

Landscape & Revegetation Plan

Ranger Road, Adare QLD 4343

Lot 191 on CSH2361



Rehabilitation Objectives:
1. Provide a strategy for the rehabilitation and maintenance of the nominated area to achieve remnant status.
2. Revegetate and rehabilitate the nominated areas to using locally endemic species.
3. Treat and eradicate weed species.
4. Minimise the spread of weeds to and from adjacent land.
5. Ensure rehabilitated areas are appropriately maintained.
7. Protect and enhance wildlife movement opportunities including flood free terrestrial fauna movement.
8. Maintain on site vegetation, including rehabilitation, to manage the threat of bushfire exposure and or severity.

LRP01: Cover Page

Legend

- Site (surveyed)
- Lot boundary
- Easement

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2. Nearmap 2020.

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Plan Contents:

Drawing No.	Title
LRP01	Cover Page
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LRP03	Landscape & Revegetation Plan - Stage 1
LRP04	Landscape & Revegetation Plan - Stage 2
LRP05	Sections
LRP06	Planting Details
LRP07a - LRP07b	Revegetation Procedures
RP08	Weed Control Procedures

Plan References:

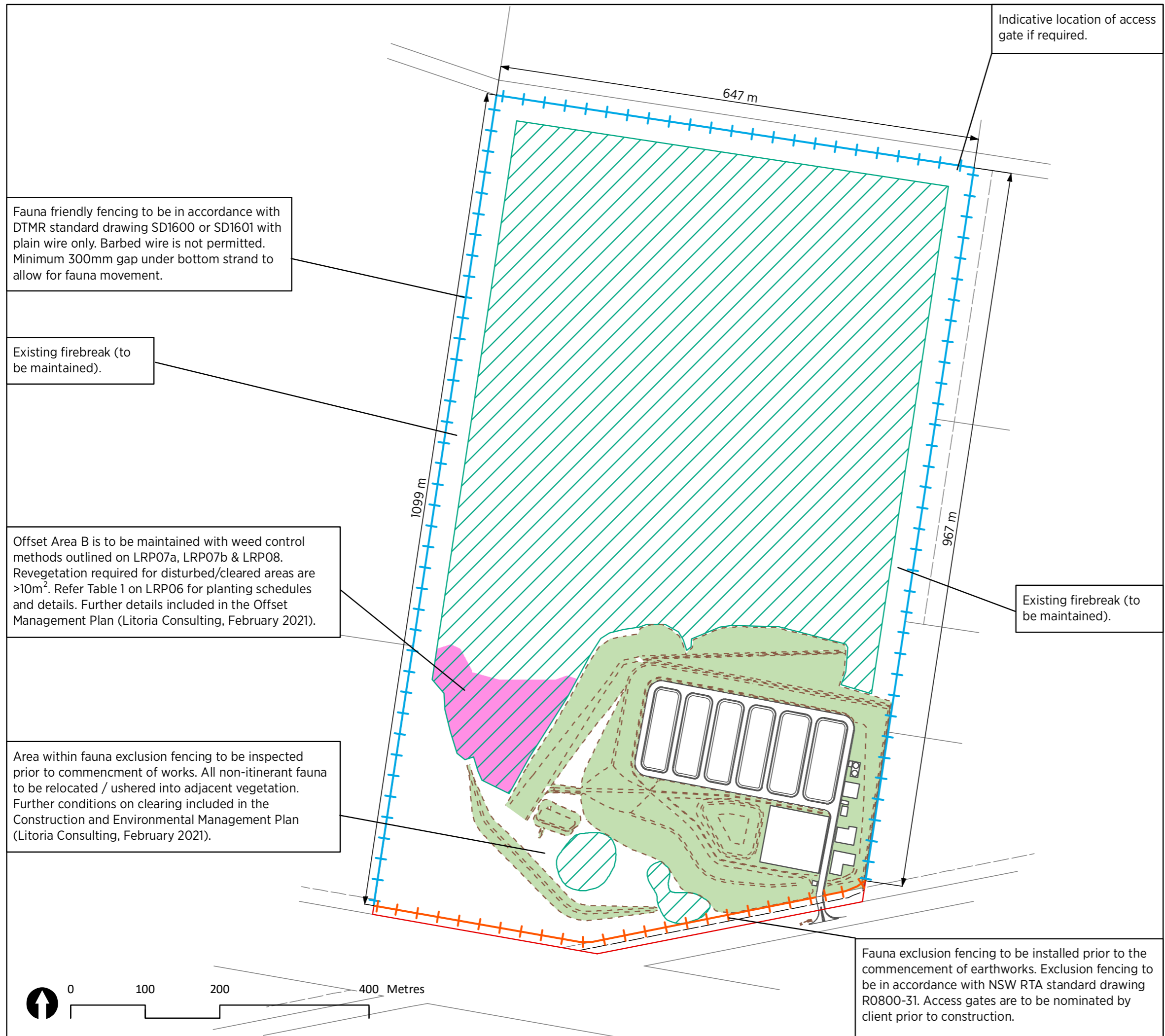
NATSPEC Specification - 0253 Landscape - Planting
NATSPEC Specification - 0251 Landscape - Soils / 0252 Landscape - Soil Preparation
NATSPEC Specification - 0255 Landscape - Plant Procurement
NATSPEC Specification - 0256 Landscape - Establishment
NATSPEC Specification - 0259 Landscape - Maintenance
Appendix C of the South East Queensland Ecological Restoration Framework
Best Practice Erosion & Sediment Control (IECA Australasia, November 2008)
CORVEG Regional Ecosystem Technical Descriptions
BSD-9051 Planting General Notes
BSD-9053 Planting - Typical Tree, Shrub and Tubestock
Development Permit No. 2606 of 2010 (In the Planning and Environment Court, 28/02/2014) - Condition 10.

Litoria Consulting Pty Ltd
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certifies that this plan has
been prepared by a
qualified environmental
consultant and AQF Level 5
arborist in accordance with
local, State and
Commonwealth
environmental regulations.

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Fauna friendly fencing to be in accordance with DTMR standard drawing SD1600 or SD1601 with plain wire only. Barbed wire is not permitted. Minimum 300mm gap under bottom strand to allow for fauna movement.

Existing firebreak (to be maintained).

Offset Area B is to be maintained with weed control methods outlined on LRP07a, LRP07b & LRP08. Revegetation required for disturbed/cleared areas are >10m². Refer Table 1 on LRP06 for planting schedules and details. Further details included in the Offset Management Plan (Litoria Consulting, February 2021).

Area within fauna exclusion fencing to be inspected prior to commencement of works. All non-itinerant fauna to be relocated / ushered into adjacent vegetation. Further conditions on clearing included in the Construction and Environmental Management Plan (Litoria Consulting, February 2021).

Indicative location of access gate if required.

Existing firebreak (to be maintained).

Fauna exclusion fencing to be installed prior to the commencement of earthworks. Exclusion fencing to be in accordance with NSW RTA standard drawing R0800-31. Access gates are to be nominated by client prior to construction.

LRP02: Overall Layout Plan

- Legend**
- Site (surveyed)
 - Lot boundary
 - Easement
 - Buildings / plant area
 - Earthworks
 - Easement (new)
 - Retained vegetation
 - Proposed treatments (Refer LRP03 & LRP04 for details)
 - Offset area B
 - Fauna exclusion fence
 - Fauna friendly fence

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LRP03: Landscape & Revegetation Plan - Stage 1

- Legend**
- Site (surveyed)
 - Adjacent cadastre (surveyed)
 - Lot boundary
 - Easement
 - Proposed works (Stage 1)
 - Buildings / plant area
 - Top of batter
 - Bottom of batter
 - Easement (new)
 - Stormwater
 - Existing features
 - Scour protection
 - Retained trees
 - Landscaping and revegetation treatments (Stage 1)
 - Screening amenity bund (2.55ha)
 - Drainage slopes (1.23ha)
 - Exposed rock face (slopes >1:2)
 - Channel base (0.30ha)
 - Garden and entry statement (0.07ha)
 - Maintained grass (includes pathways between buildings) (1.18ha)
 - Bioretention basin (Refer civil engineers drawings)
 - Evaporation pond (Refer civil engineers drawings)
 - Offset area B
 - Temporary diversion (1.07ha)
 - Disturbed reseed (where required)

Notes:
 1. Topsoil to be reinstated on areas where bare rock is exposed (slopes <1:2). Topsoil to be reclaimed from earthworks where possible. Imported topsoil to be in accordance with AS4419 Soils for landscaping and garden use.
 2. Where required, all disturbed areas from construction works, outside of treatments shown on this plan must be reseeded with a native grass seed mix. Maintenance procedures are shown on LRP07a & LRP07b.

Drainage batter slopes are to be seeded with a native grass seed mix in hydromulch with jute netting pinned in accordance with manufactures specifications.

Existing firebreak (to be maintained).

Refer LRP02 for offset area B details.

Channel base is to be seeded with a native grass seed mix in hydromulch. Rock check dams and coir rolls are to be installed at regular intervals along the channel to minimise erosion. Refer civil engineering plans for erosion and sediment control details.

Temporary stage 1 diversion works are to be hydromulched only.

Potential exposed rock face. Refer civil engineering drawings

Areas of retained vegetation are to be protected during construction works and maintained with weed control methods outlined on LRP07a, LRP07b & LRP08.

Screening bund treatment to include full planting of Canopy, Shrub and Understorey species as shown on LRP06.

Landscaped garden and entry statement to be specified by client. Species used in planting are to be in accordance with Table 1 on LRP06.

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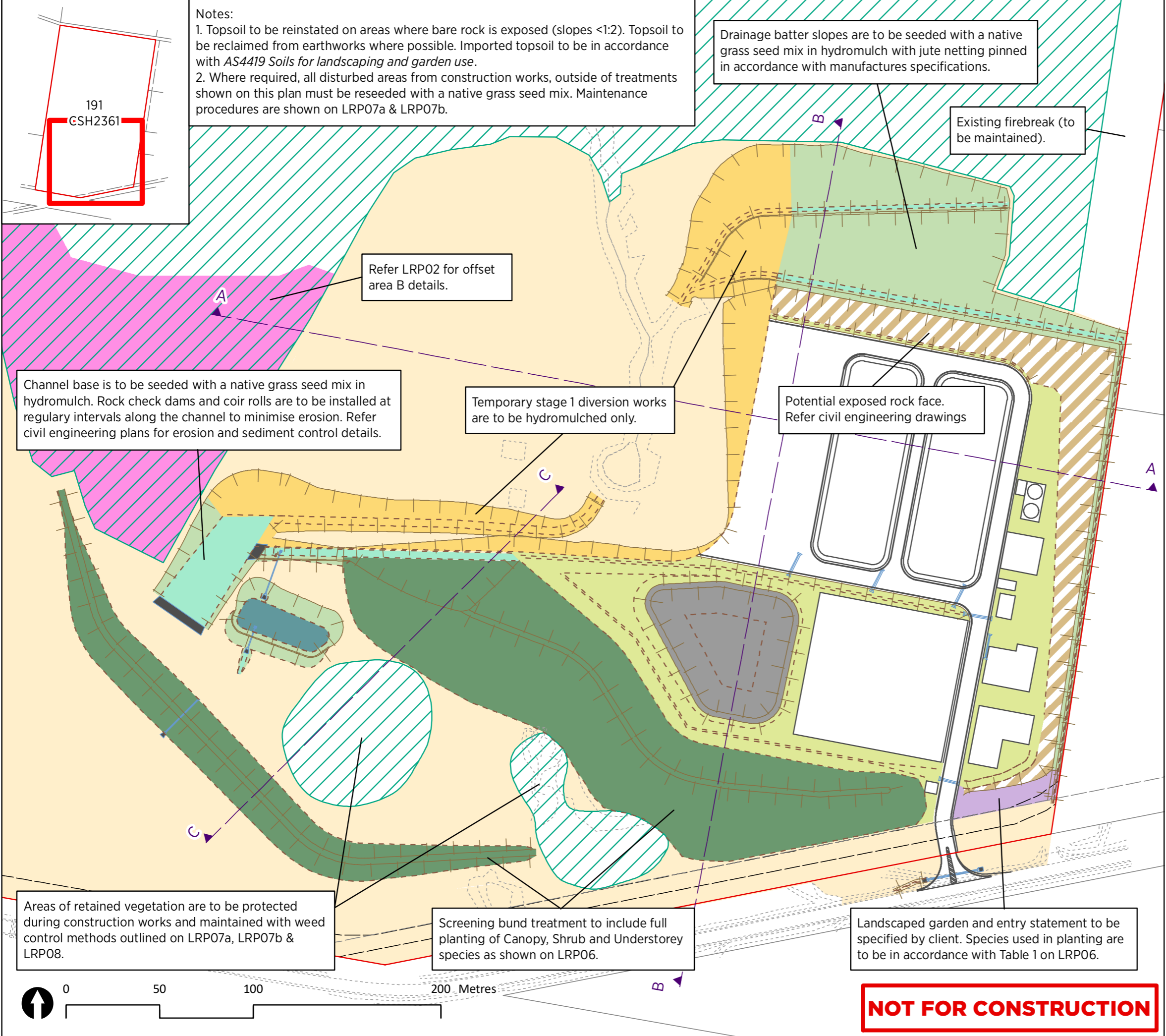
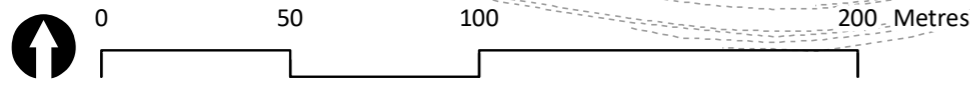
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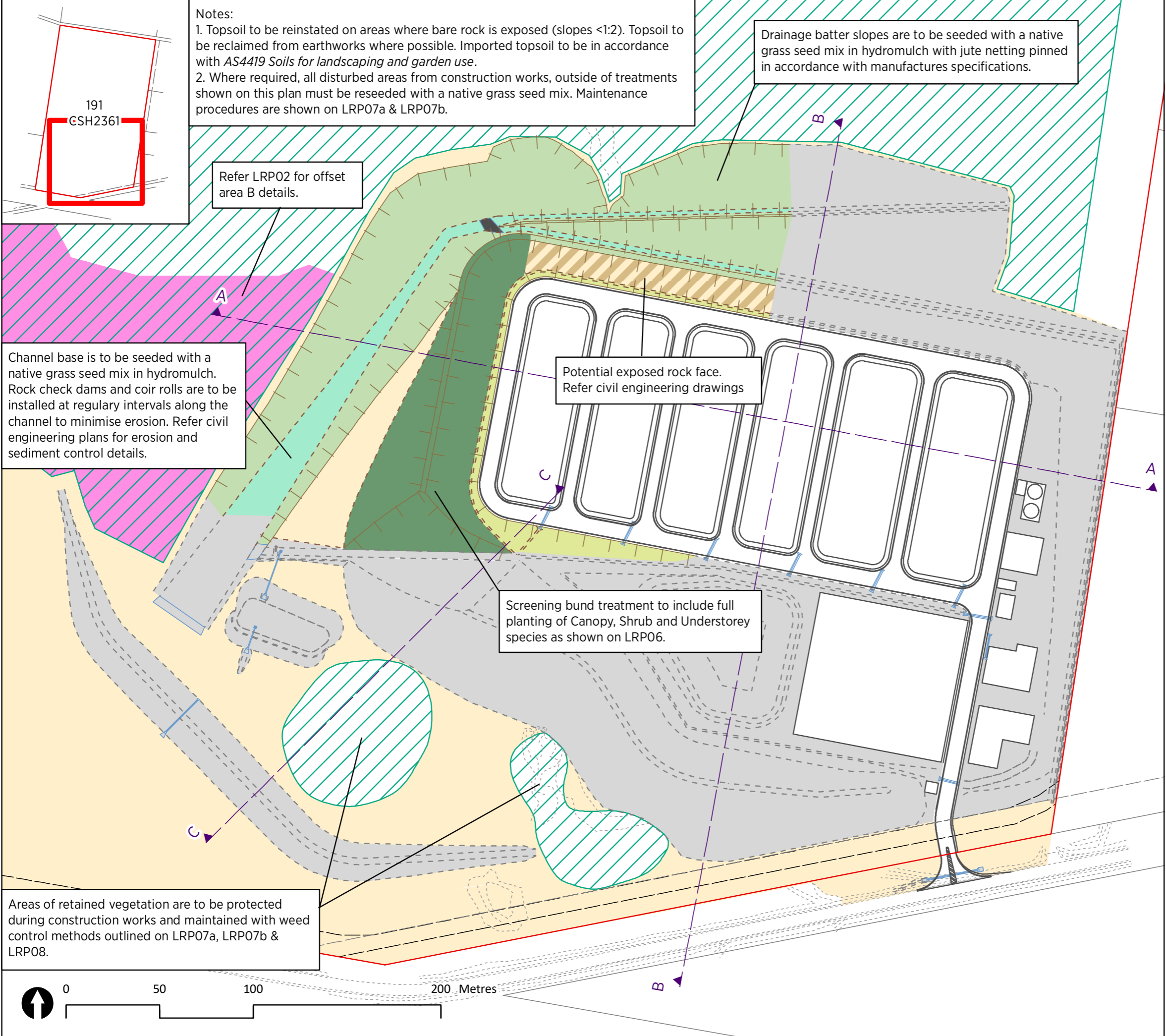
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LRP04: Landscape & Revegetation Plan - Stage 2

- Legend**
- Site (surveyed)
 - Lot boundary
 - Easement
 - Buildings / plant area
 - Top of batter
 - Bottom of batter
 - Completed earthworks
 - Easement (new)
 - Stormwater
 - Existing features
 - Scour protection
 - Retained trees
 - Landscaping and revegetation treatments (Stage 2)**
 - Screening amenity bund (0.77ha)
 - Drainage slope (1.65ha)
 - Drainage slope / rock face (where required slopes >1:2)
 - Channel base (0.31ha)
 - Maintained grass (0.21ha)
 - Offset area B
 - Disturbed reseed (where required)
 - Works completed as part of stage 1



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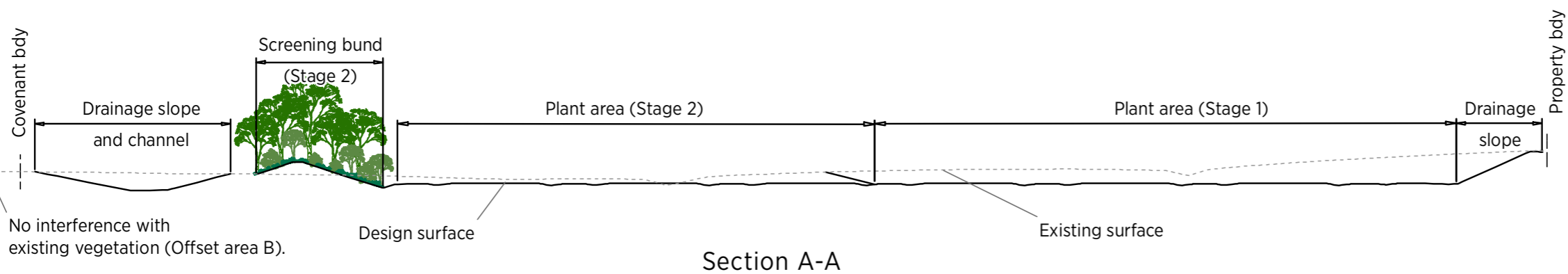
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LRP05: Sections

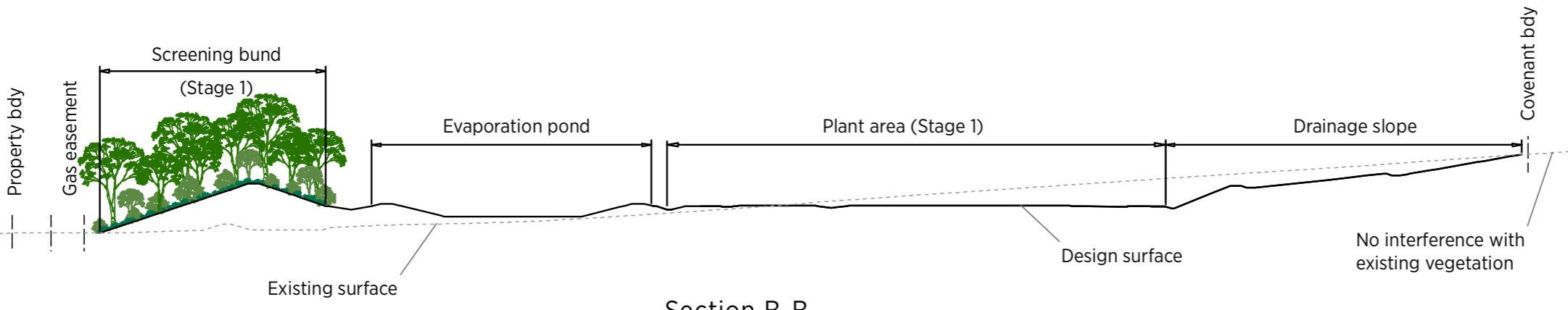
Legend

- Existing surface
- Design surface

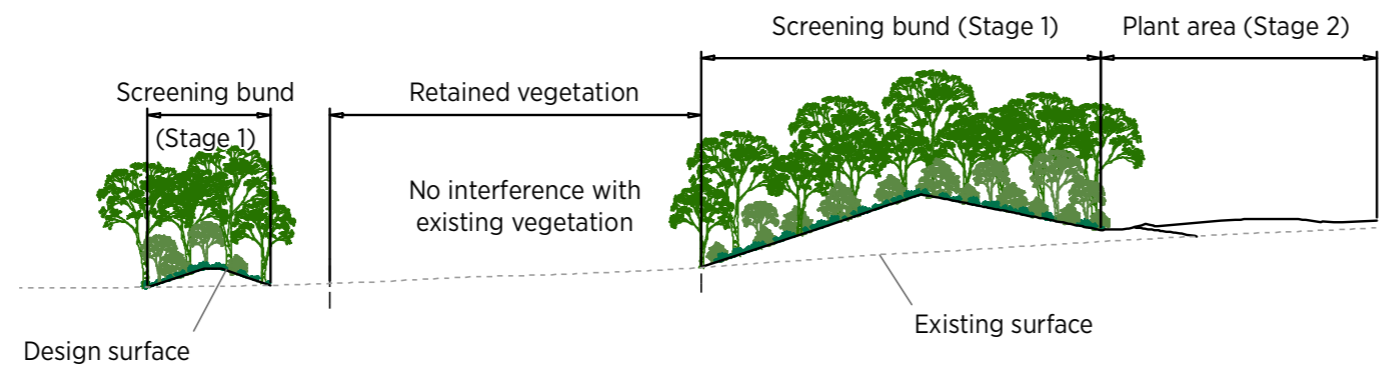
Notes:
 1. Refer to drawings LRP03 and LRP04 for relevant details of the sections shown on this plan.
 2. Vegetation shown on this plan is indicative only. It is shown to demonstrate the potential vegetation structure at full maturity.
 3. Existing vegetation and plant treatments not shown for clarity.



Section A-A



Section B-B



Section C-C

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Table 1: Screening Amenity bund treatment

Botanical Name	Common Name	Planted Size	Planted density
Canopy			
<i>Angophora leiocarpa</i>	Smooth-barked Apple	75mm	1/9m2
<i>Corymbia citriodora</i> subsp. <i>variegata</i>	Spotted Gum	75mm	
<i>Corymbia intermedia</i>	Pink Bloodwood	75mm	
<i>Eucalyptus creba</i>	Narrow-leaved Ironbark	75mm	
<i>Eucalyptus tessellaris</i>	Moreton Bay Ash	75mm	
<i>Eucalyptus tereticornis</i>	Queensland Blue Gum	75mm	
Mid-storey			
<i>Acacia disparrima</i> subsp. <i>disparrima</i>	Hickory Wattle	75mm	1/3m2
<i>Acacia leiocalyx</i>	Early Black Wattle	75mm	
<i>Allocasuarina luehmannii</i>	Bull Oak	75mm	
<i>Allocasuarina torulosa</i>	Forest Oak	75mm	
<i>Alphitonia excelsa</i>	Soap Tree	75mm	
<i>Brachychiton populneus</i>	Kurrajong	75mm	
<i>Hovea acutifolia</i>	Purple Pea Bush	75mm	
<i>Jacksonia scoparia</i>	Dogwood	75mm	
<i>Pittosporum angustifolium</i>	Weeping Pittosporum	75mm	
Groundcovers			
<i>Aristida vagans</i>	Threeawn Speargrass	75mm	2/1m2
<i>Cymbopogon refractus</i>	Barbed Wire Grass	75mm	
<i>Dianella revoluta</i>	Blue Flax-lily	75mm	
<i>Entolasia stricta</i>	Wiry Panic	75mm	
<i>Eremochloa bimaculata</i>	Poverty Grass	75mm	
<i>Eremophola debilis</i>	Winter Apple	75mm	
<i>Imperata cylindrica</i>	Blady Grass	75mm	
<i>Hardenbergia violacea</i>	Native Sarsaparilla	75mm	
<i>Lomandra longifolia</i>	Mat Rush	75mm	
<i>Themeda triandra</i>	Kangaroo Grass	75mm	

Table 2: Native grass seed mix

Botanical Name	Common Name	Application
Groundcovers		
<i>Aristida vagans</i>	Threeawn Speargrass	To be included in hydromulch mix
<i>Cymbopogon refractus</i>	Barbed Wire Grass	
<i>Entolasia stricta</i>	Wiry Panic	
<i>Eremochloa bimaculata</i>	Poverty Grass	
<i>Imperata cylindrica</i>	Blady Grass	
<i>Lomandra longifolia</i>	Mat Rush	
<i>Themeda triandra</i>	Kangaroo Grass	

LRP06: Planting details

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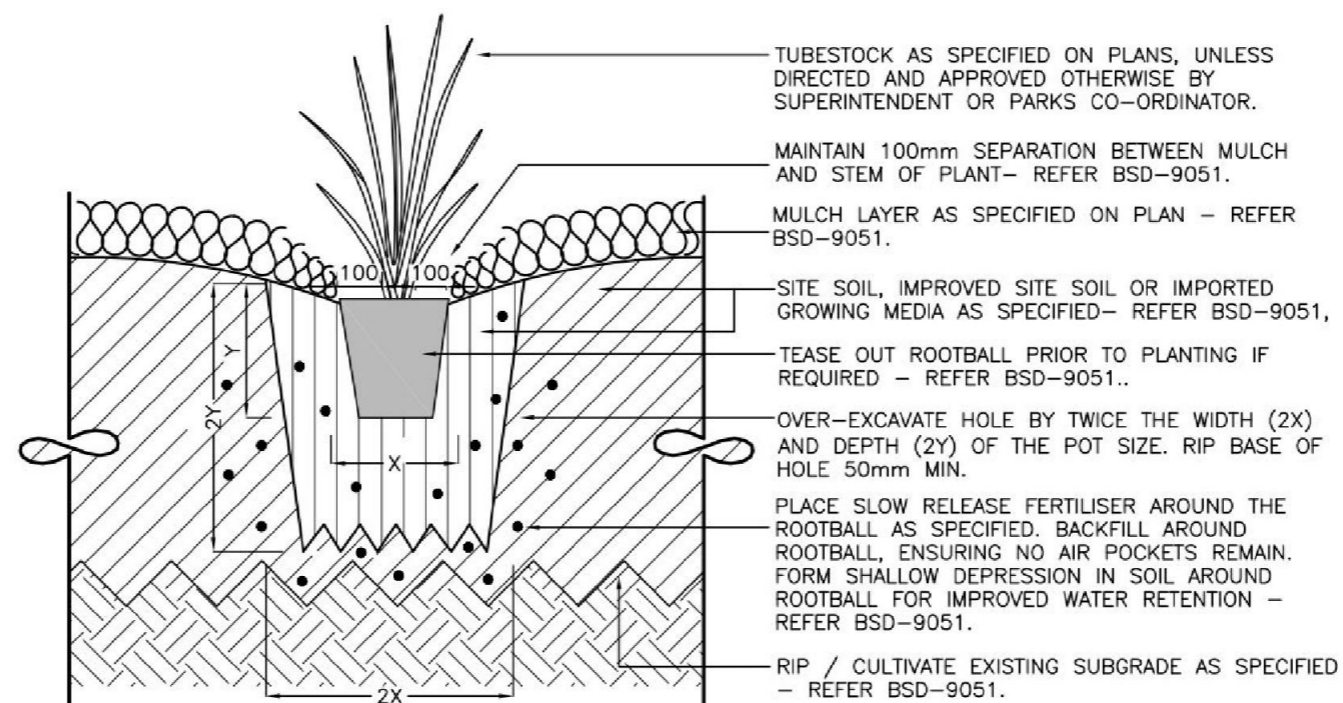
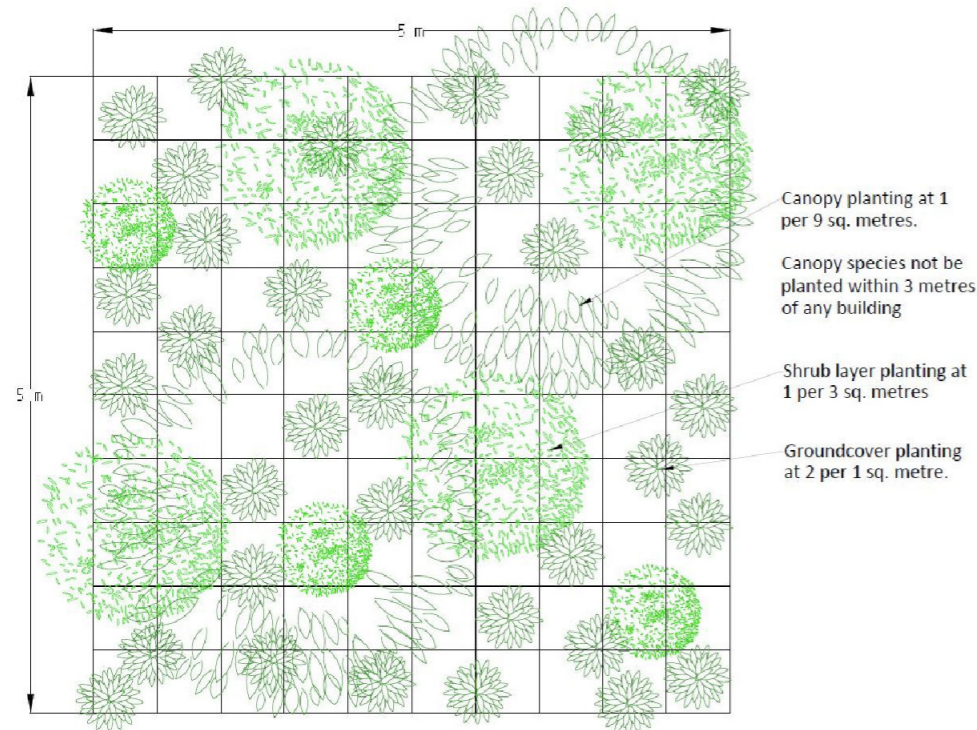
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Tubestock Planting Detail (BSD-9053)

Sample Planting Layout (to be achieved by off-maintenance).



Table 3: Revegetation Procedures

Activity	Management Response	Responsible Party
Appointment of contractor	1 Appointment of contractor with demonstrated experience in bushland rehabilitation. Relevant qualifications include a certificate in Conservation Land Management - natural Area Restoration or a degree in a related field such as ecology or vegetation management. Contractors must hold applicable licences such as: - Commercial operator's licence (ground application of herbicides) issued under the <i>Agricultural Chemicals Distribution Control Act 1966</i> ; - Senior First Aid certificate; - White Card i.e. General Safety Induction (Construction Industry); and, - Relevant Ecoaccess permits issued by the relevant State department.	Project Manager
Review Rehabilitation Plan	1 Rehabilitation Plan must be reviewed by contractor prior to commencement of site work. 2 All relevant personnel sign a register noting that they have reviewed and will comply with the requirements of the Rehabilitation Plan.	Project Manager, Contractor
Rehabilitation staging	1 Staging to be in accordance with LRP03 & LRP04 of this plan. 2 All stages of rehabilitation works are to be completed prior to establishment period. 24 month maintenance period to include all stages of rehabilitation. 3 Prior to commencement of any stage, spotter/catcher is to inspect stage area. Observed fauna is to be relocated outside of the stage boundary into already completed rehabilitation areas or adjacent vegetation. 4 Any amphibians encountered during inspections, works or monitoring are to be handled in accordance with the <i>Interim hygiene protocol for handling amphibians</i> (DEHP).	Contractor
Site preparation	1 Bare topsoil in rehabilitation areas will be appropriately prepared prior to planting. 2 Bare soil in rehabilitation areas affected by earthworks is to be tined to a minimum depth of 300mm prior to planting and covered with 200mm reclaimed topsoil. 3 Import topsoil similar to naturally occurring topsoil, suitable for the establishment and on-going viability of the selected vegetation, free of weed propagules and contaminants, and which achieves the requirements of <i>AS 4419 Soils for landscaping and garden use</i> . 4 Avoid differential subsidence and excess compaction and produce a finished topsoil surface which has the following characteristics: a Finished to design levels. b Smooth and free from stones or lumps of soil. c Graded to drain freely, without pending, to catchment points. d Graded evenly into adjoining ground surfaces. e Ready for planting. 5 In areas of exposed soil, install mulch which is free of deleterious and extraneous matter such as soil, weeds and sticks. 6 Mulch is to be from native trees removed from site where possible. Otherwise native organic mulch is to be imported in accordance with <i>AS 4454-2012 Composts, soil conditioners and mulches</i> .	Contractor
Erosion and sediment	1 Temporary erosion and sediment control fencing to be installed in accordance with Best Practice Erosion and Sediment Control (IECA Australia, November 2008).	Contractor
Adaptive management, monitoring and compliance	1 Project Ecologist to conduct regular inspections to ensure compliance with procedures outlined in this plan. 2 Project Ecologist to issue notice of compliance to contractor for non-conforming works and any remedial works to ensure compliance.	Project Ecologist
Plant procurement	1 Plant species and sizes to be supplied in accordance with Table 1. 2 Plants will be supplied in weed-free containers of the required size. Open rooted stock is not to be supplied. All plants are to be healthy and vigorous. Root bound, diseased and poor stock will not be accepted. 3 Supply plants with foliage size, texture and colour at time of delivery consistent with the size, texture and colour shown in healthy specimens of the nominated species. 4 Supply plants with extension growth consistent with that exhibited in vigorous specimens of the species nominated. 5 Supply plants free from damage and from restricted habit due to growth in nursery rows. 6 Supply plants free from stress resulting from inadequate watering, excessive shade or excessive sunlight experienced at any time during their development. 7 Supply plants that have been grown and hardened off to suit the conditions that could reasonably be anticipated to exist on site at the time of delivery. 8 Supply plants with foliage free from attack by pests or disease. 9 No single species shall constitute more than 30% of the total individuals planted. 10 All plant material is to be sourced from local provenance stock. 11 Plant substitution is not permitted and alternative species must be confirmed with Litoria Consulting and/or Council prior to planting.	Contractor

Activity	Management Response	Responsible Party
Planting	1 Do not plant in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, suspend excavation when the soil is wet, or during frost periods.	Contractor
	2 Planting of designated areas in accordance with the planting schedule, densities and planting detail described in this Rehabilitation Plan.	Contractor
	3 Planting layout of designated areas requires a random planting layout, in accordance with the <i>Sample Planting Layout, Tubestock Planting Detail</i> shown in this Rehabilitation Plan.	
	4 Generally planting holes for trees are to be a minimum of 1.5 times the diameter of the rootball and twice the depth of the rootball.	Contractor
	5 Planting pit is to have roughened sides and decompacted base.	Contractor
	6 Install water retention crystals to manufacturer's specifications (approximately 5 grams per plant).	Contractor
	7 Remove the plant from the container with minimum disturbance to the root ball, ensure that the root ball is moist and place it in its final position, in the centre of the hole and plumb, and with the top soil level of the plant root ball level with the finished surface of the surrounding soil.	Contractor
	8 Backfill with topsoil mixture. Lightly tamp and water to eliminate air pockets. Ensure that topsoil is not placed over the top of the root ball, so that the plant stem remains the same height above ground as it was in the container.	Contractor
Weed control	1 Prior to the commencement of weed removal / control, contractor to inspect site to confirm weed species and/or extents for control.	Contractor
	2 Weed species / extents are flagged on-site (as required).	Contractor
	3 Weed control, subject to site monitoring, undertaken every 3 months following planting and carried out in accordance with requirements listed in this Rehabilitation Plan.	Contractor
	4 During the establishment and 12 month maintenance period all rehabilitation treatments shall be maintained in a weed free condition.	Contractor
	5 Weed control is carried out in accordance with best practice methods according to the requirements of individual species and/or environmental conditions as specified in Table 4 and Table 5.	Contractor
	6 Weed control will be undertaken in a manner which does not promote erosion or instability of soil, especially in waterways or high velocity flow zones.	Contractor
	7 Avoid application of herbicides on windy days or if rain is likely to follow within 12 hours.	Contractor
	8 Apply herbicides: a To the manufacturer's instructions and material data and safety sheets. b When the weather is humid with moderate temperatures and maximum sunlight. c When the ground has adequate soil moisture. d Where in close proximity to waterways, undertake weed control in accordance with the following guidelines: 1. Do not spray herbicides over waterbody. 2. Direct spray away from waterbody where possible. 3. Spray only to the extent of covering foliage with droplets. 4. Spray when weather is calm. 5. Use a flat fan nozzle and low pump pressure to reduce likelihood of spray drift. 6. Do not spray when rain is forecast within 6 hours.	Contractor
	9 Undertake any 'make good' works arising from meetings with either Council or Litoria Consulting, resulting in no declared plant pests or environmental weeds (i.e. 0%).	Contractor
Establishment	1 Ensure the general appearance and presentation of the landscape and the quality of plant material at date of practical completion is maintained for the full planting establishment period.	Contractor
	2 Replace failed, dead and/or damaged plants at maximum 3 week intervals as necessary throughout the full plant establishment period.	Contractor
Watering	1 Thoroughly water the plants before planting, immediately after planting, and as required to maintain growth rates free of stress.	Contractor
	2 Subject to prevailing weather conditions, watering to occur: a Daily for first week (5 waterings) b 3/week for weeks 2-4 (9 waterings) c 2/week for weeks 5-8 (8 waterings)	Contractor
	3 Manually water all planting areas, soaking to a depth of 300 mm. Avoid frequent dampening of the surface. Allow the surface of the soil to partially dry out between waterings.	Contractor
	4 Water at times of day to minimise water evaporation loss. Do not water during the hottest period of Summer days.	Contractor

LRP07a: Revegetation procedures

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Table 3: Revegetation Procedures (cont)

Activity	Management Response	Responsible Party
Maintenance	1 Maintain appropriate planting densities and replace dead / dying / diseased stock every 3 months.	Contractor
	2 Provide replacement plants as follows:	Contractor
	a Of the same species and size listed in Table 1 & Table 2.	Contractor
	b Of uniformly high quality stock equal to the best commercially available.	Contractor
	c Representative of optimum growth for the species as restricted by the container size.	Contractor
	d With a balanced root system in relation to the size of the plant and conducive to successful transpiration. Inspect the root conditions of plants by knocking plants from their containers.	Contractor
	e Without signs of having been stressed at any stage during their development due to inadequate watering, excessive shade/sunlight, suffered physical damage or have restricted habit due to growth in nursery rows.	Contractor
	f Healthy, well grown, hardened off specimens of good shape and free from pests and disease.	Contractor
	g Well rooted and without any indication of having been restricted (pot bound) or damaged at any time.	Contractor
	h Been grown in their final containers for not less than twelve (12) weeks.	Contractor
	3 Water to a depth of 300 mm. Avoid frequent dampening of the surface. Allow the surface of the soil to partially dry out between waterings. Water at times of day to minimise water evaporation loss. Do not water during the hottest period of Summer days.	Contractor
	4 Provide progress report to Council at minimum 12 months after acceptance on-maintenance.	Contractor

Table 4: Maintenance and Monitoring Procedures

Task	Objective	Action	Timing	Maintenance frequency	Responsible Party
Weed control in rehabilitation areas	No declared plant pests within restoration areas (Council/State) (i.e. 0%).	Supplementary weed removal in accordance with this Landscape & Rehabilitation Plan.	Prior to completion of maintenance period	Every 3 months during maintenance period	Current owners / proprietors of the land
	No environmental weeds within restoration areas (i.e. 0%).	Supplementary weed removal in accordance with this Landscape & Rehabilitation Plan.	Prior to completion of maintenance period	Every 3 months during maintenance period	Current owners / proprietors of the land
Establishment and survival of all plants	90% survivorship of plants.	Replacement or supplementary planting in accordance with this Landscape & Rehabilitation Plan.	Prior to completion of maintenance period	Every 3 months during maintenance period	Current owners / proprietors of the land
Maintain appropriate planting densities	Planting densities are in accordance with this Landscape & Rehabilitation Plan.	Replacement or supplementary planting in accordance with this Landscape & Rehabilitation Plan.	Prior to completion of maintenance period	Every 3 months during maintenance period	Current owners / proprietors of the land
Rubbish removal	No rubbish within restoration areas	Remove rubbish and dispose off-site.	Prior to on-maintenance inspection.	-	Contractor / current owners / proprietors of the land

Table 5: Performance Outcomes

Period	Weed content	Planting densities	Structure, growth & health	Diversity
On-maintenance inspection	<20%	-80% (±5%) of target density	Species from canopy, shrub and understorey present.	Planted species in accordance with LRP06, with no species to constitute more than 30% of planted individuals.
Off-maintenance inspection	<10%	-90% (±5%) of target density	Species from canopy, shrub and understorey present, exhibiting healthy plant growth typical for 24 month for each species.	Planted species in accordance with LRP06, with no species to constitute more than 30% of planted individuals.

LRP07b: Revegetation procedures

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Table 6: Weed Control Procedures

Method	Details
Complete removal	This technique is used for plants which regrow from bulbs, tubers or other plant parts, such as runners. Remove all plant parts, including roots by hand pulling. Plant parts should be removed from the site and disposed of via landfill or composting.
Stem scraping	This method is suitable for treating small shrubs and vines with thin and relatively soft bark tissue, which are actively growing and not stressed. Stem scraping or scrape and paint is perfect for treating vine species, especially Madeira Vine. The aim of this technique is to remove a small portion of the bark. This will allow the herbicide to penetrate into the plant's sapwood travelling to the tubers and effectively destroying the plant. Using the knife, scrape away 100 millimetres to expose the sap wood. Immediately (within 15 seconds) apply the herbicide to the exposed stem. Failure to apply the herbicide immediately will result in the plant sealing itself off and not all the herbicide to effectively penetrate into it.
Cut stump	This method is a quick and effective way of treating small shrubs, large trees, woody plants and vines without aerial tubers. This method allows accurate placement of the herbicide with minimal hazard to the environment and the operator. The intention of this method is to apply the herbicide to the actively growing plant sapwood. The herbicide will move through the plant into its roots and effectively kill it. Using the saw, machete, cane knife or secateurs, cut the plant at least 150mm above the ground. Immediately (within 15 seconds) apply the herbicide to the base of the stump. Failure to apply the herbicide immediately will result in the plant sealing itself off and not allow the herbicide to effectively penetrate into it.
Overall wet spray	This technique is suitable for treating grasses, herbs and shrubs up to 6 metres tall and involves spraying individual and small clumps of weeds with diluted herbicide. Avoid spraying on rainy or windy days and make sure the plants are actively growing. Ideal conditions for spraying are immediately after rain and once all the dew has evaporated. In terms of application technique: 1. Spray close to the target plants to avoid spray drift onto other valuable (i.e. native) plants. 2. Spray to cover all leaves and stems to the point of visible wetness. 3. Use short sweeping strokes. 4. Start from the far corner of the infestation working away from sprayed areas. 5. Be systematic to avoid spraying the same area twice.

Table 7: Weeds & Recommended Control

Scientific Name	Common Name	Control Method
<i>Bidens pilosa</i>	Cobbler's Pegs	Complete removal
<i>Cirsium vulgare</i>	Spear Thistle	Overall wet spray
<i>Conyza bonariensis</i>	Flaxleaf Fleabane	Overall wet spray
<i>Gomphocarpus physocarpus</i>	Balloon Cotton Bush	Overall wet spray
<i>Gomphrena celosioides</i>	Gomphrena Weed	Overall wet spray
<i>Lantana camara</i>	Lantana	Cut stump, stem scraping
<i>Lantana montevidensis</i>	Creeping Lantana	Cut stump, stem scraping
<i>Melinis repens</i>	Red Natal Grass	Overall wet spray
<i>Optunia stricta</i>	Prickly Pear	Complete removal
<i>Paspalum dilatatum</i>	Paspalum	Overall wet spray, slashing and mowing
<i>Verbena bonariensis</i>	Purpletop	Overall wet spray

LRP08: Weed control procedures

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