

# Main Roads Technical Standard

## **MRTS16E**

### **Establishment and Monitoring Works**

**June 09**

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# Establishment and Monitoring Works

## 1 INTRODUCTION

This Technical Standard applies to the general requirements of establishment and monitoring works for road construction and associated works.

This Technical Standard shall be read in conjunction with MRTS01 *Introduction to Technical Standards*, MRTS50 *Specific Quality System Requirements* and other Technical Standards as appropriate.

This Technical Standard forms part of the Main Roads Specifications and Technical Standards Manual.

## 2 DEFINITION OF TERMS

The terms used in this Standard shall be as defined in Clause 2 of MRTS01 *Introduction to Technical Standards*. Landscape and revegetation related terms and abbreviations used in this Standard are defined in Table 2 of MRTS16 *General Requirements – Landscape and Revegetation Works*. Guidance on generic landscape and revegetation terms is contained in MRTS16 *User Guidelines Vegetation Ground Works*.

## 3 STANDARDS

### 3.1 Materials and Practices

Materials and practices shall be in accordance with, but not limited to, the Australian Standards AS 4373 Pruning of amenity trees.

## 4 QUALITY SYSTEM REQUIREMENTS

### 4.1 Hold Points, Witness Points and Milestones

General requirements for Hold Points, Witness Points and Milestones are specified in Clause 5.2 of MRTS01 *Introduction to Technical Standards*.

The Hold Points, Witness Points and Milestones applicable to this Standard are summarised in Table 4.1.

**Table 4.1 – Hold Points, Witness Points and Milestones**

Clause	Hold Point	Witness Point	Milestone
5.1			Submission of samples
6.2.6	1 Submission of Weed, Pest and Disease Control Proposal (WP&DCP)		
6.3.1	2 Submission of herbicide distribution permit		
8			Commencement of LR Construction Establishment Period
8			Commencement of LR Monitoring Period – Input Control
10.1.2			Commencement of LR Monitoring Period – Performance Based

## 5 GENERAL REQUIREMENTS

### 5.1 Samples

The Contractor shall submit to the Administrator, samples of materials as specified in Clause 2.1 of Annexure MRTS16E.1 or where not specified as listed in Clause 5.4 of MRTS16 *General Requirements*.  
**Milestone**

## 6 WEED, PEST AND DISEASE CONTROL

### 6.1 General

The Contractor is responsible for maintaining all landscape and revegetation works in a weed, pest and disease free condition.

All declared plants shall be managed to the level of control required by the *Land Protection (Pest and Stock Route Management) Act 2002* and the *Land Protection (Pest and Stock Route Management) Regulation 2003*.

Unless specified in Clause 3.1 of Annexure MRTS16E.1 or elsewhere in the Contract, weed, pest and disease control may be required using the application of herbicides and / or pesticides. Herbicide and pesticide application operations are to be carried out in accordance with the Contractor's Weed, Pest and Disease Control Proposal (WP&DCP).

Slashing or brushcutting to control weeds may be carried out in seeded areas in accordance with the cutting of cover crop in Clause 7.2.

### 6.2 Material Requirements

#### 6.2.1 Herbicides and Pesticides

All herbicides and pesticides shall be registered for use on roadsides and rights of way under the *Chemical Usage (Agricultural and Veterinary) Control Act 1988*.

#### 6.2.2 Knock-down Herbicides

Knock-down herbicide shall be a broad spectrum, non residual, glyphosate based herbicide that has been specifically manufactured for low aquatic toxicity.

#### 6.2.3 Residual Herbicides

Residual herbicides shall be specifically selected to treat the spectrum of weeds to be controlled. They may also be combined with a knock-down herbicide where vegetative weed eradication is required prior to planting.

#### 6.2.4 Target Herbicides

Target herbicides shall be nominated by the Contractor and submitted to the Administrator for direction as to their suitability. They shall be used exclusively for the eradication of the target plant species.

#### 6.2.5 Pesticides

Pesticides for seed drilling application shall be permethrin-based products or other pesticides approved by the manufacturer for seed drilling.

#### 6.2.6 Weed, Pest and Disease Control Proposal

Where a weed, pest or disease infestation, which has the potential to cause lasting damage to landscape and revegetation plantings occurs, the Contractor shall submit a Weed, Pest and Disease Control Proposal (WP&DCP) to the Administrator for a determination as to its suitability. **Hold Point 1** Weed, pest and diseases shall be controlled in accordance with the WP&DCP.

### 6.3 Construction

#### 6.3.1 Weed Control

Unless otherwise specified in Clause 3.1 of Annexure MRTS16E.1, the Contractor shall handle and apply herbicides, in accordance with the manufacturer's instructions.

Application of herbicides shall only be carried by a licensed contractor in accordance with the *Agricultural Chemicals Distribution Control Act (1966)*.

Where herbicide shall be applied to hazardous areas, as defined by the *Agricultural Chemicals Distribution Control Act (1966)*, the Contractor shall obtain and submit a distribution permit to the Administrator prior to carrying out the works. **Hold Point 2** Herbicides shall be applied in accordance with the approved label or permit instructions under the *Chemical Usage (Agricultural and Veterinary) Control Act (1988)*.

Over-spray onto landscape and revegetation plants or plants that are to be retained shall be minimised. Where landscape and revegetation plants or plants to be retained are poisoned, they shall be replaced with plants of the same species, size and quality.

Where herbicides are prohibited from use, weeds shall be removed by the methods as specified in Clause 3.1 of Annexure MRTS16E.1.

### 6.3.2 Pest and Disease Control

Pesticides shall be applied by a licensed operator in accordance with the *Agricultural Chemicals Distribution Control Act (1966)*.

## 7 SLASHING AND BRUSHCUTTING

### 7.1 General

Slashing and brushcutting operations shall be carried out where shown on the Drawings, or as specified elsewhere in the Contract.

### 7.2 Construction

Slashing or brushcutting shall be carried out as follows –

- a) prior to ground preparation; and / or
- b) to control the growth and spread of weeds and cover crops in seeded areas; and / or
- c) to maintain grass height during the landscape and revegetation construction establishment operations and monitoring period.

Cut vegetation that does not contain propagules shall be evenly windrowed or dispersed over the area.

Vegetation with propagules shall be disposed of in accordance with the requirements of Clause 8.3 of MRTS04 *General Earthworks*.

## 8 ESTABLISHMENT AND MONITORING – GENERAL

Construction establishment and monitoring operations are to be carried out by the Contractor following landscape and revegetation installations.

Construction establishment and monitoring consists of two distinct periods –

- a) the LR Construction Establishment Period; and
- b) the LR Monitoring Period.

The LR Construction Establishment Period is the period which occurs during the construction phase and commences immediately following the installation of any landscape and revegetation plant material (planting operations). **Milestone** During the Construction Establishment Period the Contractor shall carry out the processes, which are necessary to ensure sustainability of plant materials until the Certificate of Commencement of the LR Monitoring Period (CCMP) is issued.

The LR Monitoring Period is the period which commences with the CCMP. **Milestone** During the Monitoring Period the Contractor shall establish plants which were installed within three months prior to the issue of the CCMP, and monitor and maintain all landscape and revegetation installations, including plant material installed three months or longer, to ensure the long term sustainability of plant materials.

Seeding operations shall be either Input Control or Performance Based as specified in Clause 3.1 of Annexure MRTS16C.1.

## **9 CONSTRUCTION ESTABLISHMENT AND MONITORING – INPUT CONTROLLED**

### **9.1 Construction**

#### **9.1.1 LR Construction Establishment Period – Input Controlled**

The Contractor shall generally care for plants to ensure their establishment.

Watering of landscape and revegetation plant material shall be carried out to maintain soil moisture content to no less than shown in Table 9.1.1 during the construction establishment period. No separate payment shall be made for watering during the Construction Establishment Period.

The Contractor shall replace any failed plants with plants of the same species and of an equivalent maturity within seven days of the failure being identified.

**Table 9.1.1 - Watering Schedule**

<b>A 12 week watering period is to be implemented immediately following installation of all planting and revegetation works to ensure successful establishment during the Landscape Establishment Period, as follows:</b>	
Week 1 &2	Once every day
Week 3 &4	Once every second day
Week 5 &8	Twice every week
Week 9,10,11,12	Once a week

Unless otherwise specified in Item 6 of Annexure 16E.1 the watering schedule in Table 9.1.1 shall be applied to all plant material as a minimum for areas of annual rainfall over 1000 mm.

#### **9.1.2 LR Monitoring Period Duration – Input Controlled**

The Monitoring Period shall be a duration of three months from the date of the Certificate of Commencement of the Monitoring Period.

#### **9.1.3 LR Monitoring Period Operations – Input Controlled**

The Contractor shall generally care for plants to ensure their long term sustainability.

The Contractor shall replace any failed plants with plants of the same species and of an equivalent maturity within seven days of the failure being identified.

The Contractor shall reseed areas that have not germinated within 3 months of the seeding operations.

Where extreme weather conditions have the potential to cause severe stress to the landscape and revegetation plantings, the Administrator may order watering of plant material.

For the duration of the LR Monitoring Period, the Contractor shall submit to the Administrator a rolling monthly LR Monitoring Program.

The Contractor shall arrange with the Administrator a suitable timetable for joint monthly inspections.

##### **9.1.3.1 Pruning**

The Contractor shall prune plants as necessary to promote vigorous new growth.

The Contractor shall formatively prune trees to maintain sight visibility and general form in accordance with AS 4373.

Care shall be taken to avoid placement of prunings in a manner that may be hazardous to public safety. Placement of prunings in clear zones, sight visibility zones and pedestrian areas is prohibited. In mulched or grassed areas prunings shall be disposed of off site.

##### **9.1.3.2 Mowing, Slashing and Brushcutting**

The Contractor shall cut vegetation to the heights as specified in Clause 4.1 of Annexure MRTS16E.1, or where not specified, as shown in Table 9.1.3.2 and in the Drawings.

Clippings produced from mowing, slashing or brushcutting operations may remain in situ. Care shall be taken to avoid clippings being deposited in a manner that may be hazardous to public safety.

Where native grass species have been specified, no mowing, slashing or brushcutting is to be carried out.

Cover crops, in native seeded areas (other than native grass species) shall be slashed or brushcut, without damage to native seedlings, prior to weeds setting seed, and in accordance with Table 9.1.3.2.

**Table 9.1.3.2 – Mowing, Slashing and Brushcutting Schedule**

Landscape and Revegetation Treatment (as shown in the Drawings)	Mow	Average Height Prior to Mowing (mm)	Average Height After Mowing (mm)
Grass seeded areas	1 <sup>st</sup>	200	75
	2 <sup>nd</sup>	200	75
	3 <sup>rd</sup> and consecutive	150	50
Grass turfed areas	1 <sup>st</sup>	150	50
	2 <sup>nd</sup>	150	50
	3 <sup>rd</sup> and consecutive	150	50
Landscape and Revegetation Treatment (as shown in the Drawings)	Slash or Brushcut	Average Height Prior to Slashing / Brushcutting (mm)	Average Height after Slashing / Brushcutting (mm)
Grass seeded areas	1 <sup>st</sup>	300	150
	2 <sup>nd</sup>	300	150
	3 <sup>rd</sup> and consecutive	200	100
Cover crops in native seeded areas (other than native grass species)	1 <sup>st</sup>	300	150
	2 <sup>nd</sup>	300	200

**9.1.3.3 Selective Removal of Non-complying Vegetation from Seeded Areas**

The Contractor shall remove potentially non-complying vegetation where seeding has resulted in non-complying species growing in areas such as –

- a) vegetation setbacks;
- b) under overhead services or structures;
- c) sight visibility zones;
- d) clear zones; and
- e) service easements.

**10 MONITORING – PERFORMANCE BASED**

**10.1 Construction**

Performance based seeding operations shall be carried out when specified in Clause 5.1 of Annexure MRTS16C.1.

**10.1.1 LR Monitoring Period Duration – Performance Based**

The Monitoring Period shall be a duration of twelve months from the date of the Certificate of Commencement of the Monitoring Period (CCMP).

**10.1.2 LR Monitoring Period Outcome – Performance Based**

The establishment success rate is assessed by inspecting the planting area and assessing the area of vegetative cover relevant to non-vegetated area. **Milestone**

**10.1.2.1 Grass Seeded Areas**

Grass seeded areas shall achieve foliage cover at CCMP in accordance with Table 10.1.2.1.

**Table 10.1.2.1 – Achieved Ground Surface Cover – Grass Seeded Areas**

<b>Establishment Success Rate at CCMP</b>
Grass seeded areas – acceptance criteria <ul style="list-style-type: none"> <li>• No rill or sheet erosion greater than 0.5 m<sup>2</sup></li> <li>• 80% ground surface protection with combination cover crop and perennial grasses</li> <li>• No bare areas greater than 0.5 m<sup>2</sup></li> </ul>
Native mix – acceptance criteria <ul style="list-style-type: none"> <li>• No rill or sheet erosion greater than 0.5 m<sup>2</sup></li> <li>• 80% ground surface protection with combination cover crop and perennial grasses</li> <li>• No bare areas greater than 0.5m<sup>2</sup></li> </ul>
Drill seeding – acceptance criteria <ul style="list-style-type: none"> <li>• No rill or sheet erosion greater than 0.5m<sup>2</sup></li> <li>• 80% ground surface protection with combination cover crop and perennial grasses</li> <li>• No bare areas greater than 0.5 m<sup>2</sup></li> </ul>
<b>Success Rate at End of LRMP</b>
Grass seeded areas <ul style="list-style-type: none"> <li>• No rill or sheet erosion</li> <li>• 90% ground surface protection with perennial grasses only</li> </ul>
Native mix and drill seeded areas <ul style="list-style-type: none"> <li>• No rill or sheet erosion</li> <li>• 90% ground surface protection with perennial grasses only</li> <li>• Native seed strike prate of not less than 1 juvenile plant per 10 m<sup>2</sup></li> </ul>

**10.1.2.2 Native Vegetation Seeded Areas**

The Contractor shall achieve a vegetation cover specified in Clause 5.1 of Annexure MRTS16E.1 and in accordance with the following –

- a) any given 100 m<sup>2</sup> of the specified treatment shall have a seedling strike and ground surface cover in accordance with the requirements of Table 10.1.2.1; and
- b) where areas do not comply, the non-conformance shall be recorded by the Administrator, the Contractor shall reseed the area as specified in MRTS16C *Vegetation Works*.

**10.1.2.3 Selective Removal of Non-complying Vegetation from Seeded Areas**

The Contractor shall remove potentially non-complying vegetation where seeding has resulted in non-complying species growing in areas such as –

- a) vegetation setbacks;
- b) under overhead services or structures;
- c) sight visibility zones;
- d) clear zones; and
- e) service easements.

## 11 SUPPLEMENTARY REQUIREMENTS

The requirements of MRTS16E *Establishing and Monitoring Works* are varied by the supplementary requirements given in Clause 6 of Annexure MRTS16E.1.