



Appendix D

Landscape Management Plans

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Appendix D

Vegetation Management Plans

- MR154 – The Northern Road Upgrade – Stage 4 Landscape Management Plan, January 2018
- Main Road 154 – The Northern Road, Upgrade Stage 6 Between Eaton Road And Littlefields Road Landscape Management Plan, April 2019
- The Northern Road Upgrade (Stage 5) From Littlefields Road, Luddenham To Glenmore Parkway, Glenmore Park Landscape Management Plan, April 2019



Transport
Roads & Maritime
Services

LANDSCAPE MANAGEMENT PLAN

VERSION FOR: MR154 – The Northern
Road Upgrade – Stage 4

DATE: January 2018

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1 Background

1.1 Purpose of this plan

This Landscape Management Plan (LMP) has been prepared by RMS to promote the cost effective and consistent management of roadside landscape vegetation established along The Northern Road between Eaton Road, Luddenham and Mersey Road, Bringelly.

This LMP promotes a standard approach to the maintenance of landscape plantings, both in technique and frequency.

To avoid duplication and to highlight the detailed maintenance requirements of some specific landscape types, the LMP details the required maintenance activities into two categories:

1 – All Areas

Those maintenance activities that apply to every area of the landscape.

2 – Specific Landscape Types

Those maintenance activities that are specific to the different landscape types present.

1.2 Role of the Landscape Management Plan

The LMP will be regarded as the base reference document for performance monitoring for the initial contract landscape maintenance period and for subsequent maintenance contracts until handover to RMS Assets.

Types of landscape maintenance **not** covered in this LMP:

- Clearing of services or structural drainage alignments through landscape areas.
- Maintenance of enclosed spaces or at heights in landscape areas.
- Reporting or specialised inspections & maintenance of landscape elements on special or structural items such as artwork, noise walls, bridge abutments, sign structures.
- Special landscape maintenance for CPTED requirements.

The landscape management requirements for each landscape type are set out in Section 2 and 3.

1.3 All Areas (i.e.: Site boundaries)

This LMP applies to all planting areas as defined in the Landscape Drawings and its attachments. Landscape areas include garden beds, revegetation, mulched and naturally-occurring landscape zones adjacent to new landscape works.

1.4 Specific Landscape Types

Four landscape types are present. These are:

Landscape Type 1: Broadscale Grass / Turf Areas (Mown Grass or Slashed Areas)

- Turfed / Grassed swales and verges
- Turfed / Grassed roadside areas
- Turf / Grassed areas within the agreed RMS maintenance area
- Slashed weed species within all areas

Landscape Type 2: Individual Tree Plantings

Individually mulched tree plantings in grassed and seeded areas

Landscape Type 3: Revegetated Areas

Revegetated areas are those areas established by seed through the application of a hydromulch, hydroseed, direct seeding or compost blanket process. There are 4 types of seed mix used for revegetating disturbed areas on this site. They are

- Mix 1 – Pasture grasses
- Mix 2 – Native shrubs and grasses which includes a cover crop with perennial grasses
- Mix 3 – Riparian grasses which includes a cover crop with perennial grasses
- Mix 4 – Native shrubs and grasses applied as compost blanket

2 Summary table of maintenance and inspection requirements

This table summarises the landscape maintenance and inspection requirements, including the timeframes and frequencies required, for the different maintenance activity categories. It is provided for the purpose of using as a quick “checklist” for Section 3 – Maintenance Activities Maintenance Activities

2.1 Activities relevant to “All Areas”

(pg. 8) provides the details of each maintenance task summarised in this table.

Maintenance Activities/Tasks	Timeframes / Frequency		
	Inspections		Frequency of Work
	Monthly	Annual	
ALL AREAS - (Summarised from section 3.1 of this LMP)			
1. Pruning of Vegetation for Safety			
- Check driver and pedestrian sightlines			As required
- Check vegetation at intersections and traffic islands			As required
- Pruning trees over carriageways, roads, paths and cycle-ways.			As required
2. Management & Removal of Non Frangible Vegetation			Once per year as required
3. Weed Control – general, noxious and environmental			As required
4. Rubbish Removal of all Roadside Litter and Debris			Prior to mowing duties
5. Fungal and Disease Control			As required
6. Auditing and Reporting			Monthly

Maintenance Activities/Tasks			Timeframe / Frequency
	Inspections		Frequency of Work
	Monthly	Annual	
SPECIFIC LANDSCAPE TYPES			
Landscape Type 1: Broad-scale Grassed / Turf Areas <i>(Summarised from section 3.2.1 of this LMP)</i>			
1. Mowing			Varies according to season (refer section 3.2.1)
2. Replacement of Damaged Turf			As required
3. Slashing / Brush-cutting			Varies according to season (refer section 3.2.1)
4. Weed control in turf			As required
Landscape Type 2: Individual Tree Plantings <i>(Summarised from section 3.2.2 of this LMP)</i>			
1. Weed around individual trees prior to weed setting flower			As required (prior to weeds setting flower)
2. Mulching – around each individual tree.			As required
3. Removal of Dead / Dying Plant Material			As required
4. Replacement and New Plantings			
- Replace failed plantings			As required
- Water the replacement plantings.			For the first 12 weeks As required to ensure survival (refer Clause 5.4 of Spec R179).
5.Horticultural Maintenance			
- Fertilise all plantings at specified rates			As required
- Prune all plantings in specified manner			As required
- Trees			As required

Maintenance Activities/Tasks	Timeframe / Frequency		
	Inspections		Frequency of Work
	Monthly	Annual	
SPECIFIC LANDSCAPE TYPES			
Landscape Type 3: Revegetated Areas <i>(Summarised from section 3.2.3 of this LMP)</i>			
1. Weed revegetated areas prior to weed setting flower			As required (prior to weeds setting flower)

3 Maintenance Activities

3.1 Activities relevant to “All Areas”

The following maintenance activities are to be implemented across all areas of this LMP.

1. Pruning of Vegetation for Safety

Purpose: To maintain driver sight lines and remove dead wood from over hanging paths, cycleways and roads.

Vegetation shall be pruned to the extent that driver sight lines are maintained for the next six month period as a minimum. Pruning should take branch back to a node and be in accordance with AS4373 (2007)

Work Required	Frequency of Work
Maintaining driver sight lines Prune all roadside vegetation, to a height of 500mm, when: <ul style="list-style-type: none"> Vegetation obscures any part of horizontal railing of safety barriers, when viewed from approaching traffic within 100 m of all intersections and access roads. 	As required
Vegetation in Intersection Traffic Islands Maintain vegetation at a maximum height of 500 mm.	As required
Pruning trees over carriageways and roads Prune all roadside vegetation over carriageways, roads, paths and cycleways when it is: <p>Carriageways / Roads:</p> <ul style="list-style-type: none"> Lower than 5.5 m above carriageway; Lower than 3.3 m above path or cycleway <p>All areas:</p> <ul style="list-style-type: none"> Overhanging dead / diseased/ badly damaged trees or limbs 	As required but should not be necessary more than once per year
Vegetation which obscures signage Prune vegetation or seek permission to remove (if likely to be ongoing issue) when: <ul style="list-style-type: none"> Vegetation which obscures part of signage when viewed from approaching traffic within 100m of sign. 	As required

2. Management of Non Frangible Vegetation

Purpose: To ensure that non frangible vegetation is removed in dangerous areas in accordance with RMS safety standards.

Work Required	Frequency of Work
Remove woody regeneration / woody weeds (i.e. where trunk diameter exceeds 150 mm measured at 300 mm from the ground) in setback area by manual removal if present in the following areas:	As required but should not be necessary more than once per year

Work Required	Frequency of Work
Set backs from edge of travel lane: <ul style="list-style-type: none"> • With safety rail present: 2m. • With no safety rail present, setback varies as follows: <ul style="list-style-type: none"> ○ <70 km/h speed zones: 4 m ○ 70-90 km/h speed zones: 5 m ○ >90 km/h speed zones: 14 m 	

3. Weed Control general noxious and environmental

Purpose: *Continuously control noxious weeds as per legal & notification requirements.*

Work Required	Frequency of Work
Control categories of noxious weed species within the area are listed in Appendix 1 – Noxious Weed Species and Control Categories” of this LMP. Continuously suppress and destroy, in accordance with their control category, the growth of all declared noxious weeds where present or where they establish. Continuously suppress and destroy the growth of all general and environmental weeds where present or where they establish	As required

4. Rubbish Removal

Purpose: *Litter and roadside debris removal.*

Work Required	Frequency of Work
Remove all roadside litter and debris.	Monthly and prior to mowing.

5. Fungal and Insect Attack

Purpose: *Plant protection procedures*

Work Required	Frequency of Work
Inspection of entire site to report on any incidence of fungal and insect attack and treat where a problem does exist. Treatment shall be with an approved chemical applied as per the manufacturer's instructions.	As required

6. Auditing and Reporting

Purpose: *Regular auditing and reporting on compliance or otherwise with this LMP and recommendations regarding future maintenance works required prior to the next report.*

Work Required	Frequency of Work
Audit and report regarding: <ul style="list-style-type: none"> a) maintenance work completed during the period; 	Each month plus an annual audit

<i>Work Required</i>	<i>Frequency of Work</i>
<ul style="list-style-type: none">b) the state of the site with regard to compliance or otherwise with the requirements of this LMP; andc) The remedial/maintenance works that are recommended for completion prior to the next report including an estimate of quantity or hours for those items with chargeable rates.	<i>Each month plus an annual audit</i>

3.2 Specific Landscape Types

3.2.1 Broad-scale Grassed/Turf Areas

The following maintenance activities are applicable to *broad-scale grassed/turf areas*.

1. Mowing

Purpose: Maintenance of grass areas for neat appearance and to maintain groundcover.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Remove litter prior to mowing. Cut grass height must not be less than 50mm and undertaken at the frequency noted or as otherwise directed. Clippings to remain where they fall except that: road surfaces, drains, footpaths and cycle paths shall be swept clear of clippings and these clippings shall be removed from site. 	<p>Spring – Every 4 weeks Summer – Every 4 weeks Autumn – Every 6 weeks Winter – Every 12 weeks</p>

2. Replacement of Damaged Turf

Purpose: Replacement of exotic turf damaged by vehicles or other disturbances. Does not include native grasslands.

Work Required	Frequency of Work
Re-establish turf cover immediately after damage / death / removal. Use originally specified species.	As Required

3. Slashing and Brush cutting

Purpose: Maintenance of individual tree and shrub plantings in grassed areas.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Remove litter prior to brush-cutting operation. Slash weed/grass between and around planted areas to encourage domination of planted trees and shrubs. Clippings to remain where they fall except that: road surfaces, drains, footpaths and cycle paths shall be swept clear of clippings and these clippings shall be removed from site. 	<p>Spring – Every 4 weeks Summer – Every 4 weeks Autumn – Every 6 weeks Winter – Every 12 weeks</p>

4. Weed control in Turf

Purpose: Ensure that turf remains weed free. Continuously control weeds in turf as per legal & notification requirements.

Work Required	Frequency of Work
<p>Control, through the use of approved selective broad-leaf herbicides, the establishment and growth of weed species in turf.</p> <p>Herbicide use is to be in accordance with regulation rates and manufacturers recommendations. Dye shall be added to herbicides to show extent of treated area.</p>	As required

3.2.2 Individual Tree Plantings

The following maintenance issues and activities are to be implemented by all maintenance authorities in *Individual Tree Plantings*

The extent of *individual tree plantings* are illustrated on the LMP Landscape Plans.

1. Weeding general, noxious and environmental

Purpose: *To ensure that general noxious and environmental weeds do not reproduce around individual tree plantings. Continuously control noxious weeds as per legal & notification requirements.*

Weeding and weed control is considered to be a critical maintenance action.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Prevent reproduction of weeds by destroying seedlings and established weeds before flowering or other propagules form. Herbicide application must occur before weed seed set. Non-target species and areas must be reinstated if damaged by herbicide application. Herbicide use to be in accordance with regulation rates and manufacturers recommendations. Dye shall be added to herbicides to show extent of treated area. 	As required

2. Mulching

Purpose: *Maintain an adequate level of mulch around individual trees to maximise water conservation and weed suppression.*

Work Required	Frequency of Work
<ul style="list-style-type: none"> Maintain mulch depth to 75mm, through periodic applications. Use same mulch as originally specified in each planting. 	As required

3. Removal of Dead / Dying Plant Material

Purpose: *To remove dead or dying plant material from around individual tree planting may be required as plantings mature, after damage or adverse environmental conditions.*

Work Required	Frequency of Work
<ul style="list-style-type: none"> Remove dead or dying plant material. 	As required

4. Replacement or New Plantings

Purpose: *To ensure that the density and species of established plant material is maintained or new planting areas can be established.*

Work Required	Frequency of Work
<ul style="list-style-type: none"> Replace failed, senescent or damaged plantings. 	As required

Work Required	Frequency of Work
<p>Densities, sizes and species used are to be in accordance with those specified in the original landscape plans.</p> <ul style="list-style-type: none"> New planting not shown in the landscape plans can be undertaken with prior approval from the authority Water replacement plantings for a minimum of 12 weeks after planting. 	<p><i>As directed</i></p> <p><i>As required to ensure survival (refer Clause 5.4 of Spec R179).</i></p>

5. Horticultural Maintenance

Purpose: Horticultural maintenance of individual tree plantings to ensure the long life and maintenance of form.

The following tables outline the standards required for pruning and fertilising all individual tree plantings

Tree Species List
<i>Araucaria cunninghamii</i>
<i>Fraxinus 'Raywoodii'</i>

For all tree species, the following fertilising and pruning is required

Fertilising	Frequency of Work	Pruning	Frequency of Work
<p>Sierra Blend ® or similar slow release granules. 50 grams per plant applied to root zone at 150mm depth</p> <p>Only to be applied if plants show deficiencies such as yellowing leaves. Apply Bi Monthly</p>	<p><i>Inspect annually but apply late Spring and Summer if, and when, required.</i></p>	<p>Prune to remove split leaders, remove dead limbs, and remove heavily damaged limbs.</p> <p>As maturity permits prune lower branches to collar to 5.5m above ground level where these overhang carriageways and roads. In other areas, prune lower branches to 3.3m above ground level.</p>	<p><i>As required.</i></p>

3.2.3 Revegetated Areas

The following maintenance activities are applicable to *revegetated areas*.

1. Weeding **general, noxious and environmental**

Purpose: *To ensure that general noxious and environmental weeds do not reproduce within the revegetated areas and compete with seedlings germinating from the hydromulch mix. Continuously control noxious weeds as per legal & notification requirements.*

Weeding and weed control is considered to be a critical maintenance action.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Prevent reproduction of weeds by destroying seedlings and established weeds before flowering or other propagules form. Weeds to not exceed 25% cover in any 50m² area. Herbicide application must occur before weed seed set. Non-target species and areas must be reinstated if damaged by herbicide application. Herbicide use to be in accordance with regulation rates and manufacturers recommendations. Dye shall be added to herbicides to show extent of treated area. 	<i>As required</i>

Appendices

Appendix 1 – Noxious Weed Species

Appendix 2 – Monthly maintenance audit performa

Appendix 3 – Pesticides application record sheet

Appendix 1 – Noxious Weed Species and Control Categories

An up-to-date list of noxious weed species for each local government area can be found at:

<http://www.dpi.nsw.gov.au/Home/Index>

Maintenance staff shall be familiarised with the identification of these species as their control (in accordance with the control category) is a legal requirement under the NSW Noxious Weeds Act. *Use the Monthly Maintenance Audit to schedule notification of all chemical application for the upcoming month and the Pesticide Application Record Sheet to keep record of all chemical application after the event.*

Control techniques for these species are to be consistent the standards / practices outlined in the Noxious and Environmental Weed Control Handbook 6th Ed (November 2014). Copies of this handbook can be downloaded from:

<http://www.dpi.nsw.gov.au/biosecurity/weeds/weed-control/management-guides/noxious-enviro-weed-control>

Where control standards have not been clearly defined for a species, control is to utilise chemicals (where required) that are registered for use on the species or control techniques that minimise environmental impacts.

Priority Weeds for Greater Sydney

The following weeds are declared noxious in the control area of Greater Sydney, including Liverpool City Council:

Weed	Duty
All plants	General Biosecurity Duty <i>All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.</i>
African boxthorn [<i>Lycium ferocissimum</i>]	Mandatory Measure <i>Must not be imported into the State or sold.</i>
African olive [<i>Olea europaea</i> subsp. <i>cuspidata</i>]	Regional Recommended Measure An exclusion zone is established for all lands in Blue Mountains City Council and Central Coast local government areas. The remainder of the region is classified as the core infestation area. <i>Whole region: The plant or parts of the plant are not traded, carried, grown or released into the environment. Exclusion zone: The plant is eradicated from the land and the land kept free of the plant. Core infestation area: Land managers prevent spread from their land where feasible.</i>
Alligator weed [<i>Alternanthera philoxeroides</i>]	Mandatory Measure <i>Must not be imported into the State or sold.</i> Biosecurity Zone The Alligator Weed Biosecurity Zone is established for all land within the state except land in the following regions: Greater Sydney; Hunter (but only in the local government areas of City of Lake Macquarie, City of Maitland, City of Newcastle or Port Stephens). <i>Within the Biosecurity Zone this weed must be eradicated where practicable, or as much of the weed destroyed as practicable, and any remaining weed suppressed. The local control authority must be notified of any new infestations of this weed within the Biosecurity Zone. Land managers prevent spread from their land where feasible. Land managers mitigate the risk of new weeds being introduced to their land. Land managers reduce the impact on priority assets.</i> Regional Recommended Measure Exclusion zone: Blue Mountains City Council area. Core infestation area: the remainder of the region. <i>Whole region: Land managers prevent spread from their land where feasible. Exclusion zone: The plant is eradicated from the land and the land kept free of the plant. Core infestation area: Land managers mitigate the risk of new weeds being introduced to their land. Land managers reduce the impact on priority assets.</i>

Anchored water hyacinth [<i>Eichhornia azurea</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p>
Athel pine [<i>Tamarix aphylla</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Barleria [<i>Balaria prionitis</i>]	<p>Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found. This Regional Recommended Measure applies to <i>Barleria repens</i> (coral creeper)</p>
Bellyache bush [<i>Jatropha gossypifolia</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Bitou Bush [<i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i>]	<p>Mandatory Measure Must not be imported into the State or sold. Biosecurity Zone The Bitou Bush Biosecurity Zone is established for all land within the State except land within 10 kilometres of the mean high water mark of the Pacific Ocean between Cape Byron in the north and Point Perpendicular in the south. Within the Biosecurity Zone this weed must be eradicated where practicable, or as much of the weed destroyed as practicable, and any remaining weed suppressed. The local control authority must be notified of any new infestations of this weed within the Biosecurity Zone.</p>
Black knapweed [<i>Centaurea X moncktonii</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries</p>
Black willow [<i>Salix nigra</i>]	<p>Mandatory Measure Must not be imported into the State or sold. Regional Recommended Measure The plant should be eradicated from the land and the land kept free of the plant. Notify local control authority if found.</p>
Blackberry [<i>Rubus fruticosus</i> species aggregate]	<p>Mandatory Measure Must not be imported into the State or sold All species in the <i>Rubus fruticosus</i> species aggregate have this requirement, except for the varieties Black Satin, Chehalem, Chester Thornless, Dirksen Thornless, Loch Ness, Murrindindi, Silvan, Smooth Stem, and Thornfree</p>
Boneseed [<i>Chrysanthemoides monilifera</i> subsp. <i>monilifera</i>]	<p>Mandatory Measure Must not be imported into the State or sold. Control Order Boneseed Control Zone: Whole of NSW Boneseed Control Zone (Whole of NSW): Owners and occupiers of land on which there is boneseed must notify the local control authority of new infestations; immediately destroy the plants; ensure subsequent generations are destroyed; and ensure the land is kept free of the plant. A person who deals with a carrier of boneseed must ensure the plant (and any seed and propagules) is not moved from the land; and immediately notify the local control authority of the presence of the plant.</p>
Boxing glove cactus [<i>Cylindropuntia fulgida</i> var. <i>mamillata</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Bridal creeper [<i>Asparagus asparagoides</i>]	<p>Mandatory Measure Must not be imported into the State or sold *this requirement also applies to the Western Cape form of bridal creeper</p>
Bridal veil creeper [<i>Asparagus declinatus</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the</p>

	presence of prohibited matter must immediately notify the Department of Primary Industries.
Broomrapes [<i>Orobancha</i> species]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p> <p>All species of <i>Orobancha</i> are Prohibited Matter in NSW, except the natives <i>Orobancha cernua</i> var. <i>australiana</i> and <i>Orobancha minor</i></p>
Cabomba [<i>Austrocyllindropuntia cylindrica</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p> <p>Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land.</p>
Cane cactus [<i>Cabomba caroliniana</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p> <p>All species in the <i>Austrocyllindropuntia</i> genus have this requirement</p>
Cape broom [<i>Genista monspessulana</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Cat's claw creeper [<i>Dolichandra unguis-cati</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p> <p>Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land.</p>
Chilean needle grass [<i>Nassella neesiana</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Chinese knotweed [<i>Persicaria chinensis</i>]	<p>Regional Recommended Measure The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Chinese violet [<i>Asystasia gangetica</i> subsp. <i>micrantha</i>]	<p>Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Climbing asparagus [<i>Asparagus africanus</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p> <p>Regional Recommended Measure The plant should be eradicated from the land and the land kept free of the plant. Notify local control authority if found.</p>
Climbing asparagus fern [<i>Asparagus plumosus</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Common pear [<i>Opuntia stricta</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
East Indian hygrophila [<i>Hygrophila polysperma</i>]	<p>Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Eurasian water milfoil [<i>Myriophyllum spicatum</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p>
Fireweed [<i>Senecio madagascariensis</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Flax-leaf broom [<i>Genista linifolia</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Frogbit [<i>Limnobium laevigatum</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the</p>

	<p>presence of prohibited matter must immediately notify the Department of Primary Industries.</p> <p>All species of <i>Limnobium</i> are Prohibited Matter</p>
Gamba grass [<i>Andropogon gayanus</i>]	<p>Prohibited Matter</p> <p>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p>
Giant devil's fig [<i>Solanum chrysotrichum</i>]	<p>Regional Recommended Measure</p> <p>Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Giant rat's tail grass [<i>Sporobolus pyramidalis</i>]	<p>Regional Recommended Measure</p> <p>Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Giant reed [<i>Arundo donax</i>]	<p>Regional Recommended Measure</p> <p>Land managers should mitigate the risk of new weeds being introduced to their land. The plant should not be bought, sold, grown, carried or released into the environment.</p>
Glory lily [<i>Gloriosa superba</i>]	<p>Regional Recommended Measure</p> <p>The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Gorse [<i>Ulex europaeus</i>]	<p>Mandatory Measure</p> <p>Must not be imported into the State or sold.</p> <p>Regional Recommended Measure</p> <p>Exclusion zone: Blue Mountains City Council area. Core infestation area: rest of region</p> <p>Whole region: Land managers should mitigate the risk of new weeds being introduced to their land. The plant or parts of the plant should not be traded, carried, grown or released into the environment. Exclusion zone: The plant should be eradicated from the land and the land kept free of the plant. Core infestation area: Land managers should mitigate spread from their land.</p>
Green cestrum [<i>Cestrum parqui</i>]	<p>Regional Recommended Measure</p> <p>Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. The plant should not be bought, sold, grown, carried or released into the environment.</p>
Grey sallow [<i>Salix cinerea</i>]	<p>Mandatory Measure</p> <p>Must not be imported into the State or sold.</p> <p>Regional Recommended Measure</p> <p>The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Ground asparagus [<i>Asparagus aethiopicus</i>]	<p>Mandatory Measure</p> <p>Must not be imported into the State or sold.</p>
Hawkweeds [<i>Hieracium</i> species]	<p>Prohibited Matter</p> <p>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p> <p>All species in the genus <i>Hieracium</i> are Prohibited Matter</p>
Holly leaved senecio [<i>Senecio glastifolius</i>]	<p>Regional Recommended Measure</p> <p>Exclusion zone: whole region except for the core infestation area of the Royal National Park.</p> <p>Whole region: Land managers mitigate the risk of the plant being introduced to their land. The plant or parts of the plant are not traded, carried, grown or released into the environment. The Local Control Authority should be notified if the plant is found. Exclusion zone: The</p>

	<p>plant is eradicated and the land kept free of the plant. Core infestation area: Land managers prevent spread from their land where feasible.</p>
Horsetails [<i>Equisetum</i> species]	<p>Regional Recommended Measure Whole region except Northern Beaches local government area: The plant should be eradicated from the land and the land kept free of the plant. Notify local control authority if found. Plant should not be bought, sold, grown, carried or released into the environment. Northern Beaches local government area: Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. Plant should not be bought, sold, grown, carried or released into the environment. Notify Local Control Authority if found.</p>
Hudson pear [<i>Cylindropuntia rosea</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Hydrocotyl [<i>Hydrocotyle ranunculoides</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p>
Hygrophila [<i>Hygrophila costata</i>]	<p>Regional Recommended Measure The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Hymenachne [<i>Hymenachne amplexicaulis</i> and hybrids]	<p>Mandatory Measure Must not be imported into the State or sold.</p> <p>Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Karoo thorn [<i>Vachellia karroo</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p>
Kei apple [<i>Dovyalis caffra</i>]	<p>Regional Recommended Measure The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Kidney-leaf mud plantain [<i>Heteranthera reniformis</i>]	<p>Regional Recommended Measure The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Kochia [<i>Bassia scoparia</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p> <p>Excluding the subspecies <i>trichophylla</i></p>
Koster's curse [<i>Clidemia hirta</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p>
Kudzu [<i>Pueraria lobata</i>]	<p>Regional Recommended Measure The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Lagarosiphon [<i>Lagarosiphon major</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p>

Lantana [<i>Lantana camara</i>]	Mandatory Measure <i>Must not be imported into the State or sold.</i>
Leaf cactus [<i>Pereskia aculeata</i>]	Regional Recommended Measure <i>The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</i>
Ludwigia [<i>Ludwigia peruviana</i>]	Regional Recommended Measure <i>Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</i>
Madeira vine [<i>Anredera cordifolia</i>]	Mandatory Measure <i>Must not be imported into the State or sold.</i>
Mesquite [<i>Prosopis</i> species]	Mandatory Measure <i>Must not be imported into the State or sold.</i> All species in the genus <i>Prosopis</i> have this requirement
Mexican feather grass [<i>Nassella tenuissima</i>]	Prohibited Matter <i>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</i>
Miconia [<i>Miconia</i> species]	Prohibited Matter <i>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</i> All species of <i>Miconia</i> are Prohibited Matter in NSW
Mikania vine [<i>Mikania micrantha</i>]	Prohibited Matter <i>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</i> *all species in the genus <i>Mikania</i> are Prohibited Matter in NSW
Mimosa [<i>Mimosa pigra</i>]	Prohibited Matter <i>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</i>
Ming asparagus fern [<i>Asparagus macowanii</i> var. <i>zuluensis</i>]	Regional Recommended Measure <i>Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</i>
Mysore thorn [<i>Caesalpinia decapetala</i>]	Regional Recommended Measure <i>The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment.</i>
Nodding thistle [<i>Carduus nutans</i> subsp. <i>nutans</i>]	Regional Recommended Measure <i>Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</i>
Pampas grass [<i>Cortaderia</i> species]	Regional Recommended Measure <i>Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</i> This Regional Recommended Measure applies to <i>Cortaderia jubata</i> (pink pampas grass)
Parkinsonia [<i>Parkinsonia aculeata</i>]	Mandatory Measure <i>Must not be imported into the State or sold.</i> Control Order

	<p>Parkinsonia Control Zone: Whole of NSW</p> <p><i>Parkinsonia Control Zone (Whole of NSW): Owners and occupiers of land on which there is parkinsonia must notify the local control authority of new infestations; immediately destroy the plants; ensure subsequent generations are destroyed; and ensure the land is kept free of the plant. A person who deals with a carrier of parkinsonia must ensure the plant (and any seed and propagules) is not moved from the land; and immediately notify the local control authority of the presence of the plant.</i></p>
Parthenium weed [<i>Parthenium hysterophorus</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries</p> <p>Mandatory Measure The following equipment must not be imported into NSW from Queensland: grain harvesters (including the comb or front), comb trailers (including the comb or front), bins used for holding grain during harvest operations, augers or similar for moving grain, vehicles used to transport grain harvesters, support vehicles driven in paddocks during harvest operations, mineral exploration drilling rigs and vehicles used to transport those rigs, unless set out as an exception in Division 5, Part 2 of the Biosecurity Order (Permitted Activities) 2017</p>
Pond apple [<i>Annona glabra</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p>
Prickly acacia [<i>Vachellia nilotica</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p>
Prickly pear – <i>Austrocylindropuntias</i> [<i>Austrocylindropuntia</i> species]	<p>Mandatory Measure Must not be imported into the State or sold. All species in the <i>Austrocylindropuntia</i> genus have this requirement</p>
Prickly pear – <i>Cylindropuntias</i> [<i>Cylindropuntia</i> species]	<p>Mandatory Measure Must not be imported into the State or sold. All species in the <i>Cylindropuntia</i> genus have this requirement</p>
Prickly pear – <i>Opuntias</i> [<i>Opuntia</i> species]	<p>Mandatory Measure Must not be imported into the State or sold. Except for <i>Opuntia ficus-indica</i> (Indian fig)</p>
Rope pear [<i>Cylindropuntia imbricata</i>]	<p>Mandatory Measure Must not be imported into the State or sold. All species in the <i>Cylindropuntia</i> genus have this requirement</p>
Rubber vine [<i>Cryptostegia grandiflora</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p>
Sagittaria [<i>Sagittaria platyphylla</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Salvinia [<i>Salvinia molesta</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p> <p>Regional Recommended Measure Exclusion zone: whole region except for the core infestation area of the Georges and Hawkesbury-Nepean Rivers and their tributaries. Whole region: Land managers mitigate the risk of the plant being introduced to their land. Exclusion zone: The plant is eradicated and the land kept free of the plant. The Local Control Authority should be notified if the plant is found. Core infestation area: Land managers should prevent spread from their land where feasible.</p>
Scotch broom [<i>Cytisus scoparius</i> subsp. <i>scoparius</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>

	<p>Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land.</p>
Sea spurge [<i>Euphorbia paralias</i>]	<p>Regional Recommended Measure Exclusion zone: whole region except the core infestation area of Sutherland Shire. Whole region: Land managers should mitigate spread from their land. The plant should not be bought, sold, grown, carried or released into the environment. Exclusion zone: The plant should be eradicated from the land and the land kept free of the plant. Notify local control authority if found. Core area: Land managers should mitigate the risk of new weeds being introduced to their land.</p>
Senegal tea plant [<i>Gymnocoronis spilanthoides</i>]	<p>Regional Recommended Measure Exclusion zone: whole region except the core infestation area of the Central Coast Council, Royal National Park and the Hawkesbury-Nepean River and its tributaries. Whole region: Land managers mitigate the risk of the plant being introduced to their land. The plant or parts of the plant are not traded, carried, grown or released into the environment. The Local Control Authority should be notified if the plant is found. Exclusion zone: The plant is eradicated and the land kept free of the plant. Core infestation area: Land managers prevent spread from their land where feasible.</p>
Serrated tussock [<i>Nassella trichotoma</i>]	<p>Mandatory Measure Must not be imported into the State or sold. Regional Recommended Measure Exclusion zone: whole region excluding the core infestation area of Wollondilly and Camden Whole region: Land managers should mitigate the risk of new weeds being introduced to their land. The plant or parts of the plant should not be traded, carried, grown or released into the environment. Notify the Local Control Authority if found. Exclusion zone: The plant should be eradicated from the land and the land kept free of the plant. Core infestation: Land managers should mitigate spread from their land.</p>
Siam weed [<i>Chromolaena odorata</i>]	<p>Prohibited Matter A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</p>
Sicilian sea lavender [<i>Limonium hyblaenum</i>]	<p>Regional Recommended Measure The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Sicklethorn [<i>Asparagus falcatus</i>]	<p>Regional Recommended Measure The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Silverleaf nightshade [<i>Solanum elaeagnifolium</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Singapore daisy [<i>Sphagneticola trilobata</i>]	<p>Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land. The plant should not be bought, sold, grown, carried or released into the environment.</p>
Skunk vine [<i>Paederia foetida</i>]	<p>Regional Recommended Measure The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</p>
Smooth tree pear [<i>Opuntia monacantha</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Snakefeather [<i>Asparagus scandens</i>]	<p>Mandatory Measure Must not be imported into the State or sold.</p>
Spanish broom [<i>Spartium junceum</i>]	<p>Regional Recommended Measure Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept</p>

	<i>free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</i>
Spongeplant [<i>Limnobium spongia</i>]	<p>Prohibited Matter <i>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries</i></p> <p>All species of <i>Limnobium</i> are Prohibited Matter</p>
Spotted knapweed [<i>Centaurea stoebe</i> subsp. <i>micranthos</i>]	<p>Prohibited Matter <i>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</i></p>
Tiger pear [<i>Opuntia aurantiaca</i>]	<p>Mandatory Measure <i>Must not be imported into the State or sold.</i></p>
Tropical soda apple [<i>Solanum viarum</i>]	<p>Control Order <i>Tropical Soda Apple Control Zone: Whole of NSW</i> <i>Tropical Soda Apple Control Zone (Whole of NSW): Owners and occupiers of land on which there is tropical soda apple must notify the local control authority of new infestations; destroy the plants including the fruit; ensure subsequent generations are destroyed; and ensure the land is kept free of the plant. A person who deals with a carrier of tropical soda apple must ensure the plant (and any seed and propagules) is not moved from the land; and immediately notify the local control authority of the presence of the plant on the land, or on or in a carrier.</i></p>
Velvety tree pear [<i>Opuntia tomentosa</i>]	<p>Mandatory Measure <i>Must not be imported into the State or sold.</i></p>
Water caltrop [<i>Trapa</i> species]	<p>Prohibited Matter <i>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries</i></p> <p>All species in the <i>Trapa</i> genus are Prohibited Matter in NSW</p>
Water hyacinth [<i>Eichhornia crassipes</i>]	<p>Mandatory Measure <i>Must not be imported into the State or sold.</i></p> <p>Biosecurity Zone <i>The Water Hyacinth Biosecurity Zone applies to all land within the State, except for the following regions: Greater Sydney or North Coast, North West (but only the local government area of Moree Plains), Hunter (but only in the local government areas of City of Cessnock, City of Lake Macquarie, MidCoast, City of Maitland, City of Newcastle or Port Stephens), South East (but only in the local government areas of Eurobodalla, Kiama, City of Shellharbour, City of Shoalhaven or City of Wollongong).</i> <i>Within the Biosecurity Zone this weed must be eradicated where practicable, or as much of the weed destroyed as practicable, and any remaining weed suppressed. The local control authority must be notified of any new infestations of this weed within the Biosecurity Zone.</i></p> <p>Regional Recommended Measure <i>Land managers should mitigate spread from their land.</i></p>
Water lettuce [<i>Pistia stratiotes</i>]	<p>Regional Recommended Measure <i>Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</i></p>
Water poppy [<i>Hydrocleys nymphoides</i>]	<p>Regional Recommended Measure <i>Exclusion zone: All lands and waters in the region except for the core infestation area of the Hacking River catchment.</i> <i>Exclusion zone: The plant should be eradicated from the land and the land kept free of the plant. Notify Local Control Authority if found. Core infestation: Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. Plant should not be bought, sold, grown, carried or released into the environment.</i></p>

Water soldier [<i>Stratiotes aloides</i>]	<p>Prohibited Matter <i>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</i></p>
Water star grass [<i>Heteranthera zosterifolia</i>]	<p>Regional Recommended Measure <i>Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</i></p>
White blackberry [<i>Rubus niveus</i>]	<p>Regional Recommended Measure <i>Land managers should mitigate the risk of new weeds being introduced to their land. The plant should be eradicated from the land and the land kept free of the plant. The plant should not be bought, sold, grown, carried or released into the environment. Notify local control authority if found.</i></p>
Willows [<i>Salix</i> species]	<p>Mandatory Measure <i>Must not be imported into the State or sold.</i> All species in the <i>Salix</i> genus have this requirement, except <i>Salix babylonica</i> (weeping willows), <i>Salix x calodendron</i> (pussy willow) and <i>Salix x reichardtii</i> (sterile pussy willow)</p>
Witchweed [<i>Striga</i> species]	<p>Prohibited Matter <i>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries.</i> All species in the <i>Striga</i> genus are Prohibited Matter in NSW, except the native <i>Striga parviflora</i></p>
Yellow burrhead [<i>Limnocharis flava</i>]	<p>Prohibited Matter <i>A person who deals with prohibited matter or a carrier of prohibited matter is guilty of an offence. A person who becomes aware of or suspects the presence of prohibited matter must immediately notify the Department of Primary Industries</i></p>

Appendix 2 – Monthly Maintenance Audit

This form shall be completed by the Contractor responsible for landscape maintenance on the last working day of each month..

Upon completion of this form, a copy shall be provided to the RMS Superintendent.

Two copies of this completed form are required. One shall be issued to maintenance staff for action. The second shall be maintained for records.

Further details in relation to the maintenance items described in this form are included at Section 3 of RMS's Landscape Management Plan

This audit form has been divided into 2 parts as follows:

PART 1 – is a summary of the maintenance work actually performed during the month

PART 2 – is a summary of the current status of the site and recommendations of maintenance work that should be performed prior to the next monthly audit. The work recommended by the Contractor should not be commenced until approval to perform the work has been received from the RMS Superintendent.

Date of Inspection: _____

Inspected by: _____

PART 1 – SUMMARY OF MAINTENANCE WORK PERFORMED DURING THE MONTH

Maintenance / Inspection Item	Location and description of maintenance work performed	Previously Estimated Quantity or Hours approved by RMS	Actual quantity or hours
A. ALL AREAS			
1. Pruning of vegetation for Safety			
(i) Maintain driver sightlines			
(ii)Vegetation in intersection traffic islands			
2. Removal of non-frangible veg from dangerous areas.			
3. Weed Control – general, noxious and environmental			
4. Rubbish removal of all roadside litter & debris	Undertaken as part of mowing/slashing duty		

Maintenance / Inspection Item	Location and description of maintenance work performed	Previously Estimated Quantity or Hours approved by RMS	Actual quantity or hours
5. Fungal & disease control			
C. BROADSCALE GRASSED/TURF AREAS ONLY			
1. Mowing			
2. Replacement of damaged turf			
3. Slashing and Brush-cutting			
4. Weed control in turf			
E. INDIVIDUAL TREE PLANTINGS			
1. Weed around individual trees prior to weeds setting flower			
2. Mulching			
3. Removal of dead plant material			

Maintenance / Inspection Item	Location and description of maintenance work performed	Previously Estimated Quantity or Hours approved by RMS	Actual quantity or hours
4. Replacement and new plantings			
5. Horticultural Maintenance			
G. REVEGETATED AREAS			
1. Weed around vegetation prior to weeds setting flower			

PART 2 – STATUS AND RECOMMENDED MAINTENANCE WORK FOR THE PERIOD PRIOR TO THE NEXT MONTHLY AUDIT

Maintenance / Inspection Item	Inspected (Y/N)	Location and description of any recommended maintenance or remediation work identified.	Recommendation of maintenance or remediation work required	Estimated Quantity or Hours for recommended work	RMS Approval to perform work (signature)
A. ALL AREAS					
1. Pruning of vegetation for Safety					
(i) Maintain driver sightlines					
(ii)Vegetation in intersection traffic islands					
2. Removal of non-frangible veg.					
3. Noxious Weed Control					
4. Rubbish removal of all roadside litter & debris	Undertaken as part of mowing/slashing duty				
5.Fungal & disease control					
B. BROADSCALE TURF/GRASSED AREAS ONLY					
1.Mowing					
2. Replacement of damaged turf					

Maintenance / Inspection Item	Inspected (Y/N)	Location and description of any recommended maintenance or remediation work identified.	Recommendation of maintenance or remediation work required	Estimated Quantity or Hours for recommended work	RMS Approval to perform work (signature)
3. Slashing and Brush-cutting					
4. Weed control in turf					
C. INDIVIDUAL TREE PLANTINGS					
1. Weed around trees prior to weeds setting flower					
2. Mulching	Not applicable for the monthly audit				
3. Removal of dead plant material	Not applicable for the monthly audit				
4. Replacement and new plantings					
5. Horticultural Maintenance	Not applicable for the monthly audit				
G. REVEGETATED AREAS					
1. Weed around vegetation prior to weeds setting flower					

Signed: _____

Date: _____

Issued to: _____

Date: _____

Appendix 3 Pesticides Application Record Sheet

1. Date and time	Start Date and Time:	
	Finish Date and Time:	
2. Who applied the pesticide	Full operator name:	
	Operator contact address:	
	Operator contact phone:	
3. Who owns/occupies the land	Full owner/occupier's name:	
	Owner/occupier's contact address:	
	Owner/occupier's contact phone:	
4. Boundaries of treated area and order of treatment	List treated areas and order of treatment, preferably with reference to a map:	
	List order of treatment:	
5. Problem treated	Identify the pest or problem treated (eg controlling of spot weed infestation):	
6. Product used	Record either the full name, or a product code if a list of full product names of pesticides you use is kept at the front of your logbook:	
7. Equipment used	Describe the equipment used (eg boom-spray, hand-held backpack sprayer etc.):	
8. Quantity applied and dilution	Total amount of pesticide product mix used:	
	Write down whether the mix was concentrated product or a diluted mixture (note down rate of dilution):	
9. Area covered by application	Area of application (in square metres or hectares):	
10. Wind speed and direction	Estimate of wind speed and direction (only if the pesticide is applied through the air):	
	Write down any changes in weather during application:	
11. Other weather details	Record any weather details such as temperature, humidity and/or rainfall where the pesticide product label requires you to assess these:	



Transport
Roads & Maritime
Services

LANDSCAPE MANAGEMENT PLAN

VERSION FOR: Main Road 154 – The Northern Road, Upgrade Stage 6 between Eaton Road and Littlefields Road

DATE: April 2019

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1 Background

1.1 Purpose of this Plan

This Landscape Management Plan (LMP) has been prepared based on the LMP prepared by RMS to promote the cost effective and consistent management of roadside landscape vegetation established for a previous project.

This LMP promotes a standard approach to the maintenance of landscape plantings, both in technique and frequency. ***KI Studio have embellished the RMS LMP version to include more information on OHS and on water sensitive design.***

To avoid duplication and to highlight the detailed maintenance requirements of some specific landscape types, the LMP details the required maintenance activities into two categories:

1 – All Areas

Those maintenance activities that apply to every area of the landscape.

2 – Specific Landscape Types

Those maintenance activities that are specific to the different landscape types present.

This LMP should be read in conjunction with any other ***Vegetation Management Clearing and Grubbing and Weed Management Plans***, which form part of a ***Construction Environmental Management Plan (CEMP)*** when appropriate, or if provided.

This LMP covers the period during construction to construction completion and the Landscaping Maintenance Period. Refer to figure 1.2 LMP Timeline



Figure 1.2 Landscape Management Plan Timeline

1.2 LMP Areas

This LMP applies to all landscape areas as defined in the project's landscape drawings and its attachments. Landscape areas include garden beds (mass planted beds), vegetation/batter stabilisation to cuts and fills, hydroseeded and hydromulched areas, naturally-occurring mulched landscape zones adjacent to new landscape works.

1.2.1 All Areas (Site boundaries)

This LMP applies to all planting areas as defined in the landscape drawings. The detailed schedule of regular upkeep tasks includes:

- ☐ Watering
- ☐ Topping up mulch layers
- ☐ Pruning off vegetation for safety
- ☐ Management and removal of non-frangible vegetation
- ☐ Weed control
- ☐ Rubbish removal
- ☐ Disease and insect control
- ☐ Auditing and reporting

1.2.2 Specific Landscape Types

Specific areas, requiring a special or different maintenance regime, in addition to the above, are itemized in section 3.3 Maintenance Activities – Specific Landscape Types

Landscape types identified in this landscape documentation include:

1. Turfed/ Grassed Areas

- ☐ Grassed/ turf verges
- ☐ Grassed/ turf along median verges
- ☐ Grassed/ turf roadside areas

2. Mass Planting Beds -

Mass planting beds. These may vary in appearance from mass plantings of single species to complex beds containing mixes of trees shrubs and groundcovers. Planting beds show the following variations, based on the plant species used in individual areas:

- ☐ Native grass and shrub planting, with or without trees, in mulched beds.
- ☐ Shrub and tree planting in mulched beds.
- ☐ Median planting of native grasses and shrubs, in mulched beds.

3. Advanced Spot Planting– 5L and 45L

- ☐ Single trees planted in broken ground with mulched watering basins
- ☐ trees within mass planting beds
- ☐ 5L trees in tree pods
- ☐ 5L tree in riplines

4. Hydroseeding/ Hydromulching (grass areas)

- ☐ Hydroseeded dryland grass
- ☐ Hydroseeded pasture grass

5. Water Sensitive Design Elements

- ☐ Vegetated swales
- ☐ Infiltration area
- ☐ Rock mulch swale

Other types of special treatment may be determined after Final Design (FDA) for Construction Drawings (IFC) and during the Landscape Construction period. Any such further types of treatments should be identified and responded to in the Landscape Management Plan by appropriate expansion of scope and period, where approved by the RMS's Environmental Manager.

1.3 Work Health and Safety

Carry out all work in accordance with RMS Work Health and Safety (WHS) plans for the contractor's safety, Specification RMS G21 or Specification RMS G22 and the NSW Work Health and Safety Act 2011 including its Regulations and Codes of Practice. In particular, comply with the requirements of the SafeWork Code of Practice for the Safe Use and Storage of Chemicals (including Pesticides and Herbicides) in Agriculture 2006.

Prepare and implement a Hazardous Substances Plan that includes:

- a hazardous substance register which contains Material Safety Data Sheets (MSDS), risk assessment forms, records of pesticide/herbicide usage and details of the controls which are used;
- health surveillance measures for all personnel using pesticides and herbicides;
- procedures for safe storage and disposal of pesticides and herbicides; and
- training of all personnel using pesticides and herbicides to implement the measures prescribed in the Code of Practice for the Safe Use and Storage of Chemicals (including Pesticides and Herbicides) in Agriculture 2006 before using these substances.

1.4 Control of Traffic

Landscaping works which are in close proximity to the road traffic require appropriate traffic control complying with Specification RMS G10.

2 Summary table of maintenance and inspection requirements

This table summarises the landscape maintenance and inspection requirements, including the timeframes and frequencies required for the different maintenance activity categories. It is provided for the purpose of using as a quick “checklist” for Section 3 – Maintenance Activities.

Maintain all landscape planting works in accordance with the requirements of the Landscape Works Specification during the period of construction and, during the Post-completion Maintenance Period, until the Contractual Completion Date.

The duration of this Post-completion Maintenance Period is specified in the Contract. Failure to maintain the landscape planting in a healthy condition may result in the Clients Representative arranging for the maintenance work to be carried out by others at your expense.

2.1 Recording Maintenance Inspections

2.1.1 Frequency

- Carry out monthly maintenance inspections to the intervals as summarised in sections 3.2 and 3.3, and as per the contractor’s monthly audit.
- Carry out annual maintenance inspections of various component tasks as summarised in sections 3.2 and 3.3, and as per the contractor’s yearly audit.
- Utilise the checklist for water sensitive design elements – as per Appendix 4 of this LMP.

2.1.2 Inspection Reports

Submit a written report to the client’s representative within two weeks of each maintenance inspection.

The report must include the date of visit, maintenance works completed, maintenance works in progress and maintenance works required. The report must give details of damaged, dead or missing plants and show their locations on the relevant sheets of the drawings.

The report must also identify separately any damage to landscape planting which has not been caused by you.

2.1.3 Audits

It is the responsibility of the contractor and managing authority to prepare their audits in response to the issues and actions contained within this Landscape Management Plan (LMP), and as summarised in the tables in sections 3.2 and 3.3.

The audits shall be completed by the Contractor, Contractor Supervisor, Project or Contract Managers responsible for landscape maintenance on the last working day of each month.

Audits need to cover maintenance actions carried out during the period, the location of the action, any issues, and follow up maintenance tasks, and be signed by the relevant landscape managers in charge of the actual works.
Monthly audits and Yearly audits will need to be undertaken.

2.2 Activities relevant to “All Areas”

Section 3 provides the details of each maintenance task summarised in this table.

Maintenance Activities/Tasks	Timeframes / Frequency		
	Inspections		Frequency of Work
	Monthly	Annual	
ALL AREAS – (TURFED/ GRASSED AREAS, MASS PLANTING BEDS, ADVANCED SPOT PLANTING IN MPB, HYDROSEEDING/ HYDROMULCHING, WATER SENSITIVE DESIGN ELEMENTS). (Summarised from section 3.2 of this LMP)			
1. Watering			Varies - refer section 3.2.1
2. Topping up Mulch Layers			Once per year as required
3. Pruning of Vegetation for Safety			
- Check driver and pedestrian sightlines			As required
- Check vegetation at intersections and traffic islands			As required
- Pruning trees over carriageways, roads, paths and cycle-ways.			As required
4. Management & Removal of Non Frangible Vegetation			Once per year as required
5. Weed Control – general, noxious and environmental			As required
6. Rubbish Removal of all Roadside Litter and Debris			Prior to mowing duties
7. Disease and Insect Control			As required
8. Auditing and Reporting			Monthly

Maintenance Activities/Tasks	Timeframe / Frequency		
	Inspections		Frequency of Work
	Monthly	Annual	
SPECIFIC LANDSCAPE TYPES			
SPECIFIC TASKS TO TURFED/ GRASSED AREAS ONLY - <i>(Summarised from section 3.3.1 of this LMP)</i>			
1. Mowing			Varies according to season (refer section 3.3.1)
2. Weed control in grass			As required
SPECIFIC TASKS TO MASS PLANTING BEDS <i>(Summarised from section 3.3.2 of this LMP)</i>			
1. Weed garden beds prior to weed setting flower			As required (prior to weeds setting flower)
2. Mulching – within 1.5m of the boundary of a planted area.			As required
3. Removal of Dead / Dying Plant Material			As required
4. Replacement Plantings			
- Replace failed plantings			As required
- Water the replacement plantings.			First 12 weeks to ensure survival (refer Cl. 5.4 R179)
5. Tree Guards & Stakes			
- Replace damaged tree guards and stakes during establishment.			As required
- Remove tree guards and stakes.			As required
6. Fertilising and Pruning			
- Fertilise all plantings at specified rates.			
- Prune all plantings in specified manner:			
Trees			
Tall / Medium / Low Shrubs			Refer to section 3.3.2 - 6 after flowering
Climbers			Refer to section 3.3.2 - 6
Ground / Tussocks			After flowering– every 4 years (refer to 3.3.2 - 6)

3 Maintenance Activities

Maintain all landscape planting works in accordance with the requirements of the Landscape Works Specification during the period of construction and, during the Post-completion Maintenance Period, until the Contractual Completion Date.

The duration of this Post-completion Maintenance Period is specified in the Contract. Failure to maintain the landscape planting in a healthy condition may result in the Clients Representative arranging for the maintenance work to be carried out by others at your expense.

3.1 Recording Maintenance Inspections

3.1.1 Frequency

- ☐ Carry out monthly maintenance inspections to the intervals as summarised in sections 3.2 and 3.3, and as per the contractor's monthly audit.
- ☐ Carry out annual maintenance inspections of various component tasks as summarised in sections 3.2 and 3.3, and as per the contractor's yearly audit.
- ☐ Utilise the checklist for water sensitive design elements – as per Appendix 4 of this LMP.

3.1.2 Inspection Reports

Submit a written report to the client's representative within two weeks of each maintenance inspection.

The report must include the date of visit, maintenance works completed, maintenance works in progress and maintenance works required. The report must give details of damaged, dead or missing plants and show their locations on the relevant sheets of the drawings.

The report must also identify separately any damage to landscape planting which has not been caused by you.

3.1.3 Audits

It is the responsibility of the contractor and managing authority to prepare their audits in response to the issues and actions contained within this Landscape Management Plan (LMP), and as summarised in the tables in sections 3.2 and 3.3.

The audits shall be completed by the Contractor, Contractor Supervisor, Project or Contract Managers responsible for landscape maintenance on the last working day of each month.

Audits need to cover maintenance actions carried out during the period, the location of the action, any issues, and follow up maintenance tasks, and be signed by the relevant landscape managers in charge of the actual works.

Monthly audits and Yearly audits will need to be undertaken.

3.2 Activities relevant to “All Areas”

The following maintenance activities are to be implemented across all areas of this LMP.

1. Watering

Purpose: To maintain an adequate level of moisture within the soil to ensure maximum establishment and growth.

Water to plants must be checked, in order to maintain healthy growth and to ensure longevity.

Water applied to plants must be potable or obtained from a source which contains no toxins or pollutants or any substance which would adversely affect the growth of any of the plants.

Trees should be watered in the same position every time. Ideally this is in the shade or just inside a tree's drip zone (the drip zone corresponds to the outer edge of the leaf canopy).

Concentrate the water in a defined area and the tree will maintain its root activity there.

It is best to water mature trees in the evening as this gives the tree time to distribute the water through its branches and leaves overnight.

During summer and in times of drought stressed trees benefit from being watered every week or fortnightly dependent on the existing moisture in the soil, soil type and the size of the tree. The larger the tree the less often it needs to be watered. Watering more than once a week encourages shallow root development and is not beneficial for the tree in ongoing dry conditions.

Check the depth of the wet soil and apply only a sufficient amount of water to moisten the soil to the depth of the root zone. The age, size and species of tree are dependent on the extent of the root zone.

In order to help maintain the moisture in the soil it is important to sustain the 75mm depth layer of mulch over the root zone. Water plants when required to maintain healthy growth. Watering must be carried out in accordance with the Principal's directions. Water restrictions must be complied with if they are in force. The Principal may request an exemption to the imposed water restrictions from the relevant water authority.

Frequency of watering will be varied during period of adequate rainfall and in accordance with the Principal's directions. Tubestock plants must receive a minimum of 5 litres of water each time.

Work Required	Frequency of Work
<ul style="list-style-type: none"> For trees, concentrate the water in a defined area and the tree will maintain its root activity there. Trees should be watered in the same position every time. Ideally this is in the shade or in the trees drip zone. (The drip zone corresponds to the outer edge of the tree canopy) For all plant types, check the depth of the wet soil and apply only a sufficient amount of water to moisten the soil to the depth of the root zone. 	As required
If Post-completion Maintenance Period is applicable:	

Work Required	Frequency of Work
<ul style="list-style-type: none"> • 20 litres of water per advanced plant • 10 litres of water per tubestock plant • Notwithstanding the watering application rates specified above, ensure that a distinct level of moisture in the soil is maintained at all times during this Post-completion Maintenance Period and that plants do not dry out during this period • Vary the frequency of watering during periods of adequate rainfall with the approval of the Principal • Water areas when and where directed by the Principal. Water by means of fine spray which causes minimal disturbance to surrounding seeded areas 	<p><i>Weekly intervals for the first 12 weeks</i></p> <p><i>Fourteen (14) day intervals thereafter</i></p>
<p>Watering Advanced Trees:</p> <ul style="list-style-type: none"> • All trees to be watered-in at planting at a rate equal to 2 x the initial water application rate shown in Table 6, section 3.6.3 of the RMS Landscape Works Specification. As a general guide, each plant must receive a minimum of 20 litres of water each time it is watered <p>Should trees show signs of moisture stress check that:</p> <ul style="list-style-type: none"> • Watering has actually been carried out according to the schedule. • Planting pits are draining and trees are not being waterlogged. • Watering rings are and have been correctly maintained so all water passes through the rootball. Then modify watering to suit specific conditions if required. • Verification: Provide third party verification to demonstrate that PVC products proposed for the project satisfy the criteria required by the Green Building Council of Australia for their credit in the Materials category of Green Star assessment. 	
<p>Watering Plant Replacement:</p> <p>Immediately after planting, water each plant in a manner which does not disturb the soil backfill and mulch.</p> <p>Should trees show signs of moisture stress check that:</p> <ul style="list-style-type: none"> • The watering figures assume that water rings are in place (other than trees in infiltration/ biofiltration areas) and that the water applied penetrates the rootball (and not just the surrounding soil). • Good drainage to planting holes is assumed. 	

2. Topping up Mulch Layers

Purpose: To maintain an adequate level of mulch in planted beds to maximise water conservation and weeds suppression.

Mulch must be placed over the existing weed free mulched area and must be kept clear of plant stems. Mulch must be free of stormwater pits.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Maintain mulch depth to 75mm, through periodic applications. Use same mulch as originally specified for each planting type. Maintain woodchip mulch (or recycled site mulch) in a weed free condition 	<i>As required but should not be necessary more than once a year</i>

3. Pruning of Vegetation for Safety

Purpose: *To maintain driver sight lines and remove dead wood from over hanging paths, cycleways and roads.*

Vegetation shall be pruned to the extent that driver sight lines are maintained for the next six month period as a minimum. Pruning should take branch back to a node and be in accordance with AS4373 (2007)

Work Required	Frequency of Work
<p>Maintaining driver sight lines</p> <p>Prune all roadside vegetation, to a height of 500mm, when:</p> <ul style="list-style-type: none"> Vegetation obscures any part of horizontal railing of safety barriers, when viewed from approaching traffic within 100m of all intersections and access roads. 	<i>As required</i>
<p>Vegetation in Intersection Traffic Islands</p> <p>Maintain vegetation at a maximum height of 500 mm to edge vegetation as shown on plans.</p>	<i>As required</i>
<p>Pruning trees over carriageways, roads, paths and cycleways</p> <p>Prune all roadside vegetation over carriageways, roads, paths and cycleways when it is:</p> <p>Carriageways / Roads:</p> <ul style="list-style-type: none"> Lower than 5.5 m above carriageway; <p>Paths and Cycleways:</p> <ul style="list-style-type: none"> Lower than 3.3 m above path or cycleway <p>All areas:</p> <ul style="list-style-type: none"> Overhanging dead / diseased/ badly damaged trees or limbs 	<i>As required but should not be necessary more than once per year</i>
<p>Vegetation which obscures signage</p> <p>Prune vegetation or seek permission to remove (if likely to be ongoing issue) when:</p> <ul style="list-style-type: none"> Vegetation which obscures part of signage when viewed from approaching traffic within 100m of sign. 	<i>As required</i>

4. Management of Non Frangible Vegetation

Purpose: To ensure that non frangible vegetation is removed in dangerous areas in accordance with RMS safety standards.

Work Required	Frequency of Work
<p>Remove woody regeneration / woody weeds (i.e. where trunk diameter exceeds 150 mm measured at 300 mm from the ground) in setback area by manual removal if present in the following areas:</p> <p>Set backs from edge of travel lane:</p> <ul style="list-style-type: none"> With safety rail present: 2m. <p>With no safety rail present, setback varies dependant on adjacent bank slope direction, gradient and design speed.</p>	<p>As required but should not be necessary more than once per year</p>

5. Weed Control general noxious and environmental

Purpose: To ensure that environmental weeds do not reproduce within planted beds and compete with plantings and seedlings.

To continuously control noxious weeds as per legal & notification requirements.

Weeding and weed control is considered to be a critical maintenance action.

Weeds adversely affect native plant germination and growth, especially in areas of hydroseeding, direct seeding and hydromulching. Noxious weeds (refer cl 1.5) were treated commonly with herbicide in the past, yet the requirement is now to use non herbicide applications wherever feasible. Steam treatments are specified for this project for the majority of areas, where access is possible. . This section outlines approaches and actions for native vegetation, and use of herbicides/steam treatment..

Work Required	Frequency of Work
Control categories of noxious weed species within the area are listed in Appendix 1 – Noxious Weed Species and Control Categories' of this LMP.	As required
Carry out grass and weed removal to keep all planting areas, and up to the limit of clearing free of grass and weed and ensure that weeds do not flower to form seed heads.	At intervals of not more than four (4) weeks
Continuously suppress and destroy, in accordance with their control category, the growth of all declared noxious weeds where present or where they establish.	As required
Set up a program for weed control and monitor	Half yearly
Weed Control using herbicide or steam	
<ul style="list-style-type: none"> Herbicide/steam application must occur before weed seed set. Non-target species and areas must be reinstated if damaged by herbicide application. Do not spray where herbicide could fall into a watercourse or when wind conditions could cause drift outside the area to be treated or onto desirable plants. After spraying, lop any dead weeds flush with the ground surface and dispose of the cuttings. Remove by hand any weeds which cannot be controlled by herbicide or steam.. Ensure that the entire weed including all roots is removed. Dispose of the weeds off site. Herbicide use to be in accordance with regulation rates 	<p>As required (prior to weed setting flower)</p> <p>As required (prior to</p>

Work Required	Frequency of Work
Control categories of noxious weed species within the area are listed in Appendix 1 – Noxious Weed Species and Control Categories' of this LMP.	<i>As required</i>
Carry out grass and weed removal to keep all planting areas, and up to the limit of clearing free of grass and weed and ensure that weeds do not flower to form seed heads. and manufacturer's recommendations. A biodegradable red dye must be added to herbicides to show extent of treated area.	<i>At intervals of not more than four (4) weeks weed setting flower)</i>

6. Rubbish Removal

Purpose: *Litter and roadside debris removal.*

Work Required	Frequency of Work
Remove all roadside litter and debris.	<i>Monthly and prior to mowing.</i>

7. Fungal and Insect Attack

Purpose: *Plant protection procedures*

Work Required	Frequency of Work
Inspection of entire site to report on any incidence of fungal and insect attack and treat where a problem does exist. Treatment shall be with an approved chemical applied as per the manufacturer's instructions.	<i>As required</i>

8. Auditing and Reporting

Purpose: *Regular auditing and reporting on compliance or otherwise with this LMP and recommendations regarding future maintenance works required prior to the next report.*

Work Required	Frequency of Work
Audit and report regarding:	<i>Each month plus an annual audit</i>
<ul style="list-style-type: none"> a) maintenance work completed during the period; & b) the state of the site with regard to compliance or otherwise with the requirements of this LMP; & c) The remedial/maintenance works that are recommended for completion prior to the next report including an estimate of quantity or hours for those items with chargeable rates. 	<i>Each month plus an annual audit</i>

Monthly audits/ reports shall be completed using the same format as that detailed in the "Monthly Maintenance Audit" form shown at Appendix 2 of this LMP.

3.3 Specific Landscape Types

3.3.1 Turfed/ Grassed Areas

The following maintenance activities are applicable to *broadscale turf/ed/ grassed areas*.

1. Mowing

Purpose: Maintenance of grassed/ turf areas for neat appearance and to maintain groundcover. Frequency of work for grassed/ turf areas relates to **road edges, medians, and maintenance access tracks**. Areas of open dryland and pasture grass separate from the road corridor should be slashed annually, or as required.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Remove litter prior to mowing. Cut grass height must not be less than 40mm nor greater than 75mm high. Do not remove more than 50% of the grass height at any one time. Clippings to remain where they fall except that road surfaces, drains, footpaths and cycle paths shall be swept clear of clippings and these clippings shall be removed from site. 	<p>Spring – intersection area- every 4 weeks; rural areas- every 6 weeks</p> <p>Summer – intersection area- every 4 weeks; rural areas- every 8 weeks.</p> <p>Autumn – intersection area- every 6 weeks; rural areas- every 10 weeks</p> <p>Winter – intersection area- every 12 weeks; rural areas- every 16 weeks.</p>

2. Weed Control in Grass

Purpose: Ensure that grassed/ turf areas remain weed free.

Work Required	Frequency of Work
Control, through the use of approved selective herbicides, the establishment and growth of weed species in turf. Herbicide use to be in accordance with regulation rates and manufacturers recommendations. Red dye shall be added to herbicides to show extent of treated area.	As Required

3.3.2 Mass Planting Beds

The following maintenance issues and activities are to be implemented by all maintenance authorities in *mass planting beds*.

The extent of *landscape bed plantings* are illustrated on the Landscape Drawings

1. Weeding

Purpose: To ensure that environmental weeds do not reproduce within planted beds and compete with plantings.

Weeding and weed control is considered to be a critical maintenance action.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Prevent reproduction of weeds by destroying seedlings and established weeds before flowering or other propagules form. Weeds to not exceed 10% cover in 	As required

<i>Work Required</i>	<i>Frequency of Work</i>
<p>any 50m² area.</p> <ul style="list-style-type: none"> • Herbicide/steam application must occur before weed seed set. Non-target species and areas must be reinstated at contractor's expense if damaged by herbicide application. • Herbicide and steam use to be in accordance with regulation rates and manufacturers recommendations. • RED Dye shall be added to herbicides to show extent of treated area. 	

2. Mulching

Purpose: *Maintain an adequate level of mulch in garden beds to maximise water conservation and weed suppression.*

Work Required	Frequency of Work
<ul style="list-style-type: none"> • Maintain mulch depth to 75mm, through periodic applications. Use same mulch as originally specified in each planting. • Mulch shall be applied to beds within 1.5m of the boundary of a planted area at roads, paths and verges, or where a planted area adjoins a weed dominated area. 	<i>As required</i>

3. Removal of Dead / Dying Plant Material

Purpose: To remove dead or dying plant material from garden bed plantings. May be required as plantings mature, after damage or adverse environmental conditions.

<i>Work Required</i>	<i>Frequency of Work</i>
<ul style="list-style-type: none"> Remove dead or dying plant material. 	<i>As required</i>

4. Replacement Plantings

Purpose: *To ensure that the density and species of established plant material is maintained.*

Work Required	Frequency of Work
<ul style="list-style-type: none"> • Replace failed, senescent or damaged plantings. Densities, sizes and species used are to be in accordance with those specified in the original landscape plans. • Water replacement plantings for a minimum of 12 weeks after planting. 	<p><i>As required</i></p> <p><i>As required to ensure survival.</i></p>

The plant species density and species selections specified for each area of landscape covered by this LMP are provided in the Landscape Drawings.

5. Tree Guards and Stakes

Purpose: *To replace tree guards / stakes when damaged, and to remove when no longer required.*

Work Required	Frequency of Work
<ul style="list-style-type: none"> Replace timber tree guards or stakes (for trees and shrubs) if damaged or removed prior to plant establishment. Replace with same or equivalent guard / stake. Remove tree guards and stakes. 	<p><i>As required</i></p> <p><i>As required to ensure survival.</i></p>

6. Fertilising & Pruning

Purpose: To replace stakes when damaged and to remove when no longer required.

The following tables outline the standards required for pruning and fertilising all plantings.

Fertilising	Frequency of Work
<p>2 x 20 gram slow release fertiliser tablet per plant. N:P:K ratio– 18:3:10</p> <p>Only to be applied if plants are obviously under stress and it has been agreed that the plant/s will benefit from application of the fertiliser</p>	<p><i>Inspect annually but apply late Spring if, and when, required.</i></p>

Pruning	Frequency of Work
<p>Prune to remove split leaders, remove dead limbs, and remove heavily damaged limbs.</p> <p>As maturity permits prune lower branches to collar to 5.5m above ground level where these overhang carriageways and roads. In other areas, prune lower branches to 3.3m above ground level.</p>	<p><i>As required.</i></p>

For all tall and medium shrub species, the following fertilising and pruning is required:

Fertilising	Frequency of Work
<p>2 x 20 gram slow release fertiliser tablet per plant. N:P:K ratio– 18:3:10</p> <p>Only to be applied if plants are obviously under stress and it has been agreed that the plant/s will benefit from application of the fertiliser</p>	<p><i>Inspect annually but apply late Spring if, and when, required.</i></p>

Pruning	Frequency of Work
A. Prune to remove split leaders, remove dead limbs, and remove heavily damaged limbs.	<i>As required.</i>
B. Prune evenly to promote compact shape (to specified max. height). Remove 200 to 300mm (depending on vigour of previous plant growth) length of branches all around the plant.	<i>Not required</i>
C. Tip prune to encourage density.	<i>Not required</i>
D. Remove spent flower stalk and spent leaves	<i>Not required</i>

For all low shrub species, the following fertilising and pruning is required:

Fertilising		Frequency of Work
2 x 20 gram slow release fertiliser tablet per plant. N:P:K ratio– 18:3:10		<i>Inspect annually but apply late Spring if, and when, required.</i>
Only to be applied if plants are obviously under stress and it has been agreed that the plant/s will benefit from application of the fertiliser		

Pruning		Frequency of Work
C	Tip prune to encourage density. Remove 50-100mm	<i>Not required</i>
D	Prune evenly to a height of 300mm above ground	<i>Not required</i>

For all ground cover and tussock species, the following fertilising and pruning is required:

Fertilising	Frequency of Work
10 grams slow release fertiliser tablet per plant. N:P:K ratio– 18:3:10	<i>Inspect annually but apply late Spring if, and when, required.</i>
Only to be applied if plants are obviously under stress and it has been agreed that the plant/s will benefit from application of the fertiliser	

Pruning		Frequency of Work
C	Tip prune to encourage density. Remove 50 – 100mm	<i>Not required</i>
D	Prune evenly to a height of 300mm above ground	<i>Not required</i>
E	Prune evenly to a height of 200mm above ground	<i>Not required</i>
F	Remove spent flower heads & leaves	<i>Not required</i>
G	Prune evenly to a height of 300mm above ground	<i>Not required</i>

7. Slashing

Purpose: Maintenance of native grasses / direct seeded grass, for bush fire management, and safety.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Remove litter prior mowing Slashed grass height must not be less than 250mm high. Do not remove more than 50% of the grass height at any one time. Clippings to remain where they fall except for road surfaces, drains, footpaths, and cycle paths. These have to be swept clear of clippings and clippings shall be removed from site. 	<i>Slash native grasses twice a year to maintain a low profile, (approximately 250/350mm); but allow native grasses to seed annually.</i>

3.3.3 Advanced Spot Planting in Mass planting beds (MPB)

The following maintenance issues and activities are to be implemented by all maintenance authorities for advanced spot planting in mass planting areas. The extent of revegetation is illustrated on the Landscape Drawings.

1. Weeding general, noxious and environmental

Purpose: To ensure that environmental weeds do not reproduce within revegetation areas and compete with establishing indigenous plantings.

Weeding and weed control is considered to be a critical maintenance action.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Prevent reproduction of weeds by destroying seedlings and established weeds before flowering or other propagules form. Weeds to not exceed 20% cover in any 50m² area. Herbicide/steam application must occur before weed seed set. Non-target species and areas must be reinstated if damaged by herbicide application. Herbicide/steam use to be in accordance with regulation rates and manufacturers recommendations. Red Dye shall be added to herbicides to show extent of treated area. 	As required

2. Mulching

Purpose: Maintain an adequate level of mulch in the noise mound to maximise water conservation and weed suppression.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Maintain mulch depth to 75mm, through periodic applications. Use same mulch as originally specified in each planting. Mulch shall be applied to beds within 1.5m of the boundary of a planted area at roads, paths and verges, or where a planted area adjoins a weed dominated area. 	<p>As required</p> <p>Refer to landscape design plans</p>

3. Removal of Dead / Dying Plant Material

Purpose: To remove dead or dying plant material from noise mound plantings. May be required as plantings mature, after damage or adverse environmental conditions.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Remove dead or dying plant material. 	As required

4. Replacement Plantings

Purpose: To ensure that the density and species of established plant material is maintained.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Replace failed, senescent or damaged plantings. Densities, sizes and species used are to be in accordance with those specified in the original landscape plans. 	As required
<ul style="list-style-type: none"> Water replacement plantings for a minimum of 12 weeks after planting. 	As required

The plant species density and species selections specified for each area of landscape covered by this LMP are provided in the Landscape Drawings

5. Tree Stakes

Purpose: To replace stakes when damaged and to remove when no longer required.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Replace bamboo stakes (for trees and shrubs) if damaged or removed prior to plant establishment. Replace with same or equivalent guard / stake. 	As required
<ul style="list-style-type: none"> Remove tree stakes. 	12 months after planting.

3.3.4 Hydroseeding/ Hydromulching (dryland and pasture grass areas)

The following maintenance issues and activities are to be implemented by all maintenance authorities in the hydroseeding/ hydromulching dryland grass and pasture grass areas).

The extent of hydroseeding/ hydromulching (dryland grass and pasture grass areas) is illustrated on the Landscape Drawings.

1. Weeding

Purpose: To ensure that environmental weeds do not reproduce within revegetation areas and compete with establishing indigenous plantings.

Weeding and weed control is considered to be a critical maintenance action.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Prevent reproduction of weeds by destroying seedlings and established weeds before flowering or other propagules form. Weeds to not exceed 10% cover in any 50m² area. Herbicide/steam application must occur before weed seed set. Non-target species and areas must be reinstated if damaged by herbicide application. Herbicide/steam use to be in accordance with regulation rates and manufacturers recommendations. Red dye shall be added to herbicides to show extent of treated area. 	As required

2. Removal of Dead / Dying Plant Material

Purpose: To remove dead or dying plant material from around individual tree planting may be required as plantings mature, after damage or adverse environmental conditions.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Remove dead or dying plant material. 	As required

3. Replacement Plantings

Purpose: To ensure that the density and species of established plant material is maintained.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Replace failed, senescent or damaged plantings. Densities, sizes and species used are to be in accordance with those specified in the original landscape plans. 	As required

The plant species density and species selections specified for each area of landscape covered by this LMP are provided in the Landscape Drawings.

4. Tree Stakes & Guards

Purpose: To replace stakes and guards when damaged and to remove when no longer required. The following tables outline the standards required for pruning and fertilising all individual tree plantings

Work Required	Frequency of Work
<ul style="list-style-type: none"> Replace bamboo stakes (for trees and shrubs) if damaged or removed prior to plant establishment. Replace with same or equivalent guard / stake. Remove tree stakes. 	<p>As required</p> <p>12 months after planting.</p>

3.3.5 Water Sensitive Design Elements

- ☐ Vegetated swale
- ☐ Infiltration areas
- ☐ Rock mulch swale

The following maintenance issues and activities are to be implemented by all maintenance authorities for *the water sensitive design elements (as listed above) to maintain bio-filtration drainage systems ensuring that the natural flow and filtration of stormwater is not comprised due to obstructions.*

The water sensitive design elements are illustrated on the Landscape Drawings.

Unblocking Inlets and Outlets

The inlets and outlets are the main hydraulic controls. If they are blocked or not flowing freely:

- ☐ the asset may pose a risk to flooding , particularly if there if there is no alternative high-flow path
- ☐ the vegetation will be at risk (the plants may crown eventually)
- ☐ the volume of water that can be treated will be restricted as inflow will not enter the asset when it is full, causing flows to overflow or to pass downstream untreated

Remove litter and debris by hand or with hand tools such as shovels, forks and tongs. Special opening tools (e.g. grate/gatic openers) are required for some outlets.

If blocking persists it may be due to the following and will need to be rectified as soon as possible;

- ☐ a design flaw such as the levels of the hydraulic structures within the asset are not correct
- ☐ poor construction, such as incorrectly placed soil or filter media
- ☐ the collapse of a hydraulic structure
- ☐ mass plant failure within a wetland

Removing Sediment

Sediment build-up in swales, and infiltration/ systems can:

- ☐ Smother other vegetation
- ☐ Change the surface profile of the asset, which influences flow patterns
- ☐ Form an impermeable layer on the surface of infiltration/ systems and prevent infiltration

If infiltration in an infiltration system is reduced or not occurring, stormwater will bypass untreated into the overflow and the media may become boggy. A lack of water will affect the health of the vegetation and boggy conditions can attract mosquitoes, as well as generate unpleasant odours.

Infiltration/ systems – surface;

- ☐ Remove sediment in dry weather and ideally at the end of the dry season.
- ☐ To maintain the integrity of the vegetation and prevent compaction of the filter media, remove sediment by hand (if possible) using flat shovels.
- ☐ If machinery is used, remove sediment via an excavator located on the edge of the infiltration system or via a pozitrack bobcat to avoid compaction of the filter media. Minimise the number of times the bobcat passes over the infiltration surface. Re-profile and replant/grass the area as required.

Removing Litter and Debris

While litter and debris are mainly an aesthetic issue, they can smother vegetation, provide habitat for mosquito breeding, be a source of pollutants, block inlet and outlet structures and pose a risk to public safety. If litter is able to enter downstream waterways it can cause environmental harm.

Remove litter and excessive debris, by hand or with hand tools such as shovels, forks and tongs.

Replanting

Vegetated storm water assets should have dense, evenly distributed vegetation across all planted areas. Maintaining vegetation is crucial to the performance of vegetated stormwater assets because it:

- ☐ assists to spread and slow water, which maximises the amount of vegetation in contact with the stormwater
- ☐ helps to reduce erosion
- ☐ minimises the establishment of weeds by shading and competing for nutrients
- ☐ preserves hydraulic conductivity in infiltration systems
- ☐ traps coarse litter
- ☐ acts as a deterrent to public access

Controlling Weeds

A weed is a plant that is growing where it is not wanted. Plants are considered weeds because they: compete with or displace native plant species; reduce biodiversity; impact ecosystem function; alter natural habitats; restrict natural processes; reduce amenity; and cause blockages to hydraulic structures. While this definition is generally applied to introduced plant species, some native plant species are also classified as weeds when they grow out of their natural range.

Identifying and controlling weeds is important to preserve the function of a vegetated storm water asset. Assets are particularly vulnerable to weed invasions when the desirable plants are stressed, such as during the dry season or at the end of the wet season

Swales and infiltration systems

Common terrestrial weeds readily grow within infiltration systems and swales. The growth of weeds within infiltration systems can reduce vegetation health, cover and diversity and can result in an excessive organic layer occurring on the surface of the filter material. Dense weeds within swales can reduce the flow capacity of the asset and increase the risk of flooding.

Ideally, remove or control all weed species within an asset as part of a regular maintenance program. This is mandatory for declared weeds. A low level of undeclared weed cover may be ok if it does not hinder the functioning of the asset. However early detection and action should cost less and result in higher success rates for managing weeds.

The main aspects of controlling weeds in vegetated stormwater assets are:

- ☐ recognise that some weed growth is inevitable because stormwater conveys weed seeds from the catchment
- ☐ be aware of which weeds cause problems
- ☐ regularly inspect for weeds
- ☐ Persistent weed ingress or weed cover may mean that maintenance activities are not sufficient to manage the weeds. In this case increase the maintenance frequency for a growing season (6 – 12 months)
- ☐ When managing weeds consider the following factors:
 - ☐ the cause of the weed infestation
 - ☐ the biology and ecology of the weed species
 - ☐ methods to remove weeds, including their costs and benefits

Determining the source and cause of the weeds will help to determine the most appropriate weed control strategy. Understanding a weeds biology or ecology may influence the timing of the control method. For example it may be beneficial to control a particular weed before it seeds to prevent further spread of the infestation. There are a range of methods commonly used to control weeds commonly associate within vegetated stormwater assets. An integrated approach, where a number of control methods are used in a co-ordinated manner, is often the most effective long term strategy. For example a weed may initially be removed by hand, with any remaining weeds controlled using chemicals or steam.

Physical Removal of Weeds

Hand Pulling: A labor-intensive method that is extremely effective for controlling isolated weed infestations. This method is particularly useful for removing shallow rooted weed species. Take care to remove all root material particularly when removing deep-rooted perennial weed species.

Hand Raking: A labor-intensive method used to remove small aquatic weed infestations. This method involves using a long-handled rake to remove floating or submerged aquatic weeds from sediment basins and constructed wetlands.

Grubbing: This method uses tools such as shovels and mattocks to remove weeds. Grubbing is a useful method for removing deep-rooted, woody weed species.

Herbicides: This is a common method used to control weeds growing in vegetated storm water assets. Chemical weed control is often more cost-effective than mechanical methods and is particularly effective at controlling large weed infestations.

Major risks associated with using herbicides include the potential impacts of desirable plants and the environmental effects due to chemical residues accumulating within sediments and soils.

When treating aquatic weeds within the dry detention area and infiltration areas, take care to ensure that herbicides are registered or permitted for use around aquatic areas. Use herbicides in accordance with the registered labels and the relevant legislation (e.g. *Environmentally Hazardous Chemicals Act 1985 No14*, in New South Wales). Seek advice from a relevant government department if considering uses other than prescribed on labels. Note that all staff using herbicides should have completed Chemcert Training or its equivalent. Special licenses may be required to use herbicides within a water body. Herbicides are commonly applied to weeds using either foliar spray or rope-wick applicator methods. Cut stump and stem injection (drill and fill) are suitable methods for applying herbicides to woody weeds.

Relevant herbicide applications are:

- ☐ Foliar Spray
- ☐ Rope-wick applicators

Foliar spray is applied to weeds using spot spraying techniques with hand held sprayers. Spot spraying reduces the amount of herbicide used, which minimises the cost of application and damage to non-target plants. Take care to minimise the amount of herbicide that makes contact with the water. Using booms to confine isolated aquatic weeds may help to minimise not target application of the herbicide. Rope-wick applicators consist of a handle with a wick or rope attached to the end that is soaked with herbicide. Use the wetted wick or rope to brush herbicide over the surface of the weed. Rope wick indicators are suitable for herbaceous weeds and young growth. This method ensures minimal damage to non-target plants.

The contractor is to investigate appropriateness of steam to remove weeds, rather than using herbicides.

1. Weeding

Purpose: *To ensure that environmental weeds do not reproduce within detention basins and compete with indigenous plantings.*

Weeding and weed control is considered to be a critical maintenance action.

Work Required	Frequency of Work
Prevent reproduction of weeds by destroying seedlings and established weeds before flowering or other propagules form. Weeds to not exceed 10% cover in any 50m ² area. Herbicide application must occur before weed seed.	As required

2. Removal of Dead / Dying Plant Material

Purpose: *To remove dead or dying plant material from landscapes. May be required as plantings mature, after damage or adverse environmental conditions.*

Work Required	Frequency of Work
Remove dead or dying plant material.	As required

3. Replacement Planting

Purpose: To ensure that the density and species of established plant material is maintained.

Work Required	Frequency of Work
<ul style="list-style-type: none"> Replace failed, senescent or damaged plantings. Densities, sizes and species used are to be in accordance with those specified in the original landscape plans. 	As required

The plant species density and species selections specified for each area of landscape covered by this LMP are provided in the Landscape Drawings.

4. Inspection Seeded Swales/Drains

Purpose: To ensure integrity of swales

Work Required	Frequency of Work
<ul style="list-style-type: none"> Inspection of erosion. Any obvious damage to grass or to the swales bottom soil bed should be repaired immediately. Seeded swales may require periodic re-seeding. Repairs need to conform to the original design. Remove trash and other debris from all parts of the swale. Maintain clear inlet and outlet structures, including overflow routes by weeding and removal of litter, debris and sediments by hand or with hand tools such as shovels, forks and tongs. Soil phytotoxicity test 	<p>Yearly</p> <p>As required</p> <p>As required or after events of heavy downpours. Required if failed area is >300m² without evident erosion</p>

Appendices

Appendix 1 – Noxious Weed Species and Control Register

Appendix 2 – Monthly Maintenance Audit Proforma

Appendix 3 – Pesticides Application Record Sheet

Appendix 4 – Inspection Maintenance Checklist for Bio-retention Systems and Swales

Appendix 1 – Noxious Weed Species and Control Categories

An up-to-date list of noxious weed species for each local government area can be found at:

<http://www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/noxweed>

Maintenance staff shall be familiarised with the identification of these species as their control (in accordance with the control category) is a legal requirement under the NSW Noxious Weeds Act. *Use the Monthly Maintenance Audit to schedule notification of all chemical application for the upcoming month and the Pesticide Application Record Sheet to keep record of all chemical application after the event.*

Control techniques for these species are to be consistent the standards / practices outlined in the Noxious and Environmental Weed Control Handbook 3rd Ed (April 2007). Copies of this handbook can be downloaded from:

<http://www.dpi.nsw.gov.au/agriculture/pests-weeds/weeds/publications/management/noxious-environmental-weed-control>

Where control standards have not been clearly defined for a species, control is to utilise chemicals (where required) that are registered for use on the species or control techniques that minimise environmental impacts.

Table 2 Control classes of noxious weeds

Control class	Weed type	Example control requirements
Class 1	Plants that pose a potentially serious threat to primary production or the environment and are not present in the State or are present only to a limited extent	The plant must be eradicated from the land and the land must be kept free of the plant. The weeds are also "notifiable" and a range of restrictions on their sale and movement exist
Class 2	Plants that pose a potentially serious threat to primary production or the environment of a region to which the order applies and are not present in the region or are present only to a limited extent.	The plant must be eradicated from the land and the land must be kept free of the plant. The weeds are also "notifiable" and a range of restrictions on their sale and movement exist.
Class 3	Plants that pose a potentially serious threat to primary production or the environment of a region to which the order applies, are not widely distributed in the area and are likely to spread in the area or to another area.	The plant must be fully and continuously suppressed and destroyed.*
Class 4	Plants that pose a potentially serious threat to primary production, the environment or human health, are widely distributed in an area to which the order applies and are likely to spread in the area or to another area.	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority.*
Class 5	Plants that are likely, by their sale or the sale of their seeds or movement within the State or an area of the State, to spread in the State or outside the State.	There are no requirements to control existing plants of Class 5 weeds. However, the weeds are "notifiable" and a range of restrictions on their sale and movement exists.

NOTE: All Class 1, 2 and 5 weeds are prohibited from sale in NSW.

* In some cases the following wording has also been inserted "the plant may not be sold, propagated or knowingly distributed."

Appendix 2 – Monthly Maintenance Audit

This form shall be completed by the Contractor responsible for landscape maintenance on the last working day of each month..

Upon completion of this form, a copy shall be provided to the RMS Superintendent.

Two copies of this completed form are required. One shall be issued to maintenance staff for action. The second shall be maintained for records.

Further details in relation to the maintenance items described in this form are included at Section 3 of RMS's Landscape Management Plan

This audit form has been divided into 2 parts as follows:

PART 1 – is a summary of the maintenance work actually performed during the month

PART 2 – is a summary of the current status of the site and recommendations of maintenance work that should be performed prior to the next monthly audit. The work recommended by the Contractor should not be commenced until approval to perform the work has been received from the RMS Superintendent.

Date of Inspection: _____

Inspected by: _____

PART 1 – SUMMARY OF MAINTENANCE WORK PERFORMED DURING THE MONTH

Maintenance / Inspection Item	Location and description of maintenance work performed	Previously Estimated Quantity or Hours approved by RMS	Actual quantity or hours
A. ALL AREAS			
1. Pruning of vegetation for Safety			
(i) Maintain driver sightlines			
(ii)Vegetation in intersection traffic islands			
2. Removal of non-frangible veg from dangerous areas.			
3. Weed Control – general, noxious and environmental			
4. Rubbish removal of all roadside litter & debris	Undertaken as part of mowing/slashing duty		

Maintenance / Inspection Item	Location and description of maintenance work performed	Previously Estimated Quantity or Hours approved by RMS	Actual quantity or hours
5. Fungal & disease control			
B. INTERSECTION GRASSED/TURF AREAS ONLY			
1. Mowing			
2. Replacement of damaged turf			
3. Slashing and Brush-cutting			
Weed control in turf			
C. BROADSCALE GRASSED/TURF AREAS ONLY			
1. Mowing			
2. Replacement of damaged/turf			

Maintenance / Inspection Item	Location and description of maintenance work performed	Previously Estimated Quantity or Hours approved by RMS	Actual quantity or hours
3. Slashing and Brush-cutting			
4. Weed control in turf			
C. MASS PLANTING BEDS			
1. Weed garden beds prior to weeds setting flower			
2. Mulching			
3. Removal of dead plant material			
4. Replacement of failed plantings			
5. Horticultural Maintenance			
D. ADVANCED SPOT TREE PLANTINGS			
1. Weed around individual trees prior to weeds setting flower			

Maintenance / Inspection Item	Location and description of maintenance work performed	Previously Estimated Quantity or Hours approved by RMS	Actual quantity or hours
2. Mulching			
3. Removal of dead plant material			
4. Replacement and new plantings			
5. Horticultural Maintenance			
E. THREATENED SPECIES			
1. Weed around trees prior to weeds setting flower			
2. Mulching			
3. Removal of dead plant material			
4. Delineation of trees in the landscape			
F. WATER SENSITIVE DESIGN ELEMENTS			

Maintenance / Inspection Item	Location and description of maintenance work performed	Previously Estimated Quantity or Hours approved by RMS	Actual quantity or hours
1. Weeding			
2. Removing sediment			
3. Replanting			
4. Unblocking inlets			

PART 2 – STATUS AND RECOMMENDED MAINTENANCE WORK FOR THE PERIOD PRIOR TO THE NEXT MONTHLY AUDIT

Maintenance / Inspection Item	Inspected (Y/N)	Location and description of any recommended maintenance or remediation work identified.	Recommendation of maintenance or remediation work required	Estimated Quantity or Hours for recommended work	RMS Approval to perform work (signature)
A. ALL AREAS					
1. Pruning of vegetation for Safety					
(i) Maintain driver sightlines					
(ii)Vegetation in intersection traffic islands					
2. Removal of non-frangible veg.					
3. Noxious Weed Control					
4. Rubbish removal of all roadside litter & debris	Undertaken as part of mowing/slashing duty				
5.Fungal & disease control					
B. INTERSECTION TURF/GRASSED AREAS ONLY					
1.Mowing					
2. Replacement of damaged turf					

Maintenance / Inspection Item	Inspected (Y/N)	Location and description of any recommended maintenance or remediation work identified.	Recommendation of maintenance or remediation work required	Estimated Quantity or Hours for recommended work	RMS Approval to perform work (signature)
3. Slashing and Brush-cutting					
4. Weed control in turf					
C. BROADSCALE TURF/GRASSED AREAS ONLY					
1. Mowing					
2. Replacement of damaged turf					
3. Slashing and Brush-cutting					
4. Weed control in turf					
D. MASS PLANTING BEDS					
1. Weed garden beds prior to weeds setting flower					
2. Mulching			Not applicable for the monthly audit		
3. Removal of dead plant material			Not applicable for the monthly audit		

Maintenance / Inspection Item	Inspected (Y/N)	Location and description of any recommended maintenance or remediation work identified.	Recommendation of maintenance or remediation work required	Estimated Quantity or Hours for recommended work	RMS Approval to perform work (signature)
4. Replacement of failed plantings					
5. Horticultural Maintenance	Not applicable for the monthly audit				
D. ADVANCED SPOT TREE PLANTINGS					
1. Weed around trees prior to weeds setting flower					
2. Mulching	Not applicable for the monthly audit				
3. Removal of dead plant material	Not applicable for the monthly audit				
4. Replacement and new plantings					
5. Horticultural Maintenance	Not applicable for the monthly audit				
E. THREATENED SPECIES					
1. Weed around threatened species prior to weeds setting flower					
2. Mulching	Not applicable for the monthly audit				
3. Removal of dead plant material	Not applicable for the monthly audit				
4. Delineation of the trees in the landscape					

Maintenance / Inspection Item	Inspected (Y/N)	Location and description of any recommended maintenance or remediation work identified.	Recommendation of maintenance or remediation work required	Estimated Quantity or Hours for recommended work	RMS Approval to perform work (signature)
F. WATER SENSITIVE DESIGN ELEMENTS					
1. Weeding					
2. Removal of dead/ dying plant material					
3. Replacement planting					
4. Inspection seeded swales/ drains					

Signed: _____

Date: _____

Issued to: _____

Date: _____

Appendix 3 - Pesticides /Steam Application Record Sheet

1. Date and time	Start Date and Time:	
	Finish Date and Time:	
2. Who applied the pesticide	Full operator name:	
	Operator contact address:	
	Operator contact phone:	
3. Who owns/occupies the land	Full owner/occupier's name:	
	Owner/occupier's contact address:	
	Owner/occupier's contact phone:	
4. Boundaries of treated area and order of treatment	List treated areas and order of treatment, preferably with reference to a map:	
	List order of treatment:	
5. Problem treated	Identify the pest or problem treated (eg controlling of spot weed infestation):	
6. Product used	Record either the full name, or a product code if a list of full product names of pesticides you use is kept at the front of your logbook:	
7. Equipment used	Describe the equipment used (eg boom-spray, hand-held backpack sprayer etc.):	
8. Quantity applied and dilution	Total amount of pesticide product mix used:	
	Write down whether the mix was concentrated product or a diluted mixture (note down rate of dilution):	
9. Area covered by application	Area of application (in square metres or hectares):	
10. Wind speed and direction	Estimate of wind speed and direction (only if the pesticide is applied through the air):	
	Write down any changes in weather during application:	
11. Other weather details	Record any weather details such as temperature, humidity and/or rainfall where the pesticide product label requires you to assess these:	

Appendix 4 - Inspection Maintenance Checklist for Water Sensitive Design elements

Bioretention / Swales Maintenance Checklist		
Asset I.D:		
Inspection frequency:	4 months	Date of visit:
Location:		
Description:		
Site visit by:		
Inspection Items	Yes/No	Action required (details)
Sediment accumulation at inflow		
Litter within swale?		
Erosion at inlet or other key structures (e.g. crossovers)?		
Traffic damage present?		
Evidence of dumping (e.g. building waste)?		
Vegetation condition satisfactory (density weeds etc.)?		
Replanting required?		
Slashing required?		
Clogging of drainage points (sediment or debris)?		
Evidence of Ponding?		
Set down from kerb still present?		
Damage/vandalism to structures present?		
Surface clogging visible?		
Drainage system inspected?		
Remulching of trees and shrubs required?		
Soil additives or amendments required?		
Pruning and/ or removal of dead or Diseased vegetation required?		
Resetting of system required?		
Inspectors additional comments		



DRAFT

Roads and Maritime Services

The Northern Road Upgrade (Stage 5) from Littlefields Road,
Luddenham to Glenmore Parkway, Glenmore Park
Landscape Management Plan

April 2019

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Appendices

- Appendix A – Noxious weed species
- Appendix B – Monthly maintenance audit proforma
- Appendix C – Pesticides application record sheet

1. Introduction

1.1 Purpose of this report

The purpose of the Landscape Management Plan (LMP) is to provide a consistent standard of maintenance activities to be carried out during the maintenance period (12 months) following the completion of the landscape works for The Northern Road Upgrade (Stage 5) project, from Littlefields Road, Luddenham to Glenmore Parkway, Glenmore Park.

The LMP aims to promote a cost effective approach to the maintenance works of the landscape areas throughout the project, both in technique and frequency.

1.2 Scope and limitations

This report has been prepared by GHD for Roads and Maritime Services and may only be used and relied on by Roads and Maritime Services for the purpose agreed between GHD and the Roads and Maritime Services as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Roads and Maritime Services arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

1.3 Site Extent

This LMP applies to all the new landscaped areas within the road reserve between chainages 0 and 6689 (MC1A) that form part of The Northern Road Upgrade Stage 5 and as shown on the landscape plans (LS-3601 to LS-3634).

1.4 Landscape types

For the purpose of this report, the landscape treatments shown on the landscape plans (LS-3601 to LS-3634) have been grouped according to their maintenance activities with a view to minimise multiple pass maintenance activities.

Table 1 shows the correlation between the landscape types described in this report and the treatments shown on the landscape and revegetation plans.

Table 1 Landscape types

Landscape Types As described in LMP	Landscape Treatments As shown on landscape and revegetation layouts
Revegetation – hydromulch seeding	– Seed Mix 1 – Native grasses and groundcovers
Revegetation – compost blanket	– Seed Mix 2 – Native grasses and shrubs
Revegetation – existing seed bank topsoil with cover crop	– Seed Mix 3 – Pasture Grass – Native grasses – Seed Mix 4 – Fishway – Native turf grass
Mass container stock planting into mulched areas	– Planting Mix 1 – Native grasses – Planting Mix 2 – Grasses, groundcovers and shrubs – Planting Mix 3 – Intersection Accent Planting (grasses and groundcovers)
Mass container stock planting into environmental matting	– Planting Mix 4 – Swales and dry basins – Planting Mix 5 – Water quality basins – Planting Mix 6 – Waterfront land planting
Individual tree planting	– Tree Planting Cluster 1 and 2 – Proposed tree clusters – Avenue planting on Littlefields Road – Proposed individual trees
Turf areas	– Rolled Turf

Key characteristics of the landscape types are described below and the specific maintenance activities to be carried out for each of the landscape types are described in detail under section 3 of this report.

1.4.1 Revegetation Areas – Hydromulch Seeding

The revegetation treatment of hydromulching with native seed is the main treatment throughout the project site. Three different seed mixes have been proposed to suit specific spatial road safety and maintenance requirements.

- **Seed Mix 1:** Comprises of native grasses and groundcovers. This mix has been used extensively throughout the project site especially in those areas that are affected by clear zones, areas that will be affected by future works (future footpaths), cut benches and road embankments.

1.4.2 Revegetation Areas – Compost Blanket

The revegetation treatment of compost blanket with native seed is the treatment throughout the project site for steep batters with a grade of 1:2.

- **Seed Mix 2:** Comprises of native grasses and shrubs.

1.4.3 Revegetation Areas – Existing seed bank topsoil with cover crop

- **Seed Mix 3 - Pasture Grass:** Comprises of native grasses for revegetation to existing seed bank topsoil areas. It occurs on some batters but predominantly between the batter and boundary. Pasture grass is to be applied to disturbed areas only.

1.4.4 Mass container stock planting into mulched areas

All planting mixes are frangible. This treatment has been proposed to the following areas:

- To visually high profile areas (southern part of the project) to provide a more formalised planting approach.
- Where the gradients of the batters are too steep to safely carry out mowing activities.
- Where a controlled outcome is required such as sight lines or CPTED principles next to footpaths.
- Where planting would minimise maintenance activities (planting instead of turfing) such as edge of road and within medians.

The following planting mixes have been proposed:

- **Planting Mix 1** – Native grasses
- **Planting Mix 2** – Grasses, groundcovers and shrubs
- **Planting Mix 3** – Intersection accent planting (grasses and groundcovers with more texture and colour to alert road users to change in road conditions).

1.4.5 Mass container stock planting into environmental matting

Container stock planting to areas associated with swales, water quality devices and creek restoration will be protected by a layer of environmental matting to assist in maintaining water quality and avoiding loss of soil due to water flow and associated erosion.

The following plant mix associated with this landscape type have been solely defined by species that would best suit the environmental conditions of the areas where they have been proposed, as follows:

- **Planting Mix 4** – Swale planting
- **Planting Mix 5** – Water quality basin planting
- **Planting Mix 6** – Waterfront land planting.

1.4.6 Individual tree planting

Cluster planting of trees have been proposed to revegetation areas to assist in blending the new work to the surrounding landscape. Size and type of clusters vary from single species to a mix of species. The following tree plantings have been proposed:

- **Tree Planting Clusters 1 and 2** – Proposed tree clusters
- **Avenue planting on Littlefields Road** – Proposed individual trees.

1.4.7 Turf Areas

Turf has been proposed between the back of kerb and shared use path as well as a continuous length along median edges, to establish sightlines, reduce fire risk from cigarette butts and facilitate rubbish removal. The following type has been proposed:

- **Rolled Turf** – Zoysia 'Nara'

2. Summary of Maintenance Activities

Table 2 Maintenance Table – All Areas

Maintenance Actions	Tasks	Frequency							
		Weekly	Monthly	Sum	Aut	Win	Spr	As Req'd	As Noted
Pruning of vegetation for safety	Maintaining sight line affected areas								
	Pruning trees over roads and shared paths								
Management of non-frangible vegetation	Removal of non-frangible vegetation from clear zone areas								Annually
Noxious weed control	Removal of noxious weeds according to the control category and the measures specified by the local control authority								
Rubbish removal	Removal of litter and debris from road corridor								And prior to mowing activities
Fungal and insect attack	Inspect all planted areas and control fungal and insect affected areas where required							Control	
Auditing and reporting	Audit and report on maintenance and additional works								

Table 3 Maintenance Table – Revegetation Areas / Hydromulch Seeding

Maintenance Actions	Tasks	Frequency							
		Weekly	Monthly	Sum	Aut	Win	Spr	As Req'd	As Noted
Watering	Water revegetation areas to germinate seed and maintain healthy growth until seedlings are								
	Water by means of a fine spray to ensure								
									Once every second day
									Fortnightly
Rill and sheet erosion control			Inspection					Repair	
Reseeding									Annually
Weed control									Prior to weeds setting flower

Table 4 Maintenance Table – Revegetation Areas / Compost Blanket

Maintenance Actions	Tasks	Frequency							
		Weekly	Monthly	Sum	Aut	Win	Spr	As Req'd	As Noted
Watering	Water revegetation areas to germinate seed and maintain healthy growth until seedlings are								
	Water by means of a fine spray to ensure								
									Once every second day
									Fortnightly
Erosion control			Inspection					Repair	
Reseeding									Annually
Acacia control									Bi-annually
Weed control									Prior to weeds setting flower
Auditing and reporting									

Table 5 Maintenance Table – Revegetation Areas / Existing Seed Bank Topsoil

Maintenance Actions	Tasks	Frequency							
		Weekly	Monthly	Sum	Aut	Win	Spr	As Req'd	As Noted
Watering	Water revegetation areas to germinate seed and maintain healthy growth until seedlings are								
	Water by means of a fine spray to ensure								
									Once every second day
									Fortnightly
Rill and sheet erosion control			Inspection					Repair	
Reseeding									Annually
Weed control									Prior to weeds setting flower

Table 6 Maintenance Table – Mass Container Stock Planting into Mulched Areas

Maintenance Actions	Tasks	Frequency							
		Weekly	Monthly	Sum	Aut	Win	Spr	As Req'd	As Noted
Watering									
									Fortnightly
	Inspect and repair any rills and sheet erosion formed on batters that have affected planting		Inspection						
									Prior to weeds setting flower
	Replace missing and removed plant material with same species and similar size to the plant being replaced. Density shall be as specified on drawings. Replacement shall								
			Inspection						
									As listed in 'Watering' above

Maintenance Actions	Tasks	Frequency							
		Weekly	Monthly	Sum	Aut	Win	Spr	As Req'd	As Noted
Fertilising									8 months after the installation of planting
Pruning									
									Annually after flowering

Table 7 Maintenance Table – Mass Container Stock Planting into Environmental Matting

Maintenance Actions	Tasks	Frequency							
		Weekly	Monthly	Sum	Aut	Win	Spr	As Req'd	As Noted
Watering	Water plants to maintain adequate soil moisture and prevent plants from drying out								
	- For the first 12 weeks after planting – 20L per plant								
	- Week 13 to week 26 after planting – 10L per plant								Fortnightly
Weed control	Removal of weeds (manual or herbicide). Where required replace landscape planting damaged by herbicide application.								
Removal of dead/dying plant material	Remove dead or dying plant material								
	- For the first 12 weeks after planting								
	- Week 13 to week 26 after planting								
Replacement planting	Replace removed plant material with same species and similar size to the plant being replaced. Density shall be as specified on drawings. Replacement shall be carried out								
	- For the first 12 weeks following planting		Inspection					Replacement	
	- Week 13 to week 26							Replacement	
	Water replacement planting as listed in 'Watering' above								As listed in 'Watering' above
Environmental matting control	Carry out inspections where environmental matting has been specified to ensure no disruption or displacements has occurred								
	Repair matting displacements. Repair work shall be carried out as soon as practical								

Table 8 Maintenance Table – Individual Tree Planting

Maintenance Actions	Tasks	Frequency							
		Weekly	Monthly	Sum	Aut	Win	Spr	As Req'd	As Noted
Watering	Water plants to maintain adequate soil moisture and prevent plants from drying out								
	- For the first 12 weeks after planting – 20L per plant								
	- Week 13 to week 26 after planting – 10L per plant								Fortnightly
Stake & ties and tree guards	Repair tree ties that have been broken and replace any missing stakes							Repair	
	Maintain tree guards around trees so that plant growth is not impeded or restricted.							Repair	
	Remove tree guards progressively as plants mature								Or 12 months after planting established
Removal of dead/dying plant material	Remove dead or dying plant material								
Replacement planting	Replace missing or removed plant material with same species and similar size to the								
	Replacement shall be carried out within 14								
	Water replacement planting as listed in 'Watering' above								As listed in 'Watering'
Fertilising	Fertilise individual tree plantings with a fertiliser to suit the requirements set out in the specification								8 months after the installation of planting
Pruning	Carry out pruning in accordance with AS 4373								Refer to 'Pruning' in Table 2.0

Table 9 Maintenance Table – Turf Areas

Maintenance Actions	Tasks	Frequency							
		Weekly	Monthly	Sum	Aut	Win	Spr	As Req'd	As Noted
Watering	Water turf until the underlay is moistened to its full depth. Turf must not be allowed to dry out								
									Once every second day
Mowing									Monthly from spring to autumn. Tri-monthly during winter
Replace damaged/dry turf									
									As listed in 'Watering' above
Slashing and Brush-cutting									Monthly from spring to autumn. Tri-monthly during winter
Weed control									

3. Maintenance activities

3.1 Pruning of vegetation for safety

This item includes pruning of vegetation to maintain clear sightlines, to remove dead, diseased, dying and conflicting branches over roads and shared paths. Plants shall be pruned as necessary to promote vigorous new growth. Pruning shall be carried out by experienced personnel. All pruning operations shall be in accordance with AS 4373.

Pruning shall be carried out by experienced personnel and pruning operations shall be in accordance with AS 4373 and shall be as per the requirements set out in RMS Specification M321 'Landscape Maintenance'.

Table 10 Pruning of vegetation for safety

Actions Required	Frequency
Maintain sightline affected areas	
Prune all vegetation growing on road edges which is in the sightline affected areas to a maximum height of 500mm.	Monthly
Pruning trees over roads and shared paths	
Prune all roadside vegetation over roads and shared paths: <ul style="list-style-type: none"> - Vegetation over roads – branches lower than 6m above carriageways - Vegetation over shared paths – branches lower than 3m over path - All areas – overhanging dead, diseased, dying and badly damaged trees or limbs. 	As required/ Annually
Vegetation which obscures signage	
Prune vegetation or seek permission to remove (if likely to be ongoing) <ul style="list-style-type: none"> - Vegetation which obscures part of signage when viewed from approaching traffic within 100m of sign. 	

3.2 Management of non-frangible vegetation

Non-frangible vegetation is considered to be vegetation with a mature trunk diameter of 100mm or greater, measured at 500mm above ground level.

Table 11 Management of non-frangible vegetation

Actions Required	Frequency
Remove all non-frangible vegetation (woody regeneration and weeds) within clear zone areas: Where no guard rail present: <ul style="list-style-type: none"> - <70km/h speed zones: 4m - 70-90km/h speed zones: 5m - >90km/h speed zones: 14m. Where guardrail is present: <ul style="list-style-type: none"> - 2m setback behind guardrail. 	Annually

3.3 Noxious weed control

The growth and spread of noxious weeds shall be controlled according to the measures specified by the local control authority.

Declared noxious weed present in the project site have been listed in Appendix A.

Actions

- Continuously suppress and destroy noxious weeds listed in Appendix A in accordance with their category and associated control treatments.

3.4 Rubbish removal

Actions

Remove all litter and debris from road corridor.

3.5 Fungal and insect attack

Regular inspections shall be carried out to ensure plants are healthy and free from insects. Plants shall be sprayed with the appropriate pesticides to control fungal and insect attacks as per manufacturer's instructions.

Actions

- Inspect planted areas for fungal and insect attack
- Control fungal and insect affected areas.

3.6 Auditing and reporting

Regular auditing and report on maintenance works undertaken and additional works is required. Appendix B includes a Monthly maintenance audit proforma to be used to carry out the audit and reporting of maintenance works.

Actions

- Inspection of entire site to report on Landscape Management Plan compliance and any additional work required.
- The remedial/ maintenance works that are recommended for completion prior to the next report including an estimate of quantity or hours for those items with chargeable rates.

3.7 Watering

Water all planting areas as per the maintenance tables, to ensure moisture is maintained in the topsoil and underlying subsoil throughout the first three months after installation. Continue watering for at least 6 months after planting is complete to ensure healthy growth of plants.

Water all turf areas until the underlay is moistened to its full depth.

Actions

- Continue watering for at least 6 months after planting/sowing is complete to ensure healthy growth of plants.
- For Revegetation – Hydromulch seeding: towards the end of the 6 months reduce the watering regime to ensure acclimatisation of seedlings to the conditions of the project site.
- For turf areas: water turf until the underlay is moistened to its full depth, to the frequency noted in the maintenance table.

3.8 Erosion Control

Rill and sheet erosion control

Regular monitoring shall be carried out on revegetated batters so that there is no rill or sheet erosion greater than 0.5m² in one area.

Rills and sheet erosion formed on batters due to poor drainage shall be repaired and reseeded.

Actions

- Address and fix drainage issue.
- Topsoil shall be placed (lightly compacted) on the rill or sheet erosion area and finished surface level shall be graded evenly to match existing levels.
- Reseed area with same seed mix as originally specified for the area.

Compost blanket erosion control

Regular monitoring shall be carried out on revegetated batters so that there is no erosion greater than 0.5m² in one area.

Actions

- Repair any holes in compost blanket as required.

3.9 Reseeding

At the end of the maintenance period there should be a consistent cover/ surface protection with perennial grasses and species proposed in the relevant hydromulch and compost blanket mixes. Areas that are showing nil or poor germination/growth rates shall be reseeded.

Areas that have failed or that are showing poor growth shall be cleared of dead vegetation, soil cultivated, lost topsoil replaced and the entire area shall be reseeded with the appropriate seed mix specified for the area.

3.10 Weed Control

Weed control in planted areas

All planting areas shall be maintained free of weeds. This is critical to ensure appropriate establishment of new plants and seedlings and that weeds do not outcompete proposed native species.

The majority of container stock planting installed into environmental matting is associated with waterways. Herbicide application of treatment of weeds within 10m of waterways shall be carried out with low toxicity herbicides that will have low impact on the environment. Selected herbicide for these areas shall comply with the requirements of G36 Environmental Protection and shall be approved by the project's environmental officer prior to its application.

Weed control in turfed areas

Remove all undesirable vegetation growth from turfed areas before weeds form seeds. Control manually or through the use of selective herbicides. Where herbicides are used, it shall be carried out in accordance with the manufacturer's recommendations and rates.

Actions

- Remove all undesirable vegetation growth from revegetation areas before weeds form seeds. Control manually or through the use of selective herbicides. Where herbicides are used, it shall be carried out in accordance with the manufacturer's recommendations and rates.
- Where required replace turf damaged by herbicide application.

3.11 Mulching

Where required all mulched areas shall be reinstated to minimise and prevent weed growth.

Actions

- Inspect all mulched areas and where necessary top up areas to maintain the specified depths for each landscape type.
- Ensure mulch is kept clear from plant stems.

3.12 Removal of dead/dying plant material

Actions

- Undertake regular inspections to identify any dead or dying plants.
- Plants that have lost 50% of their normal foliage cover or plants that have died shall be removed and replaced.

3.13 Replacement plantings

Replacements shall be carried out within 14 days of detection.

Actions

- Replace missing or removed plant material with the same species and similar size to the plant being replaced. Density shall be as specified on drawings.

3.14 Fertilising

Fertilise all mass container stock planting areas with a fertiliser to suit the requirements set out in the specification.

Actions

- Fertilise eight months after the initial planting or late spring early summer if and when required.

3.15 Environmental matting control

Regular inspections shall be carried out to ensure placement of the environmental matting is intact. Where water flows may have displaced or disturbed the environmental matting, it shall be adjusted to ensure soil is protected from erosion, to maximise soil moisture retention and minimise weed growth.

Depending on the degree of displacement, additional work may be required, such as:

- Replacement of topsoil
- Replacement of environmental matting
- Replacement of planting.

Actions

- Carry out inspections where environmental matting has been specified to ensure no displacements has occurred.
- Repair matting displacements. Repair work shall be carried out as soon as practical.
- Replacement of topsoil: place topsoil, lightly compacting the affected area. Finish surface level shall be graded evenly to match existing levels. Restoring environmental matting: install to manufacturers recommendations.
- Replanting affected area (as listed in the maintenance tables).

3.16 Stakes and ties and tree guards

Regular inspections shall be carried out to ensure stake and ties are in place, maintain tree guards so that they don't impede the growth of the plant and remove stakes, ties and guards when they are no longer required.

If plants are unable to be self-supported or if stakes are damaged, stake or re-stake plants. Stakes, ties and guards shall be removed progressively where plants are robust with well-developed systems and are strong enough to no longer require support or protection. Table 12 Stake & ties and tree guards.

Actions

- Inspections to be carried out to control the state of stakes & ties and tree guards. Repair tree ties that have been broken and replace any missing stakes – monthly or as required.
- Inspections to be carried out to ensure plant growth is not impeded or restricted by tree guards. Replace damaged and missing tree guards as required – monthly.
- Remove tree guards progressively as plants mature – as required or at 12 months are planting establishment.

3.17 Mowing

Turf areas to be kept neat and tidy.

Actions

- Remove litter and fallen branches prior to mowing.
- Mow areas adjacent to footpaths or within 2m of the road pavement. Remove turf clippings.
- Mow grass to a minimum height of 50mm.
- Mowing to be undertaken as follows: Spring every 4 weeks, summer every 4 weeks, autumn every 6 weeks and winter every 12 weeks – note that Zoysia 'Nara' is a slow growing turf variety and mowing schedule ensures that grass is maintained at the heights nominated above for turf health.

3.18 Replace damaged/dry turf

Actions

- Remove damaged/died turfed areas, cultivate and returf as required.
- Water replacement turf at the frequency listed in the maintenance tables.

3.19 Slashing and Brush-cutting

Actions

- Remove litter prior to brush-cutting operation.
- Slash weeds/grass around planted areas to encourage domination of planted trees and shrubs. Slashing to be undertaken as follows: Spring every 4 weeks, summer every 4 weeks, autumn every 6 weeks and winter every 12 weeks.

Appendices

Appendix A – Noxious weed species

The table below shows the noxious weed species identified for the project area and also includes the noxious class for each species.

Maintenance personnel shall be familiar with these species and able to address their control in accordance with the control requirements set out in the “*Department of Primary Industries (DPI), Noxious and environmental weed control handbook, Fifth edition*”.

The above handbook includes control techniques and suggested herbicides and rates to be used for the management of each weed species.

Table 13 Noxious weed species¹

Noxious class (DPI 2012)	Species Common name	Prevalence within the survey area
Class 4 The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority and the plant may not be sold, propagated or knowingly distributed.	<i>Asparagus asparagoides</i> Bridal creeper	Recorded in moderate abundance in disturbed roadside areas
	<i>Hypericum perforatum</i> St John's Wort	Recorded in moderate to high abundance in disturbed road easements, disturbed areas of remnant vegetation and agricultural areas.
	<i>Lantana camara</i> Lantana	Recorded in low abundance. Restricted to several patches of disturbed native vegetation towards the southern end of the corridor.
	<i>Ligustrum lucidum</i> Broad-leaved Privet	Recorded in high abundance within riparian zones.
	<i>Lycium ferocissimum</i> African Boxthorn	Recorded in moderate to high abundance within numerous patches of native remnant vegetation.
	<i>Olea europaea subsp. cuspidata</i> African Olive	Recorded in high abundance throughout the corridor. Dominant understorey species in many patches of remnant vegetation and unmaintained road easements.
Class 3 The plant must be fully and continuously suppressed and destroyed	<i>Rubus fruticosus</i> Blackberry	Recorded in low to moderate abundance in unmaintained road easements and disturbed areas of vegetation, mainly in riparian or moist situations.
	<i>Bryophyllum delagoense</i> Mother of millions	Recorded in high abundance in several patches of remnant vegetation.

¹ Sinclair Knight Merz, *The Northern Road Upgrade, Narellan to Bringelly Review of Environmental Factors* (REF), October 2012

Appendix B – Monthly maintenance audit proforma

The proforma below is intended to be used while carrying out maintenance inspections. These inspections shall be carried out at intervals not exceeding one month.

Inspection date: _____

Inspector: _____

Location/ Chainage	Landscape Type	Location and description of maintenance work performed	Previously estimated Quantity or hours approved by RMS	Actual quantity or hours
	Pruning of vegetation for safety			
	Management of non- frangible vegetation			
	Noxious weed control			
	Rubbish removal			
	Fungal and insect attack			
	Auditing and reporting			
	Watering			

Location/ Chainage	Landscape Type	Location and description of maintenance work performed	Previously estimated Quantity or hours approved by RMS	Actual quantity or hours
	Erosion Control			
	Reseeding			
	Weed Control			
	Mulching			
	Removal of dead/dying plant material			
	Replacement plantings			
	Fertilising			
	Environmental matting control			

Location/ Chainage	Landscape Type	Location and description of maintenance work performed	Previously estimated Quantity or hours approved by RMS	Actual quantity or hours
	Stakes and ties and tree guards			
	Mowing			
	Replace damaged/dry turf			
	Slashing and brush cutting			

Signed _____

Date: _____

Issued to _____

Date: _____

Appendix C – Pesticides application record sheet

Date and time		
	Finish date and time:	
Who applied the pesticide	Full operator name:	
	Operator contact details:	
	Operator contact phone:	
Who owns/ occupies land	Full owner/ occupier name:	
	Owner/ occupier contact address	
	Owner/ occupier contact phone	
Boundaries of treated area and order of treatment	List treated areas and order of treatment, preferably with map reference	
	List order of treatment	
Problem treated	Identify the pest or problem treated	
Product used	Record either a full name or product code of pesticides used	
Equipment used	Describe the equipment used	
Quantity applied and dilution	Total amount of pesticide product mix used	
	Write if concentrated product or diluted mixture (note rate of dilution)	
Area covered by application	Area of application (in square metres or hectares)	
Wind speed and direction	Estimate wind speed and direction	
	Note changes in weather during application	
Other weather details	Record temperature, humidity/ rainfall	

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	J. Glasby	K. Gow	K.Gow*	L.Sorrell	L.Sorrell*	16.06.17
B	J. Glasby	C.'Dowd	C.Dowd*	A.Penn	A.Penn*	04.04.19

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