



# 8300 Soft Landscaping and Horticultural Treatment

REVISION 04/04/2024

## 8300.1 Introduction

This Supplementary Specification refers to:

- a) the vegetation of cut and fill batters, median, roundabout and traffic island areas, road and pathway verges, open swale drains, and other broad scale areas as nominated on the Drawings;
- b) the supply and installation of landscape planting at locations and areas as shown on the Drawings;
- c) surface and sub-surface preparation operations;
- d) the supply and installation of topsoil.

The following items are not included within this specification however their relevant specification should be read in conjunction with these works:

- a) Irrigation including IrriNET – MRC Supplementary Specification 8316
- b) Pathways/Shared paths/Bikeways – MRC Supplementary Specification 8321
- c) Garden Edging and Trip Stops -MRC Supplementary Specifications 8204 & 8321
- d) Root barriers – MRC Supplementary Specification 8304
- e) Drainage – MRTS 03 and MRC Supplementary Specification 8107

### 8300.1.1 Definition of Terms

This section describes any term which are specific to this specification or requires clarification due to an ambiguous understanding.

Term	Definition
Establishment Period	Agreed period of 12 weeks after defective vegetation has been replanted/laid/rectified and re-inspected
On Maintenance Period	Agreed initial period of 12 month as “On Maintenance” where all works have been inspected and accepted for “On maintenance”. This may be extended depending on the extent of planting defects identified or needs addressing



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## 8300.2 Referenced documents

This Supplementary Specification shall be read in conjunction with current versions of following documents:

- MRS01 *“Introduction to Specifications”*;
- MRTS01 *“Introduction to Technical Specifications”*;
- MRTS03 *“Drainage, Retaining Structures and Protective Treatments”*;
- MRTS04 *“General Earthworks”*;
- MRTS16 *“Landscape and Revegetation Works”*
- MRTS 50 *“Specific Quality System Requirements”*;
- MRTS51 *“Environmental Management”*;
- MRTS70 *“Concrete”*;
- AS 1160 *“Bitumen emulsion for construction and maintenance of pavements”*;
- AS 2507 *“The storage and handling of pesticides”*;
- AS 2758.7 *“Aggregates and rock for engineering purposes”*
- AS 2845 *“Water Supply – Backflow Prevention Devices”*;
- AS 3500 *“National Plumbing and Drainage Code” Water Supply*;
- AS 3743 *“Potting mixes”*;
- AS 4158 *“Thermal Bonded Polymeric Coatings”*;
- AS 4373 *“Pruning of amenity trees”*;
- AS 4419 *“Soils for landscaping and garden use”*;



- AS 4454 “Composts, soil conditioners and mulches”;
- AS 4843 “Synthetic weed blocking fabric”;
- NATSPEC: *Guidelines for the Specification of Trees*;
- *Chemical Usage (Agricultural and Veterinary) Control Act 1988*;
- *Soil Chemical Methods: Australasia (2011)* by Rayment and Lyons;
- Transport & Main Roads Standard Drawing 1656 “*Guying Advanced Containers and Ex-ground Stock*”;
- Transport & Main Roads *Road Landscape Manual Appendix 4*;
- Mackay Regional Council Standard Drawing A4-00177 “*Tree Planting to CBD Gate and Guard*”;
- Mackay Regional Council Standard Drawing A4-00049 “*Standard Tree Planting Detail*”;
- Mackay Regional Council Standard Drawing A4-00420 “*Garden Edging*”;
- Mackay Regional Council Street Tree Planting List
- MRTS16 “*Landscape and Vegetation Works*”
- MRTS16 “*Landscape and Vegetation Works Appendix*”
- AS 2303 “*Tree Stock for Landscape Use*”,
- Mackay Regional Council *Engineering Design Guideline D8 – Landscape*;
- Supplementary Specification 8317 “*Landscaping and Horticultural Maintenance Period*”
- Supplementary Specification 8316 “*Landscape and Turf Irrigation Systems*”
- Mackay Regional Council “*Planning Scheme Policy – Landscape*”;
- Mackay Regional Council “*List of Furniture and Materials*”;
- Mackay Regional Council “*List of Plant Species*”
- Other referenced documents and specifications as appropriate; and
- The project Drawings.

### **8300.3 Description of Works Items**

Work items incorporated by this supplementary specification are identified in Section 8300.6 and 8300.7 with individual activities/tasks for measurement and payment sourced from the Bill of Quantities and listed in MRC Supplementary Specification Annexure 8300\_1 Soft Landscape and Horticultural Treatment Section 1

### **8300.4 Quality System Requirements**

#### **8300.4.1 Std test Methods (Testing Regime)**

The following minimum testing regime applies to this specification:

Unless otherwise stated the manufacturer certification of the landscape materials shall form the basis of the requirements, audit testing shall be carried out to confirm material compliance once delivered to site as required.

Topsoil sampling and testing as per AS4419 – For all topsoil insitu on site or manufactured on site or delivered to site. Testing to be as per each batch.

Mulch Sampling and testing as per AS4454 - For all mulch manufactured on site or delivered to site. Testing to be as per each batch.



Subgrade (subsoil) sampled and tested for purposes of amelioration of the soil on site shall follow the requirements of MRTS16 Landscape and Revegetation and MRTS16 Landscape and Revegetation Works Appendix (Forms A-I)

Civil works activities associated with excavation, concrete pours, drainage installation, subsoil drainage shall be tested as per the relevant MRTS specification MRTS03, MRTS04, and MRTS70 or relevant MRC Supplementary Specification unless otherwise approved by the Superintendent.

**8300.4.2 Hold Points, Witness Points and Milestones**

The following table represents the minimum inspection requirements for this specification.

Activity	Inspection Type	When	Reference
Program of Works and other required documents as per 8300.5	Milestone	4 Weeks prior to works commencing	<b>8300.5 8300.5.8</b>
Site Access and compound setup	Hold Point	Prior to site establishment with approved by Superintendent	<b>8300.5.2</b>
Contractors' personnel	Hold Point	After initial submission, 10 days prior to specific works activities commencing	<b>8300.5.7</b>
Plant supply proposal	Milestone	Prior to prestart meeting	<b>8300.5.14.30</b>
Plant delivery inspection	Hold Point	At time of delivery to nursery	<b>8300.5.14.29</b>
Discrepancies in documentation notification to Superintendent (as required)	Hold Point	Prior to works commencing approval by Superintendent	<b>8300.6</b>
<b>Weed Control</b>			<b>8300.6.2.1</b>
Weed free site	Hold Point	Prior to ground preparation	
Protection of existing vegetation	Witness Point	During herbicide application	
Visible coloured dye added to herbicide	Witness Point	During application to show visible application area for at least 48 hours	
Application of herbicide in a deemed hazardous area	Hold Point	Prior to application in a hazardous area	
Treated area isolated and left undisturbed	Hold Point	For two weeks after application	
Weed die off	Witness Point	Within 14 days since application	
<b>Spreading of amelioration agent prior to ground preparation</b>			<b>8300.6.2.2</b>
Testing of soil and submission of Amelioration Report	Hold Point	Prior to commencement of amelioration works, Superintendents approval of proposed works	
Amelioration process submitted for approval	Hold Point	10 days prior to amelioration activities commencing	



Materials verification	Witness Point	Each delivery to site	
Application rates of amelioration agent/s	Witness Point	During application process	
Excavated base breakup and application of soil improver	Witness Point	After excavation of tree holes/pits	
Notification period of amelioration application and incorporation	Hold Point	3 days prior to amelioration activities are to commence.	
<b>Ripping</b>			<b>8300.6.2.3</b>
Ripping method detailed in approved work procedure	Witness Point	Prior to ripping operations occurring	
Ripping where turf is to be laid	Witness Point	During ripping activities	
Ripping where shrubs/mass plantings are to be planted	Witness Point	During shrub/mass planting activities	
Ripping where tree planting/s are to be planted	Witness Point	During Tree planting activities	
Ripping process near paths, kerbs, or structures, existing vegetation	Witness Point	During ripping process	
<b>Cultivation</b>			<b>8300.6.2.4</b>
Cultivation method detailed in approved work procedure	Witness Point	Prior to ripping operations occurring	
Areas to be cultivated	Witness Point	Prior to cultivation works commencing	
Cultivation where shrubs/mass plantings are to be planted	Witness Point	During shrub/mass planting activities	
Cultivation of other areas	Witness Point	During cultivation activities	
Cultivation process near paths, kerbs, or structures, existing vegetation	Witness Point	During cultivation process	
<b>Roughening</b>			<b>8300.6.2.5</b>
Roughening method detailed in approved work procedure	Witness Point	Prior to roughening operations occurring	
Areas to be roughened	Witness Point	Prior to roughening works commencing	
Surface after roughening conforms with no stone, rubble, or deleterious materials present	Witness Point	After roughening prior to seeding installation occurring	
<b>Trimming and Recontouring</b>			<b>8300.6.2.6</b>



trimming and recontouring method detailed in approved work procedure	Witness Point	Prior to trimming and contouring operations occurring	
Areas to be trimmed and contoured	Witness Point	Prior to trimming and contouring works commencing	
Keying of subgrade layer	Witness Point	Prior to topsoil be installed	
<b>Ground preparation works for revegetation areas</b>			<b>8300.6.2.7</b>
Site weed free	Witness Point	Prior to clearing and stripping of topsoil	
Areas free of rubbish and materials that may hinder plant growth	Witness Point	After clearing and stripping topsoil	
Topsoil verification to specification, submission of test results or certification if imported	Hold Point	Prior to incorporating topsoil	
Spreading of topsoil over area in required layer	Witness Point	During topsoiling incorporation and laying	
Installation of weed control matting	Witness Point	within 24 hours of topsoil being re-spread and levelled	
<b>Topsoil Operations</b>			<b>8300.6.3</b>
On-site verification of topsoil	Hold Point	Tested for compliance prior to use and approved by the Superintendent	
Delivered top soil verification	Hold Point	Verified through certification or tested where verification cannot be supplied	
Stripping and stockpiling requirements	Witness Point	During stripping and stockpile activities	
<b>Manufacture of site topsoil</b>			<b>8300.6.3.1</b>
Tested for compliance to AS4419	Hold Point	Prior to use and for approval by Superintendent	
Amelioration process followed	Witness Point	During manufacturing of topsoil	
Amelioration Application rates	Witness Point	During manufacturing of topsoil	
Topsoil screened to meet size requirements	Hold Point	During manufacturing process	
<b>Installation of topsoil</b>			<b>8300.6.3.2</b>
Topsoil installed in urban landscapes (medians, roundabouts)	Witness Point	Prior to plant installation	
Topsoil installed in broad acre mass planting beds	Witness Point	Prior to plant installation	
Topsoil installed for turf and vegetation (seeding)	Witness Point	Prior to plant installation	



Topsoil spreading and finishing	Witness Point	During and at the completion of topsoiling works	
Topsoil finish and depth	Hold Point	At the completion of topsoiling activities	
<b>Vegetation works - Seeding</b>			<b>8300.6.4</b>
Notification of planned seeding works	Hold Point	48 hours prior to seeding works being planned	
Seed installation	Witness Point	During process of seeding and watering	
<b>Drill seeding</b>			<b>8300.6.4.1</b>
Notification of planned seeding works	Hold Point	48 hours prior to seeding works being planned	
Drill seeding process followed	Witness Point	During seeding activity	
seed and fertilizer application and rates process	Witness Point	During seeding activity	
Open or swale drain applications	Witness Point	During seeding activity	
Initial watering and rewatering	Witness Point	At completion of seeding installation	
<b>Broadcast seeding</b>			<b>8300.6.4.2</b>
Notification of planned seeding works	Hold Point	48 hours prior to seeding works being planned	
Broadcast seeding process followed	Witness Point	During seeding activity	
seed and fertilizer application and rates process	Witness Point	During seeding activity	
Open or swale drain applications	Witness Point	During seeding activity	
Initial watering and rewatering	Witness Point	At completion of seeding installation	
<b>Hydroseeding</b>			<b>8300.6.4.3</b>
Notification of planned seeding works	Hold Point	48 hours prior to seeding works being planned	
Hydroseeding process followed	Witness Point	During seeding activity	
Application rates of seeding materials	Witness Point	During seeding activity	
Initial watering and rewatering	Witness Point	At completion of seeding installation	
<b>Hydromulch seeding</b>			<b>8300.6.4.4</b>
Notification of planned seeding works	Hold Point	48 hours prior to seeding works being planned	



Hydromulch seeding process followed	Witness Point	During seeding activity	
Application rates of seeding materials	Witness Point	During seeding activity	
Initial watering and rewatering	Witness Point	At completion of seeding installation	
<b>Straw mulch seeding</b>			<b>8300.6.4.5</b>
Seeding process	Witness Point	During seeding activities as per two pass process	
Depth of straw mulching checked	Witness Point	During and at completion of straw mulching	
Straw mulched areas protected against pedestrian and vehicular traffic	Hold Point	After installation until germination and establishment occurs	
<b>Initial watering and rewatering of seeding operations</b>			<b>8300.6.4.6</b>
Initial watering after seeding	Witness Point	Same day as seeding operations occur	
Rewatering of seeded areas	Witness Point	Daily basis until On Maintenance period commences	
<b>Vegetation works – turfing</b>			<b>8300.6.5</b>
Notification of turfing works commencement	Hold Point	After surface preparation prior to installation	
Amelioration process and spreading (as required)	Hold Point	Prior to subsoil operations occurring	
Subsoil operations and preparation	Witness Point	During subsoil operations	
Installation of topsoil	Witness Point	Within 3 days of subsoil operations being complete	
Surface preparation	Witness Point	Prior to turf installation	
Location and layout of turfing	Witness Point	During laying	
On maintenance inspection	Hold Point	At completion of works	
<b>Reinforced turfing</b>			<b>8300.6.5.1</b>
Notification of turfing works commencement	Hold Point	After surface preparation prior to installation	
Amelioration process and spreading (as required)	Hold Point	Prior to subsoil operations occurring	
Subsoil operations and preparation	Witness Point	During subsoil operations	
Installation of topsoil	Witness Point	Within 3 days of subsoil operations being complete	
Surface preparation	Witness Point	Prior to turf installation	
Location and layout of turfing	Witness Point	During laying	



On maintenance inspection	Hold Point	At completion of works	
<b>Initial watering and rewatering of turfing operations</b>			<b>8300.6.5.2</b>
Initial Watering	Witness Point	within 2 hours after laying operations	
Continued Watering	Witness Point	Continual until "On Maintenance"	
<b>Vegetation works – organic mulching</b>			<b>8300.6.6</b>
Testing and compliance of mulch	Hold Point	Prior to use on site at delivery or via landscape supplier certification	
Mulching depths and finish	Witness Point	During mulching activities	
Notification of use of pre-emergent	Witness Point	Prior to the installation of mulch	
<b>Manufacture of site mulch</b>			<b>8300.6.6.1</b>
Site production of mulch	Witness Point	During process of manufacturing of mulch	
<b>Vegetation works – environmental matting</b>			<b>8300.6.7</b>
Installation of matting	Witness Point	After ground surface preparation	
Installation in grass drainage structures	Witness Point	During installation of matting	
Installation for weed and erosion control	Witness Point	During installation of matting	
<b>Revegetation works – erosion control matting</b>			<b>8300.6.7.1</b>
Surface preparation and laying of matting	Witness Point	Prior to planting occurring	
Temporary irrigation installed	Witness Point	Prior to planting occurring and tested for coverage	
<b>Vegetation works – planting</b>			<b>8300.6.8</b>
irrigation system commissioned and accepted by Council	Hold Point	Prior to site plantings occurring	
Surface preparation	Witness Point	Prior to planting occurring	
Notification of planting schedule	Witness Point	Prior to planting occurring	
Watering and rewatering plantings	Witness Point	After planting and daily until "On-maintenance" period commences	
<b>Revegetation works – planting</b>			<b>8300.6.8.1</b>
Inspection of site for weeds and hazards to plantings	Hold Point	Prior to planting and rectification of any issues preventing planting.	
Notification of planting schedule	Witness Point	Prior to planting occurring	
Planting layout and species as per schedule	Witness Point	Prior to planting occurring	
Planting installation and backfilling	Witness Point	During planting activities	



Watering of plants	Witness Point	Immediately after planting occurs	
<b>On-site storage of plants</b>			<b>8300.6.8.2</b>
Approval of on-site nursery setup	Hold Point	prior to any plants being delivered.	
Inspection of planting stock at time of delivery for quality	Hold Point	At delivery time to onsite nursery	
Inspection of planting stock after 12 weeks acclimatisation for health of plantings	Hold Point	Prior to site planting	
<b>Setting out of plants</b>			<b>8300.6.8.3</b>
Inspection of plant layout	Hold Point	Prior to any excavation or plantings occurring	
<b>Mass planting</b>			<b>8300.6.8.4</b>
Planting holes excavation	Witness Point	During excavation size of hole and method of excavating	
Soil Conditioner added as per manufacturers requirements	Witness Point	Prior to planting and during backfilling	
Backfilling of hole, watering, and mulching	Witness Point	During and after backfilling prior to mulching	
Clean up of site	Hold Point	After establishment and "On-maintenance" period	
<b>Individual tree planting ≥ 45L Stock</b>			<b>8300.6.8.5</b>
Excavation of hole pit	Witness Point	During and at completion of excavation of hole	
Installation of root guard (if required)	Witness Point	Prior to installation of tree	
Planting tree and backfilling	Witness Point	During tree planting activities	
Fertilizing the planting during backfilling	Witness Point	During backfilling activities	
Mulching of tree around tree	Witness Point	After backfilling activities	
Clean up of site	Hold Point	After establishment and "On-maintenance" period	
<b>Marginal aquatic plantings</b>			<b>8300.6.8.6</b>
Environmental matting installation	Witness Point	During laying of matting	
Plantings and water levels	Hold Point	When works are complete	
<b>Stakes and ties</b>			<b>8300.6.8.7</b>
Position of stakes	Witness Point	During installation	
Position and tension of ties	Witness Point	After plantings tied off	
<b>POST CONSTRUCTION</b>			<b>8300.7</b>



<b>Submission of As Constructed Detail</b>	<b>Hold Point</b>	<b>At completion of works 4 weeks prior to requesting practical completion inspection.</b>	<b>8300.7.1</b>
Inspection of Worksite for preconstruction Condition	Hold Point	After demobilisation	<b>8300.7.2</b>
On-maintenance Inspection	Hold Point	Acceptance of works for “on maintenance” for 12 months	<b>8300.7.3</b>
Establishment Period	Hold Point	After defect rectification and setting of maintenance periods for the specific planting	<b>8300.7.3</b>

### 8300.4.3 Construction Tolerances

The limits and tolerances applicable to the various clauses in this Supplementary Specification are summarised in the table below.

#### *Summary of Limits and Tolerances*

<b>Activity / Property</b>	<b>Limits / Tolerances</b>	<b>Referenced Clause</b>
<b>Topsoil</b>		
Organic Content	> 10% by volume	<a href="#">8300.5.14.15</a>
pH Range	> 6.5 < 7.5	<a href="#">8300.5.14.15</a>
Soluble Salt Content	< 600 ppm	<a href="#">8300.5.14.15</a>
Clay Content	< 10% by dry mass	<a href="#">8300.5.14.15</a>
Stone Content	< 5% by dry mass	<a href="#">8300.5.14.15</a>
<b>Seed</b>		
Seed Purity – grass & cover crop	95%	<a href="#">8300.5.14.21</a>
Germination Viability - grass & cover crop	80%	<a href="#">8300.5.14.21</a>
Seed Purity – native seed	95%	<a href="#">8300.5.14.21</a>
Germination Viability – native seed	60%	<a href="#">8300.5.14.21</a>
Grass seeded coverage	>80% coverage with >90% coverage at 12 weeks after “on maintenance”	<a href="#">8300.7.3</a>
Native seed coverage	>60% coverage with >75% and minimum 1 one juvenile native plant species specimen per 9m2 at 12 weeks after “on maintenance”	<a href="#">8300.7.3</a>
<b>Turfing</b>		
Roll Widths	≥ 400mm	<a href="#">8300.5.14.25</a>



Sod Depth	>50mm	<a href="#">8300.5.14.25</a>
Maximum failure rate of Turf	0%	<a href="#">8300.7.3</a>
<b>Vegetable Mulch Fibres</b>		
Material	Max size < 10mm	<a href="#">8300.5.14.22</a>
Paper Pulp	< 25% by mass of total mulch	<a href="#">8300.5.14.22</a>
<b>Level Tolerance</b>		
Subsoil	+/-15mm	<i>MRTS03/04</i>
<b>Topsoiling</b>		
Minimum compacted thickness – turf areas ≤1:4 gradient – road verge	75mm	<a href="#">8300.6.3.2</a>
Minimum depth – turf areas >1:4 gradient – road verge	50mm	<a href="#">8300.6.3.2</a>
Minimum depth – turf areas in urban settings	150mm	<a href="#">8300.6.3.2</a>
Minimum depth – mass planting in urban settings	350mm	<a href="#">8300.6.3.2</a>
Minimum depth – mass planting in broadacre settings	200mm	<a href="#">8300.6.3.2</a>
Minimum depth – trees over 45L or trees with shrubs in urban settings	450mm	<a href="#">8300.6.2.2</a>
Stone/Clod/Deleterious Material Size (diameter)	<50mm	<a href="#">8300.5.14.15</a>
<b>Sub-soil Amelioration Depth</b>		
Minimum compacted thickness – turf areas ≤1:4 gradient – road verge	150mm	<a href="#">8300.6.2.4</a>
Minimum depth – turf areas >1:4 gradient – road verge	150mm	<a href="#">8300.6.2.4</a>
Minimum depth – turf areas in urban settings	150mm	<a href="#">8300.6.2.4</a>
Minimum depth – mass planting in urban settings	150mm	<a href="#">8300.6.2.4</a>
Minimum depth – mass planting in broadacre settings	150mm	<a href="#">8300.6.2.4</a>
Minimum depth – trees over 45L or trees with shrubs in urban settings	200mm	<a href="#">8300.6.2.2</a>
<b>Organic Mulch</b>		
Fines Content	< 5% by volume	<a href="#">8300.5.14.27</a>
Woodchip Size	< 50 mm	<a href="#">8300.5.14.27</a>
Layer Depth	>100mm	<a href="#">8300.6.6</a>



Plant Material		
Minimum dimensions at installation – stock >25lt	<a href="#">Refer to Table 8300.5.14.29b</a> >25lt	<a href="#">8300.5.14.29</a>
Minimum dimensions at installation – stock ≤25lt	<a href="#">Refer to Table 8300.5.14.29b</a> ≤25lt	<a href="#">8300.5.14.29</a>
Maximum acceptable failure rate – stock <300mm in size	5%	<a href="#">8300.7.3</a>
Maximum acceptable failure rate – stock 300mm and 25L in size	2%	<a href="#">8300.7.3</a>
Maximum acceptable failure rate – stock >25L	0%	<a href="#">8300.7.3</a>
Planting Temperature	< 35°C and > 10°C	<a href="#">8300.6.8</a>

The following table provides recommended tree rooting volumes for trees to be planted in limited soil conditions

Tree type and location in project and approved installation pot size	Minimum soil volume per tree (m <sup>3</sup> )	Topsoil depth (A) / subsoil depth (B) / subgrade depth (C)	Notes
Street trees (100L)	40m <sup>3</sup>	A: 500-560mm B: 300mm C: 200mm	Subsoil drainage as specified.
Street trees (100L) in root cells in Urban, high traffic environment	40m <sup>3</sup>	A: 500-560mm C: 200mm	Root cells ( <i>Stratavault</i> ) as supplied by City Green or approved equivalent. Subsoil drainage as specified.
Trees in carpark (100L)	27m <sup>3</sup> per individual tree / planting zone	A: 350mm C: 200mm	Subsoil drainage as specified.
Trees and screen hedges of rooftop	18m <sup>3</sup> (less per tree for shared rooting zones)	A: 350mm B: 300mm C: 200mm	Excludes depths of drainage, drainage cell and waterproof membranes. Trees may require anchoring and stabilising



Containerised trees / trees in planters / rooftop trees	20m <sup>3</sup> (less per tree for shared rooting zones)	A: 350mm B: 300mm C: 200mm	Lightweight soil requirements, tree anchors, mounded
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### 8300.5 Preliminary

The Contractor is to submit the following documentation and any other listed for submission prior to works commencing throughout this specification 4 weeks prior to commencing work or a prestart is conducted:

**(MILESTONE)**

- Material Safety and Technical Data sheets for nominated products and materials
- Prequalification of materials and plants including procurement source
- Proposed storage method and location of materials
- Works procedure/s for all activities
- Maintenance Program for construction, establishment period and defects liability period compliant with MRC Supplementary Specification 8317.
- Workplace Health and Safety Plan including Work Method Statements (WMS)
- Contractor’s personnel experience, qualification, skills and training (10 days prior to undertaking work on site)
- Environmental Management Plan
- Erosion and Sediment Control Plan (as required for site/s)
- Traffic Management Plan and TGS’s (as required)
- Quality Plan detailing requirements of 8300.4.

Other preliminary requirements unique to the project will be listed in the MRC Supplementary Specification Annexure 8300\_1 Landscaping and Horticultural Treatment

**(MILESTONE)**

The contractor is to ensure their construction activities are based on the design drawing and documentation requirements. Alternate construction materials and procedures are not acceptable unless site conditions dictate and at the Superintendents approval.

#### 8300.5.1 Soft Landscape Materials and Procurement

Supply of all materials to site is the responsibility of the Contractor at their cost, where items are Principal supplied the nominated storage site shall be obtained from MRC Supplementary Specification Annexure 8300\_1 Landscaping and Horticultural Treatment Section 3 and shall be the point of supply.

Where items are to be salvaged and stored or reused this shall be obtained from MRC Supplementary Specification Annexure 8300\_1 Landscaping and Horticultural Treatment Section 4 and shall be included within the contractors Works Procedure.

All materials and plants shall comply with the relevant Specification, legislation or Australian Standard as listed in 8300.2 and be approved by the Superintendent.



### **8300.5.2 Site Access and Storage Compounds**

Vehicle and machinery access through the site must be included within the Contractors approved Construction Procedure and authorised by the Superintendent prior to entry. The alignment of access paths is to be nominated on a site plan as part of the abovementioned approval, with the existing surface treatment recorded and photographed as evidence of the ground conditions required to be reinstated post construction. Approved access paths shall be fitted with sediment and erosion control.

#### **(HOLD POINT)**

Prior to any soil disturbances, sediment and erosion control-measures shall be installed as per the Contractors approved Environmental Plan.

Chemicals and fuels, equipment and materials used in construction shall be stored on site within a secured compound fitted with approved spill and other environmental protection measures including but not limited to sediment and erosion control. The setup of all storage compounds must be as per the approved Construction and Environmental Plan/s. The compound's location, size, configuration and point of access is to be nominated on a site plan as part of the abovementioned approval, with the existing surface treatment inside the compound recorded and photographed as evidence of the ground conditions required to be reinstated post construction.

Storage compounds cannot be established inside the dripline of an existing tree canopy. Earthworks undertaken to level a hardstand for a compound or access path (cut or fill) must also observe adequate clearance to existing tree roots and/or canopy driplines to avoid detrimental impact to site vegetation.

Plants and turf which cannot be installed into a prepared area within eight (8) hours of delivery to site must be stored in an appropriately outfitted and secure compound protected from wind and excessive heat exposure or other impacts. Storage compounds used for the storage of plants and turf must be fitted with a water supply, be vermin proof, and with other measures necessary to ensuring the health of the plant stock or turf.

Any soil contamination resulting of the storage, transport or construction of the proposed works shall be removed for disposal and treatment off-site as per the approved Environmental Plan and as agreed to by the Superintendent. Areas subject to excavation because of soil contamination are to be reinstated with suitable fill and other necessary treatments as instructed by the Superintendent.

Post construction, all access paths, storage compounds and any other areas of disturbance outside the proposed works caused by construction-related activities shall be reinstated to their original condition including surface treatment at the Contractors expense.

### **8300.5.3 Construction Waste**

All debris, rubbish and waste generated through the proposed. Works debris shall be collected for disposal at a registered landfill site.

Debris, rubbish, and construction waste may be stored or stockpiled on site in an approved compound or otherwise approved waste collection area. No stockpiling of debris, rubbish or construction waste is permitted inside the dripline of tree canopies.

Temporary waste collection or stockpiling areas must be as per the approved Construction Procedure and Environmental Plans, and be authorised by the Superintendent prior to being established. Temporary waste collection or stockpiling areas must be fitted with all necessary environmental protection measures including sediment and erosion controls were necessary. Subject to the nature of the material being temporarily stored, pest and vermin control may also be required. The location, size, and access to the temporary waste collection area is to be nominated on a site plan as part of the abovementioned approval, with the existing surface treatment of the nominated area recorded and



photographed as evidence of the ground conditions required to be reinstated post construction.

#### **8300.5.4 Stockpiling of site soils**

Stockpiling of soil and other landscape materials to be done in accordance with MRC PSP – Landscape.

The stockpiling of topsoil and bulk fill for re-use on site is encouraged. Topsoil is to be separated and stored separately to bulk fill. The location, size and configuration including the maximum height of all proposed soil stockpiles must be approved by the Superintendent before being established. Each stockpile is to be identified as either topsoil or bulk fill, and the location nominated on a site plan as part of the abovementioned approval, with the existing ground surface treatment of the nominated area recorded and photographed as evidence of the ground conditions required to be reinstated after the stockpiled soil has been used.

Locate soil stockpiles at least 5 metres from concentrated water flows including drainage lines and access paths operating within the site. Stockpiles must be appropriately protected from waste and rubbish dumping as well as encroachment for the construction works.

Topsoil stockpiles are to be a maximum two (2) metres in height and can be flat topped.

Where a soil stockpile is to be in place longer than three (3) months, stabilise the surface by sowing a seasonally appropriate sterile cover crop.

#### **8300.5.5 Cover crop to stockpiles – direct seeding**

All seed stock to be used shall be secured three (3) months prior to the commencement of scheduled works. The seed mix and rates of application must comply with the specification. Any discrepancies in seed stock specifications shall be made known to the Superintendent prior to ordering.

All seed sourced shall be from the Mackay region unless otherwise authorised by the Superintendent.

Prior to commencing any direct seeding, the Contractor shall assess the surface of the stockpile for the presence of weed species. Where necessary, weed control is to be undertaken prior to direct seeding with a sterile cover crop.

The soil surface must be prepared in response to the site soil conditions to provide a suitable surface environment for seed germination and unless specified otherwise, the soil surface must be lightly cultivated immediately prior to seeding to form a loose and roughed surface. Prior to seeding, the soil is to have sufficient moisture content to support seed germination.

Seed must be sown uniformly in overlapping passes to allow for complete seed coverage of the prepared surfaces. The soil shall then receive a light harrowing, rolling, scarifying, dragging or raking to cover the seed within 24 hours of surface being sown. The surface should also be lightly watered to further promote germination.

Seeding must not occur when the wind speed exceeds 25 km per hour, or in heavy rain if a mechanical blower or spreader is being used.

No mulch is to be spread over areas subject to direct seeding.

#### **8300.5.6 Native Fauna**

The construction site, which is to include all trees and area of vegetation to be removed or disturbed, must be inspected for native fauna that may be displaced or potentially injured by the proposed construction activities. This inspection is to occur prior to the start of the works on site and as necessary during the construction program. Where identified, fauna shall be physically relocated to nearby suitable habitat. The method of transplanting displaced fauna and the habitat recommended is to be approved by the superintendent prior to relocation.



Any injured native fauna found on site or resulting from construction activity must be immediately rescued and transported for treatment by a veterinarian at the expense of the Contractor. All incidences of fauna being found injured or dead on-site must be reported promptly to the Superintendent.

#### **8300.5.7 Contractor's Personnel**

The Contractor shall provide documented evidence for the Superintendent's approval to demonstrate the experience, qualification, skills and training of proposed personnel, sub-contractors and suppliers a minimum 4 weeks prior to works commencing and then at least 10 working days prior to the relevant personnel, sub-contractors and suppliers undertaking works on the project as works are scheduled to commence.

**(HOLD POINT)**

#### **8300.5.8 Proposed Materials, Work Method Statement, and Inspection and Test Plan**

Prior to commencement of the works, the Contractor must submit to the Superintendent, technical data sheets and test certificates regarding the quality of materials and performance of products proposed for use in the Works.

**(MILESTONE)**

The submissions must provide information of the product compliance with relevant performance criteria detailed in this Specification.. Current test certificates supplied by the manufacturers or suppliers may be accepted. Where in the opinion of the Superintendent insufficient data is available, the Contractor must execute sufficient additional tests to prove the suitability and adequacy of such material, at the Contractor's expense.

**(MILESTONE)**

The Contractor must submit for the Superintendent's approval a Contractor's Work Method Statement and Test Plans(ITP's) detailing all testing and performance requirements and hold points in accordance with this Specification.

**(MILESTONE)**

#### **8300.5.9 Water**

All water used for landscaping purposes shall be approved by the Superintendent including the source. If the source is not potable from Council's reticulation mains the Contractor shall ensure any necessary permits have been obtain for the taking of the water.

#### **8300.5.10 General Workplace Health and Safety Requirements**

As a condition of this document, it is required that the Contractor and its workers (including all sub-contractors etc., and their workers) engaged to perform a service or work on site must at all times ensure (so far as reasonably practicable) the health and safety of all persons who are, or may be, affected by work under this specification or the services provided.

#### **8300.5.11 Legislative Compliance**

Without limiting the Contractor's other obligations, the Contractor must comply with all Acts, Regulations, Standards and Codes of Practice about work health and safety matters that are applicable to the scope of work undertaken or services being provided.

#### **8300.5.12 Handling of Chemicals**



For all hazardous chemicals, ensure current Safety Data Sheets (SDS) are available and that appropriate controls (including as required under SDS requirements) are implemented.

The manufacturer's instructions for the safe handling of products shall be followed to minimise the risk of injury or creation of health hazards to personnel.

Disposal of chemicals must be treated with due regard to environmental protection and shall be in accordance with manufacturer's guidelines and statutory requirements.

#### **8300.5.13 Traffic Control Considerations (As Required)**

Where required by the works location and scope the Contractor is responsible for traffic management on site and shall ensure their traffic management plan has been submitted and approved prior to works commencing. This includes vehicular, pedestrian, and cycling traffic.

#### **8300.5.14 Materials**

Supply of all materials to site is the responsibility of the Contractor at their cost, where items are Principal supplied the nominated storage site shall be obtained from MRC Supplementary Specification Annexure 8300\_1 Landscaping and Horticultural Treatment Section 3 and shall be the point of supply.

Where items are to be salvaged and stored for reused this shall be obtained from MRC Supplementary Specification Annexure 8300\_1 Landscaping and Horticultural Treatment Section 4 and shall be included within the contractors Works Procedure.

Concrete, grout, sealants, membranes, and reinforcing steel shall comply with the relevant MRTS Specification or Australian Standard as listed in 8300.2

Specific material requirements used throughout this specification are given below.

The Contractor shall store materials as per supplier and/or manufacturers requirements to ensure no deterioration or contamination occurs, including the potential for environmental harm.

##### **8300.5.14.1 Pesticides**

All Pesticides to be used as part of this specification shall:

- a) Be registered for use on roadsides and rights of way under the Chemical Usage (Agricultural and Veterinary) Control Act 1988, and;
- b) Be registered for treatment of weeds by the Australian Pesticides and Veterinary Medicines Authority (APVMA).

The Contractor shall submit the type/s of pesticides to be used and their compliance with the above required registrations as part of their Works Procedure a minimum 4 weeks prior to the request for a Landscape Prestart Meeting

##### **8300.5.14.2 Knock-down herbicides**

Knock-down herbicides shall be a broad spectrum, non-residual, glyphosate based herbicide that has been specifically manufactured for low aquatic toxicity, or as otherwise listed in Clause 1 of 3.2 of the Annexure.

Where no herbicide has been specified, the Contractor shall nominate target herbicides for approval by Council and shall only use subject to prior approval.

##### **8300.5.14.3 Target herbicides**

Target herbicides shall be used exclusively for the eradication of the target plant species. The type of



herbicide and target vegetation to be controlled shall be specified in Clause 1 of 3.2 of the Annexure. Where no herbicide has been specified, the Contractor shall nominate target herbicides for approval by Council and shall only use subject to prior approval.

#### **8300.5.14.4 Pre-emergent herbicides**

Pre-emergent herbicide shall be oryzalin based used only to eradicate weed seed present in site and imported topsoil. Pre-emergent herbicide shall not be used to treat emergent (growing) weeds. Pre-emergent herbicide shall be as listed in Clause 1 of 3.2 of the Annexure.

Where no herbicide has been specified, the Contractor shall nominate target herbicides for approval by Council and shall only use subject to prior approval.

#### **8300.5.14.5 Insecticides**

Insecticides shall treat target insect species infesting vegetation works. The type of insecticide/s and targeted species shall be specified in Clause 2 of 3.2 of the Annexure.

Where no pesticide has been specified, the Contractor shall nominate pesticides for approval by Council and shall only use subject to prior approval.

#### **8300.5.14.6 Fungicides**

Fungicides shall treat target fungi infesting vegetation works. Fungicides shall be nominated by the Contractor for Council approval if required.

#### **8300.5.14.7 Soil amelioration / soil conditioning agents**

Soil ameliorant / soil conditioning agents shall be incorporated into subsoils, site or imported topsoil as required to comply with the requirements of this specification.

Soil amelioration / soil conditioning agents may include:

- a) fertiliser
- b) soil wetting agents
- c) water holding agents
- d) agricultural lime
- e) agricultural gypsum
- f) agricultural dolomite
- g) microbial inoculants,
- h) organic soil conditioner; and
- i) soil additives.

Delivery of soil ameliorants / soil conditioning agents shall be accompanied by a delivery docket stating at least the following information to certify the delivered material is in accordance with the material requirements:

- a) name of supplier/manufacturer;
- b) certification that material is in accordance with the material requirements of this specification;
- c) manufacture batch number and manufacture date (organic soil conditioners only);
- d) quantity;



- e) delivery docket number; and
- f) laboratory sample number noted on the associated *Form G – Organic Soil Conditioner Testing* (organic soil conditioners only).

Delivery dockets shall be made available for inspection by the Superintendent, as part of the Quality System.

#### **8300.5.14.8 Fertiliser**

Fertiliser/s shall be as specified in Clause 5 of 3.2 of the Annexure or an approved equivalent. Where no fertiliser has been specified the Contractor shall nominate for approval by Council, fertiliser/s meeting the requirements detailed below and shall only use subject to prior approval.

All fertilisers shall be a controlled, slow release, long term (minimum 9 months) fertiliser. All fertilisers shall be in a dry, granular, pill, pellet or tablet form. Liquid fertilisers shall not be used.

Fertilisers for landscape plantings shall contain trace elements (TE).

Fertilisers shall be in accordance with the following N:P:K analysis range for specific vegetation treatment types:

- a) For seeding - N: 10-22, P: 5-15, K: 5-15
- b) For grassing / turfing – N: 10-22, P: 5-15, K: 5-15
- c) For landscape plantings (containerised stock) – N: 7-22, P: 1-6, K: 2-10; +TE

#### **8300.5.14.9 Soil wetting and water holding agents**

The soil wetting and water holding agent/s shall be as specified in Clause 6 of 3.2 of the Annexure, or an approved equivalent. Where no agent has been specified the Contractor shall nominate for approval by Council, agent/s meeting the requirements detailed below and shall only use subject to prior approval.

Soil wetting agents shall:

- a) include non-ionic surfactant component
- b) be non-foaming
- c) have a life of at least 3 months from the time of application;
- d) reduce surface tension of soil particles;
- e) reduce soil water repellence / hydrophobicity;
- f) increase water penetration to soil, and;
- g) be free from matter toxic to plant growth.

Water holding agents shall:

- a) have a life of at least 9 months from the time of installation;
- b) be manufactured from starch, synthetic polymers, porous ceramic clays and/or mineral wash;
- c) minimum 90% material purity;
- d) have the ability to hold water equal to at least 200 times their own mass;
- e) be hydrated/activated prior to installation; and
- f) be free from matter toxic to plant growth.



#### **8300.5.14.10 Agricultural lime, agricultural dolomite and agricultural gypsum**

Agricultural lime, agricultural dolomite and agricultural gypsum shall not be in a liquid form. Agricultural lime shall be natural occurring limestone (calcium carbonate  $\text{CaCO}_3$ ).

Agricultural dolomite shall be naturally occurring dolomite (calcium magnesium carbonate  $\text{CaMg}(\text{CO}_3)_2$ ).

Agricultural lime and agricultural dolomite shall meet the following parameter requirements:

- a) have a neutralising value (NV) of 90 or above, determined using the Test Method 19A1 from the *Soil Chemical Methods: Australasia* (2011) by Rayment and Lyons
- b) have a pH value of 8.5 +/- 0.5, determined using the test method in accordance with Clause 5.5 of AS 4419, and
- c) have a particle size distribution of:
  - i. 100% by weight to pass a 5mm sieve; 95% by weight to pass a 3.5mm sieve; and
  - ii. 40% by weight to pass a 0.15mm sieve.

Agricultural gypsum shall be naturally occurring gypsum (calcium sulphate  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ). Crushed plaster board is not permitted.

Agricultural gypsum shall meet the following parameter requirements:

- a) a minimum 80% of gypsum;
- b) a moisture content of < 15%;
- c) have a total content (x-ray fluorescence test) of:
  - i. 20% calcium (Ca)
  - ii. 15% sulphur (S); and
  - iii. < 2% sodium chloride (NaCl).
- d) if manufactured – have a total content of heavy metals:
  - i. <0.001% cadmium (Cd); and
  - ii. <0.01% lead (Pb).
- e) have a particle size distribution of:
  - i. 100% by weight to pass a 6mm sieve;
  - ii. 80% by weight to pass a 4mm sieve; and
  - iii. 50% by weight to pass a 2mm sieve.

#### **8300.5.14.11 Microbial inoculants**

Microbial inoculants shall:

- a) contain bacteria and/or fungi not toxic to plant growth; and
- b) improve soil structure and improve plant health.

#### **8300.5.14.12 Organic Soil Conditioner**

Organic soil conditioner shall be as specified in Clause 7 of 3.2 of the Annexure, or an approved equivalent meeting the following requirements:



- a) AS 4454 Clause 3.1.1.1 (d) mature compost, and Clause 3.1.1.2 (a) soil conditioner; and
- b) *Form G – Organic Soil Conditioner Testing* of MRTS16 Landscape and Revegetation Works.

#### **8300.5.14.13 Soil Additive**

Soil additives shall be as specified in Clause 8 of 3.2 of the Annexure, or an approved equivalent comprising of the following:

- a) be a dry granular mixture;
- b) carrier material;
- c) water holding agents meeting the general requirements of Clause 8300. 5.8.9;
- d) organic and mineral fertilisers meeting the N:P:K analysis range requirements of Clause 8300.5.8.8;
- e) trace elements (TE); and
- f) growth stimulators.

Soil additives shall only be used subject to prior approval by Council.

#### **8300.5.14.14 Soil**

For the purposes of this specification, soil is to be considered as the following:

- a) Topsoil (the top or surface layer of fertile soil containing organic material or which is biologically activated ), suitable for turf and lawns;
- b) Landscape soil, suitable for mass planted garden beds, tree planting in roundabouts, medians, and/or recreational parks;
- c) Subsoil (soils below the topsoil / landscape soil layer, the outer face of cut or fill embankments and other bulk earthworks); and
- d) Specialist soils:
  - 1. Structural (support) soil (soils designed to form a basement for engineered structures such as roads, pavement and kerbing, while also providing rooting volume for tree roots).
  - 2. Stormwater filtration (biofiltration) soils typically engineered media or mixed soil and with the aid of native vegetation to capture runoff and remove pollutants
  - 3. Wetland soils are generally anaerobic (absence of oxygen), are saturated, contain organic matter which can be oxidised or decomposed, and contain iron sulphides, an acid sulphate soil is a good example of this type of soil.

All soil shall be free of contaminants harmful to plant growth or human health.

The scheduled unit rate for supply must include all cleaning, dredging, loosening, screening, blending, and loading and delivery of the material to produce an acceptable product.

All classes of material supplied must be clean and consistent and shall be suitably processed to conform to this Specification.

All materials supplied should be free of weeds, seeds, pest insects, diseases and other deleterious material not consistent with the nature of the product.

Samples are to be tested by an accredited body in accordance with the following most current Australian Standards:



- AS4419 “Soils for landscaping and garden use”
- AS4454 “Compost, soil conditioners and mulches”
- AS1141.11.1 “Methods for sampling and testing aggregates, Method 11.1: Particle size distribution”
- AS1141.24 “Methods for sampling and testing aggregates, Method 24: Aggregate soundness”
- AS2758.7 “Aggregates and rocks for engineering purposes “

These standards require that materials be certified. Testing of samples must be carried out prior to delivery to the work site.

Notwithstanding that the material is accepted at its place of origin, all samples, for final acceptance testing, must be obtained from the material delivered to the Site of the works.

The Contractor must produce a product which conforms to the requirements of this Specification.

The Contractor shall carry out follow up testing of the material on a quarterly basis for the duration of the contract.

#### **8300.5.14.15 Topsoil**

The Contractor shall utilise suitable site-won, stripped topsoil, stockpiled on site in accordance with MRTS04, and/or imported topsoil as required for vegetation/planting works.

Clearing, stripping and stockpiling of topsoil shall occur prior to bulk earthworks commencing and in a manner as to minimise erosion and sediment loss, including but not limited to:

- a) Clearing all debris including demolition waste, timber, rubbish wire fences, rock gravelled driveways, etc.;
- b) Clearing of trees and shrub growth as required;
- c) Clearing pasture and weed growth; adjustment of stripping depth to avoid the inclusion of subsoil in topsoil as nominated or as per recommendation;
- d) Stockpiles to be located in locations identified by Superintendent prior to the commencement of works and shall be a minimum 5m away from concentrated water flows, drainage lines and roadways on ground with a slope of less than 10% and minimum 8m away from any retained trees;
- e) Stockpiles are to be protected upslope using diversion drains and downslope using appropriate sediment control structures;
- f) Stockpiles shall not be higher than 2m, but may be flat topped;
- g) Stockpiles shall be labelled containing location of origin and date; and
- h) If stockpiles are to be in place longer than 3 months, sow with a seasonally appropriate, non-invasive annual cover crop as specified.

Where topsoil is required, it shall comply with AS 4419, and shall:

- a) Be of a friable, porous nature;
- b) Be classified as a ‘sandy loam’;
- c) Be free of weeds and weed seeds, bulbs, corms, and vegetable propagules;
- d) Have less than 10% by dry mass of clay size particles (<2 microns);



- e) Contain no refuse or materials toxic to plant growth;
- f) Have less than 5% by dry mass of stone content (<20mm diameter in size);
- g) Contain no rubbish, stumps, roots, branches, clay lumps, stones, rubble and other deleterious material larger than 50mm diameter in size;
- h) Have an organic content of at least 10% by volume;
- i) Have a pH neither less than 6.0, nor more than 7.5;
- j) Have a soluble salt content not exceeding 600ppm.
- k) Have an effective carbon exchange capacity (ECEC) less than 10meg/100g; and
- l) The phosphate content from soil containers must not exceed 3%

Where constructed/manufactured topsoil is required, it shall comply with AS 4419, and shall be subject to:

- a) Site soil investigation and characterisation analysis;
- b) Sampling and analysis prior to soil improvement; and
- c) Soil Management Plan (including topsoil stripping depths, stockpiling methods, soil contamination management, soil amelioration and improvement plan, erosion control measures).

Topsoil suitable for turf repairs, topdressing and general park surfacing should have a nominal:

- Sandy loam – 30% by volume
- Washed River Sand – 60% by volume (40% coarse, 20% fine)
- Composed and screened organic matter conforming with AS4454 – 10% by volume

All the components are to be blended and then tilled and treated for a minimum of four weeks using a solarisation or non-residual chemical process to eliminate weeds. The pH of the soil must be within the ranges of 6.5 to 7.5.

The Contractor shall provide a current supplier certificate for imported topsoil to the Superintendent, demonstrating material compliance prior to delivery to site. A sealed 3kg bag of the proposed topsoil with copy of the supplier certificate shall be made available to the Superintendent for inspection. All topsoil subsequently used shall be consistent in every respect with the sample approved by the Superintendent.

#### **8300.5.14.16 Landscape Soil**

Landscape soil must be suitable for use and should contain a nominal:

- Sandy loam soil - 20% by volume
- Washed River Sand – 60% by volume
- Composed and screened organic matter conforming with AS4454 – 20% by volume

All the components are to be blended and then tilled and treated for a minimum of four weeks using a solarisation or non-residual chemical process to eliminate weeds. The pH of the soil must be within the ranges of 6.0 to 7.0.

A minimum of 20m<sup>3</sup> is to be available at all times.

#### **8300.5.14.17 Subsoil**



The Contractor shall ensure adequate preparation of the subgrade before topsoil placement and shall apply the following subgrade treatment to all finished subgrade areas which are to be planted:

- a) Fair and trim to the relative level to accommodate the required overall soil depths as nominated;
- b) Remove rocks and stone larger than 100mm in diameter;
- c) Remove rubbish, construction generated waste, plastics, metals and glass;
- d) Subsoil shall be ripped to a minimum depth of 150-200mm, as nominated;
- e) The contractor shall supply and install soil ameliorants in accordance to Clause 8300.5.8.7; and
- f) Subsoil shall be harrowed to break up clods and left 'keyed' to accept topsoil.

#### **8300.5.14.18 Structural (Support) Soil**

The Contractor shall utilise structural support soil or subgrade in accordance with MRTS04 to stabilise trees in planting holes.

This product must be suitable for advanced tree planting in urbanised environment. It should have nominal:

- 63mm hard rock aggregate (basalt or granite) \* - 80% by volume
- Clay loam/sandy clay/clay – 20% by volume

\* The aggregate (nominal 63mm size) must be a free-draining granular material capable of sustaining the anticipated load bearing requirements of the pavement.

As a guide, an aggregate that conforms to the requirements of AS2758.7 for Class L 60mm is railway ballast.

Structural soils must be uniformly blended mixture of aggregate and clay loam and are prone to segregation during handling at the source and during transport. Particular care must be taken to ensure that all structural soil is thoroughly homogenised before placement and compaction. To assist this, and to prevent segregation, ensure that the mixture remains moist at all times during mixing, transport, storage and placement. Product must be free of unwanted materials i.e., free of stone and gravel greater than 8mm and be free from toxic substances harmful to plant growth.

#### **8300.5.14.19 Stormwater Filtration (Biofiltration) Soils**

This product is highly specialised growing medium used as the growing and filtration layer in biofiltration bed installations. Biofiltration profile consists of four (4) distinct layers and every layer has its own specification and each should have nominal:

- Surface Layer
  - Loamy sand/sandy loam - <20% by volume
  - Washed river sand (medium grade) – 70 – 80% by volume
  - Composted soil conditioner conforming with AS4454 – 10 – 20% by volume
- Filtration Layer
  - Loamy sand/sandy loam - <20% by volume
  - Washed river sand (medium grade) – 70 – 80% by volume
  - Composted soil conditioner conforming with AS4454 – 10 – 20% by volume



- Transition Layer
  - Washed river sand (medium grade) – 100% by volume
- Drainage Layer
  - Drainage gravel (2-5mm) – 100% by volume

Product must be free of unwanted materials i.e., free of stone and gravel greater than 8mm and be free from toxic substances harmful to plant growth. Permeability requirements may be different for each project and need to be specified by qualified hydrologist.

**Example base level requirements for fertilisers for the surface layer  
(to be verified by laboratory testing and per agronomist's report)**

Organic fertiliser (e.g. poultry manure)	5 kg/m <sup>3</sup> or 500 g/m <sup>2</sup>
Compound fertiliser (NPK 16:4:14)	0.4 kg/m <sup>3</sup> or 40 g/m <sup>2</sup>
Trace element mix	0.1 g/m <sup>3</sup> or 10 g/m <sup>2</sup>
Superphosphate	0.2 g/m <sup>3</sup> or 20 g/m <sup>2</sup>
Magnesium sulphate	0.3 g/m <sup>3</sup> or 30 g/m <sup>2</sup>
Potassium sulphate	0.2 g/m <sup>3</sup> or 20 g/m <sup>2</sup>

The Contractor must allow for the inclusion of the above soil amendments, but the specific amendments required must be verified by laboratory testing and qualified agronomist's / soil scientist recommendations.

**8300.5.14.20 Wetland Soils**

This product is highly specialised growing medium, sandy soil mix formulated to provide resistance to compaction, reasonable wet strength and suitable drainage during wet period and good water-holding capacity to sustain plant life during extended dry periods. It should have nominal:

- Washed river sand (fine to medium grade) – 50-80% by volume
- Sandy loam/site-won soil – 10-40% by volume
- Site won clay loam/clay topsoil – 10% by volume

Product must be free of unwanted materials i.e., free of stone and gravel greater than 8mm and be free from toxic substances harmful to plant growth.

**Base level requirements for fertilisers (to be verified by laboratory testing and per agronomist's report)**

Lime and/or dolomite	2 kg/m <sup>3</sup> at mixing
Compound NPK controlled-release fertiliser 9–18 month release rate	1.0 kg/m <sup>3</sup> or 50 g/m <sup>2</sup> during planting
Gypsum	300 g/m <sup>3</sup> at mixing

The Contractor must allow for the inclusion of the above soil amendments, but the specific amendments required must be verified by laboratory testing and qualified agronomist's/soil scientist recommendations.

**8300.5.14.21 Seeding**

All seed used shall be of the species, varieties, and rates listing in Clause 3 of 3.2 of the Annexure. Where not specified in the Annexure, the Contractor shall supply seed treatments where shown on the Drawings in accordance with the requirements of this Clause.



Grass seed species shall:

- a) Be perennial species (excluding cover crops);
- b) Not exceed a mature height of 700mm; and
- c) Be typically found in the Mackay Region.

Native vegetation seed species shall:

- a) Be native species, typically endemic to the Mackay Region; and
- b) Be a species / vegetation type mix as specified in Table "Native Seed Mix – Vegetation Types"

The Contractor shall submit to the Superintendent, for approval, within 14 days of the acceptance of the tender, and at least 30 days prior to seeding operations, a Seed Supply Proposal, detailing:

- a) Name(s) of proposed seed supplier(s);
- b) Confirmation of availability of specified species at specified rates, or where unavailable, potential species substitutes and associated application rates;
- c) Species specific pre-treatment requirements;
- d) Seed inoculation and insecticidal requirements; and
- e) Copy of supplier certificates (demonstrating purity and viability percentages) and delivery dockets (demonstrating seed purchased) as appendices.

All seed shall be pre-packed commercially and must be accompanied by supplier's 'Certificate of Authenticity', which shall be furnished by the Contractor to the Superintendent upon request, at any stage of the work. Certificates shall detail seed species, date of harvest, purity, and germination viability percentages and pre-treatments or coatings that have been applied to the seed. Age of the seed shall be a maximum of two years from the date of harvest. Grass and cover crop seed shall have a minimum of 95% seed purity and minimum 80% germination viability. Native seed shall have a minimum 95% seed purity and minimum 60% germination viability.

The Contractor's attention is drawn to the lead time that may be required to procure some native seed species. The native seed shall be delivered to the site in separate lots for each species and variety, clearly labelled to show species, variety and weight. The Contractor shall not take possession of the seed more than seven days before sowing is to occur. The seed shall be stored in clean, air tight containers and kept away from direct sunlight. It shall not be exposed to the elements at any stage during storage. The Contractor shall advise the Superintendent at least three days before seed application, to allow the opportunity for inspection of unopened seed containers. The Contractor shall replace, at their expense, any seed batch found not true to type, as specified.

Grass seeding is to be a minimum, combined total application rate of 45kg/ha, consisting of the specified grass seed species (35kg/ha) and cover crop (10kg/ha) mix ratio as specified in Clause 3 of 3.2 of the Annexure. Where not specified, the default grass seed species shall be *Cynodon dactylon* (Green Couch). Native seed mixes shall be a minimum combined total

application rate of 37kg/ha, consisting of the native seed (27kg/ha) and cover crop (10kg/ha) mix ratio as specified in Clause 3 of 3.2 of the Annexure.

Native seed mixes shall be in accordance with the seed mix ratio per native vegetation type specified in below table.

**Native Seed Mix - Vegetation Types**



Native Vegetation Type Description	Minimum Application Rate (kg/ha)
Mix of minimum five (5) Acacia species	5
Mix of minimum three (3) tree species	1
Mix of minimum three (3) shrub species	1
Mix of minimum four (4) perennial grass species	20
<b>Native Seed Mix Total</b>	<b>27</b>

Cover crop species shall consist of sterile, annual pasture grass species (season dependent) as specified in Clause 3 of 3.2 of the Annexure to provide a temporary surface stabilisation treatment until grass and/or native seed species establish. A rate of 10kg/ha shall be included with all grass/native seed mixes. Where not specified, seasonal default cover crop species shall as follows:

- a) Nov – Feb: 100% Japanese Millet
- b) Mar – Apr: 50% Japanese Millet / 50% Annual Rye
- c) May – Aug: 100% Annual Rye
- d) Sep – Oct: 50% Annual Rye / 50% Japanese Millet

**8300.5.14.22 Fibres**

Vegetable mulch fibre used in hydromulching shall consist of straw, sugar cane (bagasse), wood fibre, paper pulp, or similar material, as approved by the Superintendent. Fibres shall be finely shredded to a maximum dimension of 10mm. Meadow hay or weeds shall not be used and paper pulp, if used, shall not exceed 25% by mass, of the total mulch.

Fibre mulch shall be supplied to site in unopened bags/containers, and the Contractor shall advise the Superintendent a minimum three days prior to hydromulch spraying to allow for inspection. All mulch subsequently used shall be consistent in every respect with the sample approved by the Superintendent.

**8300.5.14.23 Straw Mulch**

Straw used in straw mulching operations shall be crop residue (such as cereal variety straw of predominately stalk material). Meadow hay (pasture grasses) shall not be used.

The straw mulch is to be free from matter toxic to plant growth, plant propagules, soil, rubbish, and other deleterious materials.

The type of straw mulch and verification of it’s make up and origin submitted shall be approved by the Superintendent prior to the straw mulch mix being used.

**(HOLD POINT)**

**8300.5.14.24 Binders**

The binder used in hydro-mulching and straw mulching slurries shall be a natural or synthetic, colourless, polymer emulsion, specifically prepared for soil stabilisation, such as guar gum.

The type of binder used shall comply with MRTS16 7.4.3 and be approved by the Superintendent prior to the seeding mix or straw mulch mix being used.

**(HOLD POINT)**

**8300.5.14.25 Turfing**



Turf shall be obtained from a specialist grower of cultivated turf, deliver docket to verify and be provided at time of delivery. Provide turf of even thickness, free from weeds (including nut grass and **oxalis**) and other foreign matter.

Species certification to be clearly identified on delivery docket and attached to delivery crates/pallets.

Turf shall be installed in accordance with the Drawings, and of the species specified in Clause 4 of 3.2 of the Annexure. Where not specified, default turf species shall be *Cynodon dactylon* (Green Couch). Turf shall consist of a minimum 50mm, and average 100mm depth of sod, displaying a dense, well root zone, and displaying signs of vigorous grass grown (minimum 30mm high), and true to form of the species. Turf shall be in a healthy condition free of weeds, soil pests and diseases. The turf shall be supplied as rolls in long lengths of uniform width, not less than 400mm, and shall be in sound, unbroken condition. In general, standards of turf supplied shall meet the requirements of 'Premium Turf', under the Turf Queensland accreditation process unless otherwise specified in Clause 4 of 3.2 of the Annexure.

. Turf deliveries shall be within twenty four (24) hours of cutting, and laid within thirty six (36) hours of cutting. Measures shall be taken to prevent it from drying out between cutting and laying.

#### **8300.5.14.26 Reinforced turfing**

Reinforced turf shall consist of a mature layer of the specified turf, grown onto a synthetic reinforced layer.

The reinforced turf shall be certified as withstanding a minimum surface water flow rate of 3m/s, without degradation and provide load bearing and shear strength to support the load needed for the application as listed in Clause 4 of 3.2 of the Annexure.

Stakes used shall be 25 x 25 x 300mm hardwood stakes, or approved equivalent.

Fixing pins shall be 'U' shaped, 4mm gauge wire, 50mm wide, and 150mm long legs to ensure direct turf contact with the ground.

#### **8300.5.14.27 Organic Mulch**

Organic mulch used for planting works shall be imported organic mulch, or site manufactured, tub-ground or chipped mulch. This product must be suitable for mass planted garden beds and tree planting in roundabouts, medians, and/or recreational parks. Mulch shall be as specified in Clause 10 of 3.2 of the Annexure, or where not specified shall be in accordance with the following requirements. The use of organic mulch materials shall be as indicated on the Drawings, and as otherwise approved by the Superintendent. Non-organic mulches are not covered under this specification.

At a minimum mulch must be composted or mature mulch to be used on Council owned sites. Composted mulch is organic material composted for minimum of 6 weeks with turning and screening. Mature mulch is organic material composted for minimum of 12 weeks or until demonstrably stable with turning and screening. Raw or pasteurised mulch may be used in some instances and only at the discretion of Principal or Principal's representative.

All imported mulches used for landscape planting shall consist of a coarse, pasteurised material complying with the requirements of AS 4454. A 3kg sample of imported mulch proposed by the Contractor shall be submitted along with the Supplier's certification of compliance with AS 4454, for approval to the Superintendent two weeks before its intended use. All mulch subsequently used shall be consistent in every respect with sample approved by the Superintendent.

Hardwood chips passing a 50mm sieve are the preferred mulch for use in the Mackay region, due to low cost, low maintenance, and lack of alternative hoop pile mulch supplies. Where phosphorus sensitive planting is nominated, mulch shall have less than 5mg/L soluble phosphorus and less than



0.1%w w/w total phosphorus. Bagasse and sugar cane trash are not permitted.

The Contractor may manufacture and use suitable site won vegetation as tub-ground or chipped mulch in accordance with [Clause 8300.6.6.1](#). Suitable vegetation may include bark, branches, limbs, shrubs, and roots. Vegetation shall be weed free and subject to approval by the Superintendent prior to mulching operations. Site won mulch shall be stockpiled outside of overland flow paths, drip lines of existing vegetation, and away from water bodies and drainage channels. Stockpiles shall not exceed a height of 3m and shall be turned and watered once per week. Site won tub-ground mulch shall be weathered and matured in this fashion for a minimum of six weeks prior to spreading on site.

All mulch is to be free of weed, disease, viable seed or plant material capable of sprouting, deleterious materials such as rocks or rubbish, and of any litter contamination (plastic, metal or similar).

#### **8300.5.14.28 Environmental Matting**

Environmental matting operations for weed control and erosion control shall be carried out where shown on the Drawings and/or as directed by the Superintendent.

The type and size of matting shall be as specified on the Drawings, or in Clause 9 of 3.2 of the Annexure, or as approved by the Superintendent.

Environmental matting may be used in lieu of, or in conjunction with, organic mulch. Matting shall comply with the following properties:

- a) Made from 100% biodegradable fabric;
- b) Allows vegetation penetration;
- c) Minimises soil moisture loss;
- d) Allows the exchange of air and water; and
- e) Does not contain any matter toxic to plant growth.

Synthetic weed blocking fabric shall comply with AS 4843, and shall be water permeable environmental matting as approved by the Superintendent.

Fixing pins used to secure environmental matting shall be 'U' shaped, 4mm gauge wire, 30mm wide and 200mm long legs, or of a size and strength to ensure matting maintains direct contact with the ground.

#### **8300.5.14.29 Planting**

Plant species, quantities, container sizes, mature heights and widths; and planting densities shall be as specified in Clause 3.3 of MRC Supplementary Specification 8300\_1 Landscaping and Horticultural Treatment Annexure, and as shown on the Drawings.

All tree species selection must be in accordance with the *Mackay Regional Council Planning Scheme Policy – Landscape, List of Plant Species*. Alternative street tree species will not be accepted without prior approval from Council.

Alternative species are acceptable for non-street situations (parklands, open space and so on), subject to Council approval.

Plants may be obtained from nurseries, and harvested plant material from site. Nurseries shall be members of Garden and Nursery Industry Australia / Queensland.

The Contractor shall obtain all plants from a nursery located in the Mackay / Central Coastal Queensland area, having similar climate to the site of the Works, inclusive of saline tolerant species for planting in tidally influenced and saline conditions.



Where insufficient plants are available locally/regionally, to obtain the species, size and quantity of plants as specified on the Drawings, the Contractor shall prepare and submit a Plant Supply Proposal in accordance with Clause 8300.5.14.30 for the approval by the Superintendent, no less than 30 days prior to taking possession of site. This proposal is to detail the planned procurement and management of vegetation sourced to address any shortfall in the available local/regional supply of plant stock in accordance with the Drawings.

Where the Contractor is required to procure plant stock external to the region, they shall be responsible for arranging for the plants' acclimatisation to local conditions under the stewardship of a NAISA (Nursery Industry Accredited Scheme Australia) accredited organisation, or other operators as nominated by the Contractor, and as approved by the Superintendent.

The acclimatisation period shall be no less than twelve (12) weeks prior to delivery of stock to site for installation and shall include but not be limited to sun hardening and water reduction operations. Similarly, where marginal aquatic species are to be planted in tidally affected and/or saline conditions, sufficient acclimatisation for saline conditions over a minimum 12 week period shall occur.

There shall be no substitution of any species specified on the Drawings without the Superintendent's approval. Where external procurement of specified stock proves unfeasible, the Contractor shall submit substitutions within the Plant Supply Proposal, for the approval of the Superintendent.

All plant material delivered to site shall comply with the following requirements:

- a) Be true to species and sizes as specified, or as per the Drawings and approved Plant Supply Proposal;
- b) Be acclimatised to project site climatic conditions;
- c) Be delivered to site, properly stowed, in enclosed vehicles or by tarps to prevent damage and wind burn during transit;
- d) Damaged planting shall not be installed on site;
- e) Each group (tray and so on) of planting shall be clearly and accurately labelled on water proof labels, according to botanical nomenclature;
- f) Be of a size commensurate with its container size and within size ranges nominated in Tables 8300.5.14.29a and b;
- g) Be healthy, true to form of the species, not soft or forced and showing signs of active growth relative to the species and growing season;
- h) Display robust, well developed root systems throughout container, and not be root-bound;
- i) Be free from disease and insect pests;
- j) Container potting mix shall conform to AS 3743;
- k) Plant root systems shall be maintained moist at all times with particular attention being paid to watering during the on-site period before, and during planting; and
- l) All container stock 45L or larger, including ex-ground stock, shall conform to the requirements specified in the NATSPEC Guidelines for the Specification of Trees.

The Contractor shall advise the Superintendent a minimum of five (5) days prior to the delivery of each load of plant stock to site to allow opportunity for joint inspection at the nursery and acceptance of plant material.

**(HOLD POINT)**



Containerised tree stock ( $\geq 45L$  container) shall be classified, supplied and assessed in the following dimensions as indicated in Table 8300.5.14.29a:

**Table 8300.5.14.29a - Plant Stock >25L**

Container Volume	Minimum Height Above Container (m)	Minimum Calliper Dimension (mm) (at 300mm above rootball)	Minimum Clear Trunk Height (m)
45L	1.9 – 2.3	30-35	1.0
75L	2.2 – 2.4	40-45	1.0
100L*	2.4	>50	1.5
200L*	3.5	>60	1.5
300L*	4.2	>70	1.5
400L*	5.5	>70	1.5
Palm Trees	-	n/a	3.5

\*All street trees shall be minimum 100L or more with a minimum clear trunk height of 1.8m.

Containerised plant stock  $\leq 25L$  shall be classified, supplied and assessed under inspection as indicated in Table 8300.5.14.29b.

**Table 8300.5.14.29b - Plant Stock  $\leq 25L$**

Plant Material	Stock Container Size					
	Virotube (macrophytes only)	Full Native Tube	140mm	200mm	300mm	25L
<b>Minimum Container Size</b>						
Dia. (mm)	50x50	50x50	140	200	300	varies
Depth (mm)	90	120	140	200	300	>300
<b>Nominal Plant Height (leaf &amp; stem)</b>						
Minimum (mm)	200	300	300	300	500	1000
Maximum (mm)	300	400	400	500	750	1800

**8300.5.14.30 Plant Supply Proposal**

The Plant Supply Proposal shall include:

- a) Plant nursery/s details including accreditation certificates;
- b) The plant species, planting densities and quantities in accordance with Clause 8300.5.14.29;
- c) Copy of delivery dockets for externally procured stock demonstrating time of procurement and commencement of acclimatisation operations;



- d) Production details and operational program of acclimatisation of non-locally procured stock;
- e) Where specified plant species are unavailable, substitute plant species, mature height and width, densities and quantities for the substitutes;
- f) Inspection report forms and documentation in accordance with NATSPEC Guide:  
Specifying Trees, for all containers  $\geq 45$  L and ex-ground stock;
- g) How plants inspected and approved at the nursery can be identified as the same approved plants delivered to site, and
- h) Proposed plant delivery program and dates for joint inspections with the Council Superintendent at the nursery.

The above process is to be submitted for approval prior to the Prestart meeting. (MILESTONE)

#### **8300.5.14.31 Stakes and ties**

All plant stock of container size 25L and greater is to be generally staked and tied, as per MRC Standard Drawing A4-00049. Stakes used by the nursery, in the actual plant container as part of the production process, are to be removed from site following planting operations.

Stake requirements are as follows:

- a) For 25L stock, stakes shall be 25mm square, and minimum 1500mm long.
- b) For 45L stock, stakes shall be 50mm square, and minimum 1800mm long.
- c) For 100L (and greater) stock, stakes shall be 50mm square, and minimum 2400mm long.

All stakes shall be hardwood, sharpened at one end, and free of knots and twists. Ties shall be knitted tree ties or 50mm wide jute material.

#### **8300.5.14.32 Plant guying system**

The Contractor shall install a guying support system to advanced, ex-ground stock and other large specimens, as nominated by the Superintendent. The proposed plant material to be installed with a guying system shall be as shown on the Drawings and comply with the following:

- a) Wire cables shall be sized to adequately support the particular plant size;
- b) Turnbuckles shall be galvanised and sized to suit the cable;
- c) Wire cable shall be encased in hosing where it encircles the plant trunk and branches;
- d) Pegs shall be capable of anchoring the cable and support the plant; and
- e) Flags or plastic streamers shall be fixed to the cables and be visible to prevent tripping or mowing over cables and pegs.

The Contractor may nominate alternative proprietary brand products subject to approval by the Superintendent.

#### **8300.5.14.33 Plants used in nominated revegetation areas**

Plants for any nominated revegetation areas will be propagated and supplied by council's Mackay Natural Environment Centre (MNEC). Seed and cuttings will be collected from site and surrounding areas for germination and/or propagation of plant stock required for the project. MNEC is an accredited nursery adopting industry best practice for seed processing and for the propagation of plants.

The Contractor is required to inspect the plant stock supplied for use in the nominated revegetation



areas either prior to or on delivery of plants to site to confirm the quality of the plant stock and that the correct species, size, and quantity of plants will be supplied. The Superintendent is to be present at this inspection to record the contractor's acceptance of the plant stock supplied.

All plants must be hardened off by growing in open areas receiving sun for around 75% of the day for at least eight (8) weeks prior to delivery on site.

No substitutions can be made without written approval from the Superintendent by MNEC or the Contractor. Any proposed substitution must include details of the species, size and numbers used, and this information along with the reason why a substitution is being requested may be forwarded to the Superintendent before actioning. Where substitutions are requested by MNEC due to production or limitations in source materials (seeds or cuttings), the contractor is to be notified immediately. The Superintendent is to consult with the project's Landscape Architect before agreeing to or rejecting a request for substitutions.

The Superintendent shall be notified at least 24 hours prior to each scheduled delivery of plants to site.

Plants must not be damaged or allowed to dry out during transport. On arrival to site, if not able to be left in the covered transport vehicle / trailer, plants must be placed in a sheltered position and thoroughly watered from a suitable water supply and not allowed to dry out until required for planting.

#### **8300.5.14.34 Planting bed edging**

Planting bed edging shall be a continuous, reinforced concrete edge, in accordance with MRC Standard Drawing A4-420, or alternative approved/directed by the Superintendent.

Planting bed edging shall:

- a) Have the dimensions specified in the Standard Drawing A4-420;
- b) Be Class 25MPa/10 concrete in accordance with the requirements of MRTS70  
*Concrete*; and
- c) Have construction joints in accordance with the requirements of Clause 18 of MRTS03  
*Drainage, Retaining Structures and Protective Treatments*; and
- d) Have a finished surface level generally flush with adjacent ground lines, with a maximum 20mm projection above ground levels.

Subgrade compaction shall be in accordance with the requirements of Clause 15 MRTS04 *General Earthworks*.

Prior to commencement of edging works, the Contractor shall advise the Superintendent of intent to commence works, to allow opportunity for the request of an edging sample, for inspection and in-situ testing of structural integrity (i.e. low impact compression and shatter resistance). At the discretion of the Superintendent, the Contractor shall install a 5m section of finished concrete edging, as a sample for inspection. The sample section shall be installed to a location matching edging extents, as per the Drawings. Location is to be nominated by the Contractor. Following concrete curing, the Contractor shall advise the Superintendent to allow inspection/testing and acceptance of commencement of edging works. All subsequent edging works shall match the material and construction quality of the accepted sample.

#### **8300.5.14.35 Sand**

The scheduled rate for supply must include all cleaning, dredging, loosening, screening, blending and



loading and delivery of the material to produce an acceptable product.

All classes of sand supplied must consist of clean, sharp particles obtained from , sand dunes, riverbed or other natural deposits and must be suitably processed to conform to this specification.

Sand must be sufficiently free of organic impurities so that, when tested in accordance with AS1141, Section 34, the colour obtained is not darker than the standard colour.

Sand must be of uniform quality and must be free of any deleterious materials, which, in the opinion the Council’s engineers, may have a detrimental effect in the use and performance.

Sand, which will be in contact with ferrous metals, must be salt free. The Contractor will be advised when salt free sand is required.

Sand samples will be tested in accordance with the following Australian Standard Test Procedures:

<u>Australian Standard</u>	<u>Description of Test</u>
1141, Section 11	Particle size distribution by sieving
1141, Section 12	Materials finer than 75 micrometres in aggregates (by washing)
1141, Section 33	Clay and fine silt (settling method)
1141, Section 34	Organic impurities other than sugar

Testing of samples of sand must be carried out prior to its delivery to the Site of the works.

Notwithstanding that, the sand is accepted at its place of origin, all samples, for final acceptance testing, must be obtained from the material delivered to the Site of the works.

The Contractor must aim at producing a sand, which conforms to the requirements of the following tables:

**CLASSIFICATION OF CLASS 1 AND 2 SAND**

<u>A.S. Sieve (mm)</u>	<u>CLASS 1</u>	<u>CLASS 2</u>
	<u>% Passing</u>	<u>% Passing</u>
19.0	100	
2.36	50 -100	100
0.60	20 - 90	20 - 90
0.30	10 - 60	10 - 60
0.15	0 - 25	0 - 25
0.075	0 - 10	0 - 10

The subsoil drain backfill sand must be in accordance with MRC Supplementary Specification 8107 and MRC Standard Drawing A3-00867.

For the sand for the subsoil drains Type D applies and as specified below:

**CLASSIFICATION OF SUB SOIL DRAIN FILTER SAND**

<u>SUB SOIL DRAIN FILTER SAND</u>	
<u>A.S. Sieve (mm)</u>	<u>% Passing</u>



4.75	100
0.3	Less than 10%

A copy of the grading of the proposed sand must be supplied with the tender, with follow up testing to be carried out by the Contractor when requested by Council for the duration of the Contract.

Council reserves the right to have relevant testing carried out by an independent testing provider of Council's choice, at various times, throughout the life of the Agreement.

Sand that fails to comply with the foregoing specification, after delivery to the job Site, may, at the discretion of Council, be rejected. The Contractor must remove rejected material from the Site and replace it with material, which complies with the requirements of this Specification. The cost of such removal and replacement, together with the cost of any restoration work made necessary by such removal and replacement, will be borne solely by the Contractor.

Any royalties or fees payable on the supply of the material must be paid by the Contractor. Where the Contractor has obtained material from private land they must restore the area to the satisfaction of the owner. Where the Contractor has obtained material from areas under the control of any statutory body, the Contractor must abide by the conditions laid down by such body for the removal of materials from the areas under its control.

The Contractor is to ensure any obtaining of sand or materials is compliant with the requirements of MRC's planning scheme and any conditional permits that may be approved.

Delivery must be made to the locations required and shall take place during working hours between 7.00am and 3.00pm, Monday to Friday, inclusive, public holidays excluded, or at such other times as may be specially arranged between the Contractor and Council. Council's Representative shall have the right to direct the placement and order of delivery.

Delivery requirement may commence within two weeks of the acceptance of the Contract and shall continue as and when material is required, at least 24 hours notice being given of the requirements to the Contractor. The Contractor must deliver the sand at rate of not less than 200 cubic metres per day, when called upon to do so.

In the event of the Contractor not supplying and delivering per day the quantity ordered by Council's Representative, such quantity ordered being not in excess of the specified minimum quantity, then the Contractor shall pay the Council by way of liquidated damages and not by way of a penalty, the sum of \$100 per day for each and every day during which the Contractor fails to deliver the ordered quantity. Such sums of money may be deducted from any monies deposited with Council or payable to the Contractor.

Consideration will be given to waiving this deduction in the event of circumstances beyond the Contractor's control preventing the delivery as specified or as may be ordered by Council's Representative. The decision as to whether circumstances are such as to justify waiving the deduction will rest with Council's Representative.

The damages to be paid pursuant to this clause shall be in substitution for, and not in addition to, those referred to in Council's Preferred Supplier Arrangement (PSA) Agreement for Supply of Goods.

It is the Contractor's responsibility to have the materials delivered and stored in stockpiles. The stockpiles must be trimmed neatly as directed by Council's Representative to facilitate measurement.

Materials delivered by vehicle must carry dockets stating the volume carried. Random checks shall be made on the delivery vehicles to determine the difference, if any, between the stated volume carried and the actual measured volume.



If, after measurement, the actual volume is found to be less than the stated volume, then the Contractor shall be warned of this short loading and the Contractor must take necessary action to ensure that this short loading does not recur.

If the Contractor consistently fails to load his delivery vehicles with the stated volume, as detailed on his delivery docket, then the actual volume of the short loaded vehicle together with the percentage by which the load is short of the stated volume, will be calculated, and the total volume of all material carted by all vehicles on that day may then be reduced by this percentage to determine the volume for which payment will be made.

Where the accepted quote provides for the supply of the material at a price per tonne, payment will be made on the basis of mass. The mass of each road vehicle load must be determined on a suitable weighbridge acceptable to both the Contractor and Council, if such a weighbridge is available. Where a suitable weighbridge is not available, the volume of material delivered may be determined by measurement in the stockpiles, or alternatively by measurement in road vehicles and converted to tonnes by means of a suitable conversion rate determined in such a manner as will be acceptable to the Contractor and Council.

#### **8300.5.14.36 Softfall Sand**

This Specification covers the supply and delivery of any of the above products to any location within the boundaries of the Mackay region.

The scheduled rate for supply must include all cleaning, dredging, loosening, screening, blending and loading and delivery of the material to produce an acceptable product.

All classes of material supplied must be clean and consistent and shall be suitably processed to conform to this Specification.

All materials supplied should be free of weeds, seeds, pest insects, diseases and other deleterious material not consistent with the nature of the product.

Samples are to be tested by an accredited body in accordance with the following Australian Standards:

- AS/NZS4422 *“Playground Surfacing: Specifications, requirements and test methods”*
- AS1141.11.1 *“Methods for sampling and testing aggregates, Method 11.1: Particle size distribution”*
- AS1141.24 *“Methods for sampling and testing aggregates, Method 24: Aggregate soundness”*

Testing of samples must be carried out prior to delivery to the works site. Notwithstanding that the material is accepted at its place of origin, all samples, for final acceptance testing, must be obtained from the material delivered to the Site of the works.

The Contractor must produce a product which conforms to the requirements of this Specification.

The Contractor shall carry out follow up testing on a quarterly basis for the duration of the contract.

The properties of playground softfall sand should be:

- Well-rounded clean washed sand,
- 70% coarse and 30% medium sand mix,
- Free of loam and/or other binding matter.

It shall be free of sticks, stones, weeds, seeds, and shells etc



## 8300.6 Construction

This section lays out the works operations with more detail based on specific requirements of this supplementary specification. Some activities may appear to include items which are stated within other specifications, the purpose is to reinforce that requirement specific to this supplementary specification.

Landscaping works shall be constructed to relevant Australian standards and in accordance with the landscaping drawings and this specification, unless otherwise noted. Landscape drawings shall be read in conjunction with the relevant civil drawings

Discrepancies between or found in construction drawings, specifications or notes shall be made known to the Superintendent prior to commencing landscaping works on site. Written instruction regarding discrepancies will be issued to the Contractor by the Superintendent before any landscaping works shall commence on site. The Superintendent will consult with the project's Landscape Architect for input as required.

### **(HOLD POINT)**

Construction of most hardscape components including concrete paths, areas of segmented pavement, drainage culverts, boardwalks, fencing and temporary irrigation, will be covered by the civil drawings and relevant sections of the construction specification. 'Landscaping works' typically covers the installation of softscape components but will also include mower edging to areas nominated for revegetation.

The Contractor shall ensure that provisions for watering during and immediately post-planting or the laying of turf is available. Water should be sourced from a potable supply or in this case, can be drawn from the dam located within the district park site. If water is sourced from another alternative source, it must not contain substances that will be detrimental to weed treatments, seed germination or vegetation growth

### 8300.6.1 Work Operations

Work operations incorporated in this item are those included in Clause 2.1.5 of MRS01 "Introduction to Standard Specifications" and the following work scope activities and associated sub activities;

#### Work Scope

The scope of landscape works (including all associated sub activities) covered under this specification is as follows:

#### 8300.6.1.1 Item 8300 Landscaping & Horticultural Treatment

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Supply of all materials;
- c) Carrying out excavations as required;
- d) Utilising or disposing of excavated material; and
- e) All other activities and work operations listed in the Clause 8300.3 and annexure 8300\_1 for this project.

#### 8300.6.1.2 Item 8305 Supply of Imported Topsoil

Work operations incorporated in this item will include:



- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Topsoil test results and certificates supplied verifying the topsoils compliance to AS 4419, minimum 10 days prior to use

**(HOLD POINT)**

- c) Supply of imported topsoil to site

#### **8300.6.1.3 Item 8306 Vegetation of slopes 1V:4H or flatter, grass seeding**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Weed control, including supply and application of herbicide, and slashing/removal of weed rubbish from site;
- c) Supply, spreading and incorporation of soil amelioration agents to subgrade material, if required;
- d) Ripping of surface, if required;
- e) Cultivation of surface;
- f) Loading, haulage, amelioration/conditioning, screening, and installation of sub-soil
- g) Loading, haulage, amelioration/conditioning, screening, and installation of stripped topsoil;
- h) Installation of imported topsoil;
- i) Moistening of area surface prior to seeding;
- j) Supply and distribution of fertiliser
- k) Supply and installation of grass seed;
- l) Initial watering (if specified) of area on day of installation
- m) Continued rewater of grass seeding
- n) Site cleanup, including removal of pegs after turf establishment, where used.
- o) Upon practical completion maintenance is to follow the requirements of MRC Supplementary Specification 8317

#### **8300.6.1.4 Item 8307 Vegetation of slopes 1V:4H or flatter, turfing**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*
- b) Weed control, including supply and application of herbicide, and slashing/removal of weed rubbish from site;
- c) Supply, spreading and incorporation of soil amelioration agents to subgrade material, if required
- d) Ripping of surface, if required
- e) Cultivation of surface
- f) Loading, haulage, amelioration/conditioning, screening, and installation of sub-soil
- g) Loading, haulage, amelioration/conditioning, screening, and installation of stripped topsoil



- h) Installation of imported topsoil
- i) Moistening of area surface prior to turfing
- j) Supply and distribution of fertiliser
- k) Supply and installation of turf
- l) Initial watering of area on day of installation
- m) Topdressing of established turf
- n) Continued rewater of turf
- o) Site cleanup, including removal of pegs after turf establishment, where used.
- p) Upon practical completion maintenance is to follow the requirements of MRC Supplementary Specification 8300.17

**8300.6.1.5 Item 8308 Vegetation of slopes steeper than 1V:4H, hydromulching**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Weed control, including supply and application of herbicide, and slashing/removal of weed rubbish from site;
- c) Supply, spreading and incorporation of soil amelioration agents to subgrade material, if required;
- d) Roughening of surface;
- e) Loading, haulage, amelioration/conditioning, screening, and installation of stripped topsoil;
- f) Installation of imported topsoil;
- g) Moistening of area surface prior to seeding;
- h) Supply of all materials for hydromulching;
- i) Production and application of hydromulch slurry

**8300.6.1.6 Item 8309 Vegetation of slopes steeper than 1V:4H, hydroseeding and straw mulching**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Weed control, including supply and application of herbicide, and slashing/removal of weed rubbish from site;
- c) Supply, spreading and incorporation of soil amelioration agents to subgrade material, if required;
- d) Roughening of surface;
- e) Loading, haulage, amelioration/conditioning, screening, and installation of stripped topsoil;
- f) Installation of imported topsoil;
- g) Moistening of area surface prior to hydroseeding;
- h) Supply of all materials for hydroseeding and straw mulching;



- i) Production and application of hydroseed slurry;
- j) Application of straw mulch;
- k) Initial watering (if specified) of area

**8300.6.1.7 Item 8310 Vegetation of slopes steeper than 1V:4H, hydroseeding**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Weed control, including supply and application of herbicide, and slashing/removal of weed rubbish from site;
- c) Supply, spreading and incorporation of soil amelioration agents to subgrade material, if required;
- d) Roughening of surface;
- e) Loading, haulage, amelioration/conditioning, screening, and installation of stripped topsoil;
- f) Installation of imported topsoil;
- g) Moistening of area surface prior to hydroseeding;
- h) Supply of all materials for hydroseeding;
- i) Production and application of hydroseed slurry

**8300.6.1.8 Item 8311 Vegetation of open drains, with turfing surface protection**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Weed control, including supply and application of herbicide, and slashing/removal of weed rubbish from site;
- c) Supply, spreading and incorporation of soil amelioration agents to subgrade material, if required;
- d) Roughening of surface;
- e) Loading, haulage, amelioration/conditioning, screening, and installation of stripped topsoil;
- f) Installation of imported topsoil;
- g) ,Moistening of area surface prior to turfing;
- h) Supply and installation of turfing, as shown on the Drawings;
- i) Supply and distribution of fertiliser;
- j) Initial watering (as specified) of area

**8300.6.1.9 Item 8312 Vegetation of open drains, with emulsion surface protection**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Weed control, including supply and application of herbicide, and slashing/removal of weed



rubbish from site;

- c) Supply, spreading and incorporation of soil amelioration agents to subgrade material, if required;
- d) Roughening of surface;
- e) Loading, haulage, amelioration/conditioning, screening, and installation of stripped topsoil;
- f) Installation of imported topsoil;
- g) Moistening of area surface prior to seeding;
- h) Supply of all materials for sowing;
- i) Sowing of surface by drill seeding, broadcast seeding, hydromulch or hydroseed slurry as shown on the Drawings;
- j) Supply and application of emulsion

**8300.6.1.10 Item 8313 Vegetation of open drains, with environmental matting surface protection**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Weed control, including supply and application of herbicide, and slashing/removal of weed rubbish from site;
- c) Supply, spreading and incorporation of soil amelioration agents to subgrade material, if required;
- d) Roughening of surface;
- e) Loading, haulage, amelioration/conditioning, screening, and installation of stripped topsoil;
- f) Installation of imported topsoil;
- g) Moistening of area surface prior to seeding;
- h) Supply of all materials for sowing;
- i) Sowing of surface by drill seeding, broadcast seeding, hydromulch or hydroseed slurry as shown on the Drawings;
- j) Supply and installation of environmental matting, as shown on the Drawings;
- k) Initial watering (if specified) of area

**8300.6.1.11 Item 8314 Provision of mulched bed for landscape plantings**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Weed control, including supply and application of herbicide, and slashing/removal of weed rubbish from site;
- c) Excavation of bed, over and above standard excavation, to the depth shown on the Drawings;
- d) Supply and addition of soil amelioration agents to subgrade material, if required;
- e) Loading, haulage, amelioration/conditioning, screening, and installation of stripped topsoil;
- f) Installation of imported topsoil



- g) Supply and application of soil amelioration / soil conditioning agents to spread topsoil;
- h) Supply and installation of mulch;
- i) Supply and installation of environmental matting (where applicable and as shown on the Drawings); and
- j) Moistening of area surface prior to plant installation.

NOTE: the supply and installation of root control barrier, subsoil drainage and garden edging to landscaped areas is not included in this item, and is to be referenced elsewhere in the scheduled items, and specifications.

#### **8300.6.1.12 Item 8315 Plantings**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Supply of all plantings materials (as specified in Clause 3 of the Annexure);
- c) Coordination with plant supply nursery;
- d) Installation of containerised plants to the locations and densities shown on the Drawings and as per MRC Standard Drawings;
- e) Supply and application of soil amelioration / soil conditioning agents to planting hole prior to backfill material ( $\geq 45L$  stock);
- f) Reinstatement/respreading mulch as required following plant installation in mulched planting beds;
- g) Supply and installation of stakes and ties, as required;
- h) Supply and installation of mulch to individual trees (in grassed areas only);
- i) Supply and installation of guying support / tree stakes and ties, as shown on the Drawings;
- j) Initial watering of the planting area and/or individual trees

#### **8300.6.1.13 Item 8316 Irrigation system**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Supply of all materials and components;
- c) Installation of all materials and components;
- d) Connection to electricity supply;
- e) Connection to water supply;
- f) Testing of system;
- g) Balancing of all water outlets and line pressures;
- h) Setting of timing requirements;
- i) Providing the operation performance of the system
- j) Training the nominated Principal's representative in operation of the system;
- k) Provision of as constructed drawings;



- l) Provision of an operating manual; and
- m) Provision of construction warranties.

#### **8300.6.1.14 Item 8318 Site Trimming and Recontouring**

Work operations incorporated in this item will include:

- a) Work operations included in Clause 2.1.5 of MRS01 *Introduction to Standard Specifications*;
- b) Adjustment of moisture content, where necessary;
- c) Lightly and evenly compact material, and
- d) Trimming of material to tolerance.

#### **8300.6.2 Ground Preparation Works**

##### **8300.6.2.1 Weed Control**

Prior to the commencement of other ground preparation operations, the site shall be in a weed free condition.

**(HOLD POINT)**

Weed control methods include:

- a) Mechanical application of herbicide using boom spray or high volume power applicator;
- b) Manual application of herbicide from knapsack or similar applicator; or
- c) Manual methods including removal and disposal of weeds.

The Contractor must ensure that personnel responsible for the supervision and application of herbicides are competent, experienced, and skilled in all aspects of the proposed landscaping works including chemical weed control and revegetation. Evidence of an appropriate Agricultural Chemical Distribution Control (ACDC) accreditation or equivalent must be provided as evidence of competency.

Only chemical-based herbicide products registered for the treatment of weeds in Queensland can be used. The supply, storage, handling and use of any herbicide product must comply with regulations, restrictions and government policy, and be in accordance with manufacturer's published specifications.

Existing plants and grass cover to be retained and new plantings must be protected during any application of herbicide treatment. The Contractor must exercise absolute care in the application of herbicide to avoid spray drift. No herbicide spraying is to be undertaken in windy conditions.

**(WITNESS POINT)**

For spot spraying, a non-toxic, water-soluble, bio-degradable coloured dye must be added to the herbicide spray mix to make the application of herbicide clearly visible on inspection for at least 48 hours after the herbicide application.

**(WITNESS POINT)**

Where herbicide is required to be applied to hazardous areas, as defined by the *Agricultural Chemicals Distribution Control Act (1996)* and/or subsequent revisions, the Contractor shall obtain and submit a distribution permit to the Superintendent.

**(HOLD POINT)**

Application devices shall be calibrated to deliver prescribed rates of product in accordance with the manufacturer's instructions.



Pre-emergent herbicides shall not be applied under any circumstances to areas being vegetated by seeding operations (drill, broadcast, hydroseeding or hydromulching).

Where herbicides are prohibited from use, weeds shall be removed by hand and disposed off-site in accordance with the Contractors approved Environmental Plan and relevant bio- security requirements.

Overspray onto existing site vegetation, or vegetation installed as part of the Project works, shall be minimised through appropriate controls. Where this vegetation is poisoned due to overspray, it shall be replaced by the Contractor at their cost with plants of the same species, size and quality.

Treated areas must remain undisturbed for two (2) weeks or as recommended by the herbicide manufacturer.

**(HOLD POINT)**

Treated areas must show signs of weed die-off within 14 days of application as evidence of compliance. If weed mortality rate is less than 100%, the contractor must repeat the application at their own expense until the mortality rate is achieved.

**(WITNESS POINT)**

Dead weed material shall be slashed to a maximum stubble height of 50mm, weed trash collected and removed from site. Removal and disposal shall be in accordance with this specification and as per the Contractors approved Environmental Plan.

#### **8300.6.2.2 Spreading of amelioration agent prior to ground preparation**

Testing of the existing soil to determine amelioration agents and process shall be carried out, all testing shall be compliant with the requirements of MRTS16. At the completion of the testing a Soil Assessment Report shall be submitted to the Superintendent for approval.

**(HOLD POINT)**

Where required to meet the requirements of [Clause 8300.5.14.14](#) or as directed by the Superintendent, amelioration agents shall:

- a) Be spread at the specified rates to the subsoil surface; and
- b) Be immediately incorporated into the subsoil with the proceeding ground preparation operation (roughening, ripping, or cultivation).

The amelioration process is to be submitted and approved by Superintendent a minimum 10 days prior to the amelioration activities commencing.

**(HOLD POINT)**

The Contractor is to keep all ameliorant delivery dockets and photographic evidence of amelioration processes for inspection by the Superintendent, as part of the Quality System. **(WITNESS POINT)**

The following ameliorant application rates are not to be exceeded unless justification is provided and approved by the Superintendent:

**(WITNESS POINT)**

- a) Agricultural lime ( $\text{CaCO}_3$ ) :  $15\text{kg/m}^3$  ( $3\text{kg/m}^2$  amelioration to top 200mm of subsoil)
- b) Agricultural dolomite ( $\text{CaMg}(\text{CO}_3)_2$ ) :  $15\text{kg/m}^3$  ( $3\text{kg/m}^2$  amelioration to top 200mm of subsoil)



- c) Agricultural gypsum ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ) :  $15\text{kg}/\text{m}^3$  ( $3\text{kg}/\text{m}^2$  amelioration to top 200mm of subsoil)

Where clay soils are found at the base of planting holes for individual tree pits, base of holes shall be broken up to a minimum depth of 50mm ( $\leq 45\text{L}$  stock) or 200mm ( $>45\text{L}$  stock), and 1kg of agricultural gypsum evenly incorporated into the base material.

**(WITNESS POINT)**

The Contractor shall give at least three (3) days' notice before application and incorporation of amelioration agents.

**(HOLD POINT)**

### **8300.6.2.3 Ripping**

Prior to ripping commencing all underground infrastructure shall be identified and clearly marked to avoid damage.

The method/s for ripping shall be as detailed in the Contractors approved work procedure approved by the Superintendent

**(WITNESS POINT)**

Ripping shall be used:

- a) In areas to be vegetated with slopes  $\leq 4\text{H}:1\text{V}$ , where soil has been:
  - i. Compacted, including site compounds and building pads, or
  - ii. Used by vehicular traffic, including decommissioned roads and haul routes; or
- b) Where natural existing soil and subgrade is to form the planting bed for mass plantings.

In areas to be turfed, ripping shall:

**(WITNESS POINT)**

- a) Be a minimum 300mm depth;
- b) Have rip lines at 300mm maximum spacing and be parallel to the contours
- c) Shatter compacted subsoil sufficiently to allow subsequent cultivation operation;
- d) Incorporate soil amelioration / soil conditioning agents into the subsoil (if required); and
- e) Be followed with the cultivation operation to produce a finely tilled planting bed

In areas to be used for shrub / mass plantings, ripping shall:

**(WITNESS POINT)**

- a) Be a minimum 300mm depth;
- b) Have rip lines at 300mm maximum spacing and parallel to the contours
- c) Shatter compacted subsoil sufficiently to allow subsequent cultivation operation;
- d) Incorporate soil amelioration / soil conditioning agents into the subsoil (if required); and
- e) Be followed with the cultivation operation to produce a finely tilled planting bed.

In areas to be used for tree planting, ripping shall:

**(WITNESS POINT)**



- a) Be a minimum 300mm depth;
- b) Have rip lines at 300mm maximum spacing and parallel to the contours
- c) Shatter compacted subsoil sufficiently to allow subsequent cultivation operation;
- d) Incorporate soil amelioration / soil conditioning agents into the subsoil (if required); and
- e) Be followed with the cultivation operation to produce a finely tilled planting bed

Ripped soil shall not contain no more than 5% by weight of particles >20mm and no particles sized >50mm.

Ripping by mechanical means shall not be carried out within the drip line of existing vegetation, or within 300mm of paths, kerbs or other structures, to avoid potential damage. Manual ripping shall be undertaken in these areas.

**(WITNESS POINT)**

#### **8300.6.2.4 Cultivation**

Prior to cultivation commencing all underground infrastructure shall be identified and clearly marked to avoid damage.

The method/s for cultivation shall be as detailed in the Contractors approved work procedure approved by the Superintendent

**(WITNESS POINT)**

Cultivation shall be used:

**(WITNESS POINT)**

- a) In areas to be vegetated with slope  $\leq 4H:1V$ ; or
- b) Where natural existing soil and subgrade is to form the planting bed for mass plantings.
- c) Be carried out parallel to the surface contours; and
- d) Incorporate soil amelioration / soil conditioning agents into the subsoil (if required).

In areas to be used for shrub / mass plantings, cultivation shall:

**(WITNESS POINT)**

- a) Be a minimum 150mm depth;
- b) Break up the surface of the subsoil to achieve a coarse tilth.
- c) Be carried out parallel to the surface contours; and
- d) Incorporate soil amelioration / soil conditioning agents into the subsoil (if required).

In all other areas, cultivation shall:

**(WITNESS POINT)**

- a) Be a minimum 150mm depth;
- b) Break up the surface of the subsoil to produce a finely tilled planting bed;
- c) Be carried out parallel to the surface contours; and
- d) Incorporate soil amelioration / soil conditioning agents into the subsoil (if required).

All stone, rubble and other deleterious material greater than 50 mm that is brought to the surface in



areas to be mown / slashed in the future shall be removed.

Cultivated soil shall not contain no more than 5% by weight of particles >20mm and no particles sized >50mm.

Cultivation by mechanical means shall not be carried out within the drip line of existing vegetation, or within 300mm of paths, kerbs or other structures, to avoid potential damage. Manual cultivation shall be undertaken in these areas.

**(WITNESS POINT)**

#### **8300.6.2.5 Roughening**

The method/s for roughening shall be as detailed in the Contractors approved work procedure approved by the Superintendent

**(WITNESS POINT)**

Roughening shall:

**(WITNESS POINT)**

- a) Be used in areas to be vegetated with slope > 4H:1V;
- b) Be a minimum of 50mm depth;
- c) Occur when soils are dry enough to roughen/break up/crumb the surface
- d) Not differ from the methods approved by the Superintendent without their approval;
- e) Roughen parallel to the contours and form keys in the subsoil to prevent subsequent material slipping down the face of the slope; and
- f) Incorporate soil amelioration / soil conditioning agents into the subsoil (if required).

Non-conforming stone, rubble, and other deleterious material that may hinder germination shall be removed.

**(WITNESS POINT)**

Stabilised rock cuttings shall not be prepared and treated with vegetation unless directed by the Superintendent.

#### **8300.6.2.6 Trimming and Recontouring**

The method/s for trimming and contouring shall be as detailed in the Contractors approved work procedure approved by the Superintendent

**(WITNESS POINT)**

Trimming and Recontouring shall:

**(WITNESS POINT)**

- a) Achieve even grading to required finished levels and contours, free of localised depression, mounding and unbroken large clods after light compaction.
- b) Be smooth and free from large physical contaminants (stones, roots and branches, etc);
- c) Be by methods that will not over compact subsoils in landscaped areas; and
- d) Not differ from the methods approved by the Superintendent without their approval

Where trimming and recontouring operations are undertaken on a subgrade layer under landscaped



areas, the surface is to be left 'keyed' to accept topsoil.

**(WITNESS POINT)**

#### **8300.6.2.7 Ground preparation works for revegetation areas**

Areas nominated for re-profiling areas proposed to be revegetated must be weed free prior to clearing and stripping of topsoil.

**(WITNESS POINT)**

Revegetation works shall commence as early as practicable after completion of the earthworks to minimise soil erosion.

Areas nominated for revegetation must be cleared of all surface rubbish and any material that may hinder plant growth before further surface preparation work is commenced.

**(WITNESS POINT)**

The contractor shall prepare the insitu subsoil to nominated areas to be revegetated by ripping, disking, harrowing, tiling, mounding, furrowing, raking, racking or other means to form a loose and roughened surface in preparation for and prior to spreading topsoil. On flat or gently sloping batters (less than 1 in 6 gradient), the soil should be prepared to a depth of 500mm. On steeper batters this is to be reduced to 300mm depth.

Surface preparation shall be conducted along the contour unless ripping a redundant road/track or path (post removal of any surface treatment), in a manner that will prevent channelling of runoff along the alignment of this previous road/track or path

Prior to incorporating existing or imported top soil the Contractor shall ensure the material is compliant with the requirements of this specification and submit test results with the amelioration procedure or certification of imported topsoil for approved by the Superintendent.

**(HOLD POINT)**

Re-spread approved site-won or imported topsoil to the depth specified over the prepared subgrade soil as soon as practical following its preparation. Topsoil must be uniformly spread over the nominated finished and prepared ground surfaces. Where a depth has not been specified, provide a minimum 100mm depth of topsoil coverage.

**(WITNESS POINT)**

Unless otherwise instructed, the contractor shall place weed control matting within 24 hours of topsoil being re-spread and levelled. In the event of a rainfall occurring before the weed matting being installed, and where this results in erosion, the contractor must replace the eroded materials and prepare the soil surface before installing the matting.

**(WITNESS POINT)**

#### **8300.6.3 Topsoil operations**

Topsoil work operations include:

- a) Testing of topsoil for compliance to AS4419, imported and/or site manufactured
- b) Loading, haulage, amelioration/conditioning and screening of stockpiled site topsoil; and / or
- c) Importation of topsoil; and
- d) Installation of topsoil.



Topsoil may be sourced from:

- a) Stockpiled site topsoil; and / or
- b) Imported topsoil.

Where practicable, stripped site topsoil shall be prioritised over imported topsoil to reduce costs associated with removal and disposal of site material. Prior to use the stripped topsoil must be tested for compliance with AS4419, and be approved by the Superintendent.

**(HOLD POINT)**

Imported topsoil must be

- a) Delivered with a delivery docket carrying certification of the topsoil product, if no delivery docket is supplied or available certification the topsoil will need to be tested for compliance to AS4419 and approved by the Superintendent

**(HOLD POINT)**

Topsoil stripping and stockpiling operations are covered in MRTS04 *General Earthworks*. Where the works are being undertaken in a park / recreation reserve, stockpiling of soil and other landscape materials are to be undertaken in accordance with MRC Planning Scheme Policy – Landscape.

**(WITNESS POINT)**

#### **8300.6.3.1 Manufacture of site topsoil**

Tested and amelioration process to meet AS4419 with test results and proposed amelioration procedure submitted and approved by Superintendent.

**(HOLD POINT)**

Where required to meet the requirements of [Clause 8300.5.14.15](#), or as directed by the Superintendent, soil amelioration / soil conditioning agents shall:

**(WITNESS POINT)**

- a) Be applied at the specified rates to the stockpiled topsoil; and
- b) Be thoroughly incorporated into stockpiled topsoil immediately after being applied.

Topsoil amelioration, other than the use of fertilisers, wetting agents and water holding agents, shall not occur after installation of topsoil.

The following ameliorant application rates are not to be exceeded unless justification is provided, and approved by the Superintendent:

**(WITNESS POINT)**

- a) Agricultural lime ( $\text{CaCO}_3$ ) :  $10\text{kg}/\text{m}^3$
- b) Agricultural dolomite ( $\text{CaMg}(\text{CO}_3)_2$ ) :  $10\text{kg}/\text{m}^3$
- c) Agricultural gypsum ( $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ) :  $10\text{kg}/\text{m}^3$
- d) Organic soil conditioner :  $0.2\text{m}^3/\text{m}^3$

Where required, or as directed by the Superintendent, stockpiled topsoil shall be screened:

**(HOLD POINT)**

- a) To achieve particle size requirements:



- i. 100% by weight to pass a 20mm sieve for areas to be turfed or grass seeded and will be mown or slashed;
  - ii. 100% by weight to pass a 50mm sieve for batters to be mulched or hydraulic seeded and mulched;
  - iii. 100% by weight to pass a 75mm sieve for board acre areas to be seeded with native species.
- b) To incorporate amelioration agents.

#### 8300.6.3.2 Installation of topsoil

Topsoil for planting beds shall be installed:

**(WITNESS POINT)**

- a) For intensive urban landscapes, medians, and roundabout landscapes:
- i. To a minimum depth of 350mm;
  - ii. Slightly mounded, rising at a minimum 1:6 gradient from edges to the centre to assist in shedding excess surface water and promote root development;
  - iii. Within 5 days of the specified subsoil preparation; and
  - iv. Conditioned prior to plant installation by a combination of the specified (or approved) fertiliser and water holding agent, or soil additive, incorporated and mixed evenly throughout the soil.
- b) For general broad acre mass planting beds:

**(WITNESS POINT)**

- i. To a minimum depth of 200mm where gradient does not exceed 4H:1V; for mass planting to steeper batter slopes, a maximum depth of 75mm shall be installed;
- ii. Slightly mounded, rising at a minimum 1:6 gradient from edges to the centre to assist in shedding excess surface water and promote root development; and
- iii. Within 5 days of the specified subsoil preparation.
- iv. Conditioned prior to plant installation by a combination of the specified (or approved) fertiliser and water holding agent, or soil additive, incorporated and mixed evenly throughout the soil.

Topsoil for turfing and vegetation (seeding) works shall be installed:

**(WITNESS POINT)**

- a) Evenly over the surface of the prepared subsoil;
- b) Within 5 days of the specified subsoil preparation; and
- c) To the following minimum depths:
- i. For flat areas, and batter slopes  $\leq 4H:1V$ , an average depth of 100mm with a minimum compacted depth of 75mm at any location
  - ii. For batter slopes  $> 4H:1V$ , an average depth of 75mm with a minimum compacted depth of 50mm at any location
  - iii. Where batters have been stepped/roughened, the steps shall be loosely filled with topsoil



to a nominal depth of 50mm

Topsoil shall be spread on the prepared subsoil and graded evenly, making the necessary allowances to permit the following:

**(WITNESS POINT)**

- a) Achieve even grading to required finished levels and contours, free of localised depression, mounding and unbroken large clods after light compaction.
- b) Finished surface levels of grassed areas to be flush with adjacent hard surfaces such as kerbs, paths, and edging strips.
- c) Finished surface levels of mulched areas to be 25mm below adjacent hard surfaces such as kerbs, paths, and edging strips.

Topsoil shall be lightly and uniformly compacted in 150mm maximum loose layers, avoiding differential subsidence and excess compaction. Produce a finished topsoil surface that has the following characteristics:

**(WITNESS POINT)**

- a) Evenly graded and finished to design levels with tolerances as per [Clause 8300.4.3](#)
- b) Smooth and free from large physical contaminants (stones, soil clods, roots and branches, etc); and materials toxic to plant material as per [Clause 8300.5.14.15](#).
- c) Graded to drain freely to catchment points, in coordination with the project drainage plan, without localised ponding, concentration of flows, or surface water discharge to areas outside the project site;
- d) Graded evenly into adjoining ground surfaces; and
- e) Ready for installation of specified vegetation works.

Feather edges of spread topsoil into adjoining undisturbed ground to meet existing ground levels.

Where possible, surplus topsoil shall be spread on designated areas on site, as directed by the Superintendent. Otherwise, the Contractor shall be responsible for off-site disposal of surplus material, at no cost to the Principal.

After installation of topsoil, no further compaction of the prepared surface is to occur, and no further work resulting in degradation of finished topsoil layer shall be undertaken.

#### **8300.6.4 Vegetation works - Seeding**

Seeding operations include:

- a) Drill seeding;
- b) Broadcast seeding;
- c) Hydroseeding;
- d) Hydromulch seeding;
- e) Straw mulch seeding; and
- f) Initial watering (if specified) and rewatering of seeding operations.

The Contractor shall give a minimum 48 hours' notice to the Superintendent of planned seeding activities



**(HOLD POINT)**

Seeding shall be installed:

**(WITNESS POINT)**

- a) Within 2 days of the topsoil being deemed suitable by the Superintendent; and
- b) To the prepared surface that has been moistened with a solution of water and wetting agent at a minimum rate of 5L per m<sup>2</sup>.

#### **8300.6.4.1 Drill seeding**

Drill seeding is suitable for relatively flat sites and rural areas where machinery is readily available. It is not suited to areas with prolonged moisture. It initially requires a high level of temporary sediment control, particularly in areas with high rainfall, until surface coverage is established.

The Contractor is to give a minimum 48 hours' notice to the Superintendent of planned drill seeding activities

**(HOLD POINT)**

Drill seeding shall be installed:

**(WITNESS POINT)**

- a) By drill seeding the seed mix and fertiliser into the topsoil, using an appropriate mechanical seeder; and
- b) At a depth of 5mm, or by lightly working the surface to ensure seeds are covered with minimum 5mm of topsoil.

Where practicable, passes shall follow finished surface contours.

Seed and fertiliser shall be evenly distributed over the areas to be sown, at the rates specified in Clause 3.2 of the Annexure 8300\_1. Fertiliser shall be applied concurrently with the seeding operation.

**(WITNESS POINT)**

Where drill seeding is installed to open/swale drains, a polymer emulsion in accordance with Clause 8300.5.14.24 is to be applied immediately to the sown surface, at a rate of 200kg per hectare. Alternatively, the drain can be lined with an organic fibre mat, in accordance with Clause 8300.5.14.28.

**(WITNESS POINT)**

Initial and rewatering of drill seeding shall be watered in accordance with Clause 8300.6.4.6.

**(WITNESS POINT)**

#### **8300.6.4.2 Broadcast seeding**

Broadcast seeding is suitable for small areas or areas inaccessible by machinery. It initially requires a high level of temporary sediment control, particularly in areas with high rainfall, until surface coverage is established.

The Contractor is to give a minimum 48 hours' notice to the Superintendent of planned broadcast seeding activities

**(HOLD POINT)**

Broadcast seeding shall be installed:

**(WITNESS POINT)**



- a) By blending seed mix with a bulking agent such as dry, sharp sand, or dry, fine sawdust;
- b) By broadcasting the blended mix and fertiliser into the topsoil, using an appropriate mechanical seeder; and
- c) At a depth of 5mm, or by lightly working the surface to ensure seeds are covered with a minimum of 5mm of topsoil.

Where practicable, passes shall follow finished surface contours.

Seed and fertiliser shall be evenly distributed over the areas to be sown, at the rates specified in Clause 3.2 of the Annexure 8300\_1. Fertiliser shall be applied concurrently with the seeding operation.

**(WITNESS POINT)**

Where broadcast seeding is installed to open/swale drains, a polymer emulsion in accordance with [Clause 8300.5.14.24](#) is to be applied immediately to the sown surface, at a rate of 200kg per hectare. Alternatively, the drain can be lined with an organic fibre mat, in accordance with [Clause 8300.5.14.28](#)

**(WITNESS POINT)**

Initial and rewatering of broadcast seeding shall be watered in accordance with Clause 8300.6.4.6.

**(WITNESS POINT)**

#### **8300.6.4.3 Hydroseeding**

Hydroseeding is suitable for most situations, but is typically applied to cut and fill batters. It provides quick and efficient soil protection. It requires temporary sediment control to protect surfaces on steep slopes and drainage structures until surface coverage is established.

The Contractor is to give a minimum 48 hours' notice to the Superintendent of planned hydroseeding activities

**(HOLD POINT)**

Hydroseeding shall be installed:

**(WITNESS POINT)**

- a) With purpose-built equipment capable of:
  - i. Producing a homogenous slurry
  - ii. Uniformly applying the slurry;
- b) By applying the hydroseed slurry from at least two directions to prevent:
  - i. A shadowing effect
  - ii. Uneven coverage of slurry; and
- c) In an indirect, dispersed spray pattern to achieve a uniform cover; and
- d) With a non-toxic tracer dye added to the slurry, so as to highlight sprayed areas and provide indication of suitable coverage.

Hydroseeding shall not be applied under the following weather conditions at the Project site:

- a) When temperature is higher than 35C;
- b) When winds exceed 15km/hr;



- c) Where, in the opinion of the Superintendent, the surface is too wet; or
- d) During rain periods, or when rain appears imminent.

Storage tanks, containers, and equipment to be used in hydroseeding operations shall be clean and free of contamination from previous operations.

Hydroseeding shall be applied using the following application rates (or as approved by the Superintendent):

**(WITNESS POINT)**

- b) Water – 20,000L/ha
- b) Binder – minimum 100kg/ha (or as specified by the manufacturer)
- c) Fertiliser – minimum 350kg/ha (or as specified by the manufacturer)
- d) Seed – refer to [Clause 8300.5.14.21](#) and Clause 3.2 of the Annexure 8300\_1
- e) Wetting agent – minimum 20L/ha (or as specified by the manufacturer)

No initial watering of the hydroseeding treatment shall occur on the day of the installation to allow the binder to set.

Watering of hydroseeded areas on the day after installation shall be in accordance with Clause 8300.6.4.6.

**(WITNESS POINT)**

#### **8300.6.4.4 Hydromulch seeding**

Hydromulch seeding is suitable for most situations, but is typically applied to cut and fill batters. It provides quick and efficient soil protection. It requires temporary sediment control to protect surfaces on steep slopes and drainage structures until surface coverage is established.

The Contractor is to give a minimum 48 hours' notice to the Superintendent of planned hydroseeding activities

**(HOLD POINT)**

Hydromulch seeding shall be installed:

**(WITNESS POINT)**

- a) With purpose-built equipment capable of:
  - i. Producing a homogenous slurry
  - ii. Uniformly applying the slurry;
- b) By applying the hydromulch slurry from at least two directions to prevent:
  - i. A shadowing effect
  - ii. Uneven coverage of slurry; and
- c) In an indirect, dispersed spray pattern to achieve a uniform cover; and
- d) With a non-toxic tracer dye added to the slurry, so as to highlight sprayed areas and provide indication of suitable coverage.

Hydromulch seeding shall not be applied under the following weather conditions at the Project site:

- a) When temperature is higher than 35°C;



- b) When winds exceed 15km/hr;
- c) Where, in the opinion of the Superintendent, the surface is too wet; or
- d) During rain periods, or when rain appears imminent.

Storage tanks, containers, and equipment to be used in hydromulch seeding operations shall be clean and free of contamination from previous operations.

Hydromulch seeding shall be applied using the following application rates (or as approved by the Superintendent):

**(WITNESS POINT)**

- a) Vegetable mulch fibre – 4,500kg/ha
- b) Water – 35,000L/ha
- c) Binder – minimum 100kg/ha (or as specified by the manufacturer)
- d) Fertiliser – minimum 350kg/ha (or as specified by the manufacturer)
- e) Seed – refer to [Clause 8300.5.14.21](#) (or as specified in Clause 3.2 of the Annexure 8300\_1).
- f) Wetting agent – minimum 35L/ha (or as specified by the manufacturer)

No initial watering of the hydromulch seeding treatment shall occur on the day of the installation to allow the binder to set.

Watering of hydromulched areas on the day after installation shall be in accordance with Clause 8300.6.4.6.

**(WITNESS POINT)**

#### **8300.6.4.5 Straw mulch seeding**

Straw mulch seeding is suitable in rural areas (generally not used in urban areas where air blown materials can coat road furniture and structures) where site conditions are extreme, as it retains soil moisture and moderates soil temperature.

Straw mulch seeding shall be installed in a two pass process. The first pass shall be drill seeded (in accordance with Clause 8300.6.4.1), or broadcast seeded (in accordance with Clause 8300.6.4.2).

**(WITNESS POINT)**

The second pass shall be applied through a straw mulching machine delivering:

- a) Straw (minimum 5000kg/ha application rate); and
- b) Bituminous emulsion (minimum 2000L/ha application rate).

The finished straw mat shall have a minimum thickness of 20mm at any location.

**(WITNESS POINT)**

The area of straw mulch seeding shall be protected against pedestrian and vehicular traffic until germination and establishment occurs or until advised by the Superintendent.

**(HOLD POINT)**

Initial and rewatering of straw mulch seeding shall be watered in accordance with Clause 8300.6.4.6.

#### **8300.6.4.6 Initial watering and rewatering of seeding operations**

Initial watering in after installation of seeding operations shall:



**(WITNESS POINT)**

- a) Be carried out on the day of installation and be a minimum of 10L per m<sup>2</sup>.
- b) Be watered with a fine spray until the topsoil is moistened to its full depth.
- c) During watering operations runoff is to be avoided, measures shall be put in place to protect the surrounding environment in the event of runoff or a rainfall event

To promote and maintain growth, rewatering of the seeded area after installation shall:

**(WITNESS POINT)**

- a) Continue watering daily until germination to keep the surface damp and the topsoil moist, without surface runoff
- b) Upon germination water to maintain a healthy condition be on a daily basis until Practical Completion and commencement of the Maintenance Period.

During the Maintenance period watering shall be carried out as per the Contractors approved maintenance plan and be in accordance with MRC Supplementary Specification 8317 – Landscaping and Horticultural Maintenance Period.

**8300.6.5 Vegetation works – turfing**

Turf deliveries shall be within twenty four (24) hours of cutting. Measures shall be taken to prevent it from drying out between cutting and laying. Species and grade classification certification to be clearly identified on delivery docket.

The Contractor is to inform the Superintendent of the turfing works commencement (including top soil and sub soil preparation) and submit a timeline for the works

**(HOLD POINT)**

Turf shall be installed:

- a) Within 2 days of the topsoil being installed; and
- b) Within 24 hours of delivery to site.

Use 8.5.2 from MRTS16

Turfing shall be in accordance with Table 8.5.2

Table 8.5.2 – Turfing Slope	Standard Drawing	Detail	Subsoil Operation	Topsoil Depth	Initial Watering
≤ 1 on 4	1650	1*	Ripping* 300mm Cultivation 150 mm	75 mm	25 L /m <sup>2</sup>
> 1 on 4	1650	2	Roughening 50 mm		

\*Ripping only required where soils are compacted. For example, decommissioned site compounds, building pads, parking areas, stockpile areas, roads and haul routes.

Amelioration agents, where required based on the soil test results shall be spread over the subsoil surface at the specified rates prior to subsoil operations.

**(HOLD POINT)**



Subsoil operations shall occur immediately after the application of amelioration agents.

**(WITNESS POINT)**

Topsoil shall be installed within three days from the completion of the subsoil operations. Topsoil shall be spread to the required depth.

**(WITNESS POINT)**

Turf shall be installed within two days from the completion of the topsoil operations.

Prior to turf installation:

**(WITNESS POINT)**

- a) Fertilisers shall be broadcast evenly over topsoil in accordance with the manufacturer's recommended rates; and
- b) The prepared surface shall be moistened with a solution of water and wetting agent at a minimum rate of 5L per m<sup>2</sup>.

Turf shall be installed in the following manner:

**(WITNESS POINT)**

- a) Runs of turf shall be in a stretcher pattern with the joints staggered and close butted;
- b) Parallel with the long sides of level areas, and with contours on slopes, perpendicular to the direction of water flow,
- c) Commencing installation at the bottom of the slope or grade;
- d) On steep slopes peg the turf to prevent downslope movement. Remove the pegs when the turf is established.
- e) To be rolled or tamped to achieve even contact between sod and topsoil;
- f) To finish flush after rolling or tamping with adjacent finished surfaces of ground, edging, or grass seeded areas;
- g) Turf and in particular turf seams shall then be top-dressed with topsoil to ensure there are no gaps between rolls and to correct any uneven areas.

Initial watering in after installation of turfing operations shall be in accordance with Clause 8300.6.5.2

Upon practical completion and during the on maintenance period all maintenance is to follow the requirements of MRC Supplementary Specification 8300.17

**(HOLD POINT)**

#### **8300.6.5.1 Reinforced turfing**

Reinforced turf shall be installed:

**(WITNESS POINT)**

- a) Following the same process as 8300.6.5 "Vegetation works – turfing"
- b) With runs of turf placed hard up against each other;
- c) Be placed perpendicular to the direction of water flow; and
- d) Be staked or pinned into position at 500mm centres.
- e) Stakes and pins shall be removed and disposed of following turf establishment.



Initial watering in after installation of reinforced turfing operations shall be in accordance with-Clause 8300.6.5.2

Upon works acceptance maintenance is to follow the requirements of MRC Supplementary Specification 8300.17

**(HOLD POINT)**

### **8300.6.5.2 Initial watering and rewatering of turfing operations**

Initial watering in after laying of turf operations shall:

- a) Be carried out within 2 hours of laying operations on the day of installation with a solution of water and wetting agent until the topsoil layer is moist. Watering shall be applied in multiple applications to ensure surface erosion does not occur.

**(WITNESS POINT)**

- b) Be a minimum of 10L per m<sup>2</sup>.
- c) Be watered with a fine spray until the topsoil is moistened to its full depth.
- d) During watering operations runoff is to be avoided, measures shall be put in place to protect the surrounding environment in the event of runoff or a rainfall event

To promote and maintain growth, rewatering of the turfed area after installation shall:

**(WITNESS POINT)**

- a) Continue watering to keep the surface damp and the topsoil moist; without surface runoff until Practical Completion and commencement of the On Maintenance Period.

During the Maintenance period watering shall be carried out as per the Contractors approved maintenance plan and be in accordance with MRC Supplementary Specification 8317 – Landscaping and Horticultural Maintenance Period.

### **8300.6.6 Vegetation works – organic mulching**

Only organic mulch complying with AS4454 shall be used, testing and/or certification of the mulch shall be carried out when delivered to site. The mulch shall then be installed:

**(HOLD POINT)**

- b) Within 2 days of the topsoil being placed;
- c) Before planting of container stock in mass mulched areas;
- d) As soon as practicable after the completion of the planting operations where planting is individually mulched; and
- e) To the following minimum depths:

**(WITNESS POINT)**

- i. Mass Planting in beds – 100mm
  - ii. Planting ≤25L containers – 100mm
  - iii. Planting > 25L containers – 150mm by 1200mm diameter surround
- g) That surface finish is a minimum 25mm below adjoining paths and garden edging.
  - h) In accordance with the project Drawings and MRC Standard Drawings.



Allowance shall be made for settlement in initial spreading to achieve the specified depth. Mulched interfaces to edges (i.e. turf, paths), are to be formed with a vertical face so that immediate cover of specified depth can be established.

Contained areas, medians and separators with mulched planting shall be treated with pre- emergent herbicide with the contractor informing the Superintendent of the timing to be carried out :

**(WITNESS POINT)**

- a) Prior to installation of mulch; and
- b) In accordance with the manufacturer's instructions.

Where seeding treatments of any type has been specified directly adjoining mulched areas, pre-emergent herbicide is not to be used under any circumstances.

#### **8300.6.6.1 Manufacture of site mulch**

Site mulch shall be manufactured:

**(WITNESS POINT)**

- a) In accordance with [Clause 8300.5.14.27](#), and
- b) Be produced by double tub grinding vegetation material set aside during clearing and grubbing operations in MRTS04 *General Earthworks*; or
- c) Be produced by chipping vegetation material set aside during clearing and grubbing operations in MRTS04 *General Earthworks*.

Site mulch stockpiles shall:

- a) Not be located:
  - i. Near water bodies, or
  - ii. Within the drip line of retained trees
- b) Be maintained weed free – weeds which appear shall be treated immediately;
- c) Be limited to a height of 2m and a width of 6m;
- d) Be spaced adequately to allow watering and machinery movements; and
- e) Be watered and turned at least once per week for 4 weeks.

#### **8300.6.7 Vegetation works – environmental matting**

Environmental matting shall be installed:

**(WITNESS POINT)**

- a) In accordance with [Clause 8300.5.14.28](#);
- b) As soon as practicable after the completion of ground preparation works;
- c) Prior to container planting operations;
- d) After seeding operations; and
- e) With pins at spacings in accordance with the manufacturer's requirements.

Matting with container planting operations shall only be used in drainage structures.

Matting with seeding operations may be used:



- a) On slopes > 2H:1V, in areas with high rainfall and/or erodible soils; and
- b) In grass drainage structures where additional protection is required due to water velocities.

When matting is used in grass drainage structures, it shall:

**(WITNESS POINT)**

- a) Be laid along the direction of water flow;
- b) Be laid loosely on the soil surface such that the material is in a relaxed state and not stretched;
- c) Have the upstream end of the matting slotted into a trench 150mm wide by 150mm deep;
- d) Be pinned to the base of the trench at 200mm centres (or in accordance with manufacturer's requirements);
- e) Be overlapped 100mm with adjacent runs of matting, with the higher run lapped over the lower run;
- f) Be pinned along the sides of each run at 500mm centres, and along the middle of each run at 1m centres;
- g) Have 150mm wide end overlaps, with the higher run end lapped over the start of the lower run, and pinned at 200m centres; and
- h) Be backfilled with soil and compacted by foot.

When matting is used in planting areas, for weed and/or erosion control, it shall:

**(WITNESS POINT)**

- a) Be placed with a minimum lap between sheets, as per the manufacturer's specifications, or a minimum of 200mm;
- b) On batters, be laid with the upper outer edge of the matting area extending over the hinge point, and be buried and pinned in a trench to a minimum depth of 300mm;
- c) Have fixing pins installed to secure the matting at 300mm centres centrally, and at overlaps of matting widths; and
- d) Have plantings installed at specified densities through 'X' or 'I' shaped cuts, with the length of cuts limited as necessary to install planting through mat without tearing, and have the cuts staggered longitudinally down the length of the matting.

Matting used as erosion control in planted swales and other drainage devices shall be installed as per manufacturer's specifications.

#### **8300.6.7.1 Revegetation works – erosion control matting**

Weed matting is to be laid where indicated and in accordance with the landscaping drawing and relevant construction details. Matting must be anchored, rolled out down slopes or along the based of open drainage swales, overlapped and fixed in accordance with the manufacturer's published specifications.

Disturbance of the underneath and adjacent ground must be minimised during laying of the weed matting and is to finish flush with the top of garden edging where installed.

All surface obstructions and protuberances must be removed prior to laying out the weed matting. The matting sheets must be laid loosely to make good contact with the soil surface and not stretched taut over the surface. The matting must be laid to provide a complete cover over the fished surfaces with sufficient overlap along joins between sheets of matting.

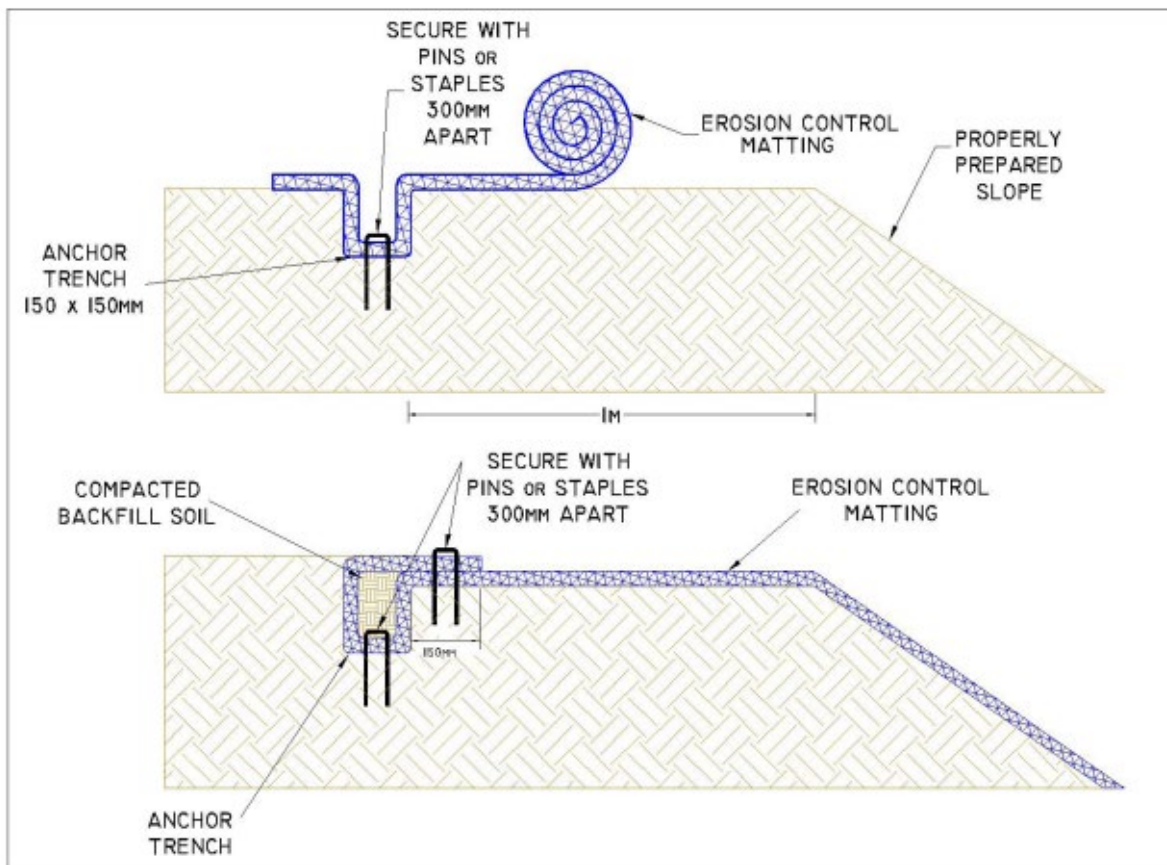
**(WITNESS POINT)**

Fix matting at intervals sufficient for the steepness and slopes in accordance with manufacturers specifications to maximise contact between the matting and soil, and to prevent runoff flows beneath the matting.

Commence planting of nominated revegetation areas as per the planting schedule as soon as practicable post laying and securing of weed matting.

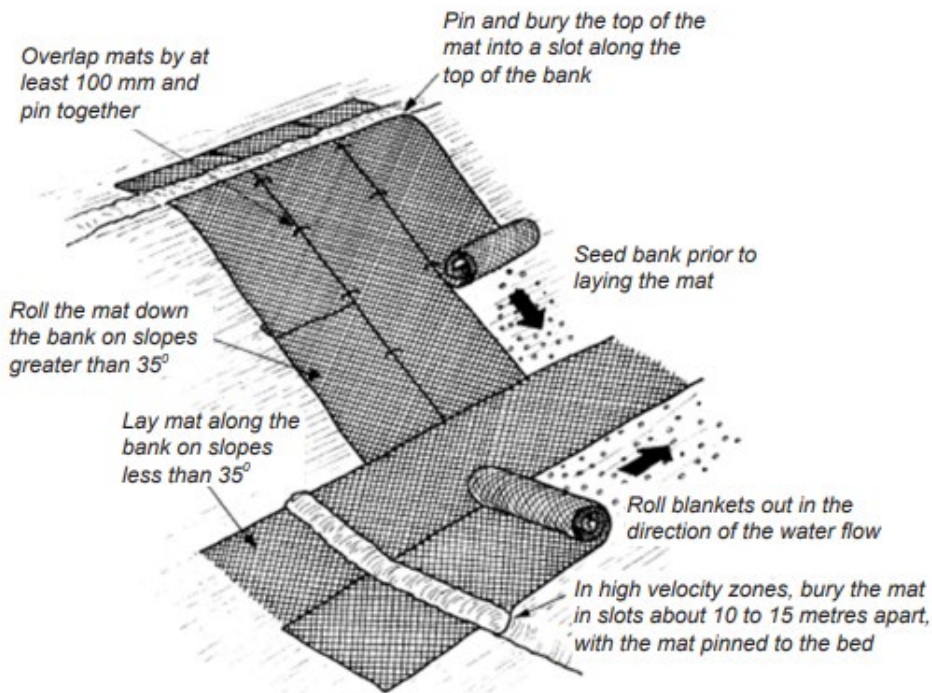
Temporary irrigation is to be in place prior to planting and tested for coverage to ensure watering occurs over the entire area nominated for revegetation. The irrigation lines between the water source and areas subject to revegetation are to be protected from damage by vehicles and other potential impacts. Irrigation lines within the nominated revegetation area are to sit on top of the weed matting so that it is visible. Spays are to be fixed to posts with feeder lines to be securely fixed in placed.

**(WITNESS POINT)**



Source: ECTC (2008)

**Figure 4 Anchor trench detail**



Source: WRC (2001a)

**Figure 8 Orientation of matting on slopes and channels**

### 8300.6.8 Vegetation works – planting

Plants shall:

- a) Be installed within 5 days of mulch or environmental matting being installed; and
- b) Be installed within 48 hours of delivery;
- c) Be set out in accordance with [Clause 8300.6.8.3](#);
- d) Be installed in accordance with [Clause 8300.6.8.4](#), for mass plantings;
- e) Be installed in accordance with [Clause 8300.6.8.5](#), for individual trees  $\geq 45\text{L}$  container size; and
- f) Be installed in accordance with [Clause 8300.6.8.6](#), for marginal aquatic plantings.

Any irrigation system to be installed shall be fully commissioned and accepted by Council prior to any plantings being undertaken.

**(HOLD POINT)**

Prior to the installation of plants, the prepared surface shall be watered with a solution of water and wetting agent at a nominal rate of  $5\text{L per m}^2$  or as required moistening the surface treatment without saturating the ground.

**(WITNESS POINT)**

The planting shall not be carried out in extreme weather conditions (above  $35\text{C}$  or below  $10\text{C}$ ), during high winds, where ground is saturated such that work activities cause degradation of finished ground profile, preparation works or mulch layer.



The scheduling of planting works occurs during but also where favourable post-planting weather conditions are predicted and notify the Superintendent of the intention to carry out revegetation planting/s.

**(WITNESS POINT)**

Initial watering after installation of planting shall:

- a) Be on the day of installation;
- b) Be as soon as practicable after installation; and
- c) Be a minimum of:
  - i. 10L for < 25L container size, individual plantings;
  - ii. 15L for ≥ 25L container size, individual plantings;
  - iii. 50L for ≥ 100L container size, individual plantings;
  - iv. 100L for ex ground stock, individual plantings; or
  - v. 10L per m<sup>2</sup>, for tube stock to 140mm mass plantings (based on ≥ 2 plants per m<sup>2</sup>)

To promote and maintain growth, rewatering of planting areas after installation shall:

**(WITNESS POINT)**

- a) Ensure a moist condition, without surface runoff;
- b) Be on a daily basis at the rates specified above until Practical Completion and commencement of the Maintenance Period; and

Watering during the maintenance period shall be in accordance with MRC Supplementary Specification 8317 – Landscaping and Horticultural Maintenance Period.

#### **8300.6.8.1 Revegetation works – planting**

The contractor shall ensure that all staff engaged in the planting operations are competent, and skilled in the required works. Staff must be supervised during the works by an experienced supervisor competent and skilled in the required revegetation installation and establishment practices.

Prior to commencing planting, the contractor shall assess the site nominated for revegetation for the presence of weed species, and to confirm an appropriate level of soil moisture is present. Planting sites shall be inspected where any obstruction, obstacle, hazard or other factor likely to cause failures in the planting operation are identified. Any issues identified, which includes the presence of weeds or the lack of adequate soil moisture, must be rectified before planting is commenced.

**(HOLD POINT)**

Planting operations shall not commence during adverse weather conditions such as extreme heat, cold or flooding. The contractor shall ensure, as far as is practicable based on local weather forecasts, that the scheduling of planting works occurs during but also where favourable post-planting weather conditions are predicted and notify the Superintendent of the intention to carry out revegetation planting/s.

**(WITNESS POINT)**

Plants meeting the species type and to the quantities specified in the planting schedule are to be installed. The Contractor is to set out the individual plants within the nominated revegetation area in



accordance with the spacing, layout and arrangement indicated on the drawings and this is to be confirmed by the nominated Supervisor before being planted.

**(WITNESS POINT)**

Prior to any planting into weed matting, each individual planting hole must be prepared by first slitting open and laying back the matter to allow each planting hole to be excavated and prepared for planting in accordance with the standard detail.

Individual plants must be removed from their containers so as not to damage the plant's leaves, stem or root ball.

Plants must not be planted into standing water within an individual planting hole.

Individual plants must be placed in the centre of the planting hole and set plumb. The backfill must be firmed progressively after placing to eliminate air pockets and minimise settlement. After planting the matting is to be refitted around the plant.

**(WITNESS POINT)**

Each plant is to be fitted with an approved plant guard. Plant guards must be installed in accordance with the manufacturer's instructions.

Plants are to be watered-in immediately after planting, with sufficient water to thoroughly saturate the soil to twice the area of the plant's root ball.

**(WITNESS POINT)**

The Contractor must protect all plants from trespass and traffic until the plants are well established

#### **8300.6.8.2 On-site storage of plants**

All plant material shall be planted within 48 hours after delivery to site. Plant material shall be heeled in or covered with moist soil or sawdust or stored as directed by the Superintendent.

Should the contractor require an on-site nursery for quarantine, acclimatisation, and holding plants prior to planting, the nursery setup and location shall be approved by the Superintendent prior to plants being delivered to the site and address the following at a minimum;

**(HOLD POINT)**

- a) It shall be a vermin proof compound of sufficient size to house the required plantings for the minimum 12 weeks quarantine and acclimatisation period/s
- b) provision for watering of plants using an approved source of water
- c) Adequate measures shall be taken to prevent theft.
- d) All planting shall be adequately protected from sun and wind as per the prevailing site planting location/s.

The Superintendent in conjunction with the Contractors certified landscape practitioner shall inspect and approve stock at quarantine and acclimatisation nursery at delivery time.

**(HOLD POINT)**

Stock must be sun hardened and quarantined and acclimatised for a minimum 12 weeks at the on-site nursery and reinspected by the Superintendent in conjunction with the Contractors certified landscape practitioner prior to use on project.

**(HOLD POINT)**



### 8300.6.8.3 Setting-out of plants

Prior to setting-out plants, the Contractor shall determine locations and extent of all services, service easements, road furniture, lighting, road signs, structures, clear zones, and sight visibility zones.

The Contractor shall:

- a) Set out plants in the locations shown on the Drawings;
- b) Adjust locations, as required and to the approval of the Superintendent, in accordance with vegetation setback and clearance table and notes:
  - i. As shown on the Drawings,
  - ii. In accordance with MRC Engineering Design Guideline D8 – *Landscape*; or
  - iii. In accordance with TMR’s *Road Landscape Manual – Appendix 4*, where not shown on the Drawings;
- c) Leave sufficient plant identification tags for each planting type to allow Superintendent to confirm plant set out in accordance with the Drawings; and
- d) Give notice of planting operations to allow the inspection of plant set out in accordance with Clause 8 of MRTS01 *Introduction to Technical Standards*.

**(HOLD POINT)**

### 8300.6.8.4 Mass planting

After removal of the localised mulch, planting holes shall be excavated to the dimensions and depths shown in [Table 8300.5.14.29b](#) or as required to install plant root balls, deleterious material removed and the sides of all holes shall be broken or loosened as necessary by means of a bar or other suitable tool to prevent confinement of root growth. Post-hole borers shall not be used to excavate planting holes.

**(WITNESS POINT)**

Plants shall be removed from planting containers immediately prior to planting with limited disturbance to the root ball and placed in the planting hole such that they are erect and vertical with the top of the root ball level with the surrounding ground line. Plant roots shall be moist at the time of removal from containers and not allowed to dry out. Unless otherwise detailed, holes shall be backfilled with site topsoil.

Each planting position, moisture gel or super absorbents equal to ‘Terrasorb’ or ‘Saturaid’ shall be added in accordance to manufactures written specifications. Backfill material shall be free from perennial weeds, stones, clods of subsoil or other extraneous matter. Backfill material shall be gently compacted compressively to stabilise the plant and remove air pockets up to the surface level. Care is to be taken to avoid mixing mulch with topsoil, or damage to the plant stem.

**(WITNESS POINT)**

Following installation, each backfilled hole shall receive sufficient water to saturate the root zone before the mulch is re-spread. The mulch shall be left a minimum 50mm clear of each plant stem. The contractor shall ensure that all mass planting beds / embankment plantings drain satisfactorily.

**(WITNESS POINT)**

On handover of the site to Council after the designated “On Maintenance” period the Contractor shall collect and remove from site, all containers, and labels associated with nursery production following



the planting operations. Refer to MRC Supplementary Specification 8317 – Landscaping and Horticultural Period for maintenance period requirements.

**(HOLD POINT)**

#### **8300.6.8.5 Individual tree planting ≥ 45L Stock**

Tree stock ≥45L shall be installed as per MRC Standard Drawings:

- a) A4-00049 *“Tree Planting Detail Semi Advanced Tree >45L”*; and
- b) A4-00177 *“Tree Planting to CBD, Grate and Guard”*.

The installation of all tree planting of stock ≥ 45L shall be undertaken by suitably qualified personnel. Minimum acceptable qualification requirements are:

- a) AHC30710 Certificate III in Horticulture; and
- b) AHC30810 Certificate III in Arboriculture.

Trees shall be installed within a tree pit excavated twice the diameter of the root ball. Sides of the pit shall be loosened, and the base broken up to a minimum depth of 50mm. Tree pits shall not be bored, to prevent glazing of the pit sides.

**(WITNESS POINT)**

Where clay soils are found at the base of planting holes for individual tree pits, sub-base material of holes shall be broken up to a minimum depth of 50mm (45L stock) or 200mm (>45L stock), and 1kg of agricultural gypsum evenly incorporated into the sub-base material. Planting holes must be drained of water prior to planting. Do not incorporate gypsum where sandy or free draining sub-soils are present. Structural soil may be used to stabilise rootball at base of planting hole only

Coordinate excavations, as necessary, with installation of root barriers and subsoil drainage. The installation of root guard shall occur prior to planting of the tree or backfilling and shall be installed as per MRC Supplementary Specification 8304. Subsoil drainage shall be installed as per MRC Supplementary Specification 8107.

**(WITNESS POINT)**

Centrally place the tree in the pit, such that it is vertical (plumb), with the top of the root ball flush with the finished ground level. The Contractor shall orientate the main leader and major branches away from roadways and paths such that future grown mitigates creation of hazards and conflicts, with critical clearances to adjoining pedestrian areas and trafficked lanes.

The planting hole shall be gently backfilled with in-situ or imported topsoil which has been conditioned with a combination of the specified (or Council approved) fertiliser and water holding agent or soil additive. All soil conditioners shall be applied in accordance with the manufacturers specified application rate. Backfill material shall be compacted progressively by foot around the rootball to stabilise the plant and remove air pockets. The backfill material shall be mounded to create a 150mm high, minimum 900mm diameter water retention basin surrounding the tree (except for trees in the CBD where compacted backfill material shall finish level with the rootball). The diameter of the basin is to be increased proportionally as suitable for the size of the tree.

**(WITNESS POINT)**

Where the specified fertiliser is installed as a concentrated pellet/tablet or unmixed granular form adjacent the root zone, fertiliser shall be placed at approximately half the depth of the planting hole, and outside the immediate root zone, such that it does not contact the root zone.

**(WITNESS POINT)**

Install stakes either side of the tree in accordance with [Clause 8300.6.8.7](#)

Surround the base of the trunk with a 200mm length of 100mm diameter agricultural pipe, split down the side as a trunk guard.

Each backfilled hole shall receive sufficient water to saturate the root zone immediately after planting.

Following tree installation, spread mulch 150mm thick, 1200mm diameter around base of tree, with an 80mm diameter clearance to the tree trunk.

**(WITNESS POINT)**

On handover of the site to Council after the designated “On Maintenance” period the Contractor shall collect and remove from site, all containers, and labels associated with nursery production following the planting operations.. Refer to MRC Supplementary Specification 8317 – Landscaping and Horticultural Period for maintenance period requirements.

**(HOLD POINT)****8300.6.8.6 Marginal aquatic plantings**

Marginal aquatic plantings shall be installed:

- a) Within rock mulched open swales;
- b) Directly into planting medium through holes cut through environmental matting lining swales and basins; or
- c) As shown on the project Drawings.

Environmental matting shall be installed as per the project Drawings, and as specified in [Clause 8300.5.14.28](#) and [Clause 8300.6.7](#).

**(WITNESS POINT)**

The Contractor shall establish water levels in accordance with the planting schedule and the supplier’s recommended water depth tolerance ranges for each individual species, taking seasonal fluctuations into consideration. The contractors certified landscape practitioner shall inspect and approve of the layout and works, including the water levels in conjunction with the Superintendent.

**(HOLD POINT)****8300.6.8.7 Stakes and ties**

Stakes and ties shall be installed in accordance with MRC Standard Drawings A4-00049 and A4-00177.

Trees shall be tied to a minimum 2 x stakes with two knitted tree ties, as specified in MRC Standard Drawing A4-00049. Additional stakes shall be used as required to ensure tree remains stable and straight. Stakes shall be driven into the ground to approximately one third of the length of the stake. Stakes shall be positioned close to the plant and be inclined at a nominal 85° angle to the groundline, ensuring that stakes do not pass through the root ball or make contact with any part of the plants branching system.

Stakes shall be installed perpendicular to prevailing wind direction and parallel with contours on sloped ground. Where located near paths and hardstand areas, stakes are to be installed parallel to the outer line of the path and/or hardstand.

**(WITNESS POINT)**

Ties shall be propriety brand, purpose made, broad, flat webbing securely fixed to the stakes. Ties shall



be positioned to support the tree between  $\frac{1}{4}$  and  $\frac{1}{2}$  of its height from the ground and the tension of the ties shall be such that the trunk is able to move to and fro at least 25mm at the point of support.

**(WITNESS POINT)**

It is recommended that tree stakes and ties be removed after two (2) growing seasons or as directed by Parks representative.

## **8300.7 Post Construction**

Items which close out the project, and readies the project for Practical Completion inspection

### **8300.7.1 Collection and submission of all As Constructed data including QA data requirements.**

Contractor is to supply and submit Works as Executed documentation as required by *MRC D20 - Drawings and Documentation* for approval by the Superintendent 4 weeks prior to requesting a practical completion inspection.

Certification of works shall be submitted with the “As Constructed” Plans and documentation.

Format of submitted “As Constructed” documentation shall be compliant with MRC Supplementary Specification 8919.

**(HOLD POINT)**

### **8300.7.2 Site inspection of work site**

After site demobilisation the Contractor shall organise an inspection of the work site with the Superintendent to verify rectification of site to its pre-construction condition.

**(HOLD POINT)**

### **8300.7.3 Inspection of Landscape Works (Establishment and Defects Liability Periods)**

At the completion of all works and acceptance of the As Constructed submissions the Contractor is to arrange an inspection of all soft landscaping for the purpose of placing “On Maintenance”.

**(HOLD POINT)**

The contractor shall ensure the requirements of the following criteria for absolute maximum failure rate are met prior to the “On Maintenance” inspection;

- 5% failure rate of any particular species for container stock < 300mm in size.
- 2% failure rate of any particular species for container stock 300mm and 25L.
- 0% failure rate for any  $\geq 45L$  stock
- 80% minimum coverage for grass seeded areas with 90% minimum coverage at 12 weeks after acceptance to “on maintenance”
- 100% coverage for turfed areas
- 60% minimum crop coverage for native seed areas with 75% minimum coverage and a minimum of 1 juvenile native plant species specimen per  $9m^2$  at 12 weeks after acceptance to “on maintenance”

If as a result of this inspection there are defects that need to be rectified the establishment and on maintenance periods shall be from the date after rectification and reinspection of the defective vegetation and plantings by the Superintendent has occurred.



During the “On Maintenance” period any rectification of plantings required and upon inspection by the Superintendent an establishment period (usually 12 weeks) shall be set, this also includes at off maintenance.

**(HOLD POINT)**

## **8300.8 Measurement and Payment**

### **8300.8.1 Measurement**

Provision for these works shall be included in the scheduled unit rate for the items show in Clause 8300.3 of this Supplementary Specification and Annexure. No separate payment will be made for the works specified within this Supplementary specification or it’s annexure.

If the Contract provides for delivery by the Contractor into stockpiles it shall be the Contractor’s responsibility to have the materials delivered and stored in stockpiles. The stockpiles must be trimmed neatly as directed.

Materials delivered by vehicle must carry dockets stating the volume carried. Random checks shall be made on the delivery vehicles to determine the difference if any between the stated volume carried and the actual measured volume.

If after measurement the actual volume is found to be less than the stated volume then the Contractor shall be warned of this short loading and the Contractor must take necessary action to ensure that this short loading does not recur.

If the Contractor consistently fails to load his delivery vehicles with the stated volume as detailed on his delivery docket then the actual volume of the short loaded vehicle together with the percentage by which the load is short of the stated volume will be calculated and the total volume of all material carted by all vehicles on that day may then be reduced by this percentage to determine the volume for which payment will be made.

Where the accepted quote provides for the supply of the material at a price per tonne, payment will be made on the basis of mass. The mass of each road vehicle load must be determined on a suitable weighbridge acceptable to both the Contractor and Council if such a weighbridge is available. Where a suitable weighbridge is not available the volume of material delivered may be determined by measurement in the stockpiles or alternatively by measurement in road vehicles and converted to tonnes by means of a suitable conversion rate determined in such a manner as will be acceptable to the Contractor and Council’s Representative.

### **8300.8.2 Rejection Of Material and Plantings**

Materials that fail to comply with the foregoing specification after delivery to the job site may be rejected. The Contractor must remove rejected material from the Site and replace it with material which complies with the requirements of this Specification.

The cost of such removal and replacement together with the cost of any restoration work made necessary by such removal and replacement shall be borne solely by the Contractor.

### **8300.8.3 Royalty**

Any royalties or fees payable on the supply of the material must be paid by the Contractor.

Where the Contractor has obtained material from private land the Contractor must restore the area to the satisfaction of the owner. Where the Contractor has obtained material from areas under the control of any statutory body, the Contractor must abide by the conditions laid down by such body for the removal of materials from the areas under its control.



**8300.8.4 Method Of Delivery**

Delivery must be made to the locations required and shall take place during working hours between 7.00am and 3.00pm, Monday to Friday, inclusive, public holidays excluded, or at such other times as may be specially arranged between the Contractor and Council’s Representative.

Council shall have the right to direct the placement and order of delivery.

**8300.8.5 Rate Of Delivery**

Delivery may commence within two weeks of the acceptance of the Contract and shall continue as and when material is required, at least 24 hours’ notice being given of the requirements to the Contractor.

The Contractor must deliver the material at a rate of not less than 200 cubic metres per day, when called upon to do so.

In the event of the Contractor not supplying and delivering per day the quantity ordered, such quantity ordered being not in excess of the specified minimum quantity, then the Contractor shall pay Council by way of liquidated damages and not by way of a penalty, the sum of \$100 per day for each and every day during which the Contractor fails to deliver the ordered quantity. Such sums of money may be deducted from any monies deposited with Council or payable to the Contractor.

Consideration will be given to waiving this deduction in the event of circumstances beyond the Contractor’s control preventing the delivery as specified.

The damages to be paid pursuant to this clause shall be in substitution for, and not in addition to, those referred to in Council’s Preferred Supplier Arrangement (PSA) Agreement for Supply of Goods.

**8300.8.6 Breach Of Supply Conditions**

Should the contractor fail to supply the material in accordance with the above technical specification, Council may purchase any of the products from another supplier and the Contractor shall have no Claim against Council.

Version Control:

Version	Description	Reviewed / Endorsed	Date
1.0	Original issue		13.04.2021
1.1	Review	R. Mogg	28.06.2022
2.0	Specification Review	C.Sultana	04.04.2024
2.1	Minor Corrections to Typographic Errors	C.Sultana	16/01/2025