

# Chambers Flat Road, Logan Reserve Concept Rehabilitation Plan

LOGAN CITY COUNCIL

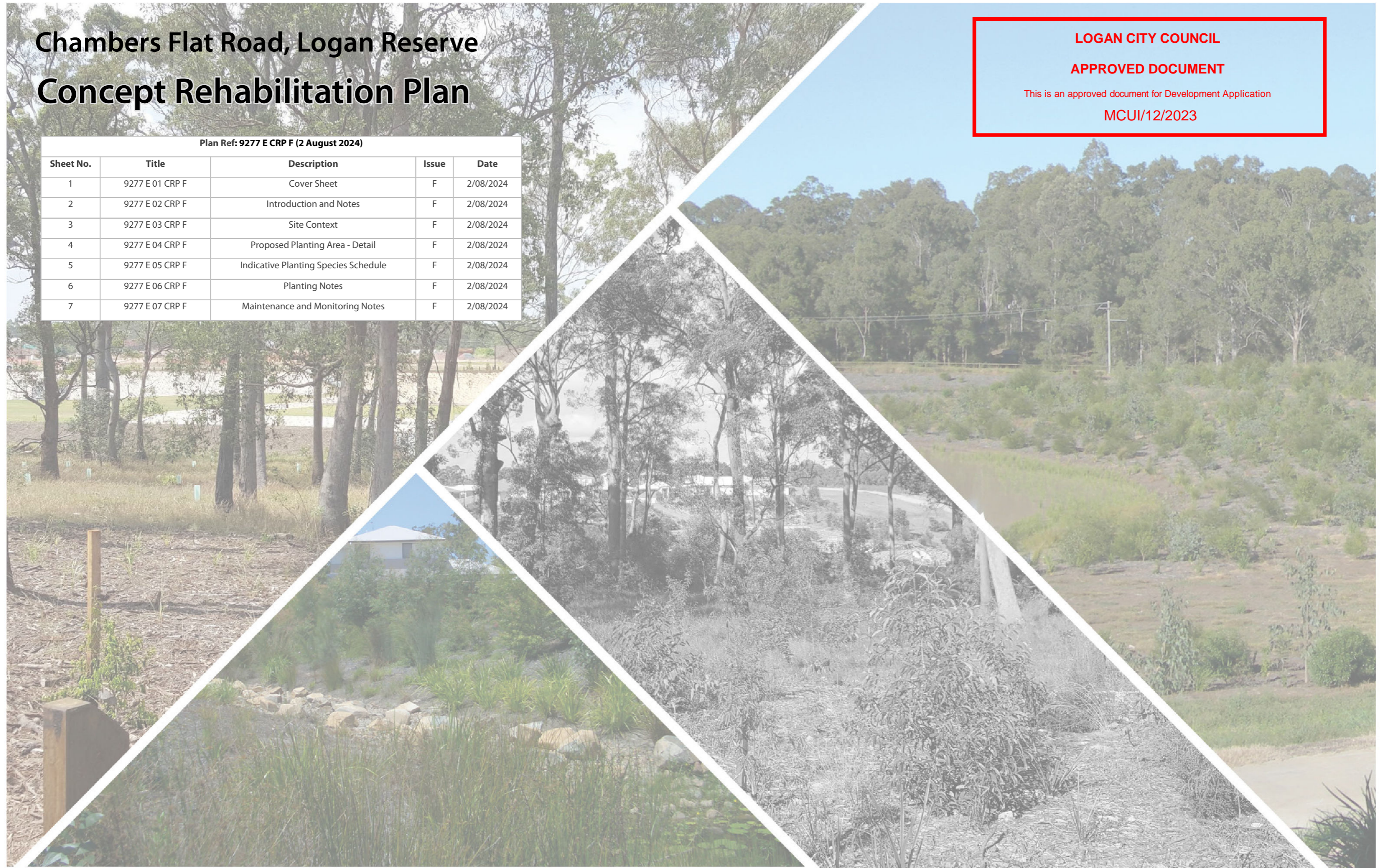
APPROVED DOCUMENT

This is an approved document for Development Application

MCUI/12/2023

Plan Ref: 9277 E CRP F (2 August 2024)

Sheet No.	Title	Description	Issue	Date
1	9277 E 01 CRP F	Cover Sheet	F	2/08/2024
2	9277 E 02 CRP F	Introduction and Notes	F	2/08/2024
3	9277 E 03 CRP F	Site Context	F	2/08/2024
4	9277 E 04 CRP F	Proposed Planting Area - Detail	F	2/08/2024
5	9277 E 05 CRP F	Indicative Planting Species Schedule	F	2/08/2024
6	9277 E 06 CRP F	Planting Notes	F	2/08/2024
7	9277 E 07 CRP F	Maintenance and Monitoring Notes	F	2/08/2024



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References:

Amendments:

Issue	Date	Description	Checked
A	18/11/2022	Client Draft	LS
F	2/08/2024	RFI	TF

Project:

Chambers Flat Road,  
Logan Reserve

environmental management

Plan of: Cover Sheet

Date: 2/08/2024 Checked: KT

Client Ref: 9277 Drawn: TF

Drawing No: 9277 E 01 CRP F

# Chambers Flat Road, Logan Reserve

## Concept Rehabilitation Plan - Introduction and Notes

### Background

The Environmental Management Division of the **Saunders Havill Group (SHG)** was engaged by **Avid Property Group** to prepare a Concept Rehab Plan (CRP) for the proposed development at for land located at 62-65 Noffke Court and 562, 564-570 and 572-578 Chambers Flat Road, Logan Reserve, described as Lots 1-3 on RP97736, and Lots 5-8 on RP182452. This CRP has been prepared for LCC and is required to be approved prior to works commencing.

### Project aims and objectives

The primary aim of this CRP is to offset unavoidable impacts to vegetation on site. This CMP also aims to re-create the vegetation community occurring in the proposed earthworks area by planting scattered native canopy trees consistent with pre-clear Regional Ecosystems (RE).

### Site Description

Contextually, the site is located in the Logan City Council Local Government Area within the South-east Queensland Bioregion (Moreton Basin) and is zoned as Emerging Community. The subject site consists of 7 rural residential properties and is surrounded by rural residential properties on all other sides.



### Weed Management Notes

- All weed management works are to be undertaken in accordance with the Queensland Biosecurity Act 2014 and the Redlands Coast Biosecurity Plan 2018-2023
- Weed management to minimise impact to aquatic and semi-aquatic fauna by utilising manual / mechanical weed removal techniques and using a frog-friendly herbicide where required. Application of herbicide to be avoided during period of frog egg-laying to juvenile emergence (generally late Autumn to early Spring but varies between species).
- Rehabilitation works contractor has a minimum Certificate III in Conservation and Land Management, or a Certificate III in Horticulture, or a Certificate III in Rehabilitation Construction, or equivalent experience in rehabilitation. Contractor to also hold relevant licenses in applicable weed management/ revegetation/ fauna management, any required insurances for scope of works and an understanding of required Laws, Act, Policies and Guidelines.
- The following weeds/introduced species were recorded during surveys:

Scientific Name	Common Name	Biosecurity Act Restricted Matter	LCC Biosecurity Plan
<i>Ageratina riparia</i>	Mist Flower		
<i>Ageratum houstonianum</i>	Blue Billygoat Weed		
<i>Alternanthera brasiliana</i>	Purple Joyweed		
<i>Alternanthera dentata</i>	Joy Weed		
<i>Amaranthus viridis</i>	Green Amaranth		
<i>Archontophoenix alexandrae</i>	Alexandra Palm		
<i>Andropogon virginicus</i>	Whiskey Grass		
<i>Asparagus aethiopicus</i>	Ground Asparagus Fern	Category 3	Asset Based Protection High
<i>Azalea sp.</i>	Azalea		
<i>Baccharis halimifolia</i>	Groundsel Bush	Category 3	Containment Moderate
<i>Banksia spinulosa var. collina</i>	Golden Candles		
<i>Bauhinia blakeana</i>	Hong Kong Orchid Tree		
<i>Bidens pilosa</i>	Cobbler's Pegs		
<i>Brunfelsia pauciflora</i>	Yesterday Today Tomorrow		
<i>Bryophyllum delagoense</i>	Mother of Millions	Category 3	Containment Moderate
<i>Bryophyllum pinnatum</i>	Resurrection Plant		
<i>Callisia fragrans</i>	Purple Succulent		Advice Only Moderate
<i>Callisia repens</i>	Creeping Inch weed		Advice Only Moderate
<i>Calypocarpus vialis</i>	Creeping Cinderella Weed		
<i>Camellia sp.</i>	Camellia		
<i>Cardiospermum graniflorum</i>	Balloon Vine	Category 3	Asset Based Protection High
<i>Caryota mitis</i>	Fishtail Palm		
<i>Cassytha glabella</i>	Dodder Laurel		
<i>Catharanthus roseus</i>	Pink Periwinkle		
<i>Celtis sinensis</i>	Chinese Elm	Category 3	Asset Based Protection High

<i>Centella asiatica</i>	Pennywort		
<i>Chloris gayana</i>	Rhodes Grass	Advice Only	Moderate
<i>Chloris virgata</i>	Feathertop Rhodes Grass	Advice Only	Moderate
<i>Cinnamom camphora</i>	Camphor Laurel	Category 3	Asset Based Protection Moderate
<i>Citharexylum spinosum</i>	Fiddle Wood		
<i>Citrus sp.</i>	Citrus tree		
<i>Coryza bonariensis</i>	Flaxleaf Fleabane		
<i>Corymbia torelliana</i>	Cadaghi	Advice Only	Moderate
<i>Crassocephalum crepidioides</i>	Thickhead		
<i>Cuscuta campestris</i>	Golden Dodder		
<i>Cyperus prolifer</i>	Dwarf Papyrus		
<i>Delonix reggia</i>	Poincianna		
<i>Desmodium unicum</i>	Silver-leaf Desmodium		
<i>Duranta erecta</i>	Duranta	Advice Only	Moderate
<i>Dyopsis lutescens</i>	Golden Cane Palm		
<i>Emilia sonchifolia</i>	Emilia		
<i>Epidendrum ibaqueense</i>	Crucifix Orchid		
<i>Euphorbia hirta</i>	Asthma Plant		
<i>Fraxinus griffithii</i>	Himalayan Ash		
<i>Gardenia sp.</i>	Gardenia		
<i>Geranium sp.</i>	Geranium		
<i>Gomphocarpus physocarpus</i>	Balloon Cotton Bush	Advice Only	Moderate
<i>Gomphrena celosioides</i>	Gomphrena		
<i>Hibiscus sp.</i>	Hibiscus		
<i>Hippeastrum sp.</i>	Hippeastrum		
<i>Hylocereus undatus</i>	Dragon Fruit	Advice Only	Moderate
<i>Hypochoeris radiata</i>	Flatweed		
<i>Ipomoea cairica</i>	Mile-a-minute		
<i>Jacaranda mimosifolia</i>	Jacaranda		Moderate
<i>Lantana camara</i>	Lantana	Category 3	Asset Based Protection High
<i>Lantana montevidensis</i>	Creeping Lantana	Category 3	Advice Only Moderate
<i>Lepidium bonariense</i>	Peppercress		
<i>Libidibia ferrea</i>	Leopard Tree		
<i>Liquidamber steraciflua</i>	Liquid Amber		
<i>Litchi chinensis</i>	Lychee		
<i>Ludwigia peploides</i>	Water Primrose		
<i>Macroptilium atropurpureum</i>	Siratro		
<i>Macroptilium lathyroides</i>	Phasey Bean		
<i>Malus sp.</i>	Apple		
<i>Mangifera indica</i>	Mango		
<i>Megathyrsus maximus</i>	Guinea Grass	Advice Only	Moderate
<i>Melaleuca "Claret Top"</i>	Claret Top		
<i>Melinis minutiflora</i>	Molasses Grass		
<i>Melinis repens</i>	Red Natal Grass		
<i>Murraya paniculata</i>	Mock Orange		
<i>Nephrolepis cordifolia</i>	Fishbone Fern	Advice Only	Moderate
<i>Nymphaea caerulea</i>	Blue Water Lily		
<i>Ochna serrulata</i>	Ochna	Advice Only	Moderate
<i>Oxalis comiculata</i>	Creeping Oxalis		
<i>Paspalum urvillei</i>	Vasey Grass	Advice Only	Moderate
<i>Passiflora edulis</i>	Edible Passionfruit		
<i>Passiflora suberosa</i>	Corky Passion Vine	Advice Only	Moderate
<i>Philodendron bipinnatifidum</i>	Philodendron		
<i>Phoenix dactylifera</i>	Date Palm		
<i>Pinus radiata</i>	Radiata Pine		
<i>Plectanthus amboinicus</i>	Mother of Herbs		
<i>Plectranthus sp.</i>	Introduced Plectranthus		
<i>Plumeria sp.</i>	Frangipani		
<i>Praxelis clematidea</i>	Praxelis	Advice Only	Moderate
<i>Ravenda madagascariensis</i>	Travellers Palm		
<i>Rosa sp.</i>	Rose		
<i>Rosmarinus officinalis</i>	Rosemary		
<i>Roystonea regia</i>	Cuban Royal Palm		
<i>Rumex crispus</i>	Curly Dock		
<i>Sansiveriatriasciata</i>	Mother-in-laws-tongue		
<i>Schinus terebinthifolius</i>	Broad-leaved Pepper	Category 3	Asset Based Protection Moderate
<i>Schleffera actinophylla</i>	Umbrella Tree		
<i>Senecio madagascariensis</i>	Fireweed		
<i>Senna pendula</i>	Easter Cassia	Advice Only	Moderate
<i>Setaria sphacelata</i>	Setaria	Asset Based Protection	Moderate
<i>Sida cordifolia</i>	Flannel Weed		
<i>Solanum chrysotrichum</i>	Giant Devil's Fig		
<i>Solanum mauritanium</i>	Wild Tobacco Tree		
<i>Solanum nigrum</i>	Blackberry Nightshade		
<i>Solanum searothianum</i>	Brazilian Nightshade	Advice Only	Moderate
<i>Solanum torvum</i>	Devil's Fig	Advice Only	Moderate
<i>Salvia sessilis</i>	Bindy Eye		

<i>Sphagneticola trilobata</i>	Singapore Daisy	Category 3	Asset Based Protection	High
<i>Sporobolus pyramidalis</i>	Giant Rat's Tail Grass	Category 3	Containment	High
<i>Syragnus romanzoffiana</i>	Cocos Palm		Advice Only	Moderate
<i>Tecoma capensis</i>	Cape Honeysuckle			
<i>Trachycarpus fortunei</i>	Chinese Windmill Palm			
<i>Urochloa decumbens</i>	Signal Grass		Advice Only	Moderate
<i>Urtica dioica</i>	Stinging Nettle			
<i>Xanthostemon chrysanthus</i>	Golden Penda			

### Soil and Stabilisation Notes

- All scour locations to be identified onsite and measures proposed in the final rehabilitation plan.
- Bare soil susceptible to erosion and scouring to be appropriately stabilised. For example, bare areas below level of inundation (i.e. Q20 floodline) to be stabilised with a thin layer of mulch and natural fibre matting or netting depending on the anticipated intensity of flows. Bare areas above the point of inundation should only require a thick blanket of mulch (100mm thick). Similarly, jute or coir squares should be utilised around individual tree specimens below level of inundation whereas mulch collars (generally 75mm thick) should be installed around trees above the level of inundation.
- A combination of light mulch stabilised with natural fibre netting / matting should also be utilised in areas where mulch may pollute dams or waterways and in concentrated flow areas above the level of inundation.
- Site mulch should be left to age for a period to allow it to breakdown. This will prevent nitrogen drawdown and potential decline in plant health.
- Any existing tracks / compacted areas to be suitably cultivated / loosened prior to planting via mechanical means i.e., aeration or via addition of organic material and/or Gypsum.

### Planting Notes

- Revegetation plant density to also consider Crime Prevention through Environmental Design (CPTED) requirements.
- Plant species to be local provenance and representative of mapped and verified REs.
- Plants to be minimum tube stock container size and comprise healthy, vigorous, hardened off stock sourced from a local nursery using locally sourced seed where possible. Root systems should be well established without being pot-bound or having large roots growing outside of contain.
- No planting of trees to occur within three (3) metres of existing trees, fence boundaries, services, infrastructure, access roads and pathways.
- Planting is to occur at appropriate times that avoid intense heat and frosts, and flooding events that may be fatal for unestablished stock. A frequent, regular watering regime should be followed during establishment phase. Watering may reduce in frequency following establishment phase but will require regular monitoring for plant stress. Prolonged hot, dry weather and signs of plants stress to trigger requirement for increased watering.
- Supporting aids i.e. tree guards and stakes to be used at discretion of rehabilitation works contractor. Supporting aids should not be used where there is potential to pollute nearby waterway.
- Soil conditions to improve soil structure and fertility for planting to be used at discretion or rehabilitation supervisor.

### Fauna Habitat Notes

- Fauna habitat values on site to be enhance via relocation of hollow logs and rock from the development area and construction of wildlife habitat piles in (Refer to VCFMP for further details). Not to conflict with stormwater management and bushfire management objectives for site i.e. do not position woody debris where it is likely to be washed downstream during a flood event.

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 # surveying # town planning # urban design # environmental management # landscape architecture

Client:

**AVID**  
Property Group

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References:

South East Queensland Ecological Restoration Framework (2012)

Amendments:

Issue	Date	Description	Checked
A	18/11/2022	Client Draft	LS
F	2/08/2024	RF1	TF

Project:

Chambers Flat Road,  
Logan Reserve


**environmental management**

Plan of: Introduction and notes






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Client Ref:	9277	Drawn:	TF
Drawing No.:	9277 E 02 CRP F		

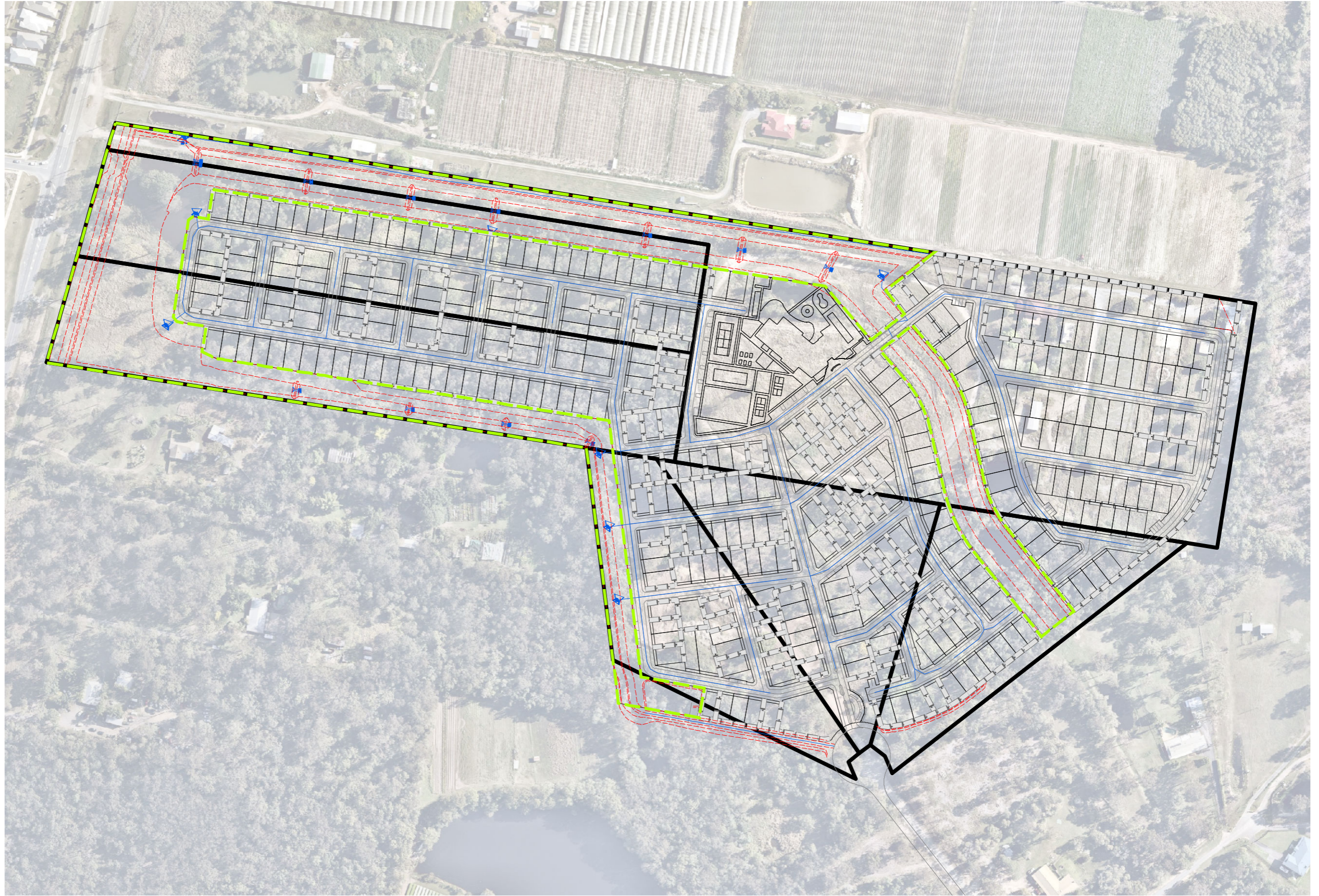
# Concept Rehabilitation Plan - Site Context

**Legend**

-  Site DCDB
-  Rehabilitation Area

**Engineering Detail**

-  Proposed Lots and Buildings
-  Proposed Roads and Footpaths
-  Earthworks Batters
-  Stormwater and Swale Design
-  Retaining Walls



Client:



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References:

Engineering Drawing (Colliers, 2023)



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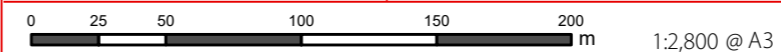
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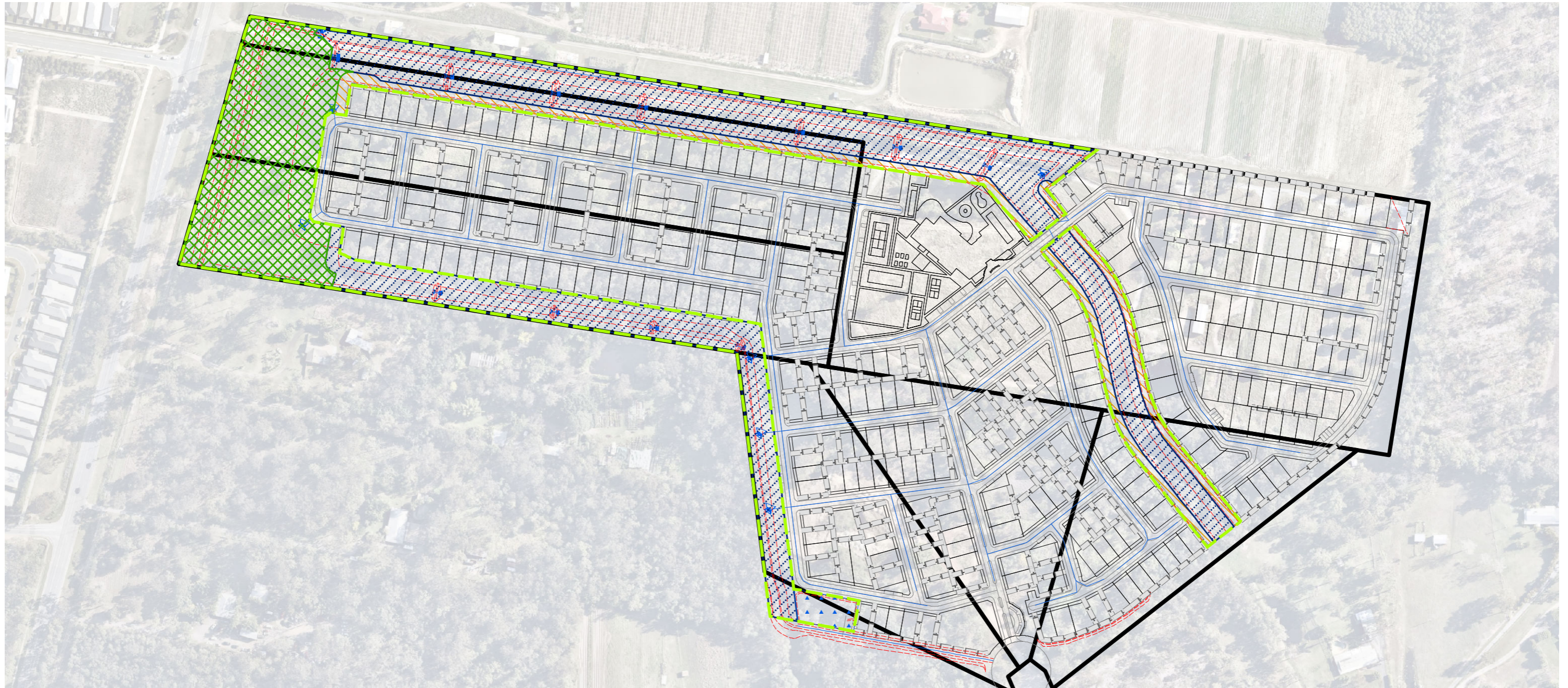
Plan of:  
Site Context

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Drawing No.:	9277 E 03 CRP F		



# Chambers Flat Road, Logan Reserve

## Concept Rehabilitation Plan - Planting Area Details



### Legend

- Site DCDB
- Rehabilitation Area - 54,135m<sup>2</sup>
- Rehabilitation Management Zones**
- Management Zone 1: Waterway Reconstruction [32,265 m<sup>2</sup>]
- Management Zone 2: RE 12.3.11 Reconstruction [14,420 m<sup>2</sup>]
- Management Zone 3: Detention Basin [955 m<sup>2</sup>]
- Management Zone 4: Bushfire Setback [6,495 m<sup>2</sup>]
- Engineering Detail**
- Proposed Lots and Buildings
- Proposed Roads and Footpaths
- Earthworks Batters
- Stormwater and Swale Design
- Retaining Walls

### Rehabilitation Notes

- All rehabilitation works are to be undertaken in accordance with the South East Queensland Ecological Restoration Framework
- All weed management works are to be undertaken in accordance with the Queensland Biosecurity Act and the City of Logan Biosecurity Plan 2017-2022.
- Batter is to be appropriately finalised by civil prior to commencement of rehabilitation works.

- The Batter is to be covered with a 100mm layer of blanket site mulch to prevent soil erosion and scouring. Steep batters (>1:3) and other areas more prone to erosion, such as concentrated flow areas, are to be further stabilised with a natural fibre netting and coir logs as required.
- Site mulch should be left to age for a period to allow it to breakdown. This will prevent nitrogen drawdown and potential decline in plant health.
- No planting of trees to occur within three (3) metres of lot boundaries, services, infrastructure and access roads and pathways.

- Tubestock used in planting are to comprise healthy, vigorous stock sourced from a local nursery using locally sourced seed where possible.
- Planting is to occur at appropriate times that avoid intense heat and frosts, and flooding events that may be fatal for unestablished stock. A regular watering regime should be followed during the establishment phase.
- Primary weed management and planting works are to be supported by a follow-up maintenance period. Duration to be determined by Council.

Client:

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Project:

Chambers Flat Road,  
Logan Reserve

environmental management

Plan of:  
Planting Area  
Details

Date:	2/08/2024	Checked:	KT
Client Ref:	9277	Drawn:	TF
Drawing No.:	9277 E 04 CRP F		

# Concept Rehabilitation Plan - Indicative Planting Species Schedule

Management Zone 1 – Waterway Reconstruction (RE 12.3.11/12.9-10.4)			
SCIENTIFIC NAME	COMMON NAME	PLANT FORM	POT SIZE
<b>TREES (planting density to reflect scattered trees as in accordance with bushfire management recommendations)</b>			
<i>Glochidion fernandini</i>	Cheese Tree	T1/T2 Tree	Tube
<i>Acmena smithii</i>	Lilli Pilli	T1/T2 Tree	Tube
<i>Ficus coronata</i>	Sandpaper Fig	T1/T2 Tree	Tube
<b>SHRUBS (planting density to reflect scattered shrubs as in accordance with bushfire management recommendations)</b>			
<i>Breynia oblongifolia</i>	Coffee Bush	Small Tree/Shrub	Tube
<i>Hibiscus heterophyllus</i>	Native Rosella	Small Tree/Shrub	Tube
<i>Banksia robur</i>	Swamp Banksia	Small Tree/Shrub	Tube
<b>GROUND COVERS ONLY</b>			
<i>Lomandra hystrix</i>	River mat-rush	Rush	Tube
<i>Lomandra longifolia</i>	Spiny-headed mat-rush	Rush	Tube
<i>Lomandra confertifolia</i>	Dwarf mat rush	Rush	Tube
<i>Juncus usitatus</i>	Common rush	Rush	Tube
<i>Caprex appressa</i>	Tall sedge	Sedge	Tube
<i>Ficinia nodosa</i>	Knobby club-sedge	Sedge	Tube
<i>Fimbristylis dichotoma</i>	Common fringe sedge	Sedge	Tube
<i>Imperata cylindrica</i>	Blady grass	Grass	Tube

Management Zone 2 – RE 12.3.11 Reconstruction			
SCIENTIFIC NAME	COMMON NAME	PLANT FORM	POT SIZE
<b>TREES</b>			
<i>Eucalyptus tereticornis</i>	Forest Red Gum	T1 Tree	Tube
<i>Eucalyptus siderophloia</i>	Northern Grey Ironbark	T1 Tree	Tube
<i>Corymbia intermedia</i>	Pink Bloodwood	T1 Tree	Tube
<i>Lophostemon suaveolens</i>	Swamp Box	T2 Tree	Tube
<i>Allocasuarina littoralis</i>	Black She-oak	T2 Tree	Tube
<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark	T2 Tree	Tube
<b>SHRUBS</b>			
<i>Acacia disparrima</i>	Hickory Wattle	Small Tree/Shrub	Tube
<i>Acacia leiocalyx</i>	Early-flowering Black Wattle	Small Tree/Shrub	Tube
<i>Acacia concurrens</i>	Black Wattle	Small Tree/Shrub	Tube
<i>Breynia oblongifolia</i>	Coffee Bush	Small Tree/Shrub	Tube
<i>Leptospermum polygalifolium</i>	Tantoon	Small Tree/Shrub	Tube
<i>Melaleuca linariifolia</i>	Snow In Summer	Small Tree/Shrub	Tube

GROUND COVERS			
<i>Lomandra hystrix</i>	River mat-rush	Rush	Tube
<i>Lomandra longifolia</i>	Spiny-headed mat-rush	Rush	Tube
<i>Lomandra confertifolia</i>	Dwarf mat rush	Rush	Tube
<i>Gahnia aspera</i>	Saw-sedge	Sedge	Tube
<i>Fimbristylis dichotoma</i>	Common fringe sedge	Sedge	Tube

### Management Zone 3– Bioretention Basin

Management zone to be planted with species suitable for the local landscape and ecology, which enable bioretention performance objectives to be met and are suitable for the predicted wetting and drying regime. Refer species selection table below. **No trees to be planted in Bioretention filter media area in depths less than 700mm**

Core Functional Bioretention Plant Species				Supplementary Functional Bioretention Plant Species			
Species Name	Common Name	Type	Region	Species Name	Common Name	Type	Region
<i>Carex appressa</i>	Tall Sedge	Groundcover sedge	ST, WT	<i>Aidia racemosa</i>	Archer Cherry	Shrub	DT, WT
<i>Ficinia nodosa</i>	Knobby Club Rush	Groundcover sedge	ST	<i>Alphitonia excelsa</i>	Red ash	Shrub	All
<i>Imperata cylindrica</i>	Blady grass	Groundcover grass	All	<i>Atractocarpus fitzalanii</i>	Native gardenia	Shrub	DT, WT
<i>Lepidosperma laterale</i>	Variable sword-sedge	Groundcover sedge	All	<i>Austromyrtus dulcis</i>	Midgen berry	Shrub	ST
<i>Lomandra hystrix</i>	River mat-rush	Groundcover herb	ST, DT, WT	<i>Breynia oblongifolia</i>	False coffee bush	Shrub	All
<i>Lomandra longifolia</i>	Spiny-headed mat-rush	Groundcover herb	All	<i>Cordylina manners-suttoniae</i>	Giant palm lily	Shrub	ST, WT
<i>Lomandra leucocephala</i>	Woolly mat-rush	Groundcover herb	DT, A	<i>Hibiscus heterophyllus</i>	Native rosella	Shrub	DT, WT, ST
<i>Pennisetum alopecuroides</i>	Swamp foxtail grass	Groundcover grass	ST	<i>Leptospermum polygalifolium</i>	Wild May	Shrub	DT, WT, ST
<i>Poa labillardieri</i>	Common tussock grass	Groundcover grass	ST, A	<i>Melastoma malabathricum</i>	Blue tongue	Shrub	ST, WT
<i>Themeda australis</i>	Kangaroo grass	Groundcover grass	All	<i>Myoporum acuminatum</i>	Coastal boobialla	Shrub	All
<i>Callistemon sieberi</i>	River bottlebrush	Shrub	ST	<i>Xanthorrhoea fulva</i>	Swamp grass tree	Shrub	ST
<i>Leptospermum livesidgii</i>	Olive tea tree	Shrub	ST	<i>Albizia canescens</i>	Townsville siris	Tree	DT, WT
<i>Melaleuca thymifolia</i>	Thyme honey myrtle	Shrub	ST, DT	<i>Casuarina equisetifolia</i>	Coast she oak	Tree	DT, WT, ST
<i>Banksia robur</i>	Swamp banksia	Small tree	ST, DT, WT	<i>Buckinghamia celsissima</i>	Ivory curl flower	Tree	DT, WT
<i>Melaleuca linariifolia</i>	Flax-leaved paperbark	Small tree	ST	<i>Callistemon viminalis</i>	Weeping bottle brush	Tree	All
<i>Melaleuca viridiflora</i>	Broad leaved tea-tree	Small tree	ST, WT, DT	<i>Chionanthus ramiflora</i>	Native olive	Tree	DT, WT, ST
<i>Casuarina glauca</i>	Swamp oak	Tree	ST, WT, DT	<i>Colubrina asiatica</i>	Latherleaf	Tree	DT, WT
<i>Casuarina cunninghamiana</i>	River sheoak	Tree	ST	<i>Corymbia tessellaris</i>	Moreton bay ash	Tree	DT, WT, ST
<i>Lophostemon suaveolens</i>	Swamp mahogany	Tree	ST, WT, DT	<i>Cupaniopsis anacardioides</i>	Tuckero	Tree	DT, WT, ST
<i>Melaleuca bracteata</i>	Black tea-tree	Tree	ST, WT, DT	<i>Eucalyptus raveretiana</i>	Black ironbox	Tree	DT
<i>Melaleuca quinquenervia</i>	Broad-leaved paper bark	Tree	ST, WT, DT	<i>Eucalyptus tereticornis</i>	River blue gum	Tree	DT, WT, ST
<b>Supplementary Functional Bioretention Plant Species</b>				<i>Eugenia reinwardtiana</i>	Cedar bay cherry	Tree	DT, WT, ST
Species Name	Common Name	Type	Region	<i>Ganophyllum falcatum</i>	Scaly ash	Tree	DT, WT
<i>Cymbopogon refractus</i>	Barbed wire grass	Groundcover grass	DT, WT, ST	<i>Livistonia decora</i>	Weeping cabbage palm	Tree	DT, ST
<i>Fimbristylis dichotoma</i>	Common fringe sedge	Groundcover sedge	All	<i>Lophostemon grandiflorus</i>	Northern swamp box	Tree	DT, WT
<i>Fimbristylis ferruginea</i>	Rusty fringe sedge	Groundcover sedge	All	<i>Melaleuca dealbata</i>	Blue leaved paperbark	Tree	DT, WT, ST
<i>Fimbristylis tristachya</i>		Groundcover sedge	DT, WT, ST	<i>Melaleuca fluviatilis</i>	Weeping tea tree	Tree	DT, WT
<i>Fuirena umbellata</i>		Groundcover sedge	DT, WT, ST	<i>Melaleuca leucandendra</i>	Weeping tea tree	Tree	DT, WT
<i>Gahnia aspera</i>	Saw-sedge	Groundcover sedge	ST, DT, WT	<i>Mimusops elengi</i>	Tanjong tree	Tree	DT, WT
<i>Gahnia seiberiana</i>	Red-fruit saw-sedge	Groundcover sedge	ST, WT, DT	<i>Waterhousia floribunda</i>	Weeping lily-pilly	Tree	ST
<i>Juncus polyanthemus</i>	Straited rush	Groundcover sedge	DT, WT, ST	<i>Bothriochloa pertusa</i>	Indian couch	Turf	DT, ST
<i>Juncus usitatus</i>	Common rush	Groundcover sedge	DT, WT, ST	<i>Paspalum distichum</i>	Water couch	Turf	DT, ST
<i>Lomandra confertifolia</i>	Dwarf mat rush	Groundcover sedge	ST	<i>Paspalum vaginatum</i>	Salt water couch	Turf	DT, ST, WT
<i>Rhynchospora corymbosa</i>	Matamat	Groundcover sedge	All	<i>Sporobolus virginicus</i>	Marina couch	Turf	DT, WT, ST
<i>Scleria polycarpa</i>	Many-fruited sedge grass	Groundcover sedge	DT, WT	<i>Zoysia macrantha</i>	Zoysia	Turf	ST

Source: WT-Wettropics,DT-Drytropics,ST-Subtropics,A-Aridzones,All-occursinallregions  
Source: BTDG (Water by Design) & FAWB Research (Monash University).

### Management Zone 4– Bushfire Setback

Entirety of management zone is to be turfed to enable access.

# Concept Rehabilitation Plan - Planting Notes

## Methodology – Planting

Primary weed management works, areas requiring infill planting (assisted natural regeneration), and larger scale planting (reconstruction and fabrication) can be undertaken. Prior to installation, the following items should be considered:

- Species selection
- Sourcing plant material
- Timing of planting
- Site preparation
- Planting density
- Planting installation

## Species Selection

Species selection is critical in achieving the desired ecological restoration outcomes for rehabilitation sites. Planting is typically derived from:

- Local Regional Ecosystem (RE) descriptions.
- Observed site native vegetation.
- Bioretention guideline requirements.
- Climatic and weather conditions observed on site (frost, salt-spray, etc.
- 'Pioneer' species are useful in site stabilisation and encouraging native regeneration.
- Utilising flowering and fruiting species are useful to attract wildlife and result in introduction of seeds.
- Diverse vegetation layers (trees, shrubs, groundcovers)
- Species availability from seed propagation and or local nurseries

## Sourcing Plant Material

There are a number of options for sourcing plant material for revegetation purposes. Propagation from site seed is a good outcome however is often limited by required timing of works. Sourcing planting from local nurseries is the commonly chosen option and has the following benefits:

- Awareness of genetic considerations when collecting seed.
- Experience with breaking dormancy mechanisms in hard to germinate seeds.
- Highly successful propagation techniques.
- Ability to provide high quality stock to order
- Draw on industry resources.

## Timing of Planting

The timing of planting should ideally be aligned with the wet season in SEQ (summer and autumn). This minimises the need for intensive watering to establishment planting. Planting between February to May is the most beneficial as it also seeks to avoid intense heat periods of summer. Furthermore, planting at flood-prone and frost-prone locations should aim for plant establishment prior to the onsite of flooding / frost events. Despite this, it is understood planting may occur at various times within rehabilitation areas due to development timing needs.

## Site Preparation

Site or planting preparation includes:

- Fencing to exclude grazing animals and people (if required)
- Pre-spraying of exotic grasses and other weeds to planting areas
- Consideration of source of water for new planting (access tracks, temporary irrigation)
- Arranging delivery of mulch, jute netting and tree guards (if required)
- Treatment of heavily compacted soils by ripping and or application of gypsum
- Soil amelioration as required

## Planting Density

Plant density is calculated on a zone by zone basis. This allows planting to cater for various requirements including standard revegetation, infill only requirements such as canopy trees at low densities, as well as dense bioretention plantings as per Bioretention Technical Guidelines.

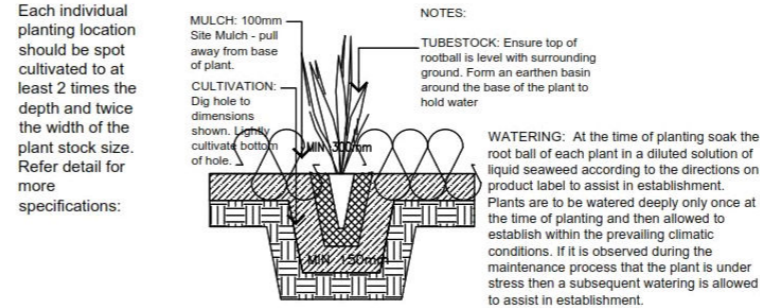
## Planting Installation

The following outlines the preferred installation methodology for revegetation works within the rehabilitation areas. It has been designed to maximise plant establishment success rates and minimize plant mortality. Revegetation works shall be either undertaken or directly supervised by an experienced and qualified contractor. All works shall be in accordance with the provisions of this CRP, and local government policies and Australian Standards.

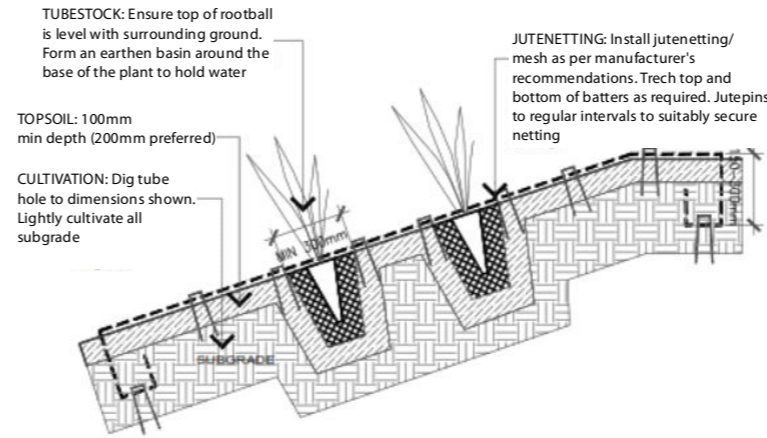
Plant installation methods shall include:

- Plants are to be vigorous, well established, hardened off, consistent with species or variety, free from disease and insect pests, with large root systems and no evidence of having been restricted or damaged. The landscape coordinator has the right to inspect and reject stock prior to planting
- Plants are to be planted immediately after delivery to the planting site.
- Planting is to be undertaken in accordance with the planting module contained within this drawing sheet.
- Excavate planting medium to a depth suitable for the installation of tube or pot specimens. In areas where planting substrate is deemed to be very poor (compacted, nutrient deficient, hydrophobic etc.) and above areas of potential frequent inundation and waterflow, topsoil may be used.
- Pre-water plant hole, if soil is dry, to decrease root stress upon planting and assess the infiltration of water through the soil.
- Incorporate into the planting substrate the appropriate quantity of prepared water crystals or other suitable hydrating product such as Hortex 'Rainsaver' or 'Moisturaid'.
- Place plant into hole and backfill ensuring that the plant is upright and the stem is not covered in any less than 10mm or any more than 20mm of planting medium.
- Plants are to be watered thoroughly immediately after planting (ensure deep irrigation) and thereafter as required during the construction phase of the development depending on climatic conditions. Creation of a concave hollow around the base of each plant will aid water infiltration to the plant roots.
- A complete, slow release fertiliser is recommended, and is to be administered appropriately during planting. Topdressing with slow release fertiliser is preferred to avoid toxic levels of fertiliser accumulating in the plant hole around the plant roots.
- To ensure successful establishment, all planting surfaces must be covered in:
  - a 100mm layer of high-quality weed-free composted chip mulch (site mulch)- Note: to avoid possible stem rot in some 'drier' species ensure mulch is 'dished' and not covering plant stem by more than 20mm. Where available, mulch material to be sourced from cleared vegetation material if adequately seasoned, or
  - Suitable individual anchored natural fibre weed mat (jute or coir mat)
- A long-term slow-release fertiliser, such as Nutricote or similar product should be used for all plantings after initial plant establishment.
- A minimum 90% survival rate should be achieved.

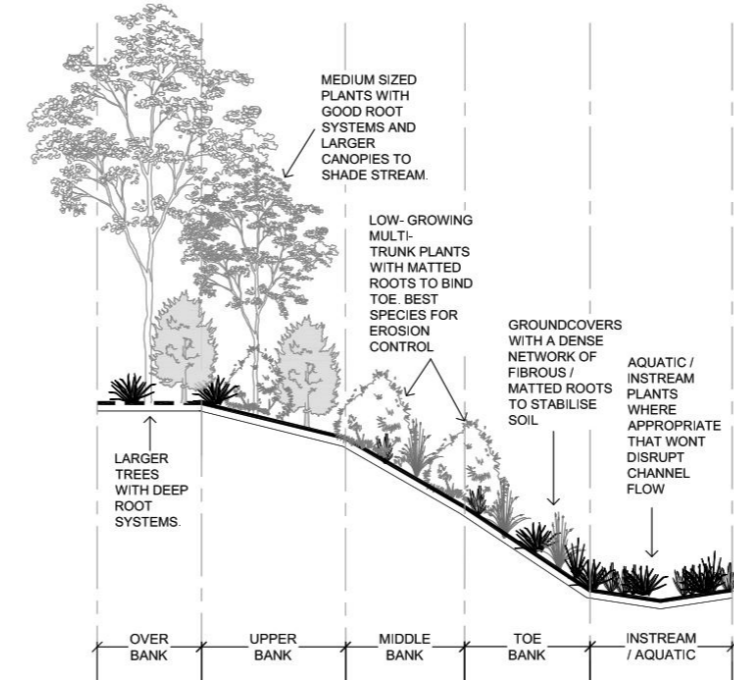
Typical planting details as below for standard medium mulch installation and jute netting. Refer to manufacturer's recommendations for detailed jute netting installation including pinning, etc.



Where evidence of plant damage is occurring, tree guards grow tubes to be installed as required.

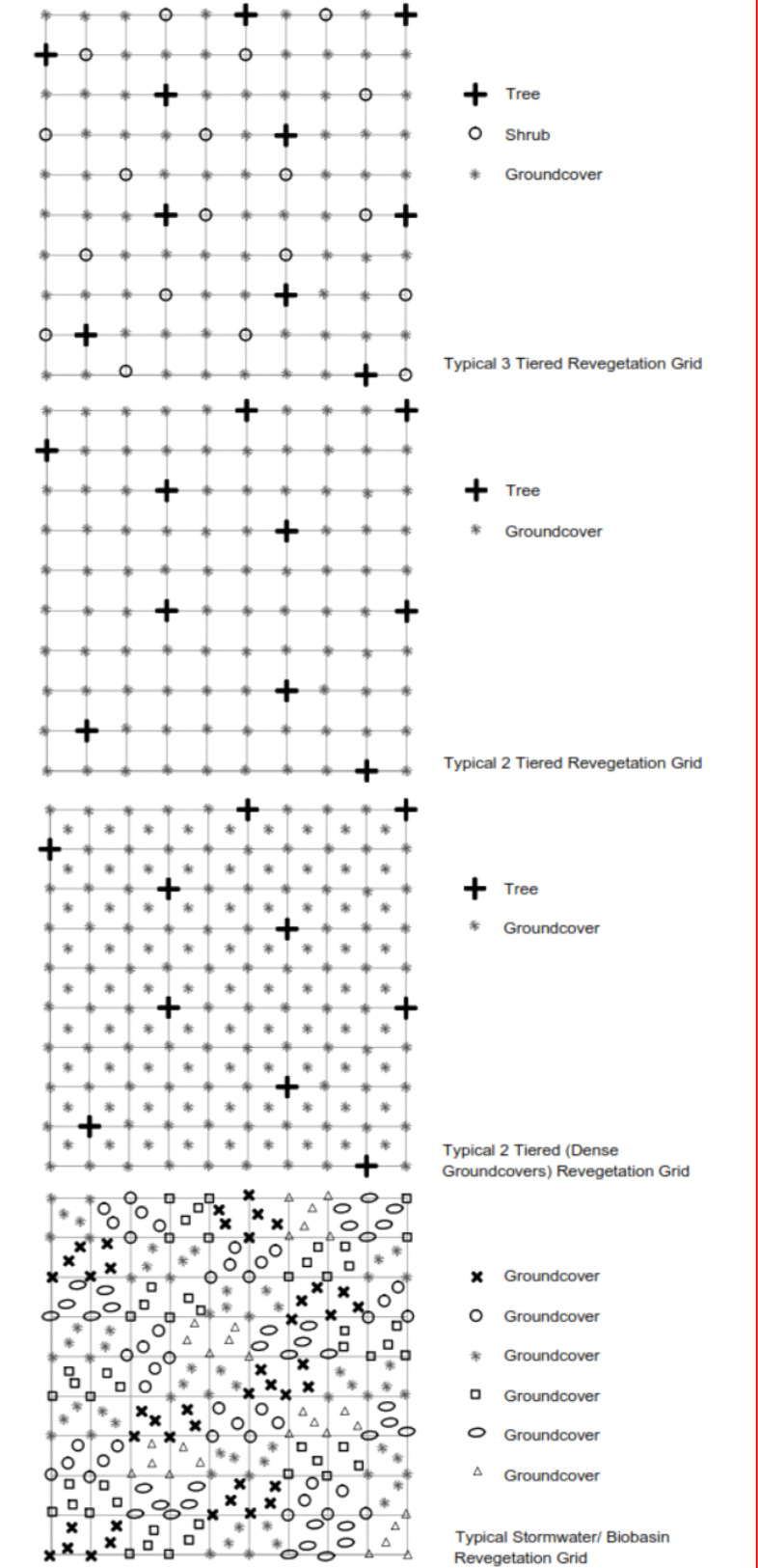


Jute netting mesh to be installed as per manufacturer's recommendations. Indicative detail shown only.



Categories of channel vegetation adapted from the Brisbane City Council Natural Channel Design Guidelines.

Revegetation planting locations shall be generally set out in accordance with a typical random grid pattern as shown below. Various typical densities shown.



# Concept Rehabilitation Plan - Maintenance & Monitoring Notes

## Methodology – Fauna Notes

Consideration for fauna habitat values should be given during rehabilitation site works and should seek to enhance and restore the existing native vegetation areas and promote safe fauna movement throughout the site and into larger greenspace corridors where possible. It is assumed properties adjacent to the rehabilitation scope of works will undertake individual site analysis, fauna investigations, and implement future measures as required.

The following treatments are intended to enhance fauna habitat values at the rehabilitation area and movement across the site:

- Protection of existing native vegetation and where possible, staged removal of weeds that provide fauna habitat to correspond with growth of native supplementary habitat.
- Reuse of fallen hollow logs and site rock from the development area and installation of fauna habitat piles to create fauna safe havens and protection for small fauna.
- Increased plant cover, protection and food resources via assisted natural regeneration and planting of native species

Consideration for bushfire requirements should be reviewed to confirm no conflict in both the fauna and rehabilitation approaches.



## Methodology – Maintenance & Monitoring

### Maintenance

Maintenance, as with all ecological restoration work, is fundamental in ensuring project success. Maintenance of the planting includes tasks such as:

- Herbicide spraying to control competing weeds.
- Watering while plants are establishing. This is often highly variable and depends on the suite of species planted, weather conditions and time of year when planted. A watering schedule may consist of watering every day for week 1, twice per week for weeks 2-6 and then weekly from weeks 6-12.
- Repair of tree guards if they become damaged.
- Replenishment of mulch.
- Maintaining fauna-friendly and pet exclusion fencing where applicable; and
- Additional planting if required.

Additional planting may be required to replace plants that do not survive (e.g. to meet survival rate requirements, or to fill gaps), but it may also be necessary to introduce new species at different stages of vegetation succession. An adaptive management approach should be utilised, if one plant species repeatedly dies on a site, consider supplementing with a species that is performing well.

Maintenance is required following installation of the plants, although if maintenance is regular and thorough during the first year, maintenance requirements are likely to taper off significantly in the following years. The desired end-product is a fully-functioning system that can support itself in perpetuity, with minimal maintenance and input required.

The maintenance period for this project is to be recommended by Logan City Council.

### Benchmark criteria / performance indicators

The utilisation of benchmark criteria helps to determine rehabilitation success during the maintenance period and assists in prompting when additional maintenance activities are required. Typically accepted benchmarks or performance indicators for dedicated or open space rehabilitation works include:

- Compliance 'On Maintenance' requirements:
  - All required planting completed.
  - 98% plant survival.
  - 100% kill rate of declared environmental weeds.
  - 98% kill rate of other weeds
  - Control measures implemented at all eroded / erosion-prone areas
- Ongoing 'Off Maintenance' requirements:
  - 95% plant survival.
  - Tree guards, stakes and general rubbish removed.
  - No remaining eroded or degraded areas.
  - 100% kill rate of declared environmental weeds.
  - 98% kill rate of other weeds
  - Control measures implemented at all eroded / erosion-prone areas

### Monitoring

Informal monitoring of rehabilitation works is one method of determining ecological restoration success in conjunction with the adjacent benchmarks. Informal monitoring may occur through ongoing site inspections, completion of record sheets and note taking. Notes to be distributed to the rehabilitation team and rectification works completed against notes.

Photo point monitoring is an effective form of informal monitoring that may be used to support note taking, and may be requested during the approval process by the assessment manager. A permanent or semi-permanent photo point can be set up using a star picket marked with fluorescent yellow safety cap or painted timber stakes, so that a photograph may be taken of the site at regular (quarterly) intervals as it is being restored. A time series of photographs from a degraded state prior to the commencement of restoration, through the transition stages and into the maintenance stage will assist in assessing the success of the

ecological restoration process. Collected site data and photos should be compiled in a 'master' monitoring report for proper record keeping.

Monitoring of the weed management and revegetation works allows practitioners to:

- Monitor the rate of assisted regeneration and revegetation of desirable native species promoted in areas where weeds have been removed i.e. number and species of native seedlings established that were not planted on site
- Ensure level of protection for existing identified native vegetation inclusive of that which has naturally regenerated.
- Review the rate of spread or contraction of weed infestation within the weed removal and control program i.e. has weed growth been inhibited by current control program or has it spread to newly disturbed areas?
- Identification of new weed threats or other factors that may be affecting areas designated for rehabilitation i.e. have additional scour locations been identified?
- Review of the benchmark criteria / pre-established performance indicators for measuring the success of the weed removal and control program i.e. has the rate of weed removal on ground reached the benchmark criteria for On or Off Maintenance?

Monitoring timeframes may involve a series of key milestones:

- Prestart Inspection - On site meeting prior to the initial commencement of work. Typically involves Consultant, Contractor and Assessment Manager to work through rehabilitation areas and clarify any adjustments to scope against approved works.
- Compliance Inspections - At the completion of the Primary Site Works, a compliance inspection meeting will be held with the Consultant, Contractor and Assessment Manager to inspect the works on-site in relation to the approved plans and previously agreed benchmarks performance indicators. Should the rehabilitation be a dedicated asset (open space) to the assessment manager, this inspection is commonly referred to as 'on maintenance'. For dedicated assets, a secondary compliance inspection will be required (off maintenance).
- Ongoing Monitoring Inspections- Informal monitoring to occur on a regular basis as highlighted above. These inspections will generally occur throughout the process, specifically before, during and after relevant compliance inspections.

### Progress Reporting

Following implementation of this plan, it is important that the techniques/methods and outcomes from maintenance and monitoring visits are documented and issued to Logan City Council for review and records.

Monitoring and progress reporting periods and frequency are to be advised by Logan City Council.

## Adaptive management

Adaptive management is an on-going, systematic approach for improving rehabilitation outcomes by learning from existing management techniques. It is a cyclic process that involves:

1. identification of unsuccessful treatments and new threats during monitoring events
2. investigation of new and alternative treatments
3. implementation of alternative management strategies based on best available knowledge
4. review of new / alternative management strategies during monitoring

Adopting an adaptive approach to rehabilitation works is recommended to achieve benchmark criteria and maximise environmental outcomes for the site.

## Rehabilitation Team Responsibilities

It is critical for all parties to understand their responsibilities as part of the rehabilitation 'team'.

PARTY	DESCRIPTION
<b>Proponent</b>	Ensure all consultants, contractors, sub-contractors or others utilizing the area are aware of the Rehabilitation Plan. Appoint appropriate consultants and contractors to undertake works as prescribed on the drawings and conditioned by the Assessment Manager. Provide security via an uncompleted works bond and maintenance bond for the cost of works if required. Cover costs of all resources to ensure works are completed as per approved plans.
<b>Consultants</b>	Brief proponent on their requirements in implementing and maintaining works as per the Rehabilitation Plan. Attend pre-start and compliance (on and off maintenance) inspections. Undertake monitoring and reporting to the Assessment Manager as per this plan. Be available to respond to technical queries to the approved documentation when on-site conditions require changes. Liaise with the Assessment Manager throughout all stages of approval, initial works and maintenance of works.
<b>Assessment Manager</b>	Provide technical expertise via commentary on the approval of documentation. Attend pre-start and compliance (on and off maintenance) inspections. Reduce and release securities held against works at the completion of successful milestone inspections. Be available to respond to technical queries to the approved documentation when on-site conditions require changes. Accept and review maintenance reports as dictated (if required in this plan).
<b>Contractor</b>	Ensuring implementation of works and compliance with this Rehabilitation Plan. Attend pre-start and compliance (on and off maintenance) inspections. Has a minimum Certificate III in Conservation and Land Management, or a Certificate III in Horticulture, or a Certificate III in Rehabilitation Construction, or equivalent experience in rehabilitation. Hold relevant licenses in applicable weed management/ revegetation/ fauna management, any required insurances for scope of works and an understanding of required Laws, Act, Policies and Guidelines. Recommend changes to the documentation when specific experience or on-site conditions require so.

INDICATIVE MAINTENANCE SCHEDULE OF WORK ITEMS AND SEQUENCING (NOTE: SCHEDULE IS SUBJECT TO CHANGE BASED ON ON-GROUND REQUIREMENTS AND MUST MEET THE REQUIREMENTS ON THE REHABILITATION CONDITION OF THE DEVELOPMENT APPROVAL)																											
TIMING	SPRING			SUMMER			AUTUMN			WINTER			SPRING			SUMMER			AUTUMN			WINTER			SPRING		
	PRIMARY WORKS			FOLLOW-UP WORKS			FOLLOW-UP / MAINTENANCE WORKS			MAINTENANCE WORKS			MAINTENANCE WORKS			MAINTENANCE WORKS			MAINTENANCE WORKS			MAINTENANCE WORKS			MAINTENANCE WORKS		
	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3	Month 1	Month 2	Month 3
<b>WEEK 1</b>	Pre-start meeting Council, Contractor and Superintendent	Establish photo points if required. Weed management - "knockdown spray"	Mulch spreading and Jute-mat installation	Watering and Monitoring and reporting (throughout establishment). Photo monitoring as required	Watering and Monitoring and reporting (throughout establishment). Photo monitoring as required	Watering and Monitoring and reporting (throughout establishment). Photo monitoring as required	Watering to replacement plants only.	Watering to replacement plants only.	Monitoring and reporting. Photo monitoring as required	watering to replacement plants only.	Monitoring and reporting. Photo monitoring as required.	Watering to replacement plants only	Monitoring and reporting. Photo monitoring as required.	Watering to replacement plants only	Monitoring and reporting. Photo monitoring as required.	Watering to replacement plants only	Monitoring and reporting. Photo monitoring as required.	Watering to replacement plants only	Monitoring and reporting. Photo monitoring as required.	Watering to replacement plants only	Monitoring and reporting. Photo monitoring as required.	Watering to replacement plants only	Monitoring and reporting. Photo monitoring as required.	Mulch - top up depths to 100mm and replace / repair Jutematting as required	Watering to replacement plants only	Monitoring and reporting. Photo monitoring as required.	
<b>WEEK 2</b>	Initial weed management works - wood removal / "knockdown" spray	Soil Preparation and cultivation	Natural regeneration plants staking for identification	Weed management - "knockdown spray" in mulched areas	Weed management - "knockdown spray" re-apply in woody weeds	Weed management - "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Weed management - rotation "knockdown spray" in mulched areas	Natural regeneration plants - weed management	Weed management - "knockdown spray" re-apply woody weeds	Weed management - "knockdown spray" in mulched areas		
<b>WEEK 3</b>	Weed management works - removal by hand	Soil Preparation and modification	Planting and Watering	Natural regeneration plants - weed management	Replacement of Failed Plants	Replacement of Failed Plants	Natural regeneration plants - weed management	Natural regeneration plants - weed management	Replacement of Failed Plants	Natural regeneration plants - weed management	Trees formative pruning	Replacement of Failed Plants	Natural regeneration plants - weed management	Trees formative pruning	Replacement of Failed Plants	Natural regeneration plants - weed management	Trees formative pruning	Replacement of Failed Plants	Natural regeneration plants - weed management	Trees formative pruning	Replacement of Failed Plants	Natural regeneration plants - weed management	Trees formative pruning	Replacement of Failed Plants	Replacement of Failed Plants	Natural regeneration plants - weed management	
<b>WEEK 4</b>	Weed Management - slashing of maintenance access paths	Mulch - stockpiled on site	Planting and Watering	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	Weed Management - slashing of maintenance access paths	

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 # surveying # town planning # urban design # environmental management # landscape architecture

Client:

**AVID**  
Property Group

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References:  
 South East Queensland Ecological Restoration Framework (2012)  
 Guideline for the preparation of a Rehabilitation Plan (GCC)  
 Keeping Dead Wood and Creating Wildlife Habitat Piles:  
 Some Guidance for Forest owners  
<https://www.nnrg.org/habitat-piles/>

Amendments:

Issue	Date	Description	Checked
A	18/11/2022	Client Draft	LS
F	2/08/2024	RFI	TF

Project:  
 Chambers Flat Road,  
 Logan Reserve

**environmental management**  
 Plan of:  
 Maintenance and Monitoring Notes

Date: 2/08/2024	Checked: KT
Client Ref: 9277	Drawn: TF
Drawing No.: 9277 E 07 CRP F	