

PART C

Chapter 2 Landscape Treatments

June 2013

Copyright



<http://creativecommons.org/licenses/by/3.0/au/>

© State of Queensland (Department of Transport and Main Roads) 2013

Feedback: Please send your feedback regarding this document to: mr.techdocs@tmr.qld.gov.au

Chapter 2 Amendments – June 2013

Revision Register

Issue / Revision No	Reference Section	Description of Revision	Authorised by	Date
1	-	Initial Release of 2nd Edition of Manual	Steering Committee	Jun 2013

Table of Contents

2.1	INTRODUCTION	C2-1
2.2	LANDSCAPE TREATMENTS	C2-1
2.2.1	Structured Planting Approach	C2-1
2.2.2	Naturalistic Planting Approach	C2-2
2.2.3	Water Sensitive Planting Approach	C2-3
2.2.4	Grass Seeding and Turfing	C2-4
2.2.5	Suitability Selection Criteria	C2-5
2.2.6	Functional Selection Criteria	C2-6
2.3	ROAD FORMATION TREATMENTS	C2-7

Figures

Figure C2-1:	An example of a low maintenance structured planting approach	C2-2
Figure C2-2:	A naturalistic approach achieved through a seeding process	C2-3
Figure C2-3:	Planting in base of creek channel	C2-4
Figure C2-4:	Rehabilitation of creek channel	C2-4
Figure C2-5:	Suitability selection criteria	C2-5
Figure C2-6:	Functional selection criteria	C2-6

Part C - Chapter 2

Landscape Treatments

2.1 Introduction

Landscape treatments are the combination of construction methods and attributes required to achieve a functional and sustainable service level. Landscape treatments are applied in the design process to facilitate the cost estimating process as well as to ensure the quality of the finished product. Road construction methods pose unique challenges to establishing a sustainable road landscape. The purpose of this chapter is to provide guidance on best practice methods for landscape and revegetation treatments and road formation treatments. Road formation treatments describe the preferred design and construction methodologies that ensure implementation of maintenance minimisation, safety and environmental considerations of the landscape works.

Vegetation setbacks and clearances are required for safety and maintenance purposes. Implementing and maintaining these setbacks and clearances ensures that clear zones and sightlines are maintained throughout the life of the project. They also ensure that sightlines necessary for Crime Prevention Through Environmental Design (CPTED) are provided. Vegetation should be selected and located based on the required setback and clearance parameters contained within this Manual.

Resources that supplement this chapter include:

- Appendix 5 Landscape and Urban Design Guidelines: design criteria and minimum technical requirements reference;
- Appendix 4 Vegetation Setbacks and Clearances Schedule; and
- MRTS16C Vegetation Works Specification and User Guidelines.

2.2 Landscape Treatments

Landscape and revegetation treatments describe the construction methodologies available for installing the landscape works on the road formation and within the road corridor. Landscape treatments include:

- structured planting approach;
- naturalistic planting approach;
- water sensitive planting; and
- grass seed and turfing.

2.2.1 Structured Planting Approach

A structured planting approach is utilised where a controlled outcome is required. Containerised plants are arranged within mulched areas. The design may be formal or informal and / or reflect surrounding landscape setting (Figure C2-1).

A structured planting approach is suitable for application in:

- urban areas to provide buffer between the road and surrounding land uses;
- as a sustainable, low maintenance alternative to high maintenance grass areas;
- medians, to provide headlight glare screen and minimise maintenance in high risk areas;
- highlighting the progression or transition to a different speed environment;

- designating feature areas or nodal points that creates a marker or landmark element such as at interchanges, junctions, major structures and regional/town entry gateways;
- in order to maintain or frame views;
- clear zone affected areas and where required to ensure sight visibility; and
- areas where minimum vegetation offset requirements are required.



Figure C2-1: An example of a low maintenance structured planting approach

2.2.2 Naturalistic Planting Approach

A naturalistic planting approach involves the application of native plant seed and/or a limited number of containerised plants in a random composition. The desired outcome is an informal distribution of individual plant species and natural appearance, reflective of bushland (Figure C2-2). It utilises perennial grasses as the primary cover to minimise erosion and *Acacia species* as the primary legume for shrub establishment. This method is an economical way to treat large areas but may be highly susceptible to weed invasion from site won topsoil.

Native seed success rates vary considerably and the seeds of certain species can be very expensive or have a very low establishment viability or short shelf life. For these reasons expectations must be managed when using species other than *Acacia spp.* as results are quite variable and unpredictable. Random plantings of container stock planting using single or mixed species are often used as a cost effective method of establishing species that are difficult or not cost effective to establish from seed.



Figure C2-2: A naturalistic approach achieved through a seeding process

2.2.3 Water Sensitive Planting Approach

A water sensitive planting approach uses macrophyte plants (aquatic and marginal aquatic plants) in water management systems. Macrophyte plants assist in the uptake of nutrients and other particulates from turbid water. They also contribute to improving water quality through filtering and stabilising sediment build up. These plants also serve as food sources and provide shelter for aquatic animals within water management systems.

Marginal aquatic plants such as sedges, rushes or similar can also be established in drainage channels and sediment basins. These types of grasses do not require rich nutrients for growth, are not competitive with other native plants during establishment, and may contribute to wildlife habitat.

The planting design to waterways seeks to achieve environmental rehabilitation. The plant layout simulates a natural creek setting which complements the character and habitat of the creek. An effective planting design can restore habitats for local fauna, visually softens exposed areas of rock rip rap, and assists in channel stabilisation by reducing soil erosion (Figures C2-3 and Figure C2-4).

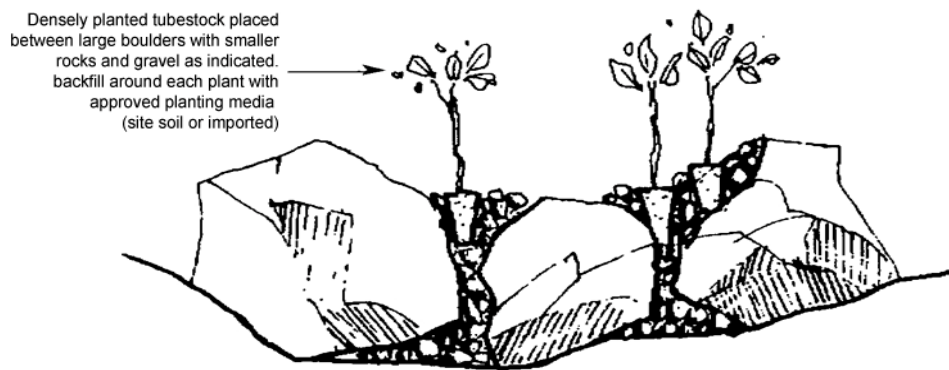


Figure C2-3: Planting in base of creek channel



Figure C2-4: Rehabilitation of creek channel

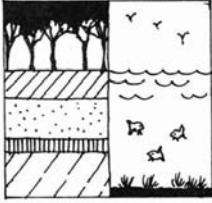
Particular plant types have different characteristics which can be used to achieve a specific landscape treatment outcome. Even though most are visual qualities, these characteristics also provide other important roles. These roles are the basis for the selection criteria of plants.

2.2.4 Grass Seeding and Turfing

There are numerous techniques available for establishing grass and turf. These are discussed in Appendix 5 and MRTS16 Specification User Guidelines.

2.2.5 Suitability Selection Criteria

Figure C2-5 summarises the factors to be considered for the suitability of plants. Overall, these are the most important criteria and should be the first addressed, particularly local climatic conditions such as rainfall and soil type. In most cases, native plants will be most suitable to local conditions.




FACTOR	DETAILED CONSIDERATIONS
Drought Resistance	<ul style="list-style-type: none"> ■ Not resistant to drought ■ Moderately resistant to drought ■ Very resistant to drought
Frost Resistance	<ul style="list-style-type: none"> ■ Not tolerant to frost ■ Withstands light frosts ■ Withstands heavy frosts
Rainfall	Refer further to Road Drainage Manual (RDM)
Soil Type	Refer further to Soil Management Manual
Lifespan	<ul style="list-style-type: none"> ■ Less than 10 years ■ 10 - 20 years ■ More than 20 years
Salt Tolerance	<ul style="list-style-type: none"> ■ Suitable for coastal locations
Fire Resistance	<ul style="list-style-type: none"> ■ Resistant to bushfire
Pollution Resistance	<ul style="list-style-type: none"> ■ Resistant to vehicle emissions

Figure C2-5: Suitability selection criteria

Source: Based on DPI (1995)

2.2.6 Functional Selection Criteria

Many planting situations require plants to be chosen for their ability to assist in achieving a desired practical function, for example as a windbreak through their mass and density, or to control erosion by binding soil (Figure C2-6).



FACTOR	DETAILED CONSIDERATIONS
Buffer Screening	<ul style="list-style-type: none"> ■ No visual screening ■ Minimal visual screening ■ Moderate visual screening ■ Dense visual screening
Shade and Sunlight Control	<ul style="list-style-type: none"> ■ Glare relief or screening ■ Shaded and cooler driving environment
Windbreak	<ul style="list-style-type: none"> ■ Effective windbreak
Physical Barrier	<ul style="list-style-type: none"> ■ Barrier to human access
Erosion Control	<ul style="list-style-type: none"> ■ No effect on reducing soil erosion ■ Moderate effect on reducing soil erosion ■ High effect on reducing soil erosion
Safety	<ul style="list-style-type: none"> ■ Minimise maintenance ■ Falling limbs, branches ■ Limited access
Noise Attenuation	<ul style="list-style-type: none"> ■ No noise attenuation ■ Some noise attenuation

Figure C2-6: Functional selection criteria

Source: Based on DPI (1995)

2.3 Road Formation Treatments

Road formation treatments establish design criteria and considerations for addressing safety, maintenance minimisation, environment, aesthetics and community. Minimum technical requirements are established for each of these which assist in the selection of the landscape treatment. These treatments seek to:

- minimise disturbance while blending the formation into the local landscape context;
- minimise maintenance and reduce risk to maintenance personnel; and,
- provide opportunities for unique features which enhance user experience.

Specific design strategies and approaches for different types of road formation can be found in Appendix 5 Landscape and Urban Design Guidelines.