 'pleated'. Flower a creamy white/yellow silky panicle to 80 cm long. Forms dense infestations especially near water courses.
Control: Small infestations dig out plant with mattock. Larger infestations spray with glyphosate. Care must be taken not to pollute watercourses

***Solanum mauritianum* Tobacco Bush** Perennial shrub or small tree to 4m, densely tomentose especially under surface, Produces fruits which are eaten by many native fauna. High seed longevity requires light for germination. In many cases can be left as part of a rainforest regeneration process as; provides shade which represses many annual weeds but allows growth of third stage pioneer species and attracts birds and bats which bring in native seeds from other areas.
Control Methods if removal is necessary cut and paint with glyphosate.

***Solanum seaforthianum* Brazillian Nightshade** Sprawling vigorous climber with light green divided leaflets. Flowers violet in colour with typical form of those in the Solanum family (e.g. similar to tomato/ potato flower). Produces masses of bright red berries that hang in bunches. Berries are bird attractive and this plant is therefore spread easily. Aggressively smothers native vegetation.
Control Methods: Hand remove or for larger vines scrape and paint with glyphosate.

***Sphagneticola trilobata* Singapore Daisy** A perennial creeper found on the edges of rainforests and coastal dunes. It has coarse bright green leaves. Flowers are yellow and daisy like. This weed re-shoots very easily and when well established can smoother other plants.
Control Method: Hand-pull small plants. Be sure to remove all parts of this plant from the site as they will re-shoot. Spray with metasulfuron-methyl.

Sporobolus fertilis **Giant Parramatta Grass** tufted perennial growing on poor or compacted soils and disturbed sites. Seed adheres to animals, vehicles, and water. Class 3 noxious weed
Control Methods small infestations hand remove or spot spray with glyphosate.

Syagrus romanzoffiana **Cocos Palm** Large Palm with drooping feathery type fronds. Produces masses of orange coloured fruit that hang in large panicles. Very attractive to fruit Bats which aid in the spread of the seed. Germinates readily.
Control Methods Larger specimens can be felled with no need to apply herbicide, as they will not regrow, direct injection with herbicide for specimens that are to be left in situ. Smaller specimens and seedlings need to be either cut and painted or manually removed (including the root system) as spraying herbicide is not effective.

Syngonium* sp. **Prayer Plant/ Arrowhead Vine Vigorous climber to 3 metres. Glossy spear shaped leaves dark to light green in colour (dependant on light levels where it grows). Can also have variegated leaves with a creamy colour towards the centre with light green edges. Forms roots at nodes. Can produce seedpods encasing bright red seeds when well established up a tree etc (not known if these are viable). Difficult to control due to its resistance to most herbicide sprays.
Control Methods: Spray with glyphosate at a rate of 50:1 with LI 700

***Tagetes minuta* Stinking Roger** Very erect annual herb, strongly aromatic, which grows on disturbed sites. Flowers February –April.
Control methods Small infestations hand remove, larger ones spray with glyphosate.

***Tecoma stans* Yellow bells** A shrub or small tree, often to 4m in height. Widely grown for its bright yellow trumpet-like flowers. Flowers between spring and summer producing yellow flowers with reddish lines at the base. Large pods contain many seeds that are easily spread by wind Class 3 noxious weed

Control Method: Hand-pull or foliar spray seedlings with herbicide. Cut and paint saplings. Frill or stem inject herbicide into sapwood of mature trees.

***Tithonia diversifolia* Japanese Sunflower** tall perennial herb 2-5 metres tall, large toothed leaves. Flowers April- June. Wind dispersed seeds long seed longevity. Control Methods manually remove smaller plants. Cut and paint larger specimens (low to ground to avoid plant re shooting) or preferably drill and apply herbicide. Care must be taken as stems placed directly on the ground will commonly grow roots from nodes.

Tradescantia flumensis **Tradescantia (Wandering Jew)**
Perennial creeping succulent herb rooting well from well-defined nodes. Invasive weed grows vigorously, smothering low growing shrubs herbs and seedlings of native species, inhibits regeneration. Likes moist fertile sites can grow in dense shade or full sun. Spreads vegetatively.
Control methods manually rake and roll with repeated maintenance. Spray with glyphosate-repeated follow up required.

Triadica sebifera **(Chinese Tallow)**
A deciduous tree growing to a height of 12 metres. Flowers are yellowish and occur in elongated clusters. The fruit is a splitting capsule that exposes large, white seeds.
Control Methods: Hand-pull or foliar spray seedlings with herbicide. Cut and paint saplings (glyphosate). Direct inject mature trees (glyphosate).Class 3 noxious weed

***Verbena* sp. Purple Top** Tall, erect, perennial herb of sunny disturbed areas. Purple flower and square stem.
Control methods Weed manually infestations (rarely dense).

Weed Control Techniques

1) **Cut and paint**: This method applies to all woody shrubs, trees and some vines.
   i. cutting stem of plant as close to the ground as possible, also scraping sides lightly to reveal green tissue
   ii. apply chemical(usually undiluted glyphosate) immediately (within 15 seconds)

2) **Scrape and Paint** This method is applicable to many species of vines where it is desirable to treat the vine intact, particularly those with aerial tubers (e.g. Madeira Vine) or those that will propagate from segments.
   i. Scrape the stem **on one side of the stem only** for 20- 30 cm if possible
   ii. Apply herbicide immediately.

3) **Direct Inject** This method applies to all woody trees and shrubs with a diameter of about 6- 10cm or greater
   i. Make cuts into the trunk (as low down as possible) with a tomahawk. Make cuts the width of the blade at a slight angle. Or preferably make drill holes with cordless drill. Holes or cuts shall be angled downwards into the trunk to prevent herbicide escape.
   ii. Apply herbicide immediately into the cut or hole
   iii. Repeat this pattern in brickwork pattern around the circumference of the tree, or if using a drill holes approximately 10 cm apart 25mm deep.
   iv. Treat any visible lateral roots as per **i.**

4) **Spot Spraying** should be carried out using a knapsack sprayer to keep pressure/volume to a minimum. This is to ensure newly planted tubestock/ germinating natives are not affected by spray drift. Glyphosate is the main herbicide used, though some weed species require Metsulfuron methyl (*Brush-off*) for treatment. A combination of the two herbicides can be used for treatment in areas where there area combination of species that are susceptible to either glyphosate or Metsulfuron methyl. A marker dye and surfactant will improve control results.

5) **Chemical Crowning** This applies to those species which have a fleshy root system such as a rhizome or large bulbs (e.g. Asparagus Fern, Canna Lily)
   i. Gouge out sections of fleshy base with a knife
   ii. Apply undiluted herbicide.

6) **Manual Removal** Is the preferred method of control if practical. Especially useful in follow up work as mitigates any risk of off target damage to germinating or young native species
   i. **Hand pulling** removal by hand (or with a mattock etc) of the plant including all tap and lateral roots. Is especially useful for smaller specimens; species with a bulb, corm or tuber; isolated grass specimens amongst native species.
   ii. **Crowning** This method is applicable to weeds which have their growing points below the surface of the ground (corms, bulbs, rhizomes, clumped or fibrous root systems etc e.g. grasses, Asparagus Fern)
      1. Grasp the stems or leaves and hold them tightly so that the base of the plant is visible
      2. Insert a knife close to the base of the plant at a slight angle with the tip well under the root system
      3. Cut through the roots close to the base
      4. Remove the plant ensuring that the base of the plant where the roots begin is completely removed.

Noxious Weed Categories

Class 1: State Prohibited Weeds	These are noxious weeds that pose a potentially serious threat to primary production or the environment and are not present in the State or are present only to a limited extent. These are noxious weeds which must be eradicated from the land and the land must be kept free of the plant.
Class 2: Regionally Prohibited Weeds	These are noxious weeds that pose a potentially serious threat to primary production or the environment of a region to which the order applies and are not present in the region or are present only to a limited extent. These are noxious weeds which must be eradicated from the land and the land must be kept free of the weed.
Class 3: Regionally Controlled Weeds	These are noxious weeds which pose a serious threat to primary production or the environment of an area to which the order applies, are not widely distributed in the area and are likely to spread in the area or to another area. These are noxious weeds which must be fully and continuously suppressed and destroyed.
Class 4: Locally Controlled Weeds	These are noxious weeds that pose a threat to primary production, the environment or human health, are widely distributed and are likely to spread in the area or to another area. The growth and spread of these noxious weeds must be controlled according to the measures specified in the relevant management published by Council.
Class 5: Restricted Plants	These are noxious weeds that are likely, by their sale or sale of their seeds or movement within the State or an area of the State, to spread either within or outside the State. These noxious weeds are prohibited from sale.

Appendix 8: Revegetation Techniques

Clear away weed and exotic grass growth within a 500mm radius area where the plant is to be placed, by spot spraying with *Glyphosate* (following manufacturer's directions).

Dig and loosen soil (150mm deep and 75mm wide) to place tubestock in.

Plant sun-hardened tubestock ensuring root system is below ground level.

It is best to also use slow release fertiliser and "*rainsave*"' water crystals (following manufacturer's recommendations).

Place medium grade jute mat (370x 370mm) around each plant ensuring that the mat does not inhibit water filtration to plant.

Hardwood chips could be used as a suitable alternative to jute matting.

Course grade hardwood chips shall be used (minimum size of 20mm x 20mm x 3mm).

Hardwood chips would need to be 100mm deep with a radius of 500mm.

The cost of either material is equivalent however spreading hardwood chips is more labour intensive.

Plants shall be protected with large (1200x 500mm) plastic tree guards using 2 small hardwood stakes as support.

This will limit Swamp Wallaby (*Wallabia bicolor)* predation and facilitate follow up weed control when spot spraying.

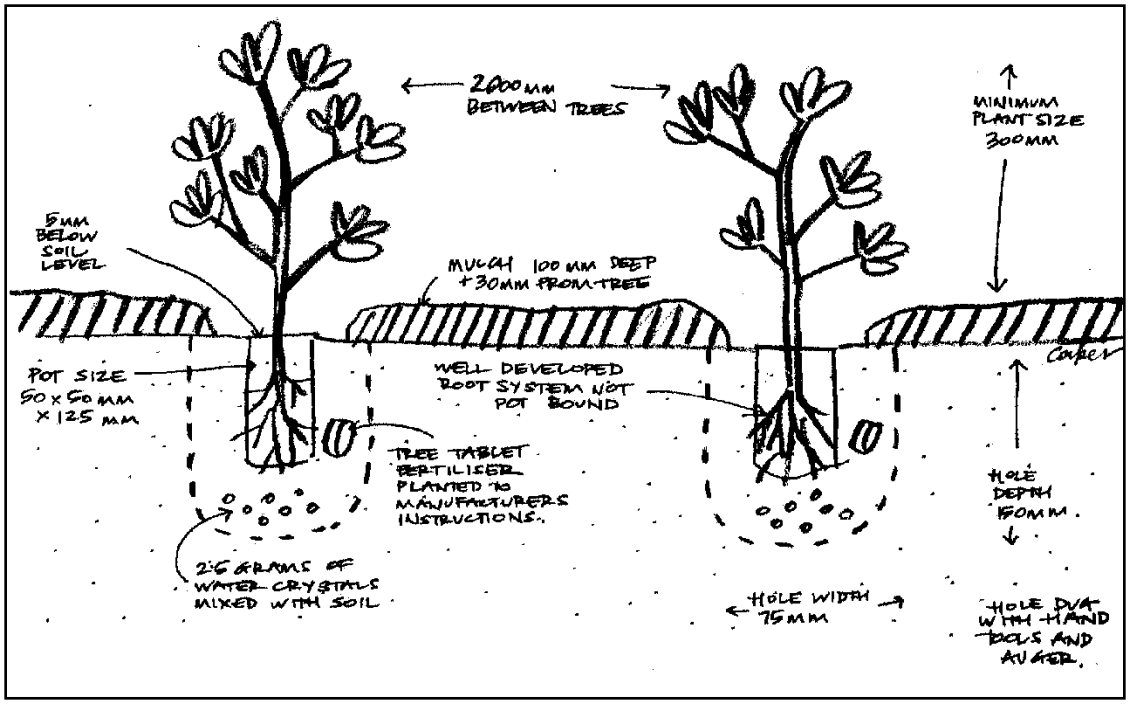
To maximize survival rates, planting should be under taken in the "wet season" (end of February to beginning May).

Generally, Spring and Summer are too hot and dry for undertaking Revegetation.

Plants will require watering directly after planting if the weather conditions are dry.

Follow up watering will also be required dependant on prevailing weather conditions.

Planting Diagram



Note: Although plant spacing is depicted as being at 2 metre intervals, this is only a general guide and the requirements for each site may vary.

Refer to the specifications given in the zone categories for the specified plant spacings. Jute weed matting may be used instead of hardwood chip.

Refer to specifications given in the zone categories.

Possible Suppliers for the Planting Program

- Coffs Coast Bush Regeneration Native Nursery Tel: 66536781
- Lacebark Native Nursery Tel: 6654 4373

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