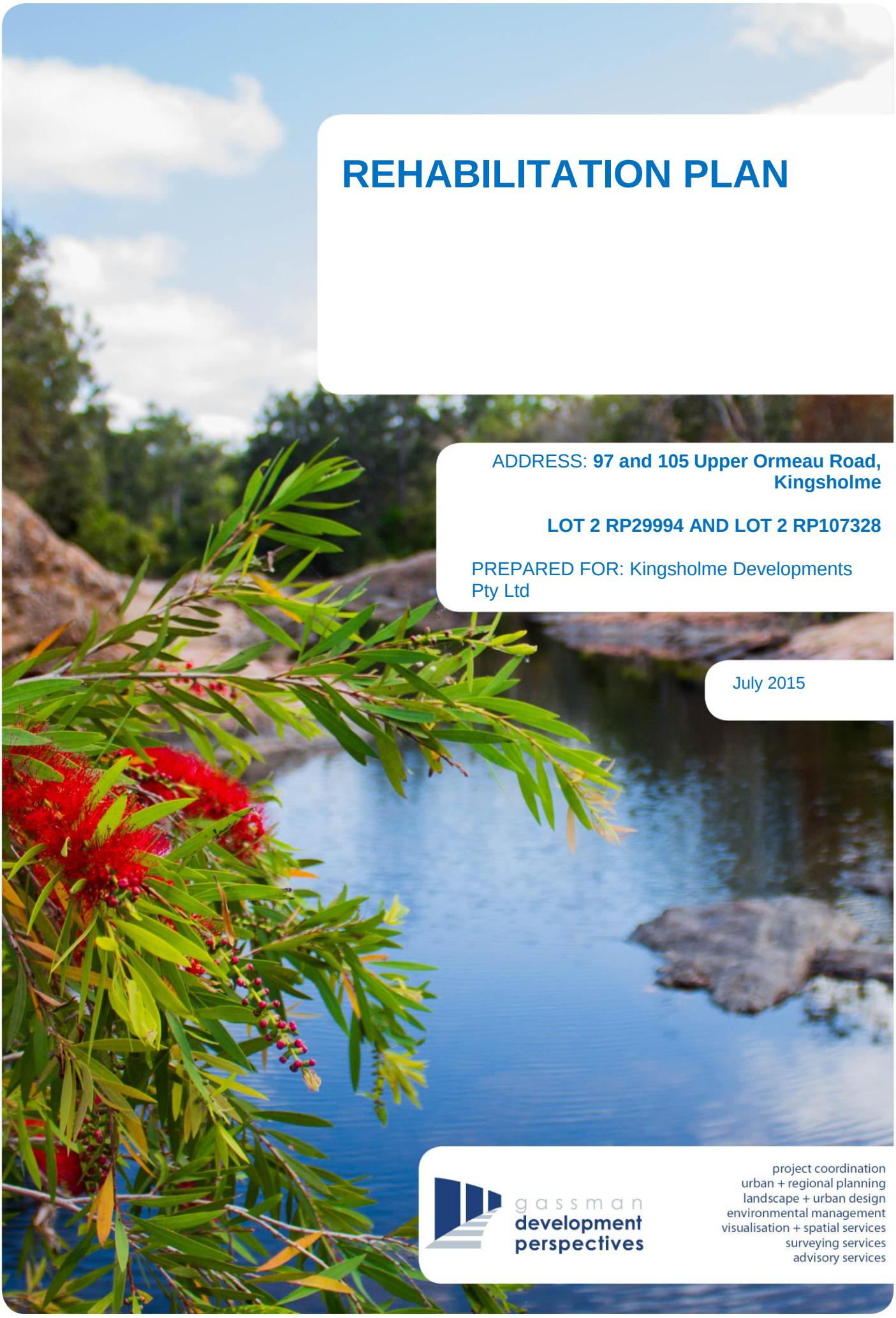
REHABILITATION PLAN

ADDRESS: **97 and 105 Upper Ormeau Road, Kingsholme**

LOT 2 RP29994 AND LOT 2 RP107328

PREPARED FOR: Kingsholme Developments Pty Ltd

July 2015



gassman development perspectives

project coordination
urban + regional planning
landscape + urban design
environmental management
visualisation + spatial services
surveying services
advisory services

"IMPORTANT NOTE"

Apart from fair dealing for the purposes of private study, research, criticism, or review as permitted under the Copyright Act, no part of this report, its attachments or appendices may be reproduced by any process without the written consent of Gassman Development Perspectives Pty Ltd.

We have prepared this report for the sole purposes of Kingsholme Developments Pty Ltd ("Client") for the specific purpose of a development permit for vegetation removal. This report is strictly limited to the Purpose and the facts and matters stated in it and does not apply directly or indirectly and will not be used for any other application, purpose, use or matter.

In preparing this report we have made certain assumptions. We have assumed that all information and documents provided to us by the Client or as a result of a specific request or enquiry were complete, accurate and up-to-date. Where we have obtained information from a government register or database, we have assumed that the information is accurate. Where an assumption has been made, we have not made any independent investigations with respect to the matters the subject of that assumption. We are not aware of any reason why any of the assumptions are incorrect.

This report is presented without the assumption of a duty of care to any other person ("Third Party") other than the Client. The report may not contain sufficient information for the purposes of a Third Party or for other uses. Without the prior written consent of Gassman Development Perspectives Pty Ltd:

a) This report may not be relied on by a Third Party; and
b) Gassman Development Perspectives Pty Ltd will not be liable to a Third Party for any loss, damage, liability or claim arising out of or incidental to a Third Party publishing, using or relying on the facts, content, opinions or subject matter contained in this report.

If a Third Party uses or relies on the facts, content, opinions or subject matter contained in this report with or without the consent of Gassman Development Perspectives Pty Ltd, Gassman Development Perspectives Pty Ltd disclaims all risk and the Third Party assumes all risk and releases and indemnifies and agrees to keep indemnified Gassman Development Perspectives Pty Ltd from any loss, damage, claim or liability arising directly or indirectly from the use of or reliance on this report.

In this note, a reference to loss and damage includes past and prospective economic loss, loss of profits, damage to property, injury to any person (including death) costs and expenses incurred in taking measures to prevent, mitigate or rectify any harm, loss of opportunity, legal costs, compensation, interest and any other direct, indirect, consequential or financial or other loss.

GDP Document Control

Originating Office:	Yatala	Job Number:	5543
Physical Address:	76 Business Street Yatala QLD 4207	Job Name: Project Manager: Document Title:	Villawood Kingsholme Brian Gassman Open Space Management Plan
Postal Address:	PO Box 392 BEENLEIGH.Q. 4207	Author:	Mark Spears
Phone:	+61 7 3807 3333	Client:	Kingsholme
Fax:	+61 7 3287 5461	Developments Pty Ltd	
Email:	mail@gassman.com.au	Client Contact:	Michael Williams
Web:	www.gassman.com.au	Client Reference:	

Revision / Checking History

No.	Author	Reviewer
1. V1.0	Mark Spears	Brian Gassman

Approval for Issue

Version	Name	Position	Signature	Date
V2.0	Brian Gassman	Director		

Final Distribution

Kingsholme Developments Pty Ltd	1 electronic copy
Gold Coast City Council	1 electronic copy

TABLE OF CONTENTS

1 Rehabilitation Management Plan

1.1 Purpose

The purpose of the Rehabilitation Management Plan (RMP) is to provide details of works that enable the client to adequately plan and undertake works that are compliant with Council requirements. It also provides Council with clear expectations of the scope of works and a means of ensuring works are completed according to the approved plan.

1.2 Scope

This RMP applies to the parcel of land to be dedicated as Open Space Park Area (OSPA) as identified in Appendix 1 as the Rehabilitation Area. A separate report has been prepared for rehabilitation areas over Lot 1 SP243312 to the northern side of Upper Ormeau Road included within the same development application. Both rehabilitation areas are subject to an overarching Open Space Management Plan, prepared by Gassman Development Perspectives dated May, 2015.

1.3 Aims and Objectives

The Rehabilitation Plan aims to outline details of work and target outcomes that restore and rehabilitate degraded areas of the subject site intended to be dedicated as public open space.

The broad objectives of this report are to:

- Comply with current 'best practice' guidelines as well as Council guidelines and policies;
- Provide an overview of the sites environmental conditions;
- Ensure the long term environmental integrity and ecological linkages within the site;
- Rehabilitate currently degraded areas of the subject site; and
- Improve ecological function and fauna opportunities of the site.

1.4 Intended Outcomes

The intended outcomes for successful rehabilitation of the site's dedicated open space are:

- Rehabilitation area is free from declared weed species; and
- Rehabilitation area demonstrates a reduction in abundance and diversity of weed species currently present on the site.

1.5 Rehabilitation Approaches

There are four generally accepted approaches to rehabilitation as outlined in GCCC Open Space Guidelines. These are:

a. Natural regeneration;
b. Assisted natural regeneration;
c. Reconstruction; or
d. Fabrication.

The two main approaches which will be assisted natural regeneration in the areas of existing bushland and native vegetation, and reconstruction via active plantings in areas currently represented by grazed paddocks currently largely devoid of native vegetation.

1.6 Site Assessment

This RMP is prepared in support of 97 and 105 Upper Ormeau Road, Kingsholme. A separate RMP has been prepared in support of rehabilitation proposed to occur on 62 Upper Ormeau Road, Kingsholme in conjunction with this application. The site is located in the northern region of the Gold Coast City Council precincts within the Emerging Communities Domain. The site has a highly variable topography and displays a history of cattle grazing over large portions of the site. Some portions of remnant vegetation occur on the subject site, although significant parts of this remnant vegetation are degraded by weeds. The remnant vegetation occurs on the higher slopes on the subject site, and the lower slopes are representative of a history of cattle grazing and are therefore currently open grasslands dominated by pastoral grass species and other weeds

A description of the site constraints and relevant planning instruments are outlined in detail within Part 1 of this document. The following shall describe the vegetation present on site in order to plan how the site is to be effectively rehabilitated.

1.6.1 Native Vegetation

The native vegetation observed as occurring on the subject site is mapped as containing 'least concern' Regional Ecosystem (RE) 12.11.5. There are also portions of unmapped native vegetation and other degraded areas which contain contiguous patches of native regrowth vegetation. These areas are illustrated in Appendix 1.

1.6.2 Exotic Vegetation

A number of exotic species were observed as occurring on the subject site and are outlined in the table below. Specific weed control techniques will be outlined in subsequent sections of this report.

Table 1.1: *Observed exotic plant species.*

Scientific Name	Common Name
Brachiaria mutica	Para Grass
Cinnamonum camphora	Camphor Laurel
Lantana camara	Lantana
Paspalum mandiocanum	Broad-leaved Paspalum
Sporobolus fertilis	Giant Parramatta Grass
Solanum chrysotrichum	Giant Devil's Fig
Eragrostis curvula	African Love Grass
Sporobolus pyramidalis	Giant Rat's Tail Grass
Senecio madagascariensis	Fireweed
Conyza bonariensis	Flaxleaf Fleabane
Gomphocarpus physocarpus	Balloon Cotton Bush
Solanum mauritianum	Tobacco Bush
Sida acuta	Spiny Head Sida
Bidens pilosa	Cobblers Pegs
Verbena bonariensis	Purple Top
Setaria sphacelata	South African Pigeon Grass
Senna occidentalis	Coffee Senna

1.7 Herbicide application

Herbicide should be applied by qualified personnel with experience in bush regeneration and native plant species identification. It is recommended that spray operators have undertaken accredited training through a nationally accredited program such as Chemcert. All weed control techniques will be in accordance with the South East Queensland Ecological Restoration Framework Guidelines 2012 (Appendix 2).

Power operated spray equipment must only be undertaken or supervised by ACDC accredited operators and must comply with the ACDC Act. This Act also specifies limitations of certain herbicides and applications in Queensland Districts.

Spray operators have a legal responsibility to themselves and the public. Employers and employees have obligations under the Work Place Health and Safety Act to provide a 'Duty of Care'.

In Queensland, the 'off-label' permit allows bush regenerators to apply herbicide on plant species that are not listed on the label under Permit 7485. The off-label permit is administered by the Australian Pesticides and Veterinary Medicines Authority (APVMA). This relates to the ground distribution control of weeds in Non Agricultural Areas, Bushland, Forests and Wetlands.

It is a requirement of this permit, that all persons using the products covered by this off-label permit comply with the details and conditions listed in the permit. In addition, read the herbicide label carefully before use and always use the herbicide in accordance with the label directions. Chemical control of various weeds mentioned in this document will comply with permit 7485.

The operator is responsible to comply with environmental considerations, especially working in riparian areas. It is important to become familiar with the product MSDS, in particular aspects of soil residuality, translocation, break down in water and impact on amphibians (for example, Glyphosate herbicides are chelated with salts which can build up in the soil, changing the pH and soil conditions). To ameliorate the impact of salt and modified pH, fulvic acid can be used in conjunction with herbicide. As a microbial stimulant fulvic acid increases the plants uptake of the herbicide and reduces soil residues, therefore minimizing environmental harm.

Within 10m of a water body only registered aquatic herbicides ("Biactive" glyphosate, Diquat, and Dichlobenil or approved equivalent) will be used.

1.8 Weed control methods

All weed control undertaken on the subject site will be undertaken with the following considerations:

- All weed control methods will be in accordance with the South East Queensland Ecological Restoration Framework Guidelines 2012 (Appendix 2).
- Due consideration of the ecologically sensitive nature of the site must be made when selecting the appropriate weed removal and weed control methods.
- Frog friendly glyphosate will be the primary herbicide used in these weed control works.
- Weed control works must be undertaken in a manner which does not promote erosion and instability of soil, specifically in areas drainage areas.
- If evidence of excessive spraying or off target damage is observed, additional rehabilitation will be undertaken to ensure that public open space areas are stable and not at elevated risks of erosion due to off target damage.
- Dye mixed with chemical is to be used when treating all weeds within public open space.
- Weed control is to be undertaken under drip lines of existing native plants in a manner which promotes regeneration and reduces competition for native species and which limits the potential for off target damage.

Specific weed control methods in accordance with Appendix 2 – Control Techniques and Herbicide Application Rates For Particular Weed Species of the South East Queensland Ecological Restoration Framework prepared on behalf of SEQ Catchments and South East Queensland Local Governments, Brisbane to be utilised for specific weed species noted on site are outlined in the following table:

Table 1.2 – Specific Weed Control methods for weeds observed on site

Scientific Name	Common Name	Proposed Weed Control Method
Brachiaria mutica	Para Grass	Spot spray 100ml Glyphosate:10L water + Dye
Cinnamonum camphora	Camphor Laurel	Stem inject 1:1.5 Glyphosate:Water
Lantana camara	Lantana	Cut Spray Paint 1:1.5 Glyphosate:Water
Sporobolus fertilis	Giant Parramatta Grass	Spot spray 100ml Glyphosate:10L water + Dye
Setaria sphacelata	South African Pigeon Grass	Spot spray 100ml Glyphosate:10L water + Adjuvant + Dye
Conyza bonariensis	Flaxleaf Fleabane	Spot spray 100ml Glyphosate:10L water + Dye
Paspalum mandiocanum	Broad-leaved Paspalum	Spot spray 100ml Glyphosate:10L water + Dye
Solanum chrysotrichum	Giant Devil's Fig	Stem inject 1:1.5 Glyphosate:Water
Eragrostis curvula	African Love Grass	Spot spray 100ml Glyphosate:10L water + Dye
Sporobolus pyramidalis	Giant Rat's Tail Grass	Spot spray 100ml Glyphosate:10L water + Dye
Senecio madagascariensis	Fireweed	Spot spray 300ml Glyphosate:10L water + Dye
Gomphocarpus physocarpus	Balloon Cotton Bush	Spot spray 100ml Glyphosate:10L water + Dye
Sida acuta	Spiny Head Sida	Spot spray 100ml Glyphosate:10L water + Dye
Coffee Senna	Coffee Senna	Cut Spray Paint 1:1.5 Glyphosate:Water
Solanum mauritianum	Tobacco Bush	Cut Spray Paint 1:1.5 Glyphosate:Water
Bidens pilosa	Cobblers Pegs	Spot spray 100ml Glyphosate:10L water + Dye
Verbena bonariensis	Purple Top	Spot spray 100ml Glyphosate:10L water + Dye

1.9 Staging of Works

The total rehabilitation works should be for a period of 12 months, allowing 6 weeks for adequate preparation of rehabilitation areas. Rehabilitation works should be staged as follows:

Table 1.2: *Staging of works*

Step	***Activity***	***Timing***
1	Locate and delineate the rehabilitation area	Week 1
2	Remove all rubbish and foreign debris from rehabilitation area	Week 1
3	Undertake initial weed treatment.	Week 1

Step	Activity	Timing
4	Undertake follow up weed control	Week 7 – 10
5	Follow up weed control within the rehabilitation areas.	6 weekly cycle: Week 16, 22, 28, 34 - 52

The initial round of weed control will be complete prior to the commencement of the establishment period.

1.10 Maintenance

The maintenance period will be for 12 months following the 12 month establishment phase and shall consist of:

- Boom spray weeding where accessible and spot spraying in steeper areas in open space areas.
- The standard of weed control and management works on lands to be transferred to Council that is attained at the acceptance of the On Maintenance period must be maintained or improved until Council accepts the public open space Off Maintenance.

The performance of maintenance activities will be assessed as part of allocated monitoring inspections.

1.11 Monitoring

The rehabilitation works are to be monitored by routine site inspections by a qualified professional. Refer to Appendix 3 for a sample monitoring inspection form.

The following inspections are recommended:

Table 1.3: *Monitoring Schedule*

Inspection	Timing	Purpose	Evidence
1	Week 1	Confirm location of rehabilitation area	Site visit
2-11	Week 2 – 52 (12 months)	'Establishment' period - Inspection of weed control. Spot spray any weeds present.	Inspection form & photographs
12+	Week 52 – 104 (12 months)	'On maintenance' period – assess ecological integrity of site; Effectiveness of weed control activities	Inspection form, photographs & certification to council

1.12 Performance Indicators

- All environmental weeds including woody weeds, vines and Declared Class 1 and 2 weeds (pursuant to the *Land Protection (Pest and Stock Route Management) Act 2002)* must be controlled on all lands proposed for transfer to Council.
- No declared Class 1 or Class 2 weeds are to be present on site at the Off Maintenance inspection.
- Pasture grass weeds and other perennial weed species are managed and impacts are minimised as much as possible.

2 Planting Details

2.1 Summary of treatments

In accordance with approved plans, the following treatment area codes are nominated as illustrated and colour coded in Appendix 1.

Areas to be treated by weed management and assisted natural regeneration

Pu1 – Mapped remnant vegetation: Weed management and assisted natural regeneration only, no additional plantings proposed. Performance criteria in accordance with Section 1.12 above.

Pu2 – Unmapped Native Vegetation: Weed management and assisted natural regeneration only, no additional plantings proposed. Performance criteria in accordance with Section 1.12 above.

Pu3a – Degraded areas containing native regrowth vegetation: Weed management and assisted natural regeneration only, no additional plantings proposed. Performance criteria in accordance with Section 1.12 above.

Whilst it is likely that following the treatment of the weed species on site that natural regeneration will be successful in revegetating this area, active plantings are to be considered as a contingency in the case that assisted natural regeneration is unsuccessful in all of these areas in cases where assisted natural regeneration fails to achieve the specified plant densities.

Areas to be treated by weed management and active plantings

Pu3b – Degraded areas with scattered individual trees: Planting and/or regeneration at a density of 1 plant per $5m^2$ (plants at 2.25m spacings or closer).

Pu3c – Degraded areas dominated by pasture grasses and weed species: Planting at a density of 1 plant per $5m^2$ (plants at 2.25m spacings or closer).

Pu4 – Existing grass drainage channels: Planting at a density of 1 plant per $2m^2$ (1.4m spacings or closer).

Pu5 – Existing grassed areas: Weed removal and scattered shade tree plantings as appropriate.

Treatments for Pu1, Pu2 and Pu3a are outlined in section 1.8 relating to weed control methods. The species palettes and planting treatments for Pu3b, Pu3c, Pu4 and Pu5 will be outlined in the subsequent sections.

Contingency plantings where required shall be selected from the following species palette and planted selectively to achieve at least 1 plant per $5m^2$.

Type	Botanical Name	Common Name
Canopy	*Eucalyptus tindaliae*	Tindale's Stringybark
	Eucalyptus carnea	Broad-leaved Mahogany
	Eucalyptus seeana	Narrow-leaved Red Gum
	Eucalyptus crebra	Narrow-leaved ironbark
	Corymbia intermedia	Pink Bloodwood
	Corymbia citriodora subsp. *variegata*	Spotted Gum
Mid-storey	*Melaleuca decora*	White Feather Honeymyrtle
	Babingtonia similis	Twiggy Myrtle
	Breynia oblongifolia	Oblong-leaved Breynia
	Leptospermum polygalifolium	Wild May
	Pultanaea villosa	Hairy Bush Pea
Shrub	*Alphitonia excelsa*	Red Ash
	Dianella caerulea	Blue Flax Lily
	Lomandra hystrix	Green matrush
	Lomandra longifolia	Spiny headed matrush

2.2 Planting techniques

Appendix 1 depicts the area of the rehabilitation area that requires planting after taking into account existing native vegetation.

Plants are to be supplied in tubestock, 75mm native tube or equivalent and is to be planted according to Figure 2.1 overleaf.

Plant stock is to be sourced from local nurseries, using local provenance parent material. Stock is to be free of defects and pathogens and should show good root structure and vigour.

A survival rate of at least 90% is to occur within the rehabilitation area for the duration of the 12 month establishment and 12 month maintenance periods. Failure to achieve these targets will require plant replacement.

The four (4) distinct rehabilitation zones as outlined in section 2.1 are nominated and are individually outlined in the following sections.

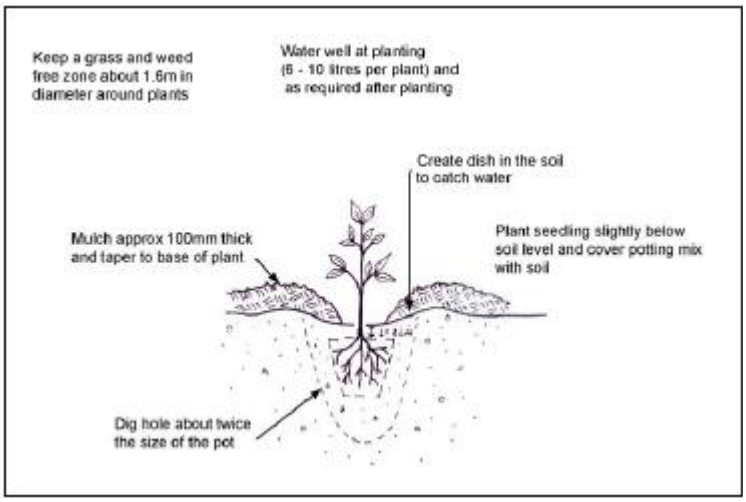


Figure 2.1: *Planting Detail*

2.3 Rehabilitation Zone Pu3b

Areas mapped as Pu3b in Appendix 1 have been observed as previously degraded, but appear to contain scattered native trees and some shrubs. As per the approved plans, weed management will be undertaken in accordance with Section 1 of this report

Following initial weed treatment in accordance with methods prescribed in Appendix 2, restorative plantings should be implemented. The planting module for the area to be rehabilitated within the rehabilitation zone Pu3b is as follows (includes the area depicted in Appendix 1). The planting density of this rehabilitation zone is 1 plant per $5m^2$ with plant centres at a minimum of 2.25m spacings.

Species have been selected after a review of pre-clearing Regional Ecosystem mapping revealed that pre-clearing RE 12.11.5a dominated this area prior to clearing. Species reflecting this RE make up the species palette below.

Type	Botanical Name	Common Name	Pot size	Number
Canopy	*Eucalyptus tindaliae*	Tindale's Stringybark	Tube	1904
	Eucalyptus carnea	Broad-leaved Mahogany	Tube	1904
	Eucalyptus seeana	Narrow-leaved Red Gum	Tube	1904
	Eucalyptus crebra	Narrow-leaved ironbark	Tube	1904
	Corymbia intermedia	Pink Bloodwood	Tube	1904
	Corymbia citriodora subsp. *variegata*	Spotted Gum	Tube	1904
Mid-storey	*Melaleuca decora*	White Feather Honeymyrtle	Tube	652
	Babingtonia similis	Twiggy Myrtle	Tube	652
	Breynia oblongifolia	Oblong-leaved Breynia	Tube	652
	Leptospermum polygalifolium	Wild May	Tube	652
	Pultanaea villosa	Hairy Bush Pea	Tube	652
Shrub	*Alphitonia excelsa*	Red Ash	Tube	408
	Dianella caerulea	Blue Flax Lily	Tube	408

Type	Botanical Name	Common Name	Pot size	Number
	Lomandra hystrix	Green matrush	Tube	408
	Lomandra longifolia	Spiny headed matrush	Tube	408
				Total 16,316

Total area: Total 81,571m² (approx)
Density: 1 plant per 5m²
Ratio: 70% canopy, 20% Mid-storey, 10% Shrubs
14x Canopy Species per 100m²
4x Mid-storey Species per 100m²
2x Shrub Species per 100m²
Total = 20 plants per 100m² module

2.4 Rehabilitation Zone Pu3c

Areas mapped as Pu3c in Appendix 1 are primarily dominated by introduced pasture grasses and a variety of other exotic species. As per the approved plans, weed management will be undertaken in accordance with Section 1 of this report

Following initial weed treatment in accordance with methods prescribed in Appendix 2, restorative plantings should be implemented. The planting module for the area to be rehabilitated within the rehabilitation zone Pu3c is as follows (includes the area depicted in Appendix 1). The planting density of this rehabilitation zone is 1 plant per 5m^2 with plant centres at a minimum of 2.25m spacings.

Species have been selected after a review of pre-clearing Regional Ecosystem mapping revealed that pre-clearing RE 12.11.5a dominated this area prior to clearing. Species reflecting this RE make up the species palette below.

Type	Botanical Name	Common Name	Pot size	Number
Canopy	*Eucalyptus tindaliae*	Tindale's Stringybark	Tube	7000
	Eucalyptus carnea	Broad-leaved Mahogany	Tube	7000
	Eucalyptus seeana	Narrow-leaved Red Gum	Tube	7000
	Eucalyptus crebra	Narrow-leaved ironbark	Tube	7000
	Corymbia intermedia	Pink Bloodwood	Tube	7000
	Corymbia citriodora subsp. *variegata*	Spotted Gum	Tube	7000
Mid-storey	*Melaleuca decora*	White Feather Honeymyrtle	Tube	2400
	Babingtonia similis	Twiggy Myrtle	Tube	2400
	Breynia oblongifolia	Oblong-leaved Breynia	Tube	2400
	Leptospermum polygalifolium	Wild May	Tube	2400
	Pultanaea villosa	Hairy Bush Pea	Tube	2400
Shrub	*Alphitonia excelsa*	Red Ash	Tube	1500
	Dianella caerulea	Blue Flax Lily	Tube	1500
	Lomandra hystrix	Green matrush	Tube	1500
	Lomandra longifolia	Spiny headed matrush	Tube	1500
				66,000

Total area: 300,017m² (approx)
Density: 1 plant per 5m²
Ratio: 70% canopy, 20% Mid-storey, 10% Shrubs
14x Canopy Species per 100m²
4x Mid-storey Species per 100m²
2x Shrub Species per 100m²
Total = 20 plants per 100m² module

2.5 Rehabilitation Zone Pu4

Areas mapped as Pu4 in Appendix 1 are currently grassed drainage channels. As per the approved plans, weed management will be undertaken in accordance with Section 1 of this report

Following initial weed treatment in accordance with methods prescribed in Appendix 2, restorative plantings should be implemented. The planting module for the area to be rehabilitated within the rehabilitation zone Pu4 is as follows (includes the area depicted in Appendix 1). The planting density of this rehabilitation zone is 1 plant per $2m^2$ with plant centres at a minimum of 1.4m spacings.

Species have been selected after a review of pre-clearing Regional Ecosystem mapping revealed that pre-clearing RE 12.3.11 was representative of the lower lying drainage lines prior to any clearing known to occur in the area. Species reflecting this RE make up the species palette below.

Type	Botanical Name	Common Name	Pot size	Number
Canopy	*Corymbia tessellaris*	Blackbutt	Tube	8275
	Eucalyptus tereticornis	Queensland Blue Gum	Tube	8275
	Eucalyptus siderophloia	Northern Grey Ironbark	Tube	8275
	Eucalyptus propinqua	Grey Gum	Tube	8275
	Corymbia intermedia	Pink Bloodwood	Tube	8275
	Eucalyptus resinifera	Red Mahogany	Tube	8275
Mid-storey	*Angophora woodsiana*	Rough-barked Apple	Tube	2837
	Melaleuca quinquenervia	Narrow-leaved Paperbark	Tube	2837
	Lophostemon confertus	Brush Box	Tube	2837
	Lophostemon suaveolens	Swamp Box	Tube	2837
	Alphitonia excelsa	Red Ash	Tube	2837
Shrub	*Melaleuca decora*	White Feather Honeymyrtle	Tube	1419
	Alphitonia excelsa	Red Ash	Tube	1419
	Dianella caerulea	Blue Flax Lily	Tube	1419
	Lomandra hystrix	Green matrush	Tube	1419
	Lomandra longifolia	Spiny headed matrush	Tube	1419
				66,000

Total area: 141,857m² (approx)
Density: 1 plant per 2m²
Ratio: 70% canopy, 20% Mid-storey, 10% Shrubs
35x Canopy Species per 100m²
10x Mid-storey Species per 100m²
5x Shrub Species per 100m²
Total = 50 plants per 100m² module

2.6 Rehabilitation Zone Pu5

Areas mapped as Pu5 in Appendix 1 are currently areas around the northern edges of the subject site. The intent of this area is for it to be used as grassed rest areas with scattered trees. The exact plantings will be subject to detailed landscape design during the delivery of future stages of the development. As per the approved plans, weed management will be undertaken in accordance with Section 1 of this report

Following initial weed treatment in accordance with methods prescribed in Appendix 2 and slashing of grass, plantings should be implemented. The planting module for the area to be rehabilitated within the rehabilitation zone Pu5 is as follows (includes the area depicted in Appendix 1). The planting density of this rehabilitation zone is an average of 1 plant per 50m^2.

Species have been selected from trees suitable for parks which are known to provide shade and are safe for plantings in a park environment. Dense buffer plantings at the edges of these areas as prescribed in the original approval will also be addressed at detailed landscape design stage.

Type	*Botanical Name*	*Common Name*	*Pot size*	*Number*
Mid-storey	*Cupaniopsis anacardiodes*	Tuckeroo	Tube	134
	Flindersia australis	Crows ash	Tube	134
	Elaeocarpus eumundi	Eumundi Quandong	Tube	134
	Elaeocarpus obovatus	Hard Quandong	Tube	134
	Mallotus philippinensis	Red Kamala	Tube	134
	Syzygium australe	Brush Cherry	Tube	134
	Waterhousia floribunda	Lilly Pilly	Tube	134
	Harpullia pendula	Tulipwood	Tube	134
	Lophostemon confertus	Brush Box	Tube	134
	Lophostemon suaveolens	Swamp Box	Tube	134
				1340

Total area: 66,946m² (approx)
Density: 1 plant per 50m²
Ratio: 70% canopy, 20% Mid-storey, 10% Shrubs
35x Canopy Species per 100m²
10x Mid-storey Species per 100m²
5x Shrub Species per 100m²
Total = 50 plants per 100m² module

2.7 Mulch

Mulch is to be used on all planting areas within the rehabilitation area. The mulch shall consist of 100mm of weed-free forest mulch spread in a 30cm radius around each plant. If considered more practical or economical, mulch may be applied in a blanket over entire rehabilitation areas, especially in Rehabilitation Zone Pu4. Alternatively, if considered more practical and viable, jute matting may be used as an alternative in Pu4.

2.8 Watering

All plant stock is to be watered onsite prior to planting and as soon as practical after planting (within several hours). Water is to be sourced locally or is to be recycled non-potable water.

2.9 Staging of Works

The total rehabilitation works should be for a period of 12 months, allowing 6 weeks for adequate preparation of planting areas. Rehabilitation works should be staged as follows:

Table 2.1: *Staging of works*

Step	***Activity***	***Timing***
1	Locate and delineate the rehabilitation area	Week1
2	Remove all rubbish and foreign debris from rehabilitation area	Week 1
3	Undertake initial weed treatment. Locate, mark out and prepare areas for planting within the covenant area	Week 1
4	Undertake follow up weed control and plant the specified species within the rehabilitation area according to the planting module.	Week 7 – 10
5	Scheduled maintenance of planting areas during establishment period within the rehabilitation area and follow up weed control within the rehabilitation areas.	6 weekly cycle: Week 16, 22, 28, 34 - 52

2.10 Maintenance

The maintenance period will be for 12 months following the 12 month plant establishment phase and shall consist of:

- Boom spraying, hand weeding and spot spraying in planting areas.
- Watering of planted plants if required.
- Top up mulch around planted areas if required.
- Replacement and repair of jute matting if required.
- Replacement planting of individual plants which have died.

The performance of maintenance activities will be assessed as part of allocated monitoring inspections.

Table 2.2: *Measurement of health*

Time scale	*Growth and development processes*	*Key indicator for species health*	*Maintenance Issues that may arise*	*Description of maintenance period*
0 – 3 Months	Growth rate and establishment	Seedling heights, foliage growth and colour, weed presence.	Weed removal, water requirements, impacts from unforseen destruction, attrition rates.	At least 90% success in establishing the planted species. Minimal weeding required.
4 – 12 Months	Continued growth and establishment General health Minor habitat use	Increasing height and trunk diameter increasing, Canopy growth and density Weed presence, Canopy closure	Weed removal, possible impacts from past weed invasion measures.	Healthy foliage growth rates and characteristics corresponding with individual species.

2.11 Monitoring

The rehabilitation works are to be monitored by routine site inspections by a qualified professional. Refer to Appendix 3 for a sample monitoring inspection form.

The following inspections are recommended:

Table 2.3: *Monitoring Schedule*

Inspection	*Timing*	*Purpose*	*Evidence*
1	Week 1	Confirm location of rehabilitation area & planting areas	Site visit
2-11	Week 2 – 52 (12 months)	'Establishment' period - Inspection of weed control & planting areas. Replace any dead plants	Inspection form & photographs
12+	Week 52 – 104 (12 months)	'On maintenance' period – assess ecological integrity of site; Plant establishment and vigour Effectiveness of weed control activities	Inspection form, photographs & certification to council

Additional planting of 'unsuccessful' assisted natural regeneration areas must have a minimum 3 month establishment period prior to the acceptance by Council of the commencement of the 'On Maintenance' period.

3 Conclusion

This Rehabilitation Management Plan has addressed the objectives that are required to achieve a protected natural asset public open space nature reserve pursuant to Council's Open Space guidelines and is in accordance with the development approval which broadly prescribes rehabilitation techniques over the subject site.

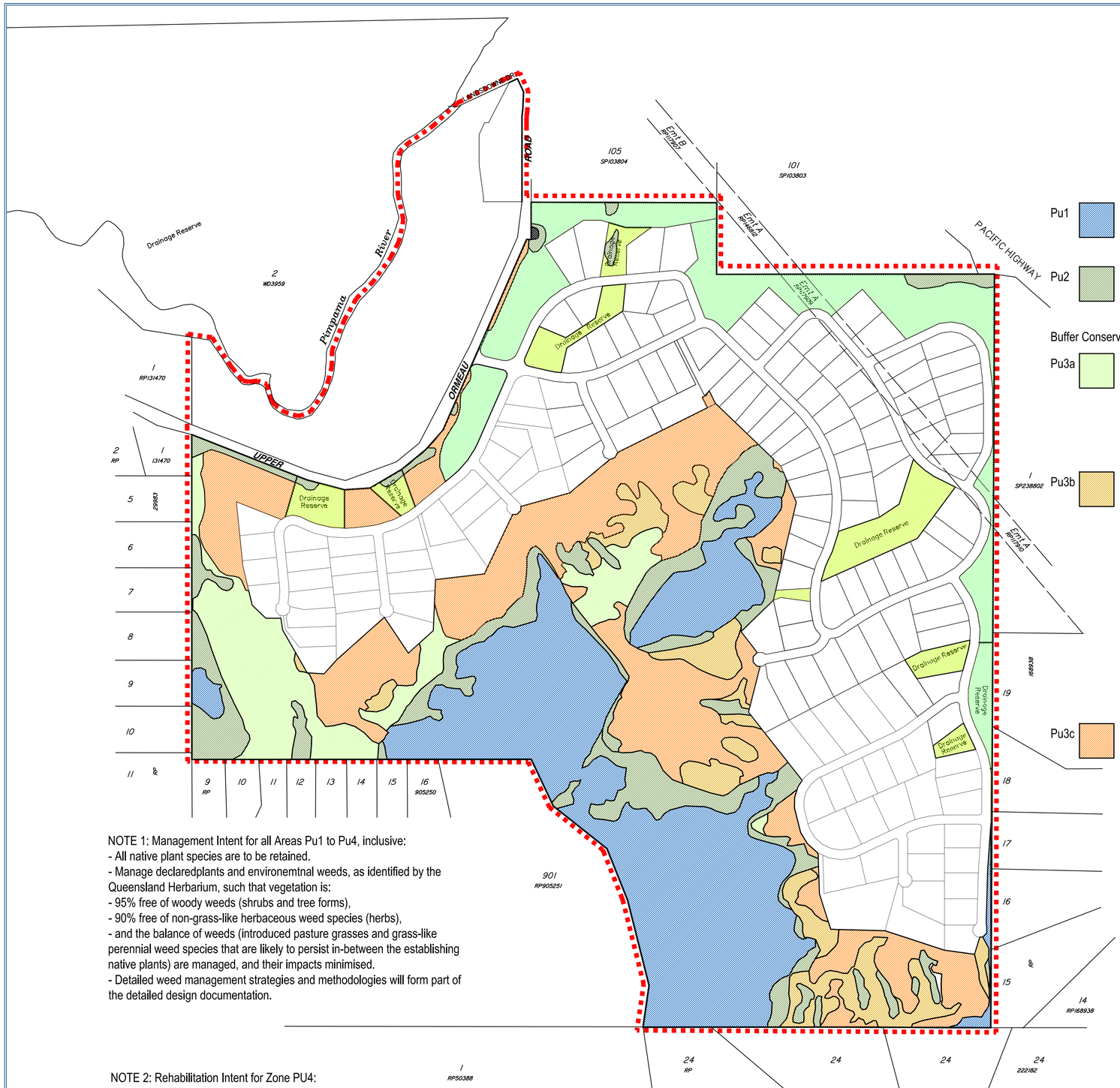
By providing evidence and the rationale behind the rehabilitation of the degraded areas contained within the subject site, this report provides the various strategies and responses to achieve Council objectives, whilst effectively managing environmentally sensitive areas during the construction and operation of the proposed development.

The creation and spatial dimensions of the Rehabilitation Area have been based on reference to the relevant GCCC planning instruments and the development layout approved over the subject site.

Resulting from the environmental context of the subject OSPA, rehabilitation will involve reconstructive rehabilitation in areas currently lacking native vegetation in combination with assisted natural regeneration via weed management in areas containing mapped or unmapped remnant vegetation.

It is considered that the rehabilitation methodology adheres to Council's organisational requirements and will likely result in a net benefit to the ecology of the area including the augmentation of fauna habitat and connectivity values for the subject site. These benefits have been identified primarily as addressing ecological issues, such as vegetation conservation, habitat protection and the future development and succession of the existing ecology.

APPENDIX 1 – Rehabilitation Areas



Pu1 - Area of mapped native remnant vegetation as at May 2006.
- Refer to NOTE 1 for management Intent

Pu2 - Areas cantaining unmapped native vegetation as at May 2006.
- Refer to NOTE 1 for management Intent

Buffer Conservation Zone

Pu3a
- Previously degraded areas that appear to contain contiguous patches of native regrowth vegetation. (Vegetation as naturally established between Nay 2006 and August 2012)
- Refer to NOTE 1 for management intent

Pu3b
- Previously degraded areas that appear to contain scattered individual native trees and shrubs. (Vegetation as naturally established between Nay 2006 and August 2012)
- Devise a rehabilitation planting suite comprising local native plant species that are consistent with the appropriate pre-clearing regional ecosystem (or encourage additional native vegetation to establish via Assisted Natural Restoration).
- Planting and / or regeneration to attain a minimum density of 1 plant per 5 square metres (Plants at 2.25m spacings or closer).
- Refer to NOTE 1 for management intent

Pu3c
- Areas that appear to remain covered with introduced pasture grasses and weed species as at August 2012.
- Devise a rehabilitation planting suite comprising local native plant species that are consistent with the appropriate pre-clearing regional ecosystem (or encourage additional native vegetation to establish via Assisted Natural Restoration).
- Planting and / or regeneration to attain a minimum density of 1 plant per 5 square metres (Plants at 2.25m spacings or closer).
- Refer to NOTE 1 for management intent

Pu4
- Existing grasses drainage channels to be rehabilitated with riparian species where and as supported hydraulic requirements.
- Repair any erosion in accordance with hydraulic engineering recommendations.
- Rehabilitation to extend as least 10m either side of invert, where road design requirements permit.
- Devise a rehabilitation planting suite comprising local native plant species that are consistent with the appropriate pre-clearing regional ecosystem (or encourage additional native vegetation to establish via Assisted Natural Restoration).
- Planting and / or regeneration to attain a minimum density of 1 plant per 2 square metres (Plants at 1.4m spacings or closer, including trees and large shrubs generally at 2m spacings from each other) with the rehabilitation intent for Zone Pu4 identified at NOTE 2).
- Refer to NOTE 1 for management intent

Pu5
- Where grades and drainage permit, existing grassed areas may be utilised as grassed rest areas with shade tree planting as appropriateand subject to detailed landscape design.
- Incorporate retained native vegetation, remove woody and herbaceous weeds and slach grasses (or fill depressions and seed as required).

BARRIERS TO CONSERVATION AREAS:
- Boundary treatment between public road reserve and public open space is to prevent unauthorised vehicular access to the conservation areas.
- Such treatments may include:
- Planting or natural establishment of vegetation barriers, that is, trees and large shrubs at the edge of conservation areas at maximum 1.5m spacings between plants.
- Post and wire fencing along the edge of conservation areas where plant density at handover may not restrict vehicle access.
- Post and rail or bollard fence in more open areas where plant density is unlikely to restrict access
- or a combination of the above, subject to detailed landscape design.

NOTE 1: Management Intent for all Areas Pu1 to Pu4, inclusive:
- All native plant species are to be retained.
- Manage declaredplants and environemtnal weeds, as identified by the Queensland Herbarium, such that vegetation is:
- 95% free of woody weeds (shrubs and tree forms),
- 90% free of non-grass-like herbaceous weed species (herbs),
- and the balance of weeds (introduced pasture grasses and grass-like perennial weed species that are likely to persist in-between the establishing native plants) are managed, and their impacts minimised.
- Detailed weed management strategies and methodologies will form part of the detailed design documentation.

NOTE 2: Rehabilitation Intent for Zone PU4:
- The primary rehabilitation intent for this zone is shading of the riparian area with tree and shrub species in order to suppress weed growth and achieve the roughness co-efficient desired by Council (n=1, i.e.
- Trees at 2 metre spacing, low branches, regular shrubs, no vines. Canopy cover possibly shades weeds and it is difficult to walk through" (Witheridge, 2003, P45)
- Thus on balance, the achievement of the desired roughness co-efficient will most likely result in a riparian corridor dominated by trees and shrubs, with the ground layer being too densely shaded for significant understorey species (native or introduced) to persist, with the possible exception of sedges and rushes along the drainage invert.
- Works within Pu4 that are affected by the power easement will be required to comply with the infrastructure owner's requirements. Based on current requirements, the desired roughness co-efficient and waterway shading is unlikely to be achieved in this area and the drainage channel treatment may be limited to a narrow bans of sedges along the invert in order to permit reasonable access to the infrastructure, limit interference by trees and permit reasonable maintenance of the channel.

NOTE: Amended subdivision layout overlaid over approved plans prepared by Yurrah Pty Ltd

Title - Proposal

Public Open Space Management Plan

Dwg# OSMP.02 Date 21/11/12

* All included text on this plan has been taken word for word from Yurrah's approved plan (OSMP 02) and remains consistent with approval.

Scale 1:5000 - Lengths are in Metres.

0 50 100 150 200 250 300 350 400

gassman development perspectives
planning design environment surveying

Brisbane Office
Level 8
97 Creek Street Brisbane Q. 4000
t: (07) 3221 6732
f: (07) 3221 7308
e: mail@gassman.com.au

Gold Coast and Logan Office
Access Business Park
76 Business Street Yatala Q. 4207
t: (07) 38073333
f: (07) 32875461
w: www.gassman.com.au

Client:

MONTEGO Hills

for

Designed for Living
villawood properties

Site Address:

MONTEGO HILLS
Upper Ormeau Road, Kingsholme

RPD:

Lot:	2/RP29994, 2/RP107328,
Plan:	1/SP243312
Parish:	Pimpama
County:	Ward
Local Authority:	Gold Coast City Council
Level Datum:	AHD der
Meridian:	RP107328

Associated Consultants:

MORTON urbansolutions
Urban & Regional Planning
Civil Engineering
Project Coordination

Issue	Date	Description	DRN	CHK
-	17-07-15	ORIGINAL ISSUE	SJH	MDS

Scale at A1:	1:5000
Date:	17-07-15
Design:	.
Drawn:	SJH
Checked:	MDS

Drawing Title:

Public Open Space Management Plan

Canceling Lot: 2 on RP29994, Lot 2 on RP107328 & Lot 1 on SP243312

Drawing No: 5543 E OSMP 01

Rev. No:

APPENDIX 2 – South East Queensland Ecological Restoration Framework Weed Management Techniques

DISCLOSURE

At the time of publication the following chemicals and techniques are registered for use and are commonly utilised. Other chemicals and techniques are used in the ecological restoration industry. Laws and best practice techniques change over time and as such it is best to check with your local government as to the current preferred approach.

Under label or off-label permits 11463 and 9868. Permit 9868 requires that persons who can use the product under the permit are "All persons who are trained in the use and handling of agricultural chemicals and who are performing weed control as part of a bush regeneration/restoration project". Operators are legally obliged to read the label before using any herbicides. If the species you wish to treat is not on the label it will be necessary to read the off label permit. Always consult the ecological restoration plan for the projects.

Additional useful references include the Weeds of Southern Queensland (Dight et al., 2011) and PUBCRIS (http://services.apvma.gov.au/PubcrisWebClient/welcome.do).

HERBICIDE (+ E.G. TRADE NAME)	PRINCIPLE USES	ECOTOXICOLOGY	GROUP	SCHEDULE	UPTAKE AND RESIDUAL AFFECT
Glyphosate 360gl (Weedmaster® or Roundup Biactive®)	Non- selective weed control	Full Aquatic registration (in **most formulations**),	M	5	Absorbed through the leaf via spraying and through the cambium when applying techniques such as stem injection and cut, scrape and paint. Extremely short-lived and rapidly immobilised (both in soil and water). Degraded within hours in most environments
2,4-D 625 gl amine (Amicide 625)	Selective of broad-leaved weeds in native grasses (limited effect on deep rooted dicots, legumes etc.)	Aquatically registered formulations **available**	I	5	Mainly absorbed through leaves and stems. Fairly immobile and reltively short-lived in the soil. (degraded within days in most environments)
Fluroxypyr 333gl (Starane advance)	Selective broad-leaf control (particularly effective on undersown legumes weeds)	N (demonstrated toxicity to aquatic organisms)	I	NS	Absorbed through the leaves. Relatively short-lived in the soil though highly persistent in water
Metsulfuron Methyl (Brush-off, Ally, Associate)®	Selective of broad-leaved weeds but also able to control a variety of monocots when applied at higher rates especially Liliaceae and Commilinacea. Lower rates do affect monocots.	N (demonstrated toxicity to aquatic organisms)	B (potential resistance rotate with other herbicicdes)	NS	Mainly leaf absorbed. May persist for 3-6 months in the soil profile.
Metsulfuron + Glyphosate	Non-selective weed control and used with particular weeds or combination of weeds.	N (demonstrated toxicity to aquatic organisms)	MB (potential resistance rotate with other herbicicdes)	5	Mainly leaf absorbed, may persist for 3-6 months in the soil profile.
2,2-DPA	Grass (monocot) selective herbicide suitable for targeting dense weedy grass infestations amongst desirable native vegetation.	Yes (limited)	J	NS	Leaf and root absorbed

***Aquatic reg indicates that formulations of this herbicide may carry and aquatice registration, some formulations do not and individuals should check PUBRCRIS prior to assuming they have an aquatically regitered formulation. Addition of non-aquatically re...**

Gly	Glyphosate	eg. Weedmaster Duo®, Roundup Biactive®					
MM	Metsulfuron methyl	eg. Brushoff ®, Brushkiller®, Associate®					
S	Surfactant	eg. LI700®, Prosil®, Pulse®					
A	Spray Adjuvant	eg. Agral®, Protec®, Codacide®,					
D	Colour Marking Dye	eg. Herbi (red or blue) Liquid Dye®					

COMMON NAME	SCIENTIFIC NAME	APPLICATION METHOD	CHEMICAL	RATE	ADJUVENT	SURFACTANT	COMMENTS
TREES							
Cinese Celtis	*Celtis sinensis*	Stem Inject	Glyphosate	1:1.5 Gly:water			
		Cut, Scrape and Paint	Glyphosate	1:1.5 Gly:water			
		Basal Bark (saplings)	Fluroxypyr	210ml:10L diesel			
		spot-spray	Glyphosate	200ml:10L water + A + D			
			Glyphosate + Metsulfuron Methyl	200mL Gly + 1.5g MM in 10L water + S + A			
Camphor Laurel	*Cinnamomum camphora*	Stem Inject	Glyphosate	1:1.5 Gly:water			
		Cut, Scrape and Paint	Glyphosate	1:1.5 Gly:water			
		Basal Bark (saplings)	Fluroxypyr	210ml:10L diesel			
		Spot spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + S + D			
			Glyphosate	200ml:10l water + A + D			
Cadaghi	*Corymbia torelliana*	Cut, Scrape and Paint	Glyphosate	1:1.5 Gly:water			
		Stem Inject	Glyphosate	1:1.5 Gly:water			
		Basal Bark (saplings)	Fluroxypyr	210ml:10L diesel			
		Spot spray	Glyphosate	100ml Gly: 10L water + A + D			
Loquat	*Eriobotrya japonica*	Basal Bark(sapling)	Fluroxypyr	210ml:10L diesel			
		Spot spray	Glyphosate	200ml Gly:10L water +			
		Cut Scrape and Paint	Glyphosate	1:1.5 Gly:water			
		Stem Inject	Glyphosate	1:1.5 Gly:water			
Cockscomb Coral Tree and Coral Tree	*Erythrina crista-galli and E. x sykesii*	Spot spray	Glyphosate	200ml Gly:10L water + S+ A			
		Basal Bark (sapling)	Fluroxypyr	210ml/10L diesel			
		Cut Scrape and Paint	Glyphosate	1:1.5 Gly:water			
		Stem Inject	Glyphosate	1:1.5 Gly:water			
Brazilian cherry	*Eugenia uniflora*	Cut Scrape and Paint	Glyphosate	neat (undiluted)			
		Stem Inject	Glyphosate + Metsulfuron Methyl	1g MM added to 1 Gly:1.5 water			
		Spot Spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + S + D			
Golden Rain Tree	*Koelreuteria elegans; paniculata*	Cut Scrape and Paint	Glyphosate	1:1.5 Gly:water			
		Stem Inject	Glyphosate	1:1.5 Gly:water			
		Basal Bark (sapling)	Fluroxypyr	210ml:10L diesel			
		Spot spray	Glyphosate	100ml Gly:10L water + A + D			
Privet (Large and Small leaved)	*Ligustrum lucidum and L.sinense*	Spot Spray	Glyphosate	200ml Gly:10L water + S+ D			
			Metsulfuron methyl	1.5g MM:10L water + A + D			
			Fluroxypyr	30ml:10L water +			
		Cut Scrape and Paint	Glyphosate	1:1.5 Gly:water			
		Stem Inject	Glyphosate	1:1.5 Gly:water			
		Basal Bark (sapling)	Fluroxypyr	210ml:10L diesel			

Mulberry	*Morus spp.*	Spot Spray	Glyphosate	200ml Gly:10L water + S + D			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Stem Inject	Glyphosate	1 Gly:1.5 water			
		Basal Bark (Juvenile)	Fluroxypyr	210ml:10L diesel			
Canary Island Date Palm	*Phoenix canariensis*	Spot Spray	Glyphosate	200ml Gly:10L water + S + D			
		Stem Inject	Glyphosate + Metsulfuron Methyl	1g MM added to 1 Gly:1.5 water			
Guava	*Psidium guajava*	Spot Spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + S + D			
		Cut Scrape and Paint	Glyphosate + Metsulfuron Methyl	1g MM added to 1 Gly:1.5 water			
		Stem Inject	Glyphosate + Metsulfuron Methyl	1g MM added to 1 Gly:1.5 water			
Umbrella Tree	*Schefflera actinophylla*	Spot Spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A + D			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Stem Inject	Glyphosate	1 Gly:1.5 water (do not stem inject when in flower)			
Broad-leaf Pepper Tree	*Schinus terebinthifolius*	Spot Spray	Glyphosate	200ml:10L water + S + A			
			Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + S + A			
			Fluroxypyr	30ml:10L water			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Basal Bark (sapling)	Fluroxypyr	210ml:10L diesel			
		Stem Inject	Glyphosate	1 Gly:1.5 water			
Giant Devils Fig and Wild Tobacco	*Solanum chrysotrichum and S. mauritianum*	Spot Spray	Glyphosate	150ml Gly:10L water + A + D			
			Fluroxypyr	30ml/10L water			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Basal Bark (Juvenile/ Mature)	Fluroxypyr	210ml/10L diesel			
		Stem Inject	Glyphosate	1 Gly:1.5 water			
African tulip tree	*Spathodea campanulata*	Spot Spray	Glyphosate	200ml Gly + 1.5g MM in 10L water + A + D			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Stem Inject	Glyphosate	1 Gly:1.5 water			
Cocos palm	*Syagrus romanzoffiana*	Stem Inject	Glyphosate + Metsulfuron Methyl	1g MM added to 1 Gly:1.5 water			
		Spot Spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A + D			
Yellow Bells	*Tecoma stans*	Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Basal Bark	Fluroxypyr	210ml/10L diesel			
		Spot Spray	Glyphosate	150ml Gly: 10L water + A + D			
		Stem Inject	Glyphosate	1 Gly:1.5 water			
Tipuana	*Tipuana tipu*	Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Stem Inject	Glyphosate	1 Gly:1.5 water			

GRASSES							
Creeping Bamboo/ Clumping Bamboo	*Arundinaria spp./ Bambusa spp.*	Cut and spray (re-growth/seedling)	Glyphosate	100ml Gly: 10L water + D			
			2,2-DPA	150g:10L water			
		Cut stump and fill segment	Glyphosate	1 Gly:1.5 water			
Broad-leaved carpet grass, Narrow-leaved carpet grass, Para grass, Mosman River grass , Pangola grass, Guinea grass, Rhodes grass, Molasses grass, Sour grass, Paspalum, Bahia grass, Vasey grass, Broad-leaf paspalum, Kikuyu grass, Bana grass, Elephant grass	*Axonopus compressus, A. fissifolius, Brachiaria mutica, Cenchrus echinatus, Chloris gayana, Digitaria eriantha, Megathyrsus maximus, Melinis minutiflora, Paspalum conjugatum , P. dilatatum , P. notatum , P. urvillei , P. wettsteinii , Pennisetum clandesti*	Spot Spray	Glyphosate	100ml Gly:10L water + D			
Herbs							
Agave/Century plant	*Agave americana*	Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Stem Inject	Glyphosate	1g MM added to 1 Gly:1.5 water			
Crofton weed	*Ageratina adenophora*	Spot Spray	Glyphosate	100ml Gly:10L water + D			
			Metsulfuron methyl	1/2 - 1g MM: 10L water + D			
Mistflower	*Ageratina riparia*	Spot Spray	Glyphosate	100ml Gly:10L water + D			
			Metsulfuron methyl	1/2 - 1g MM: 10L water + D			
Blue billy-goat weed	*Ageratum houstonianum*	Spot Spray	Glyphosate	100ml Gly:10L water + D			
			Metsulfuron methyl	1g MM: 10L water + D			
			Fluroxypyr	30ml/10L water			
			2-4,D	30ml/10L water			
Ragweed	*Ambrosia artemisifolia*	Spot Spray	Glyphosate	100ml gly:10L water + A + D			
			Metsulfuron methyl	1.5g MM: 10L water + A + D			
Cobblers pegs	*Bidens pilosa var. pilosa*	Spot Spray	Fluroxypyr	30ml/10L water			
			2, 4-D	30ml/10L water			
			Glyphosate	100ml Gly: 10L water + A + D			
			Metsulfuron methyl	1g MM: 10L water + A + D			
Mother of Millions; Live Leaf Plant; Resurrection Plant	*Bryophyllum delagoense; Pinnatum*	Spot Spray	2, 4-D	50ml/10L water			
	Bryophyllum delagoense		Metsulfuron methyl	1.5g MM:10L water + S + D			
Purple/Green Succulent, Inch Plant	*Callisia fragran; repens*	Spot Spray	Fluroxypyr	90ml/10L water			
			Metsulfuron methyl	1.5g MM:10L water + S + D			
			Glyphosate	200ml Gly:10L water + A + D			
			Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A + D			

Hairy Commelina; Trad (wandering Jew); Purple Succulent; Striped Trad	*Commelina benghalensis; Tradescantia fluminensis/ albiflora;Tradescantia pillida; Zebrina pendula syn Tradescantia zebrina*	Spot Spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A + D			
			Glyphosate	200ml Gly:10L water + A + D			
			Metsulfuron methyl	1.5g MM: 10L water + S + D			
			Fluroxypyr	90ml/10L water			
Glory lilly	*Gloriosa superba*	Foliar Spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A + D			
Polka dot plant	*Hypoestes phyllostachya*	Spot Spray	Metsulfuron methyl	1.5g MM:10L water + S + D			
			Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A + D			
Fish bone fern	*Nephrolepis cordifolia*	Spot Spray	Metsulfuron methyl	1g MM: 10L + A/S + D			
			Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A + D			
Coral berry	*Rivinia humilis*	Spot Spray	Glyphosate	100ml Gly: 10L water + A + D			
			Glyphosate + Metsulfuron Methyl	100ml Gly + 1.5g MM in 10L water + A + D			
Mother-in-law's tongue	*Sansevieria trifasciata*	Spot Spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A + D			
Flannel Weed	*Sida cordifolia*	Spot Spray	Fluroxypyr	60ml/10L water			
Ground Asparagus	*Asparagus aethiopicus*	Spot Spray	Metsulfuron Methyl	1.5g MM : 10L water + A + D			
			Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A/S + D			
Singapore Daisy	*Sphagneticola trilobata*	Spot Spray	Metsulfuron methyl	1.5g MM in 10L water + A + D			
			Glyphosate + Metsulfuron Methyl	100ml Gly + 1g MM in 10L water + A + D			
SHRUBS							
Groundsel bush	*Baccharis halimifolia*	Spot Spray	2,4-D	40ml/10L water			
		Spot Spray	Glyphosate	200ml Gly:10L water + A + D			
		Stem Inject	Glyphosate	1 Gly:1.5 water			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
Green cestrum	*Cestrum parqui*	Spot Spray	Glyphosate	200ml Gly:10L water + A + D			
			Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A + D			
Duranta	*Duranta erecta*	Overall Spray (re-growth/seedling)	Glyphosate	200ml Gly:10L water + A + D			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Stem Inject	Glyphosate	1 Gly:1.5 water			
Lantana	*Lantana camara*	Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Spot Spray	Fluroxypyr	40ml/10L (spring, summer)-60ml/10L water (Autumn, Winter)			
		Spray (spot spray and overspray)	Glyphosate	100ml Gly:10L water + D			
		Spray Red Flowering species	Glyphosate	200ml Gly:10L water + A + D			
		Splatter Gun	Glyphosate	1 Gly:9 water			

Leucaena	*Leucaena leucocephela*	Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Spot Spray	Fluroxypyr	30ml/10L water			
HERBS							
Murraya	*Murraya paniculata*	Spot Spray	Glyphosate	200ml Gly:10L water + A + D			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Stem Inject	Glyphosate	1 Gly:1.5 water			
Mickey mouse bush	*Ochna serrulata*	Basal Bark	Fluroxypyr	210ml/10L diesel			
		Spot Spray	Fluroxypyr	30ml/10L water			
		Spot Spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A/S + D			
		Scrape (lightly) and Paint - juvenile	Glyphosate	neat (undiluted)			
		Cut Drill and Fill - mature	Glyphosate + Metsulfuron Methyl	1g MM added to 1 Gly:1.5 water			
Prickly pear	*Opuntia Spp.*	Spot Spray	Glyphosate + Metsulfuron Methyl	100ml Gly + 1.5g MM in 10L water + A + D			
		Cut Scrape and Paint in horizontal cuts across flat stems	Glyphosate + Metsulfuron Methyl	1g MM added to 1 Gly:1.5 water			
Castor Oil Plant	*Ricinus communis*	Spot Spray	2, 4-D	45ml/10L water			
			Glyphosate	100ml/ 10L water			
		Cut Scrape and Paint	Glyphosate	1g MM added to 1 Gly:1.5 water			
		Stem Inject	Glyphosate	1g MM added to 1 Gly:1.5 water			
Easter Cassia/ Winter Senna	*Senna pendula var. glabrata*	Spot Spray	Glyphosate	200ml Gly:10L water + A + D			
		Cut and Paint		1 Gly:1.5 water			
		Stem Inject (Mature)	Glyphosate	1 Gly:1.5 water			
Smooth senna	*Senna septemtrionalis*	Spot Spray	Glyphosate	200ml Gly:10L water + A + D			
		Cut and Paint	Glyphosate	1 Gly:1.5 water			
		Stem Inject	Glyphosate	1 Gly:1.5 water			
Yellow Oleander	*Thevetia peruviana*	Basal Bark	Fluroxypyr	210ml/10L Diesel			
		Spot Spray	Glyphosate	200ml Gly:10L water + A + D			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Stem Inject	Glyphosate	1 Gly:1.5 water			
VINES							
Madeira Vine	*Anredera cordifolia*	Spot Spray	Fluroxypyr	30ml/10L water			
		Spot Spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A/S + D			
		Scrape and Paint (mature vines)	Glyphosate	Scrape as much stem as possible in 1m lengths on alternate sides. Gouge and paint ground tubers. Scrape and paint roots			
Moth vine	*Araujia sericiflora*	Spot Spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A + D			
		Cut Scrape and Paint	Glyphosate (aerial)	1 Gly:1.5 water			

Dutchman's pipe	*Aristolochia elegans*	Spot Spray	Glyphosate + Metsulfuron Methyl	200ml Gly + 1.5g MM in 10L water + A + D			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
Climbing Asparagus	*Asparagus africanus; plumosus*	Basal Bark	Fluroxypyr	210ml/ 10L diesel			
		Spot Spray	Glyphosate	200ml Gly:10L water + A+ + D			
Balloon Vine	*Cardiospermum grandiflorum*	Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
		Spot Spray	Glyphosate	100ml Gly:10L water + D			
Green/ Silver-leaf desmodium; Siratro; Horesgram; Glycine	*Desmodium intortum; Macroptilium atropurpureum; Macrotyloma uniflorum; Neonotonia wightii*	Spot Spray	Glyphosate	200ml Gly:10L water + A+ + D			
			2,4-D	40ml/10L water			
			Glyphosate + Metsulfuron Methyl	100ml Gly + 1.5g MM in 10L water + A + D			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
Moon flower; Mile-a-minute; Morning Glory; Blue Morning Glory	*Ipomoea alba; I. cairica; I. indica and I.purpurea*	Spot Spray	Glyphosate + Metsulfuron Methyl	100ml Gly + 1.5g MM in 10L water + A + D			
			2, 4-D	30ml/10L water			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
Creeping Lantana	*Lantana montevidensis*	Spot Spray	2,4-D	40ml/10L water			
			Glyphosate + Metsulfuron Methyl	100ml Gly + 1.5g MM in 10L water + A + D			
			Metsulfuron methyl	1.5g MM : 10L water + A + D			
Cat's Claw Creeper	*Macfadyena unguis-cati*	Spot Spray	Glyphosate	100ml Gly : 10L water + S + D			
			Glyphosate + Metsulfuron Methyl	100ml Gly + 1g MM:10L water + A + D			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
Edible passionfruit; Stinking Passionflower; Corky Passionfruit; White Passionfruit	*Passiflora edulis; foetida; suberosa; subpeltata*	Spot Spray	Glyphosate + Metsulfuron Methyl	100ml Gly + 1g MM in 10L water + A + D			
			Glyphosate	200ml Gly:10L water + A + D			
			2,4-D	30ml/10L water			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
Kudzu	*Pueraria lobata*	Spot Spray	Glyphosate + Metsulfuron Methyl	100ml Gly + 1.5g MM in 10L water + A + D			
			Fluroxypyr	30ml/10L water			
		Gouge and Paint tubers	Glyphosate	1 Gly:1.5 water			
		Stem Inject	Glyphosate + Metsulfuron Methyl	1/1 (g) + 1g (MM) Per Litre of water			
Climbing nightshade	*Solanum seaforthianum*	Spot Spray	Fluroxypyr	30ml/10L water			
			Glyphosate	100ml Gly : 10L water + A + D			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			
Black eyed susan	*Thunbergia alata*	Spot Spray	2-4,D	30ml/10L water			
			Glyphosate	200mL in 10L water			
			Metsulfuron methyl	1.5g in 10L water			
		Basal Bark	Fluroxypyr	210ml/ 10L diesel			
		Cut Scrape and Paint	Glyphosate	1 Gly:1.5 water			

APPENDIX 3 – SITE MONITORING FORM

SITE VISIT DETAILS	
Location: **Site Visit No. & Date:** **Site Visit By:** **Weather:**	
Purpose of the site visit	**Tick box**
Allocated routine inspection	

Score of 1: <5%cover **Score of 2:** 5-20% cover **Score of 3:** 20-50% cover **Score of 4:** 50-75% cover **Score of 3:** 75-100% cover

Site visit	Date	Criteria					
		Habitat	**Species Diversity Indicators**	**Indigenous cover (tree, shrub, moss)**	**Occurrence of natural regeneration**	**Condition of fences**	**General Observations (fire, flood, breeding, flowering etc.)**
1							
2							
3							
4							
5							
6							
7							
8							