ROADS AND MARITIME SERVICES (RMS)

QA SPECIFICATION M3

ROUTINE SERVICES

REVISION REGISTER

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed 1 / Rev 0		New Specification – replaces Specification RMS M20, RMS M30, RMS M40, RMS M50, RMS M60, RMS M200, RMS M300, RMS M400, RMS M500, RMS M600 and RMS M700.	John Statton (GM, IAM)	26.11.2013

GUIDE NOTES

(Not Part of Contract Document)

Purpose

This Specification sets out the planning, asset inspection, intervention and rectification requirements for routine maintenance. The intent of this specification is to provide a structured approach to all aspects of routine services from asset inspection, defect identification, maintenance decision making through to defect rectification.

This specification replaces the maintenance intervention and investigatory requirements and rectification standards described in RMS QA Specifications:

(a) M20 and M200 (Pavements).

(b) M30 and M300 (Corridor Assets).

(c) M40 and M400 (Operating).

(d) M50 and M500 (Drainage).

(e) M60 and M600 (Traffic Facilities).

(f) M700 (Bridge and Tunnel Routine Maintenance).

Using Specification M3

This specification applies only to routine maintenance services on State Roads.

ROUTINE SERVICES

IC-QA-M3

VERSION FOR:
DATE:

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CLAUSE PAGE

FOREWORD

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REVISIONS TO PREVIOUS VERSION

This document is a new RMS Specification.

PROJECT SPECIFIC CHANGES

Any project specific changes have been indicated in the following manner:

(a) Text which is additional to the base document and which is included in the Specification is shown in bold italics e.g. ***Additional Text***.

(b) Text which has been deleted from the base document and which is not included in the Specification is shown struck out e.g. ~~Deleted Text~~.

RMS QA SPECIFICATION M3

ROUTINE SERVICES REQUIREMENTS

1 GENERAL

1.1 SCOPE

This Specification sets out the planning, intervention and rectification requirements for Routine Services. The work to be executed under this Specification consists of:

(a) Meeting the Maintenance Performance Objectives (Clause 2).

(b) Asset inspection, defect and accomplishment recording, and planning works (Clause 3).

(c) Reactive Maintenance activities (Clause 4).

(d) Routine Maintenance activities (Clause 5).

(e) Incident Response Works (Clause 6).

1.2 STRUCTURE OF THE SPECIFICATION

This Specification includes a series of annexures that detail additional requirements.

1.2.1 Details of Work

Details of work are shown in Annexure M3/A.

1.2.2 Measurement and Payment

Annexure M3/B lists the maintenance activities and units of measure.

The method of measurement and payment must comply with Annexure M3/B.

1.2.3 Schedules of HOLD POINTS

Annexure M3/C lists the **HOLD POINTS** that must be observed. Refer to Specification RMS Q for the definitions of **HOLD POINTS.**

1.2.4 Planning Documents

Where appropriate, use the Austroads Guide to Pavement Technology series and the associated RMS supplements when planning and carrying out work under this Specification. These documents are to be regarded as a guide only and do not take precedence over this Specification.

Where this Specification requires reference to a manufacturer's written recommendations, such recommendations must be made by the manufacturer and supplied to you. Attach copies of such recommendations to your PROJECT QUALITY PLAN.

1.2.5 Referenced Documents

Unless otherwise specified the applicable issue of a referenced document other than an RMS Specification, must be the issue current at the date one week before the closing date for tenders, or where no issue is current at that date, the most recent issue.

Standards, specifications and test methods are referred to in abbreviated form (e.g. AS 1234). For convenience, the full titles are listed in Annexure M3/M.

1.3 DEFINITIONS

The terms 'you' and 'your' mean 'the Contractor' and 'the Contractor's' respectively.

For the purpose of this Specification, the following definitions apply:

'Abrupt discontinuity': Includes stepping at concrete joints, leading edge of stock grids, bridge abutments and pits, and any isolated 'spot' defect such as a vertical projection.

'Asset': Includes any Principal owned asset such as road pavements, structures, roadside assets, facilities and traffic control devices included in the Contract.

'Culvert': One or more adjacent pipes or enclosed channels for conveying a watercourse or stream below the formation level of a road up to a maximum overall span of 6 metres. A culvert marker peg marks its position.

'Debris': Any collection of fragments or material such as litter, detritus, shredded tyre pieces, road spillages, fallen leaves or branches, animal carcasses, deposits of wind blown sand or grit, deposits of loose aggregates, slips (collapsing banks and fretting from cuttings and embankments), rockfall and build up of any material resulting from road accidents, passing traffic or climatic conditions (e.g. sediment buildup).

'Defect': A defect is a visible or measurable failure of an asset which affects the asset's functionality, aesthetic qualities or is an undesirable condition on the Road Network which affects the use of the road or road safety. A defect is also any condition that is likely to become a hazard before the next scheduled or required inspection.

'Exceptional circumstances': Includes a rare instance or extraordinary situation such as a natural disaster or very heavy and prolonged rainfall that results in widespread defects developing across the Road Network. Refer to Clause 3.4.6.

'Forward works program': Includes periodic maintenance (works and treatments undertaken at fairly regular intervals typically longer than one year) and capital renewal works (major works undertaken to return the asset to its original as-constructed condition).

'Graffiti': Any inscription or drawing scribbled, scratched or sprayed on a surface.

'Hazard': A defect may become hazardous if the intervention criteria are reached or exceeded or it is determined that there is an unacceptable risk to road safety as described in Clause 3.4.1.

'Incident': Incidents include but not limited to abandoned vehicles, traffic accidents, vandalism, storm damage, rock falls and land slips, floods, fires, and catastrophic structural failures and spills or discharges (accidental or intentional).

'Litter': Any single item with a dimension greater than 100 millimetres. For example items such as paper, refuse, rubbish, garbage, tyre parts, drink bottles and cans or any item of a like nature.

'Maintenance clear zone': Means the area, measured from edge of travelled way, to the line of existing woody species (> 50 millimetres base diameter, measured 300 millimetres from base of tree) or within area previously cleared where regrowth is evident, but not wider than 9 metres.

'Maintenance Performance Objectives': The performance objectives of Routine Services are defined in Table M3.1.

'Large Sign': A sign with a sign face > 4 square metres.

'Small Sign': A sign with a sign face ≤ 4 square metres.

'Pedestrian fence': Pedestrian fences include concrete, steel rail, timber, plastic and steel wire rope fencing systems.

'Pedestrian zone': Areas in which there are significant pedestrian movements such as pedestrian crossings, footpaths, cycleways, bus stops and within rest areas.

'Poster': Any poster, sign, sticker, unauthorised third-party sign etc. Poster may include supports and items that cause hazards or potential hazard that: interferes with the effectiveness of a traffic control device; distracts a driver at a critical time; obscures a drivers view; gives instructions such as "Stop" or "Halt"; attempts to imitate a traffic control device; distracts a driver's attention from the driving task; or is considered to be a dangerous obstruction.

'Reactive Maintenance': A category of maintenance that includes repair of safety related defects and repair of other defects needing a short response time. The requirements for Reactive Maintenance are described in detail in Clause 4.

'Rest area': A designated area adjacent to a highway where vehicles can stop temporarily for the rest and relaxation of drivers and passengers. 'Rest area' includes all associated items such as playgrounds, picnic tables, barbeques, water storage, buildings, canopy, shelters, gates, electrical supply systems, site fencing, advisory signs and other items.

'RMAP': Means Routine Maintenance Annual Plan as described in Clause 3.3.

'Road Network': Means the network of roads included in the Contract.

'Routine Maintenance': A category of maintenance activity that can generally be planned and scheduled in advance as described in Clause 5.

"SN": Means Subnetwork as described in Clause 3.2.

"UOM": Means the unit of measurement to be adopted for reporting work accomplishment.

'Vegetation-free zone': The area in which vegetation is not permitted to grow or encroach and include the space 2.5 metres above pathways and cycleways and 5 metres above trafficable road pavement (including road shoulders).

For all other descriptions, definitions in the Austroads' Glossary of Austroads Terms will apply.

2 MAINTENANCE PERFORMANCE OBJECTIVES

The performance objectives of Routine Services are described in Table M3.1.

Table M3.1 – Maintenance Rationale for Routine Services

Code Group	Description	Performance Objectives
100	Asset Inspections	(a) Monitor the condition of assets and determine when routine maintenance intervention is likely to be required. (b) Implement systems and processes that promote consistency in the identification and rectification of defects across the Road Network. (c) Establish a process that will effectively manage the identification and rectification of hazards.
200	Pavement	(a) Rectify defects in a timely fashion so as to minimise the rate of pavement deterioration and to provide safe, consistent driving conditions. (b) Ensure that the road remains open to traffic by providing safe conditions under the prevailing weather conditions, traffic volume, and speed zone. (c) Protect the structural integrity of road pavements.
300	Corridor	(a) Provide safe travel by removing obstructions. (b) Preserve and maintain roadside assets to ensure they are fit for purpose. (c) Protect and sustain the natural environment (d) Protect and preserve heritage such as indigenous artefacts and significant sites, post-European settlement historic structures and significant sites.
400	Operational Assets	(a) Maintain amenities that improve the safety of road users such as roadside rest areas.
500	Drainage	(a) Maintain surface drains to ensure free and unrestricted flow of road water away from the pavement. (b) Maintain drainage structures such as pipes and culverts to ensure the free and unrestricted flow of water. (c) Protect the natural environment by maintaining gross pollutant traps and sedimentation basins. (d) Maintain subsoil drains to ensure the free and unrestricted flow of water. (e) Maintain stormwater devices to ensure the free flow of surface water into the drainage system and conveyance to the designated point of discharge. (f) Monitor and maintain dewatering pumping stations to ensure protection of the road and continued access.

Code Group	Description	Performance Objectives
600	Traffic Facilities	(a) Support the enforceability of road traffic regulations, warn or alert motorists of road conditions, and to provide clear information to motorists on travel destinations in day and night conditions and thereby assist in the efficient operation of the road network. (b) Provide clear delineation of the road formation by way of guide posts, raised pavement markers and line marking. (c) Provide required structural resistance to errant vehicles to minimise accident severity. (d) Provide protection to pedestrians and guidance for vision impaired pedestrians. Pedestrian fencing is maintained to ensure fencing is effective in controlling pedestrian movements and to stop pedestrians crossing at dangerous locations.
700	Bridges and Tunnels	(a) Rectify minor bridge and tunnel defects and drainage obstructions to ensure minimum service levels including safety of pedestrians and vehicular traffic. (b) The provision of safety and amenity on bridges or in tunnels through maintaining ventilation fans, air quality monitoring, lighting, signs, pedestrian lifts, emergency pedestrian access, fire-fighting systems, radio and public address systems and dewatering pumping systems.
800	Incident Response	(a) Ensure all emergencies and incidents which are hazardous are actioned immediately. Provide timely emergency response to assist the public and minimise disruption caused by temporary loss of use of the asset. Support the Police and Fire Brigades to control hazardous materials.

3 MANAGEMENT OF DEFECTS

3.1 ASSET INSPECTION REQUIREMENTS

Defects are identified during scheduled and unscheduled visual inspection of the Road Network. The following inspections must be carried out using trained and competent personnel:

(a) Prompted inspection - Prompted inspections are needed when an event, incident or defect that is hazardous or potentially hazardous is reported or identified by any other means (refer Clause 4.1).

(b) Routine inspection – Routine inspections involve both daytime and night-time asset inspections and occur at the frequency specified in Clause 5.1. Daytime inspections involve driving each road carriageway, generally in one direction only, to evaluate and record defects and the condition of assets. The direction of travel must alternate for each subsequent inspection. Identify accident damage or deformation in superstructures of tunnels and bridges and ancillary elements such as barriers, deck scuppers and waterways. Inspections at night involve driving each road in both directions to observe, evaluate and record defects and the condition of delineators and traffic signs.

(c) Nominated inspection - These include inspection of assets that are further away from the roadway and as such defects may not be readily identifiable from routine drive-by inspections (e.g. boundary fences, culverts and off-road cycleways). Details of the required nominated

inspections are detailed in Table M3/A.1 and the approved Routine Maintenance Annual Plan (refer Clause 3.3).

An asset inspection system must be implemented, as agreed by the Principal, and operated to:

(a) Record all defects and incidents including those reported by the public.

(b) Identify hazards.

(c) Provide a method for tracking compliance with the inspection and intervention requirements nominated in this Specification.

Record defects in a form acceptable to the Principal. Isolated defects are to be individually recorded. Where a large number of defects exist in close proximity, it is acceptable to record those defects as a group rather than individually. In all cases, the location reference is to be suitably detailed to enable defects to be easily located. Maintain a Maintenance Defects Register (MDR) of defects that do not need immediate action. Only defects that are likely to be scheduled for repair within the next two years need to be recorded in the MDR.

3.2 PROCESS FOR MANAGING DEFECTS

Defects must be managed to ensure that risks to loss of service and road safety are minimised. The general approach for managing defects is outlined below and illustrated in Figure M3.1:

(a) Reactive Maintenance – Defects must be rectified in order to comply with the intervention standards specified in Clause 4. The requirements for intervention might differ depending on the Subnetwork (SN) ranking designated for each road length as follows:

  (i) Higher trafficked State Roads - Subnetwork Rankings 4, 5 and 6 (SN 4-6).

  (ii) Lower trafficked State Roads - Subnetwork Rankings 1, 2 and 3 (SN 1-3).

(b) Routine Maintenance – Defects must either be:

  (i) Rectified at the time or intervention frequency nominated in Clause 5, Annexure M3/A or specified in the approved Routine Maintenance Annual Plan (RMAP). The intervention frequency is a cyclical period within which the identified service must be undertaken.

  (ii) Prioritised for repair in accordance with Clause 5. You have some degree of discretion in determining the need for or timing of defect rectification in order to best meet the Maintenance Performance Objectives and the principles for prioritisation outlined in Clause 3.4.

(c) Incident Response – You must respond to any incident in accordance with Clause 6.

3.3 PLANNING MAINTENANCE WORKS

The Routine Maintenance Annual Plan (RMAP) is an essential planning tool for the management of Routine Maintenance activities. The RMAP outlines the annual program of works and contains information on the nature and timing of maintenance activities. Through active involvement in the planning process you are expected to target opportunities to improve efficiency, increase work outputs, improve coordination with other works and generally maximise value for money. The RMAP must be based on asset and risk management principles and be developed in consultation with the Principal. The intent of the RMAP process is to plan an annual program of works with as much precision as possible. A sample format for the RMAP is shown in Figure M3.2.

HOLD POINT

Process Held:	Commencement of Routine Services in a new financial year.
Submission Details:	An RMAP that matches the Principal's advice in regard to indicative funding, any discussions with the Principal regarding maintenance priorities and assessment of required maintenance activities to best manage asset and service risks.
Release of Hold Point:	The Principal may direct ways in which the RMAP could be improved prior to authorising the release of the Hold Point.

The Agreed RMAP will be used to monitor the performance of the Services by comparing, on a quarterly basis, the actual expenditure and accomplishment with the plan. The RMAP must be reviewed and updated every quarter to reflect changing priorities. The quarterly update must consider the costs incurred, and the accomplishment achieved in the previous quarter. Each update of the RMAP must have a different version number and must be submitted to the Principal.

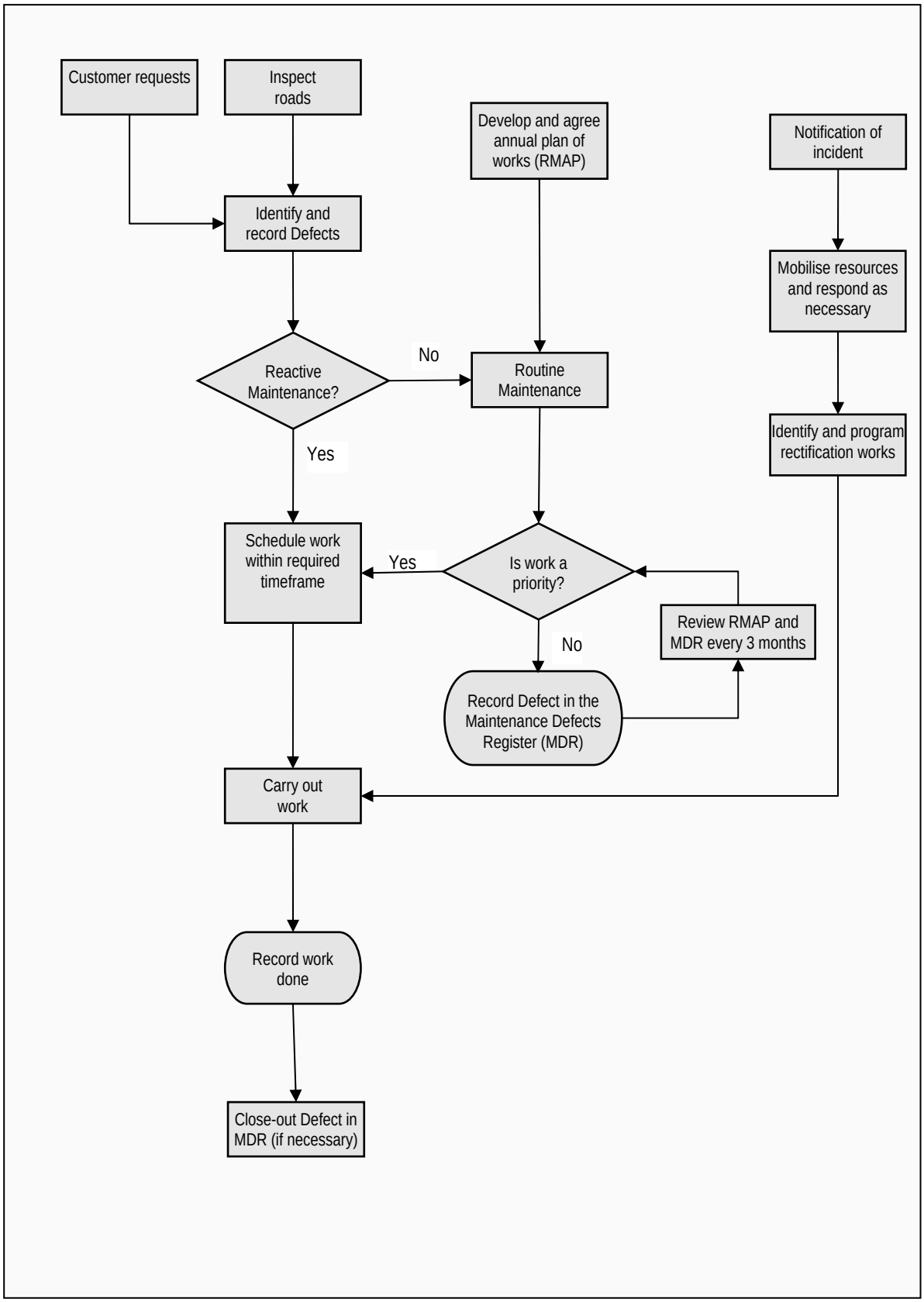

Figure M3.1 – Process for undertaking Routine Services

	Code	Proposed Description	Allocation	J	A	S	O	N	D	J	F	M	A	M	J	Comment / Details
1	**X0X**	**Reactive Maintenance**	**$ 125,000**													
	101	Prompted Inspection		x	x	x	x	x	x	x	x	x	x	x	x	
	201	Repair Pothole		x	x	x	x	x	x	x	x	x	x	x	x	
	202	Repair Pavement Edge		x	x	x	x	x	x	x	x	x	x	x	x	
	203	Repair Wearing Surface		x	x	x	x	x	x	x	x	x	x	x	x	
	204	Minor Pavement Patch		x	x	x	x	x	x	x	x	x	x	x	x	
	301	Remove Obstruction and Offensive Litter		x	x	x	x	x	x	x	x	x	x	x	x	
	302	Remove Graffiti		x	x	x	x	x	x	x	x	x	x	x	x	
	303	Reactive Roadside Maintenance		x	x	x	x	x	x	x	x	x	x	x	x	
	601	Reactive Traffic Facilty Maintenance		x	x	x	x	x	x	x	x	x	x	x	x	
	701	Reactive Bridge and Tunnel Maintenance		x	x	x	x	x	x	x	x	x	x	x	x	
2	**110**	**Inspections**	**$ 34,000**													
	111	Routine inspections		x	x	x	x	x	x	x	x	x	x	x	x	
	112	Nominated inspections									x					Inspect boundary fences on road X
3	**210**	**Cracks and Joints**	**$ 84,000**													
	211	Seal Pavement Crack									x	x	x			Seg 4560-4720
	213	Cross-Stitch Crack and Joint														
	214	Repair Joint in Concrete Pavement														
	215	Repair Spall in Concrete Pavement														
4	**220**	**Unsealed Pavement**	**$ 75,000**													
	221	Grade Formation				x	x	x								Road X and Y
	222	Resheet Formation														
	223	Incorporate New Base Material														
	224	Formation Earthworks														
5	**230**	**Slab Stability**	**$ -**													
	231	Stabilise Concrete Slab														
6	**240**	**Shoulders**	**$ 265,000**													
	241	Shoulder Grading		x	x							x	x	x	x	Roads X, Y and Z = 150 shoulder km
	242	Resheet Shoulder														
	243	Incorporate New Shoulder Material														
7	**270**	**Surface Retexturing**	**$ 89,000**													
	271	Rexture Road Surface									x	x	x			Road X
8	**310**	**Vegetation Control**	**$ 126,000**													
	311	Control Ground Vegetation							x		x		x			3 cuts planned per year
	312	Trim Tree		x	x	x	x									Road X and Y
	316	Remove Tree														
	317	Create New Fire Break														
	319	Maintain Landscaping							x					x		
9	**330**	**Roadside Assets**	**$ 9,000**													
	331	Service Vacant Property														No vacant properties
	333	Renew Boundary Fence														
	336	Renew Noise Wall														
	339	Collect Roadside Litter and Sweep Roadway			x		x		x		x		x		x	As per Table M3/A.7 amd M3/A.8.
10	**350**	**Slope Stability**	**$ 2,000**													
	351	Maintain Roadside Slope														
	354	Renew Rockfall Protection Fencing and Netting														
	355	Renew Retaining Wall														
11	**360**	**Winter Maintenance**	**$ -**													
	363	Snow Clearing Operations														
12	**420**	**Rest Areas and Toilets**	**$ 75,000**													
	421	Service Toilet														
	422	Renew Toilet														
	424	Permanently Close Toilet or Rest Area														
	425	Install, Service and Remove Portable Toilet														
	428	Service Rest Area														
	429	Renew Rest Area														
13	**510**	**Drainage**	**$ 55,000**													
	511	Renew Surface Drain														
	512	Renew Subsurface Drain										x	x	x		Install in cutting Z
	513	Clean Culvert			x	x	x			x	x	x				All culverts on Road G
	515	Clean Drainage Pit														
	516	Renew Drainage Structure														
	517	Clean Sedimentation Basin														
	518	Clean Gross Pollutant Trap			x			x			x			x		Inspect and/or clean every 3 months
14	**610**	**Traffic Facilities Maintenance**	**$ 18,000**													
	611	Maintain Non-Pavement Delineation		x		x		x		x		x		x		Intervention frequency of 2 months
	612	Renew Safety Barrier				x			x			x			x	Repair damaged safety barriers 3 monthly
	613	Renew Pedestrian Fence										x				Upgrade fencing at intersection X
	614	Repair Sign			x		x		x		x		x			
	615	Renew Small Sign				x			x			x			x	
	616	Renew Large Sign				x			x			x			x	
	617	Renew Longitudinal Linemarking									x					
	618	Renew Pavement Marking								x						
	619	Renew Raised Pavement Marker														
15	**710**	**Bridge and Tunnel Maintenance**	**$ 55,000**													
	711	Repair Timber Element		x		x					x			x		
	712	Repair Painted Surface					x									Spot painting required on Bridge X, Y and Z
	713	Repair Concrete			x	x				x	x					
	714	Repair Masonry and Brick				x		x				x		x		
	715	Repair Bridge Railing		x	x				x		x		x			
	716	Rpair Bridge Bearing			x			x			x		x			
	717	Repair Bridge Joint				x		x		x						
	718	Clean Tunnel and Steelwork		x		x		x			x				x	
	719	Repair Scour Protection System			x			x		x				x		
16	**800**	**Incident Response Works**	**$ 50,000**													
			$ 1,012,000													

Figure M3.2 – Sample format of Routine Maintenance Annual Plan

3.4 WORK PRIORITISATION

3.4.1 Hazardous or Potentially Hazardous Defects

Some defects may be hazardous or potentially hazardous and all reasonable steps must be taken to rectify or manage the hazard. If it is not possible to rectify or remove the hazard immediately upon identification, all measures that are reasonably necessary to safeguard road users and others (including the erection of warning signs, barriers and the provision of traffic control, etc.) must be undertaken until such time as repair or removal can be effected or a relevant authority directs otherwise. In determining whether a defect is a hazard consider the:

(a) Severity and consequence of the defect.

(b) Extent and nature of the defect (combined effect of multiple occurrences of the defect within localised area).

(c) Potential impact of the defect on the road user (likelihood and consequence).

(d) General road conditions (i.e. geometry, alignment, pavement width, and other relevant road conditions) and prevalent weather conditions.

(e) Location of the defect (e.g. wheel path).

(f) Effect on pedestrians, cyclists and motor cyclists (e.g. consider the location of schools, retirement villages, pedestrian crossings).

(g) Traffic volumes – normal peak flow and other times of special peak flow.

Regardless of any specific intervention standard or guideline nominated in this Specification, all actions necessary to maintain road user safety must be carried out.

3.4.2 Reactive Maintenance Defects

The intervention standards specified in Clause 4 must be complied with at all times.

3.4.3 Routine Maintenance Defects

Defects addressed through Routine Maintenance activities must be prioritised in order to best meet the Maintenance Performance Objectives and the following provisions:

(a) Does the defect represent a risk to human health or safety? Assess the need for temporary works to facilitate safe passage until such time as a permanent treatment is decided and executed.

(b) Is this activity required to ensure compliance with statutory obligations such as legislation relating to cultural heritage protection or fire risk? If so, you must act to ensure appropriate compliance.

(c) Is there a specific intervention frequency nominated in Annexure M3/A.1? If so, you must ensure that the required service is undertaken within the required timeframe.

(d) Is there a specific requirement to carry out work specified in the approved RMAP? If so, you must either undertake the required service or amend the approved RMAP to reflect changing priorities.

(e) Will more timely intervention offset potential adverse social and environmental effects?

(f) Is timely intervention required to ensure that an operational asset remains available for use? The significance of the impact will vary according to the type of asset and its effect on traffic and with the strategic importance of the road to the community.

(g) What is the impact on road users, particularly road user costs and travel time reliability? The size of the impact will increase with traffic volume.

(h) Can the asset, due to physical deterioration (e.g. faded, illegible sign), or physical damage (e.g. vandalism) continue to deliver the appropriate level of service?

(i) Is this activity required for preventative reasons? Will more timely intervention offset the physical deterioration of the asset and ensure optimal asset performance?

(j) What is the financial impact to the Principal and the community? Has the economic life of the asset been exceeded? Is it economically efficient to continue to maintain or operate the asset?

(k) Is the cost of repairing or replacing an asset component relatively low in comparison to establishment and traffic management costs? If so, then a proactive program to replace such components which are approaching the end of their service life may be cost-effective.

(l) Has the asset become technically obsolete due to the introduction of new technology? Replacement of the asset by new or possibly improved technology may result in lower total costs than on-going maintenance of the existing asset.

(m) Is this activity required at all due to imminent works planned in the Forward Works Program?

(n) Consider the intervention guidelines specified in Clause 5.

3.4.4 Recurring Defects

Recurring defects may indicate an underlying problem that should be addressed. You must investigate what has caused the defect and identify the most appropriate treatment to restore asset condition. Pavement failures resulting from sink holes, subsidence, and culvert failure or slope instability etc. must be immediately referred to the Principal.

3.4.5 Defects addressed through Periodic and Asset Renewal Works

It may be more appropriate for widespread or extensive defects to be rectified through periodic and asset renewal works. Assess the condition of assets and identify the cause of defects so as to best determine the most appropriate management action. Defects may need to be identified as an input to the development of the Forward Works Program together with other information, such as pavement condition data, to determine a suitable longer term treatment and appropriate timing of the works. Notify the Principal of the need for alternative treatments to be included in the Forward Works Program where defects are too extensive to be addressed through the Routine Services. Temporary repairs may be necessary in order to keep the asset in an operational and safe condition until a permanent repair is carried out.

3.4.6 Exceptional Circumstances

It is recognised that exceptional circumstances may be encountered where a timely or immediate response to hazards (or a response to defects in accordance with this Specification) may not be possible. If exceptional circumstances exist and it is not possible to respond to a defect, hazard or an incident, then the following actions are to be undertaken:

(a) Immediately notify the local Police and request assistance.

(b) Arrange measures or actions (including the erection of warning signs, barriers and the provision of traffic control) within a time frame the Principal considers reasonable in order to protect persons and property.

(c) Advise the Principal.

(d) Raise a Non-Conformance Report in accordance with the Quality Management Plan including the planned disposition. A Non-Conformance Report arising out of exceptional circumstances has no bearing on the assessment of your performance.

3.5 REQUIRED STANDARD OF WORK

The standard of work applicable to Reactive Maintenance is detailed in Clause 4 and for Routine Maintenance in Clause 5. In addition, the execution of all works must comply with the following general requirements:

(a) The work area must always be left clean. Any debris or excess material must be swept from the travelled way and must not impede surface drainage or stormwater drainage systems. Loose stones must be swept from any patch and adjoining pavement.

(b) All waste must be disposed of in a legal and responsible manner.

(c) Damage caused to any assets must be promptly rectified.

(d) Damage to existing vegetation must be avoided.

(e) Where surfacing aggregate is used it must remain proud of the binder such that:

  (i) Any binder is not picked up by the tyres of traffic, and

  (ii) The surface repair must have no exposed bituminous material.

(f) Use repair material and binding agents that do not cause any damage to the integrity of the existing bituminous material.

(g) The repair must not adversely affect the transverse drainage of the pavement or shoulder.

(h) Temporary pavement markings must be installed to ensure adequate delineation.

(i) Implement environmental control methods to minimise or prevent pollutant material entering waterways.

All materials used must comply with relevant specifications and, where applicable, the following requirements.

(a) Unless otherwise specified, repairs must be carried out with materials that are compatible and consistent with, the existing pavement.

(b) Repair material and binding agents used must not cause damage to the integrity of the existing bituminous surfacing. The surface must provide a uniform water resistant layer to protect the pavement from surface infiltration of moisture. The skid resistance of the surface must be consistent with that of the adjacent work area.

(c) The use of cold mix is to be limited to temporary pavement repairs.

All plant used must comply with Specification RMS G22.

A daily record must be kept detailing the location and timing of repair works including the achieved work accomplishment in the unit of measure specified in Appendix M3/B.

4 REACTIVE MAINTENANCE REQUIREMENTS

4.1 PROMPTED INSPECTION (ACTIVITY 100)

4.1.1 Intervention Standard

Defect/ Prescribed Action	SN 4 - 6	SN 1 – 3
(1) Undertake inspection of assets following heavy rains and storms within:	1 day	1 day
(2) Undertake asset inspection which is prompted by a public complaint within:	5 days	5 days

4.1.2 Standard of Work

(a) Record and manage defects in compliance with Clause 3.

(b) Refer to Clause 6 for incident response requirements.

4.2 REPAIR POTHOLE (ACTIVITY 201)

4.2.1 Intervention Standard

Defect/ Prescribed Action	SN 4 - 6	SN 1 – 3
(1) The plan dimension of a pothole or delamination must not exceed:	200 mm	400 mm
(2) The depth of a pothole or delamination must not exceed:	30 mm	50 mm

4.2.2 Standard of Work

(a) The failed area must be squared up and the edges trimmed to obtain vertical sides. Enough of the underlying unsound material must be removed such that a solid base is reached and a proper repair can be ensured. Any loose material ensuing from the operation or otherwise must be removed.

(b) Apply a tack coat to the bottom and sides of the patch.

(c) Potholes must be filled and compacted to within +5 millimetres of the surrounding pavement surface. Compaction must achieve a uniformly dense, free from segregation and well bonded repair sufficient to ensure that it is not displaced, shoved, deformed, or picked up by traffic.

(d) The repaired surface must provide a uniform water resistant layer to protect the pavement from surface infiltration of moisture. The skid resistance of the surface must be consistent with the adjacent work area. Aggregate must remain proud of the binder so that the binder is not picked up by the tyres of traffic.

(e) Temporary repair methods should only be used where rapid deterioration of the pavement has not allowed sufficient time to schedule permanent repairs or there are widespread defects across the Road Network that warrant prompt action. Temporary repair work may need to be repeatedly carried out at the same location in order to maintain safe conditions prior to the completion of permanent repairs. Appropriate monitoring of the temporary pavement repair must be instigated to ensure hazards do not return.

4.3 REPAIR PAVEMENT EDGE (ACTIVITY 202)

4.3.1 Intervention Standard

Defect/ Prescribed Action	SN 4 - 6	SN 1 – 3
(1) An edge break must not encroach into the travelled way by more than:	0 mm	150 mm
(2) The depth of an edge drop-off within 0.5 metres of the travelled way must not exceed:	40 mm	60 mm

4.3.2 Standard of Work

(a) Remove unsuitable shoulder material (e.g. material that is worn or is unable to support the pavement edge) and replace with new shoulder material. Remove any cracked or loose material from the area to be repaired.

(b) Apply a bitumen emulsion to the horizontal and vertical faces of the repair area and ensure that it overlaps the existing seal.

(c) The seal width must be restored to conform to the shape of the surrounding road surface and within 0 to +100 millimetres of the original line of the seal edge.

(d) Height of the repaired edge must not exceed the height of surrounding road surface.

4.4 REPAIR WEARING SURFACE (ACTIVITY 203)

4.4.1 Intervention Standard

Defect/ Prescribed Action	SN 4 - 6	SN 1 – 3
(1) Rectify localised bleeding or flushing resulting in bitumen pick up on vehicle tyres within:	1 day	2 days
(2) Rectify localised aggregate stripping and ravelling within:	2 days	5 days

4.4.2 Standard of Work

(a) The repaired surface must improve the skid resistance of the defective surface and provide a uniform water resistant layer to protect the pavement from surface infiltration of moisture.

(b) If warranted cool the bleeding surface with water and apply a smaller size aggregate, 5 or 7 millimetre aggregate or grit over the area where there is likelihood that vehicle tyres will pick-up bitumen.

4.5 MINOR PAVEMENT PATCH (ACTIVITY 204)

4.5.1 Intervention Standard

Defect/ Prescribed Action	SN 4 - 6	SN 1 – 3
(1) A trip hazard in a pedestrian zone and cycleway must not exceed:	15 mm	15 mm
(2) The height/depth of an abrupt discontinuity (< 20 square metres) must not exceed:	30 mm	50 mm
(3) The height/depth of bump or depression (< 20 square metres) must not exceed:	40 mm	60 mm

Defect/ Prescribed Action	SN 4 - 6	SN 1 – 3
(4) The height/depth of a shove or isolated rutting (< 20 square metres) must not exceed:	50 mm	70 mm
(5) The area of pavement affected by water ponding must not exceed:	2 square metres	5 square metres
(6) Any pavement defect causing concentrated water flow that results in an increased risk of aquaplaning must not exceed:	2 square metres	5 square metres

4.5.2 Standard of Work

(a) Permanent repair of patches must comply with Specification RMS M250 or RMS M258.

(b) The levelling (and wearing) course must be repaired to within ±5 millimetres of the surrounding pavement surface. Final compaction is to be such that no impressions are left by compaction equipment on the rectified area.

(c) Seal the patch as soon as possible where there is any likelihood that moisture will penetrate the patch. Use sufficient bitumen emulsion to prevent aggregate from stripping from the patch, but not so much as to cause a fatty surface.

(d) Temporary repair methods should only be used where rapid deterioration of the pavement has not allowed sufficient time to schedule permanent repairs or there are widespread defects across the Road Network that warrant prompt action. Temporary repair work may need to be repeatedly carried out at the same location in order to maintain safe conditions prior to the completion of permanent repairs. Appropriate monitoring of the temporary pavement repair must be instigated to ensure hazards do not return.

(e) Footpath and paved areas must be reinstated to a functional state, by matching the existing levels and appearance of existing adjoining areas using materials that are compatible in quality, colour and texture. Ensure crossfall and longitudinal gradient is maintained for the repaired footpath and paved areas. Comply with Specification RMS R53 and RMS R173.

4.6 REMOVE OBSTRUCTION AND OFFENSIVE LITTER (ACTIVITY 301)

4.6.1 Intervention Standard

Defect/ Prescribed Action	SN 4 - 6	SN 1 – 3
(1) Remove hazardous litter and debris that is likely to cause damage to a motor vehicle or person in a motor vehicle within:	4 hours	4 hours
(2) Remove any litter and debris from blocked drain, pipe/culvert or grates that cause water to pond on the roadway or flooding with potentially to cause property damage within:	4 hours	4 hours
(3) Clear snow banks causing localised water ponding or snow and ice causing a potential driving hazard within:	4 hours	4 hours
(4) Remove offensive litter (e.g. litter producing an unpleasant smell or attracting pests) within:	1 day	2 days
(5) Remove any litter and debris from safety ramp or arrestor bed within:	1 week	2 weeks

4.6.2 Standard of Work

(a) All litter and debris must be collected, and disposed off in a legal and responsible manner. Prevent the leakage of liquid or sediment during material transport (e.g. sealing the trays of trucks used for transporting to disposal area).

(b) Where an animal carcass poses a hazard to road users (in rural areas, it may be appropriate to move the animal carcass to a safe location rather than removing and disposing it completely). Check the pouch of native animals and notify appropriate authorities to care for any surviving young.

(c) No more than 5 per cent of the cross sectional area of drains and waterways is to remain blocked after clearing. Avoid, where possible, the removal of deadwood with hollows as this may be providing wildlife habitat.

(d) Safety ramps and arrestor beds must be raked level.

4.7 REMOVE GRAFFITI (ACTIVITY 302)

4.7.1 Intervention Standard

Defect/ Prescribed Action	SN 4 - 6	SN 1-3
(1) Remove posters that constitute a hazard or potential hazard (e.g. interferes with the effectiveness of a traffic control device; distracts a driver at a critical time; obscures a driver's view; gives instructions to traffic such as "Stop" or "Halt"; attempts to imitate a traffic control device; or is considered to be a dangerous obstruction) within:	4 hours	1 day
(2) Remove offensive graffiti which is visible from the travelled way or pedestrian zone within:	2 days	2 days
(3) Remove graffiti which is attracting public complaint within:	7 days	7 days
(4) Investigate removal of graffiti which is visible from the travelled way or pedestrian zone within:	2 months	3 months

4.7.2 Standard of Work

(a) Remove graffiti and clean the surface well. Employ methods that ensure that the surface of an asset is not damaged by the process of removing the graffiti. Graffiti removal from anti graffiti surfaces must be in accordance with recommended processes for the specific anti-graffiti coatings. Surfaces with anti-graffiti coatings are listed in Table M3/A.2. High pressure cleaning techniques are not to be used for the removal of graffiti from porous surfaces or those susceptible to damage (e.g. abrasion) from frequent use of this method.

(b) When using a 'painting over' method of removal try and get the closest match possible to the original paint, surface finish or surrounding area. Paint in rectangular shapes and blend into adjacent area as much as possible. Cover the graffiti completely and apply enough coats to minimise 'bleed through'. Special care will be required to ensure compatibility with protective coating systems on steel bridges/ structures.

(c) Remove unauthorised posters from assets by appropriate means such that the strata from which the items are removed are not damaged and, where possible, minimal damage to the poster occurs. Record details of the poster, sign, location and, where practical, name and address of the owner. Once removed, unauthorised posters (including supporting structures) must be stored for one month before disposing.

4.8 REACTIVE ROADSIDE MAINTENANCE (ACTIVITY 303)

4.8.1 Intervention Standard

Defect/ Prescribed Action	SN 4 – 6	SN 1 – 3
(1) Repair any breach in boundary, fauna fencing, gate and stock grid/race within:	3 days	1 week
(2) Make temporary repair to noise walls damaged through vehicular impact and vandalism within:	3 days	1 week
(3) Repair any non-functioning environmental measures within stockpile sites within:	2 weeks	2 weeks
(4) Remove trees, overhanging branches and/or broken tree limbs in danger of falling onto the travelled way, pedestrian zone, cycleway or private property within:	1 week	1 week
(5) Notify the Principal of illegal use or occupation of a stockpile site or vacant land within:	1 week	2 weeks

4.8.2 Standard of Work

(a) Fencing, stock grids and races should provide a barrier between the road traffic and humans and/or animals, both for their safety and for the safety of the road traffic.

(b) Signs (e.g. warning signs) attached to existing fencing or stock grids and races must be legible and must be reinstalled after maintenance activities are completed.

(c) Where isolated components (e.g. a post) must be replaced, ensure that the replaced components are of similar material and dimensions to the existing.

4.9 REACTIVE TRAFFIC FACILITY MAINTENANCE (ACTIVITY 601)

4.9.1 Intervention Standard

Defect/ Prescribed Action	SN 4 - 6	SN 1 – 3
(1) Rectify missing or illegible speed advisory, warning and regulatory signs within:	1 day	4 days
(2) Make temporary repairs to safety barriers damaged through vehicular impact within:	3 days	1 week
(3) Make temporary repairs to pedestrian fencing damaged by vehicular impact or vandalism within:	1 day	3 days
(4) Operate permanent seasonal and event signs when:	In accordance with Table M3/A.13	

4.9.2 Standard of Work

(a) Remove damaged or broken components of safety barrier and pedestrian fencing so that no part of asset encroaches onto the travelled way.

(b) Shield damaged asset with barrier boards and temporary warning signs where necessary to minimise the risk of vehicle impacting the terminal.

(c) Signs (e.g. warning signs) attached to existing fencing must be clearly legible and must be reinstalled to new or replacement fencing.

(d) Signs must comply with Specification RMS R143.

(e) Cover and lock seasonal signs when not in use.

4.10 REACTIVE BRIDGE AND TUNNEL MAINTENANCE (ACTIVITY 701)

4.10.1 Intervention Standard

Defect/ Prescribed Action	SN 4 - 6	SN 1 – 3
(1) Clean blocked bridge and tunnel scuppers within:	1 day	1 day
(2) Clear litter and debris from bridge or a bridge-sized culvert when the cross sectional area of a waterway is obstructed within 10 metres upstream or downstream by more than:	20 per cent	20 per cent
(3) Repair minor damage to deck footways and pedestrian lifts likely to be hazardous to pedestrian or vehicular traffic within:	1 day	2 days
(4) Make temporary repairs to any railings and traffic barriers damaged by vehicular impact within:	4 hours	1 day

4.10.2 Standard of Work

(a) Structures must be maintained clean and free from any distress likely to adversely affect the continued safe passage of traffic, or to cause further deterioration impacting on the structural capacity of the structure.

(b) The waterway must be clear of litter and debris immediately upstream or downstream of the bridge or bridge-sized culvert site. Exclude any clearing beyond 10 metres upstream or downstream of a bridge or a bridge-sized culvert.

5 ROUTINE MAINTENANCE REQUIREMENTS

5.1 FREQUENCY OF INSPECTIONS (ACTIVITY GROUP 100)

The condition and performance of assets is generally assessed visually but may sometimes warrant physical measurement. You must comply with the inspection standards outlined below.

Code	Activity	Standard	SN 4 - 6	SN 1 – 3
111	Routine Inspection	(1) Undertake daytime routine inspections at the following intervals:	Twice per week	Once every 2 weeks
		(2) Night-time routine inspection to be scheduled:	Twice a year	Once a year
112	Nominated Inspection	(1) Undertake nominated off-road inspections:	Comply with the requirements specified in the approved RMAP.	
		(2) Undertake specific inspections nominated in Table M3/A.1.	Comply with the requirements specified in Table M3.A1.	

5.2 ROUTINE PAVEMENT MAINTENANCE (ACTIVITY GROUP 210-270)

Code	Activity	Requirements
211	Seal Pavement Crack	**Intervention Guidelines** (1) Water is entering the pavement and pumping fines. (2) Width of transverse, longitudinal and diagonal cracks exceeds 3 millimetres. **Standard of Work** (a) Comply with Specification RMS M211 and RMS M212.
213	Cross-Stitch Crack or Joint	**Intervention Guidelines** (1) Width of longitudinal open joint in rigid pavements exceeds 15 millimetres. (2) Width of transverse open joint exceeds 30 millimetres. **Standard of Work** (a) Comply with Specification RMS M213.
214	Repair Joint in Concrete Pavement	**Intervention Guidelines** (1) Joint sealant has deteriorated allowing water to enter the pavement. (2) Length of lost sealant exceeds 1 metre. (3) Width of longitudinal open joint exceeds 15 millimetres. (4) Width of transverse open joint exceeds 30 millimetres. (5) Height/depth of joint stepping exceeds 25 millimetres. **Standard of Work** (a) Comply with Specification RMS M214.

Code	Activity	Requirements
215	Repair Spall in Concrete Pavement	**Intervention Guidelines** (1) Plan dimension of spalling of joints exceeds 100 millimetres. **Standard of Work** (a) Comply with Specification RMS M215.
221	Grade Formation	**Intervention Guidelines** (1) Provide safe and consistent driving conditions. (2) Depth of corrugations exceeds 25 millimetres. (3) Rut or scour depth exceeds 75 millimetres. (4) Depth of loose gravel exceeds 50 millimetres. (5) Loss of granular surface material exceeds 20 per cent of its original thickness or structural capacity of pavement is inadequate. (6) Grade road formation following rains. **Standard of Work** (a) Comply with Specification RMS M220.
222	Resheet Formation	
223	Incorporate New Base Material	
224	Formation Earthworks	
231	Stabilise Concrete Slab	**Intervention Guidelines** (1) Slab subsidence and movement that adversely affects ride quality. (2) Stepping, settlement, heaving or abrupt discontinuity in rigid pavement slabs exceeds 25 millimetres. **Standard of Work** (a) Comply with Specification RMS M231 or RMS M232.
241	Grade Shoulder	**Intervention Guidelines** (1) Ensure that unsealed shoulders are graded and maintained adequately to provide safe driving conditions. (2) Potholes, rutting and corrugations. (3) Excessive edge breaks and edge drop-off. (4) Presence of vegetation on the shoulder. (5) Poor shoulder crossfall adversely affecting surface drainage. (6) Poorly formed table drains. (7) Significant loss of shoulder material. **Standard of Work** (a) Comply with Specification RMS M240. (b) Remove all surface defects.
242	Resheet Shoulder	
243	Incorporate new Shoulder Material	

Code	Activity	Requirements
271	Retexture Road Surface	**Intervention Guidelines** (1) Presence of flushing/bleeding (excess binder), ravelling/fretting, scaling, stripping, texture loss (macrotexture), polishing (microtecture), surface contaminants (e.g. oil, grease, mud, clay and organic matter) and excessive crack sealant. (2) Refer to RMS Technical Procedure ILC-AM-TP1-401. (3) Refer to RMS Technical Direction PTD 2013/004 for advice on appropriate treatment selection. **Standard of Work** (a) Comply with the RMS Specification R93, R101, R103 or relevant standard to ensure that a skid resistant surface is reinstated.

5.3 ROUTINE ROADSIDE MAINTENANCE (ACTIVITY GROUP 310-510)

Code	Activity	Requirements
311	Control Ground Vegetation	**Intervention Guidelines** The performance of roadside vegetation is reasonably predictable from knowledge of local vegetation growth patterns and climate conditions. The failure mode is related to a progressive growth in ground vegetation. Accordingly, you must schedule mowing or weed spraying operations as necessary to address the following requirements. (1) Maintain line of sight (from a driver eye height of 1100 millimetres) to sign face, non-pavement delineator, bottom of safety barrier and traffic signal for a distance of: (i) 110 metres for ≤ 60 kilometre per hour speed zones. (ii) 160 metres for 70 and 80 kilometre per hour speed zones. (iii) 260 metres for 90 and 100 kilometre per hour speed zones. (iv) 300 metres for 110 kilometre per hour speed zones. (2) Maintain stopping sight (from a driver eye height of 1100 millimetres to view a 200 millimetres high object on the roadway including 5.5 metres up side roads) for a distance of: (i) 60 metres for speed zones ≤ 60 kilometres per hour. (ii) 100 metres for 70 and 80 kilometre per hour speed zones. (iii) 180 metres for 90 and 100 kilometre per hour speed zones. (iv) 210 metres for 110 kilometre per hour speed zones. (3) Height of vegetation exceeds 200 millimetres in pedestrian zones. (4) Height of vegetation exceeds 300 millimetres in areas nominated in Table M3/A.3. (5) Vegetation that encroaches into the vegetation-free zone. (6) Vegetation impeding the function of or causing damage to an asset. (7) Noxious and environmental weeds within the road reserve of freeways.

Code	Activity	Requirements
		(8) Maintain firebreaks in accordance with Table M3/A.4. **Standard of Work** (a) Collect litter prior to mowing to ensure litter is not transformed into confetti-like pieces. Move fallen timber to an adjacent area in the road reserve which is clear of drainage lines. (b) The required mowing width on rural road corridors is from the edge of seal to at least 1.2 metres behind guide posts. This may necessitate hand control or the use of pesticides. (c) Ensure that uncut grass around or under trees or road furniture or left behind between passes is kept to a minimum. Sweep clippings from the road surface, lined drains, footways or other paved areas, and rest areas. Clippings in other areas can remain where they fall. (d) Organise work to minimise damage to existing vegetation. Keep the movement of plant and machinery and disturbance to existing vegetation to a minimum. Vehicles must not be parked in vegetated or mulched beds. Keep harmful material (including oil, fuel, cement, bitumen, spillage from washing operations and similar contaminants) clear of trees, shrubs and grass including their root systems. Do not stockpile materials over root systems. Avoid damage to overhead tree trunks or canopies by machine or truck operations. (e) Mowing operations must be deferred during periods of total fire bans. (f) Restrictions on pesticide use include: (i) Areas prone to erosion. (ii) Within 10 metres of waterways or pedestrian areas. (iii) Wet or windy conditions. (iv) Beyond a 1 metre radius around rest area facilities. (v) No spraying in areas nominated in Table M3/A.5. (g) All spraying is to be carried out so as to avoid damage to surrounding vegetation, minimise disturbance to soil surface. Areas not targeted for spraying that are damaged by spraying activities are to be reinstated to their original form. Pesticides are to be used in accordance with Specification RMS G36 and the manufacturer's recommendations.

Code	Activity	Requirements
312	Trim Tree	**Intervention Guidelines** (1) Presence of sapling or small tree within the maintenance clear zone or up to 1.2 metres behind a non-concrete safety barrier when trunk diameter exceeds 50 millimetres measured 1300 millimetres above ground. (2) Trees and non-frangible vegetation that encroaches into the vegetation-free zone. (3) Vegetation impeding the function of or causing damage to an asset. **Standard of Work** (a) Lopping and trimming of trees is to comply with AS 4373. Pruning cuts are to be made cleanly to prevent stripping back of bark.
316	Remove Tree	**Intervention Guidelines** (1) Overhanging branches and/or broken limbs which are likely to fall on the travelled way, pedestrian zones and/or private property. (2) Mature trees (> 150 millimetre trunk diameter) located within the maintenance clear zone at known accident sites. (3) Mature trees which are impeding the functioning of any asset or may cause a future danger to the travelling public. **Standard of Work** (a) Comply with the standard of work for Activity 312.
317	Create New Fire Break	**Intervention Guidelines** (1) Vegetation control for fire management must comply with Specification RMS G36. (2) Create fire breaks as needed and advised by the Principal. **Standard of Work** (a) Construct firebreaks (unless otherwise specified) to a minimum width of 6 metres by ploughing and removing all shrubs and trees. (b) Create transverse firebreaks, from the edge of the carriageway to the boundary fence, at maximum spacing of 500 metres.
319	Maintain Landscaping	**Intervention Guidelines** (1) Dead or diseased plants. (2) Presence of weeds and inadequate thickness/coverage of weed suppressing mulch. (3) Carry out pruning, mulching, pest and disease control, watering and management of irrigation systems maintain landscape systems in accordance with Specification RMS M321. A schedule of landscaped areas is included in Table M3/A.6.

Code	Activity	Requirements
		Standard of Work (a) Keep the area neat and presentable and comply with Specification RMS M321. (b) The pruning of amenity trees must comply with AS4373.
331	Service Vacant Property	**Intervention Guidelines** (1) Ensure that environmental protection measures remain operational. (2) Vacant properties must be serviced in accordance with Table M3/A.7. (3) Control vegetation when its height exceeds 300 millimetres. (4) Remove vermin and pests. **Standard of Work** (a) Vacant property must be left clean and tidy.
333	Renew Boundary Fence	**Intervention Guidelines** (1) Missing or non functional gate (including flood gate or gate component such as the hinge or latch), boundary and fauna fence post that is missing, loose, broken, rotten, corroded or badly misaligned. (2) Any rail, panel, mesh or wire not securely attached, adequately tensioned, overstretched, corroded or otherwise non-functional. **Standard of Work** (a) Comply with Specification RMS R201.
336	Renew Noise Wall	**Intervention Guidelines** (1) Noise walls must provide an ongoing ability to reduce the impacts of road traffic noise on adjacent properties. (2) Post rail and/or panel misalignment (millimetres per metre) exceeds 100 millimetres. (3) Post, rail and/or panel is missing, broken, loose, rotten or corroded. (4) Panel is missing, damaged (e.g. spalling or exposed reinforcing), rotten or not securely fixed. (5) Voids beneath panels. **Standard of Work** (a) Comply with Specification RMS R271. (b) Remove loose material and clean surface of damaged noise wall in preparation for repairs. Paint (or similarly treat) all unexposed timber. Remove all unsound paint from timber posts and panels requiring repainting (or adopt an approved treatment). Achieve the closest match possible to the original paint, surface finish or surrounding area.

Code	Activity	Requirements
		(c) Where concrete repairs are required roughen the surface and expose the aggregate of the area to be repaired to promote adhesion of the repair. Immediately prior to repairing, clean the area to be repaired. Ensure that no material enters the joint or cracked space. Apply an appropriate repair system to repair damaged areas. (d) Where cleaning of glass (or other similar materials, including perspex) is required, ensure that cleaning methods and materials will not damage the noise wall components.
339	Collect Roadside Litter and Sweep Roadway	**Intervention Guidelines** (1) Comply with the litter collection intervention frequencies nominated in Table M3/A.8. (2) Presence of debris that reduces skid resistance of the road surface. (3) Comply with the pavement sweeping schedule in Table M3/A.9 and pavement areas to be swept in Figure M3/A.1. **Standard of Work** (a) Remove entire contents of a garbage bin (or other receptacle). (b) Garbage bins (and other receptacles) must remain functional and be replaced with a similar units as required. (c) Remove litter and debris accumulated on the designated pavement areas by hand or mechanical sweeping, including hand removal of larger sized debris. (d) During sweeping operations, loose material must not enter the storm water drainage system. After sweeping operations there should be an unimpeded passage for water into the drainage system.
351	Maintain Roadside Slope	**Intervention Guidelines** (1) Undertake slope maintenance as per slope risk management plan supplied by the Principal or as identified during other inspections. Slopes must be monitored and maintained in accordance with Annexure M3/A.10. (2) Deformation of batter protection system exceeds 200 millimetres as measured from the batter line. (3) Area of broken or cracked batter protection surface exceeds 5 square metres. (4) Scour depth of a batter exceeds 300 millimetres. (5) Loose or unstable rocks. (6) Water is flowing over batter due to blocked surface drains. **Standard of Work** (a) Ensure the stability of slopes and retaining walls so as to keep roads safe and open.

Code	Activity	Requirements
		(b) The following RMS guides are essential reference documents for this Activity: (i) Guide to the Selection of Treatments for Slopes and Retaining Structures. (ii) Guideline for treatment selection at rock fall sites. (iii) Guide to Slope Risk Analysis. (iv) Geotechnical Instrumentation and Monitoring of Road Formation Structures. (v) Site specific Slope Risk Management Plans for critical sites.
354	Renew Rock Fall Protection Fencing or Netting	**Intervention Guidelines** (1) Rockfall protection fencing or netting is damaged or non-functional. **Standard of Work** (a) Comply with the standard of work for Activity 351. (b) Remove all loose rock from behind the rock fall protection fence.
355	Renew Retaining Wall	**Intervention Guidelines** (1) Settlement of a retaining wall, reinforced soil structure and gabion wall exceeds 50 millimetres. (2) Crack length (> 5 millimetres wide) in a structure exceeds 2 metres. (3) Area (percentage area per 20 metres of wall) of steel mesh that is corroded or exposed exceeds 30 per cent. (4) Number of weepholes blocked exceeds 10 per cent percentage for each 50 metre section of wall. **Standard of Work** (a) Retaining wall must be structurally sound and free of defects.
363	Snow Clearing Operations	**Intervention Guidelines** (1) Conduct clearing operations in response to snow and ice formation. (2) Damaged or non-functioning snow fences. **Standard of Work** (a) Roadway is available for safe access.
421	Service Toilet	**Intervention Guidelines** (1) Service toilets at the frequency nominated in Table M3/A.11. (2) Any public health risks in regard to effluent treatment systems. No personnel must come in direct contact with effluent. (3) Where a public health issue is identified, temporary physical barriers preventing public access to affected areas must be erected as soon as possible. Closure of the whole rest area may be an appropriate response. (4) Effluent storage capacity reduced by more than 90 per cent.

Code	Activity	Requirements
		Standard of Work (a) Maintain and operate toilets in compliance with operation and maintenance manuals for the particular toilet system. (b) Roadside toilets must be safe, clean and provide an aesthetically pleasing and hygienic facility for resting motorists. (c) Service roadside toilets, including general cleaning, refilling paper, refilling washing liquid soap, emptying of sharps containers, etc. Whilst undertaking cleaning activities the following must be addressed: (i) Clean toilet facilities with an approved cleaning agent. Toilet facilities include all wet areas (e.g. toilet bowls, sinks, urinals, floors, and walls and doors adjacent to toilets, sinks and urinals). (ii) An appropriate regime must include frequent and proper inspection, and the cleaning and sanitising of toilet facilities to an acceptable condition. An acceptable condition will be achieved when toilets are kept free from pests and unpleasant odours, soil or filth, including body wastes, and grease marks, rust stains, scale and encrustations, graffiti, insects and vermin. (d) Caution must be used when selecting and using chemicals for a particular cleaning or sanitising task. The suitability of a chemical, and its inclusion as part of the cleaning or sanitising method description, must be determined only after reference to the detailed cleaning product information and the manufacturer's recommendations. The following factors must be considered: (i) Type of surface (hard, soft, porous, or liable to damage). (ii) Nature of soil or deposit that is to be removed. (iii) Manual or automatic application. (iv) Water temperature and time available to complete application. (v) Any bactericidal effect required. (vi) Impacts on the composting or decomposition processes within the treatment system (particularly relevant for cleaning and sanitising areas that drain to the treatment system, such as toilet pan and basin). (e) Remove effluent (by appropriately licensed personnel) to a facility approved to dispose of human waste. Underground tanks must not be completely emptied. Not all underground tanks are anchored, and so there is a potential for floatation. (f) Maintain ventilation systems (if installed). (g) Remove any vermin from the site. (h) When closure is necessary, notify the Principal prior to, or as soon as possible after (within 24 hours), the facility closure.

Code	Activity	Requirements
422	Renew Toilet	**Intervention Guidelines** (1) Damaged or non-functional toilet. **Standard of Work** (a) Roadside toilets must be fit for purpose. Consider factors such as current visitation rate (from traffic volumes and/or survey counts), expected site utilisation & growth expectations, and site factors (e.g. topography, climate, soil type, available utilities). (b) Refer to the RMS guidelines for Rest Area Planning Principles and Design.
424	Permanently Close Toilet or Rest Area	**Intervention Guidelines** (1) Close rest area or toilet facility in the following circumstances: (i) At the direction of the Principal. (ii) When sewage or treated effluent is leaking from the system. (iii) When the toilet facility is not functional. **Standard of Work** (a) Notify the Principal where part or all of the toilet facility is closed. (b) Notify the Principal of sites that do not comply with the published rest area strategy for a route, are under utilised or require expensive asset renewal works but are not of strategic importance. (c) Fence off access to the rest area and reinstate site.
425	Install, Service and Remove Portable Toilet	**Intervention Guidelines** (1) Portable toilets must be maintained and operated at the locations and times nominated in Table M3/A4.11 (example during holiday periods and at driver reviver sites). (2) Portable toilets must be repaired or replaced where they are non-functional. **Standard of Work** (a) Maintain and operate toilets in accordance with the manufacturer's recommendations.
428	Service Rest Area	**Intervention Guidelines** (1) Rest areas must be safe, clean, operational and available for use by the travelling public. Provide an aesthetically pleasing and hygienic area for resting motorists. Rest areas and wastewater treatment systems are to be maintained and serviced in accordance with Table M3/A.11. (2) Litter (including protruding glass, can lids, sharp rocks and metal) is visible within the rest area including playground areas. Flammable material in close proximity (within 5 metres) to fireplaces, BBQ's, or other rest area facilities (e.g. tables, structures). (3) Storage levels of water tanks must not drop below 10 per cent of capacity. (4) Comply with any inspection and/or maintenance requirements of

Code	Activity	Requirements
		Australian Standards and the playground equipment manufacturer. Check each monthly (and at the beginning of, and twice monthly during, high usage periods such as school holidays) the following: (i) The depth of any impact absorbing material under and around equipment must be at least 250 millimetres. (ii) Loose nuts and bolts for tightness. (iii) Sharp edges on hardware and equipment. (iv) Faulty or damaged swing seats and chains including deterioration, severe rusting or excessive wear, especially near the top swing hanger or at the seat connection as these are evidences of chain deterioration. Cracks in the protective plastic sleeve or seat itself are also signs of deterioration. (v) Spiders and spider webs form playground equipment. (5) Lubricate all moving parts on playground equipment on a monthly basis. (6) Presence of vermin. (7) Signs within rest areas are not clean and legible. (8) Close the rest area when sewage or treated effluent is leaking from the system or when the toilet facility is not functional or as directed by the Principal. **Standard of Work** (a) Litter and debris removal must comply with the standard of work for Activity 301. Graffiti and poster removal must comply with the standard of work for Activity 302. Landscape maintenance must comply with the standard of work for Activity 321 (b) Replace signs that are damaged and can not be repaired. (c) Water tanks must be filled with appropriate water. Water tanks providing drinking water must be filled with potable water. Ensure signs are erected where water is not suitable for drinking. (d) All stormwater diversions to minimise runoff entering the treatment and/or storage systems must be in place. (e) Eradicate vermin and dispose of flammable materials. (f) Clean rest area facilities with an approved biodegradable phosphorus-free detergent. (g) Playground equipment must be regularly maintained in accordance with relevant Australian Standards to ensure that equipment is in good working order and provides safe conditions. Ensure the depth of any impact absorbing material under and around equipment must be at least 250 millimetres. Replace broken, missing, or worn parts and make sure that all structures are stable. Some playground equipment manufacturers may require that accredited maintenance personnel undertake repair work.
429	Renew Rest Area	**Intervention Guidelines** (1) Rest area facilities are damaged or are non-functional.

Code	Activity	Requirements
		(2) Inadequate or missing impact absorbing material under playground equipment with fall heights over 0.5 metres. (3) Sharp edges, moving parts or protruding bolts etc. on playground equipment that could pinch a child's finger, cause bruising or act as a hook that could catch on a child's clothing. **Standard of Work** (a) All repairs to be undertaken in accordance with current Australian Standards and relevant RMS Specification. (b) Appropriate impact absorbing materials are pine, mulch, bark mulch, wet pour rubber and high density foam. Grass and sand are not appropriate surfaces. These special surfaces must be, at least, 0.25 metres deep and extend 2.5 metres beyond the equipment. For swings, the special surface must extend for the length of the swing's extension, plus another 2.5 metres. (c) Special signage must be installed to remind caretakers of their administrative role at playground facilities.
511	Renew Surface Drain	**Intervention Guidelines** (1) The depth of scour exceeds 300 millimetres. (2) A continuous length of broken lining is causing instability or undermining the drain or is more than 2 metres long. (3) Vertical projections in kerb/gutters exceed 40 millimetres or 15 millimetres within Pedestrian Zones. (4) A crack in kerb and gutter exceeds 10 millimetres wide. (5) The size of missing/broken pieces in kerb/gutter exceeds 100 millimetres. (6) Kerb and gutter defects (e.g. misalignment) cause water ponding that impacts on traffic. **Standard of Work** (a) Work must comply with Specification RMS R15, RMS R33, RMS R38, RMS R53, RMS R55, RMS R178 and other Specifications appropriate for the work. (b) Replaced sections must match to the existing levels. The structure must be in good repair and free from any defects and the line and level of the kerb and gutter must be restored. (c) Concrete repairs include sealing minor cracks, patching spalls and areas where there is evidence of corrosion or substantial loss of reinforcement steel. Where there is a significant localised structural damage to a concrete drainage structure, it might be more efficient to replace the structure (or a component of the structure) rather than repair it.

Code	Activity	Requirements
		(d) When undertaking concrete repairs of the drainage structures the following requirements must be met: (i) The aggregate size within the concrete/epoxy mix must not exceed one third of the minimum depth of the repair. (ii) Fresh concrete/epoxy must bond permanently with the damaged concrete without any cracks developing. (iii) Concrete/epoxy must be UV stable, non-shrinking and non-expansive. (iv) Concrete/epoxy must be of similar colour to the surrounding surface when cured. (v) Concrete/epoxy must be of a higher grade than the existing surface (or of a grade specified in the relevant RMS specification). (e) Do not use epoxy concrete as the repair system where exposed steel shows signs of corrosion. Where epoxy concrete is proposed, control excessive heat development in the repair. (f) Prepare the existing concrete to provide a sound foundation for the repair where appropriate, by: (i) Removing loose material, joint sealant and/or any temporary repair material. (ii) Providing a minimum depth of 25 millimetres for the repair and removing any abrupt changes below this depth. (iii) Providing vertical edges at the perimeter of the repair. Where saw-cutting or grinding is required, the depth must be 25 millimetres with a tolerance of +0/-10 millimetres. (iv) Removing unsound material, debris or any residue from the repair area. (v) Avoiding damage to or fracture of the sound concrete foundation in the repair area. (vi) Roughening the surface and exposing the aggregate of the area to be repaired to promote adhesion. Clean the area to be repaired immediately prior to repairing. Do not damage the existing concrete or leave any residue that would inhibit adhesion of the repair. For repair of concrete joints of the drainage structure, ensure that an existing joint is maintained, including where appropriate, by: (i) Forming a straight vertical face parallel to each joint. (ii) Providing a bond-breaker material against the face of joint. (iii) Ensuring that no material enters the joint space.

Code	Activity	Requirements
512	Renew Subsoil Drain	**Intervention Guidelines** (1) Drain outlets obstructed or blocked causing adjacent pavement failure. (2) Missing or broken subsoil drain outlet and headwalls resulting in scouring. **Standard of Work** (a) Completely clean the subsoil drain, including the inlets and outlets. The subsoil drain must be completely clear of any obstructions that may impede the flow of water. (b) The subsoil drain must be in good repair and free from damage or defects likely to adversely affect the flow of water. (c) Clean the drain marker pegs and the outlet screens.
513	Clean Culvert	**Intervention Guidelines** (1) Pipe/culvert flow is impeded by any obstruction (e.g. litter and debris) resulting in flow restriction of more than 50 per cent. **Standard of Work** (a) Culverts must be clear of obstructions affecting water flow.
515	Clean Drainage Pit	**Intervention Guidelines** (1) Pit is blocked or incapable of draining water away quickly enough to avoid water backing up. Obstruction results in water being diverted from drains (e.g. blocking bridge scuppers, preventing over-edge run-off, etc). (2) Drainage pits is blocked by more than 75 per cent of its capacity. **Standard of Work** (a) Remove litter and debris from pits. The pit must be clean of obstructions affecting water flows.
516	Renew Drainage Structure	**Intervention Guidelines** (1) Missing lintel, lid, grate or grids. (2) Damaged culverts, pits, lintel, grates, grids, headwall or wingwall. (3) Differential level between the grate/lid and abutting pavement surface or the lid/grate is rocking with movement under axle load. (4) Pipes/culverts undermined or with water by-passing them. (5) Deformation (millimetres/metre diameter or height) of pipe/culvert exceeds 50 millimetres. (6) Corrosion to steel pipes is evident. (7) Scour depth undermining headwall and/or wingwall exceeds 100 millimetres. (8) Spalling cracking, misalignment or damage to headwall and/or wing wall exposes reinforcing. (9) Scour protection and embankment lining on floodway is damaged.

Code	Activity	Requirements
		Standard of Work (a) Comply with Specification RMS R11. (b) The drainage structure must be in good repair and free from damage or defects likely to adversely affect the continued safe passage of traffic, or to cause further deterioration impacting on the structural capacity of the structure. The line and level of the drainage structure is to be restored. (c) Minor concrete repairs must comply with standard of work for Activity 511.
517	Clean Sedimentation Basin	**Intervention Guidelines** (1) Sedimentation basin capacity is reduced by 50 per cent. **Standard of Work** (a) The basin must be in good repair and free from any damage.
518	Clean Gross Pollutant Trap	**Intervention Guidelines** (1) Capacity of the Gross Pollution Trap is reduced by more than 90 per cent of its capacity. (2) Debris or litter restricts the flow of water. **Standard of Work** (a) Remove all litter and debris likely to adversely the function of trap. (b) Maintain the gross pollutant traps in accordance with the manufacturer's recommendations and dispose off any waste legally.

5.4 ROUTINE TRAFFIC FACILITY MAINTENANCE (ACTIVITY GROUP 610)

Code	Activity	Requirements
611	Maintain Non-Pavement Delineation	**Intervention Guidelines** (1) Broken or obscured post or reflector. (2) Reflectors covered with a build-up of mildew, moss or grime. (3) Loss of reflector reflectivity, reflector is the wrong colour or reflector is missing. (4) Reflectors not centrally placed on posts between 50 and 100 millimetres clear distance from the top of the post. (5) Posts with more than 20 per cent of the white face marked/degraded. (6) Posts that vary in height from the standard by more than 100 millimetres. (7) Posts displaced from vertical by more than 15 millimetres. (8) Posts that are offset inconsistently from the pavement edge (variation in offset for consecutive guideposts must be less than 2 metres).

Code	Activity	Requirements
		(9) Green reflectors' are placed on some guideposts as advance warning to heavy vehicle drivers of informal stopping areas. As the driver approaches a site the guideposts should progressively show 3 green reflectors then 2 green reflectors then one green reflector immediately prior to the site. (10) The locations and spacing of defect-free guide posts must comply with Specification RMS 131. Defective guide posts and guide posts that are incorrectly spaced and located must be rectified on at least a 3 month cyclical basis. **Standard of Work** (a) Comply with Specification RMS R131. (b) Clean the posts and delineators to remove dirt and other contaminants and restore their colour or reflectivity. Remove all unsound paint from timber posts and prime and paint any exposed timber.
612	Renew Safety Barrier	**Intervention Guidelines** (1) Permanent repair of accident damaged safety barriers. (2) Damaged or broken components of safety barriers encroaching into the travelled way or causing a hazard. (3) Post is loose, broken, buckled, bent, twisted, rotten, split or missing. (4) Post or spacer is misaligned by more than 150 millimetres. (5) Rail is loose (either to post or adjoining rail), corroded (affecting strength), damaged (buckled, bent, twisted, or protruding more than 200 millimetres displacement) or missing. (6) Cable is not adequately tensioned or is damaged or broken. (7) Terminal end is bent, damaged, or missing. **Standard of Work** (a) Comply with Specification RMS M620 and RMS R132. (b) Where isolated components (e.g. a post) must be replaced, ensure that replacement components are of similar material and dimensions to the existing components. (c) When retrofitting safety barriers ensure that road shoulder width is not compromised.
613	Renew Pedestrian Fence	**Intervention Guidelines** (1) Permanent repair of accident damaged or vandalised pedestrian fencing. (2) Fence is loose, broken, buckled, bent, twisted, rotten, corroded, split or missing.

Code	Activity	Requirements
		Standard of Work (a) Comply with Specification RMS R161. (b) Where isolated components (e.g. a post) must be replaced, ensure that replacement components are of similar material and dimensions to the existing components. (c) Signs attached to existing fencing must be clearly legible and must be reinstalled to new or replacement fencing.
614	Repair Sign	**Intervention Guidelines** (1) Signs that reflect glare back at motorists at night. (2) Dirty or marked signs. (3) Loose sign fittings. **Standard of Work** (a) Comply with Specification RMS R143. (b) Dirty marks must be removed. When cleaning the sign face, ensure that the cleaning method to be employed does not cause any damage to the sign. (c) Signs must be in good condition, legible at night and properly aligned to traffic. Clear and remove any foliage and undergrowth impeding a road user's line of sight to the front of the sign.
615	Renew Small Sign	**Intervention Guidelines** (1) Refer to Activity 601 for the rectification of missing and illegible speed advisory, warning and regulatory signs. (2) Speed advisory, warning and regulatory signs that are still legible but are slightly damaged (e.g. holes, scraped, peeling symbol/legend and faded) should be repaired within 3 months. (3) Repair missing and illegible information signs within 3 months. (4) Damaged supporting structures. **Standard of Work** (a) Comply with Specification RMS R143 and RMS B345. (b) Generally, reinstall sign or supporting structure in the same position and maintain the height of the previous sign and structure. (c) Where the existing sign is incorrectly located, regardless of whether the sign face only needs replacing, the entire sign (supporting structure) must be relocated to the correct position. Where a sign is damaged repetitively, a sign may be relocated to an area which is less likely to be damaged by errant vehicles (e.g. at an offset further from the travelled way) provided that the sight distance to the sign and the sign's message is not compromised. (d) Signs must be in good condition, legible at night and properly aligned to traffic. Clear and remove any foliage and undergrowth impeding a road user's line of sight to the front of the sign.

Code	Activity	Requirements
616	Renew Large Sign	**Intervention Guidelines** (1) Missing, damaged or illegible information signs should be replaced within 3 months. Damage includes holes, scrapes, peeling symbol/legend, faded sign and signs with loss of retro-reflectivity. (2) Replace damaged supporting structures. (3) Refer to RMS Procedures Manual for Structural Integrity Inspection and Condition Assessment of Road Traffic Structure Assets. **Standard of Work** (a) Comply with the standard of work for Activity 615.
617	Renew Longitudinal Linemarking	**Intervention Guidelines** (1) Lines or segments of lines that do not meet Specification RMS R145. (2) Lines or segments of lines that are worn, with no more than10 per cent of the marking missing in any 300 metres length or consecutive segments if marking according to Specification RMS R141. **Standard of Work** (a) Comply with Specification RMS R145 and/or RMS R141 as appropriate. (b) Replacement markings must be located in the same position as the existing ones. (c) New markings must be accordance with RMS Delineation Guidelines and need approval from the Principal. (d) Marking material must be compatible with any existing marking material and the road surface to which it is to be applied to. (e) All loose materials and redundant marking must be cleaned up and removed from the road, leaving the roadway clear. The method of removal must leave the pavement surface in a condition that will not mislead or misdirect road users. In selecting an appropriate pavement marking removal technique consideration must be given to leaving the pavement surface undamaged. (f) Following the removal of marking, any pavement damage attributable to the removal process must be repaired.
618	Renew Pavement Marking	**Intervention Guidelines** (1) As per the requirements for Activity 617 except as outlined below if marking according to Specification RMS R141: (i) Remark markings that are worn with more than 10 per cent of the marking missing. (ii) Prepare an annual re-mark plan based on a subjective assessment of the network. **Standard of Work** (a) As per requirements for Activity 617 and RMS R110 if marking coloured bus lanes or cycleways.
619	Renew Raised	**Intervention Guidelines**

Code	Activity	Requirements
	Pavement Marker	(1) 30 per cent of markers are missing or ineffective in any 300 metre section of road, or if 5 consecutive markers are missing on any straight section or 3 consecutive markers are missing on any curve (i.e. non straight road) section. **Standard of Work** (a) Comply with Specification RMS R142. (b) All markers used must comply with AS 1906.3.

5.5 ROUTINE BRIDGE AND TUNNEL MAINTENANCE (ACTIVITY GROUP 710)

The extent of repairs covered in this Clause involves no more than the replacement of small quantities of damaged materials generally using similar or compatible products. Major repairs requiring a detailed analysis of the failure mechanism are excluded from the Works.

Code	Activity	Requirements
711	Repair Timber Element	**Intervention Guidelines** (1) Evidence of termite attack. (2) Bolts in timber elements are not intact or are loose. (3) Timber elements are damaged or showing signs of deterioration. **Standard of Work** (a) Apply anti-termite treatment followed by preservative coating in accordance with the manufacturer's recommendations if there is no evidence of termite activity 6 weeks after treatment. (b) All broken or missing bolts in timber connections must be replaced, and all existing bolts must be tight. Remove deteriorated timber and provide localised temporary support. (c) Shape, install and secure new timber in accordance with the RMS Timber Bridge Manual (Part 4). (d) Comply with Specification RMS M757.
712	Repair Painted Surface	**Intervention Guidelines** (1) Chalking, cracking, peeling, flaking, checking, splitting, blistering or other early signs of distress occur in top coat paint. (2) Surface rust or freckled rust has formed as the protective coating is no longer effective. (3) Minor exposure of primer or metal without loss of metal section. **Standard of Work** (a) Comply with Specification RMS B220 and B223.

<table>
<tr><th>Code</th><th>Activity</th><th>Requirements</th></tr>
<tr><td>713</td><td>Repair Concrete</td><td>

Intervention Guidelines

(1) Cracks wider than the tolerable crack width as shown below:

<table>
<tr><th>Atmospheric Corrosivity</th><th>Low</th><th>Moderate</th><th>High</th></tr>
<tr><td>Corrosivity to AS 2312</td><td>A and B</td><td>C</td><td>D and E</td></tr>
<tr><td>Typical environment</td><td>Dry and Rural</td><td>Coastal</td><td>Marine and Industrial</td></tr>
<tr><td>Tolerable crack width (mm)</td><td>0.4</td><td>0.3</td><td>0.15</td></tr>
</table>

(2) If a crack has the potential to compromise the structural integrity of the element or structure, a qualified structural engineer must be consulted before a structural crack repair is carried out.

(3) Report all structural crack repair and mark locations in the work-as-executed drawings.

(4) Presence of concrete spalling. Where cracking and spalling is visibly caused by aggressive agents, particularly in coastal areas and highly carbonated structures, a detailed durability condition assessment must be carried out so that the objective of the repair is understood and appropriate corrosion protection systems can be installed.

(5) Evidence of corrosion in a previously patched area.

Standard of Work

(a) Carry out concrete repair using appropriate materials and techniques suitable to the nature of the damage and corrosivity level. Implement the appropriate curing technique for the repair material used.

(b) Patch concrete spalls using materials compatible with the original concrete. The overall size of the repair is the defined spalled area of concrete. An appropriate proprietary shrinkage compensating polymer modified cementitious repair mortar product may be used in accordance with the manufacturer's recommendations.

(c) Cut the concrete surface to a minimum depth of 10 millimetres at the perimeter of the repair locations to provide a defined delineation between the substrate and the repair material and to avoid feathered edges at repair locations. The depth of breakout must be sufficient to remove all delaminated and spalled concrete. Where honeycombing is found beyond this depth or the surrounding concrete is observed to be not sound, notify the Principal.

(d) Remove all damaged concrete. Concrete must be removed to a minimum depth of 15 millimetres from behind exposed reinforcement. Where reinforcing has corroded, remove the concrete to the extent where there is little or no evidence of reinforcement corrosion.

(e) Wash area of freshly exposed concrete by water blasting using potable water or approved mechanical means. Prepare the substrate prior to reinstatement of repair material by thoroughly soaking with potable water for a minimum period of 2 hours. The surface of the concrete substrate must be in the "saturated surface dry" condition immediately prior to reinstatement.

</td></tr>
</table>

Code	Activity	Requirements
		(f) Check for any damaged reinforcing steel. If a structural reinforcing bar is affected, consult a qualified structural engineer to assess and design a reinforcement replacement or augmentation configuration. (g) Install the required replacement or additional reinforcing steel. Where the lap development length is not attainable, the replacement or additional reinforcing steel may be welded to the existing bar as outlined below: (i) Weld thickness must be half the new bar diameter. (ii) Minimum weld length must be 10 times the new bar diameter, (iii) Weld length of the existing bar should be free from visible defects or loss of section (additional concrete may be removed to expose the existing bar as required). (h) Welding must be undertaken in accordance with AS 1554.3 and Specification RMS B204. Report all structural reinforcement additions and replacements and mark locations in the work-as-executed drawings. (i) Thoroughly clean all exposed reinforcing steel to the standard of surface preparation equivalent to Class 2 of AS 1627.4. All mill scale, rust and foreign particles must be substantially removed and a 'grey metal' finish must be visible. (j) Restore line and level of the concrete surface and, where applicable, remove all evidence of the use of injection nipples from the finished concrete surface. (k) Comply with Specification RMS 769 and RMS 772.
714	Repair Masonry and Brick	**Intervention Guidelines** (1) Loss of integrity, misalignment of line and level of masonry or brick facing but only if the movement or deterioration is not of structural significance. **Standard of Work** (a) Thoroughly clean masonry joints of all loose and unsound mortar and foreign material. Remove any damaged or loose masonry. Saturate the joint surfaces with potable water immediately before applying mortar. (b) All repairs are to be made using materials that are similar to or compatible with the existing materials. (c) Reconstruct the masonry element by replacing damaged or loose masonry. Fill all voids with mortar, making the surface flush with the adjacent face of the structure. (d) Cure all new mortar with wet burlap or a clear curing compound. Clean the face of the masonry.
715	Repair Bridge Railing	**Intervention Guidelines** (1) Damaged guardrail or traffic barrier sections affecting the structural integrity of the railing or railing anchorage (including on bridge approaches).

Code	Activity	Requirements
		Standard of Work (a) Repair concrete railings in accordance with Activity 713. (b) Carry out repairs to timber railings in accordance with the Timber Bridge Manual (Part 4). (c) For steel railing, either remove and realign or completely replace the damaged section of railing and then apply protective coating. (d) For aluminium railing, either remove and realign or completely replace the damaged section of railing. (e) Reinstate traffic barriers in accordance with Specification RMS M620. Restore alignment of railing to the original design line and level.
716	Repair Bridge Bearing	**Intervention Guidelines** (1) Presence of dirt, debris and/or grit. (2) Damage to or deterioration of protective coatings or minor bearing components, including hold-down bolts. (3) Poorly lubricated rollers and rockers. **Standard of Work** (a) Clear dirt or grit deposits on and around surfaces of the bearing. (b) Clean, apply lubricant if appropriate, and reset bearing. (c) Remove any damaged protective coating. (d) Replace damaged components with like components. (e) Remove debris and clean and repack damaged or broken bearing support pads. (f) Replace damaged or missing hold-down bolt nuts. (g) Comply with Specification RMS 783 and the manufacturer's recommendations.
717	Repair Bridge Joint	**Intervention Guidelines** (1) Loss of joint materials including sealants and fillers. (2) Damaged or missing bolts. (3) Joints are non-functional. **Standard of Work** (a) Remove all damaged seals. (b) Clean the surface to which the joint seal is to be applied. (c) Replace and tighten bolts. (d) Restore sealed joint to the line and level of the original installation. (e) Comply with Specification RMS 788 and the manufacturer's recommendations.

Code	Activity	Requirements
718	Clean Tunnel and Steelwork	**Intervention Guidelines** (1) Dirt, grit or fungal growth is present on tunnel walls. (2) Discolouration of protective coating. **Standard of Work** (a) Remove all evidence of dirt, or grit, or fungal growth, or contamination from the protective coating. (b) Provide for the collection and disposal or treatment of all contaminated water run-off.
719	Repair Scour Protection System	**Intervention Guidelines** (1) Sour protection systems is damaged or non-functional (e.g. there is ingress of water beneath the scour protection system). **Standard of Work** (a) Remove damaged scour protection materials. Compact a fresh bedding layer over the area of section under repair. (b) Restore the protection system using materials similar to those in the original system to bond with existing materials. (c) Place new materials to match line and level of the existing protection system.

6 INCIDENT RESPONSE WORKS

6.1 OVERVIEW

An incident response includes any activity necessary to make the site safe and to keep the road open to traffic. Incident response works may include, but are not limited to, any of the following four activities:

(a) Attend to Traffic Incident (Activity 801) - Includes traffic accidents, removal of abandoned or unattended vehicles.

(b) Weather Related Incident (Activity 802) - Includes flooding across road, storm damage, fires, etc.

(c) Other Incidents (Activity 803) - Includes vandalism damage, structure failures such as culvert or a bridge, rock falls and land slips.

(d) Recoverable Works (Activity 804) - Includes works where the cost of repair can be recovered from a third-party.

An incident must be attended to on-site within 10 minutes plus travel time during working hours and 40 minutes plus travel time during non-working hours. All emergencies and incidents must be addressed as a priority and must be registered in an incident register.

Sufficient emergency vehicles, equipment and stores must be maintained to allow appropriate response to emergencies and as a minimum comply with the requirements in Table M3/A.14.

6.2 ATTEND TO TRAFFIC INCIDENT (ACTIVITY 801)

The incident response requirements for attending to traffic incidents include:

(1) For injured persons, contact the NSW Ambulance Service.

(2) For hazardous materials, contact the NSW Fire Brigade.

(3) Prompt advice for the following incidents must be given to the NSW Transport Management Centre or to the relevant RMS Traffic Commander:

  (i) A fatal accident;

  (ii) Known or suspected hazardous material spillage;

  (iii) Significant delays to traffic;

  (iv) Illegally parked, abandoned or unattended vehicles hazardous or obstructing traffic or pedestrian movement.

(4) Where possible, vehicles obstructing traffic must be dragged or pushed outside the danger area. If required, traffic control (such as barriers and signs) must be established around the vehicle pending moving the vehicle to a legal and safe location.

(5) If directed by the Principal or the NSW Transport Management Centre, abandoned vehicles must be removed to the compound. Where due to the nature of the vehicle, its removal to the compound is impractical, remove the vehicle to a safe location.

(6) An unattended/abandoned vehicles report must be completed when attending to abandoned vehicles. Initial reports must be forwarded to the Principal within 24 hours of becoming aware of an abandoned or unattended vehicle. A final report must be forwarded within 24 hours of impounding any vehicle.

(7) Salvaging of vehicles which have been damaged in accidents is not required except where necessary for the safety of the public or to reduce delays to traffic.

(8) The following must be addressed in responding to the spillage of hazardous materials:

  (i) Identify all materials that are spilled by the HAZCHEM symbols and ensure that all personnel are suitably protected from any ill effects.

  (ii) Take action under direction from the emergency response agency or the Environment Protection Authority to remove spilt chemicals, fuel, contaminated soil, or to prevent any spillage from entering the waterways.

  (iii) Ensure the pavement is cleaned and made free of contamination by the removal of all spilt and residual materials. Use appropriate detergents for cleaning oil and grease residues from the pavement. Ensure proper capture and disposal of all contaminated materials. The clean-up must extend beyond the pavement to other areas where necessary (e.g. road shoulders, surface drains, sedimentation basins and other relevant areas).

  (iv) The clean-up must satisfy the Principal or Police that the surface of the pavement is not slippery to the extent that a safety hazard may arise.

  (v) The Principal must be notified of the presence of any known or suspected hazardous materials found in the road reserve as soon as practical. If advised by the Principal a waste contractor may then be hired for the collection and disposal of hazardous waste.

(9) In addition, comply with the requirements of recoverable works (Activity 804) when the cost of repair can be recovered from a third-party.

6.3 ATTEND TO WEATHER RELATED INCIDENT (ACTIVITY 802)

The incident response requirements for attending to weather related incidents include:

(1) Providing all possible assistance to the emergency services in controlling traffic and preventing public access during the clean up operations. Work must be carried out as directed by the NSW Transport Management Centre, Principal or the officer-in-charge of the combat agency (Police, Fire Brigade, and State Emergency Service etc.).

(2) Erecting road closure and detour signs, as appropriate, and provide traffic control. In addition, any other appropriate assistance to members of the public must also be provided.

(3) Ensuring that floodways are safe for traffic and ensure that depth indicator signs are sound, clean and readable.

(4) For bush fires, contact the appropriate fire fighting authority (either NSW Fire Brigade, Rural Fire Brigade, fire control officer or officer of the Forestry Commission or the National Parks and Wildlife Service).

6.4 ATTEND TO OTHER INCIDENT (ACTIVITY 803)

The incident response requirements for attending to other incidents include:

(1) Permanent repair work for structural failures and damage to asset components must comply with this and other RMS specifications unless otherwise directed by the Principal.

(2) Environmental incidents must be managed in accordance with Specification RMS G36.

(3) To ensure that stray animals within the road reserve do not become a hazard to the public, necessary traffic control must be set up. The removal of stray animals from the road reserve is a matter for the Police, a Council impounding officer, or the owner of the animal.

6.5 RECOVERABLE WORKS (ACTIVITY 804)

Adequate documentation must be provided to support the Principal in claiming for recoverable costs from third parties responsible for damage to assets. The claim for recoverable costs must be accompanied by the following documents:

(1) Photos and diagrams of the damage.

(2) Timesheets of staff responding to emergency and incidents.

(3) Copies of invoices for the purchase of material, where applicable.

(4) Copies of any other invoices, e.g. subcontractor invoices.

(5) Contact details of the person and/or vehicle causing damage.

ANNEXURE M3/A – DETAILS OF WORK

Table M3/A.1 – Special Maintenance Requirements (Activity 112)

Requirement	Location	Inspection frequency	Inspection requirements
Slope and Retaining Walls risk management actions	As defined in Table A.10.	As defined in Table A.10.	As defined in Table A.10.

Note: This table must be progressively updated, in consultation with the Principal, during the Contract.

Table M3/A.2 – Anti-Graffiti Coatings (Activity 302)

Road No	Road Name	Type of Coating	Asset	Special requirements

Note: Surfaces coated with ant-graffiti coatings require special cleaning treatment.

Table M3/A.3 – Ground Vegetation Control Areas (Activity 311)

Road No.	Road Name	From	To	Side	Approx. area (m2)	Intervention Standard

Table M3/A.4 – Fire Breaks (Activity 311)

Road No.	Road Name	From	To	Side	Intervention Standard

Note: Firebreaks generally relate only to freeways.

Table M3/A.5 – Herbicide Spraying Omission Areas (Activity 311)

The use of pesticides is not permitted in the following areas:

Road No.	Road Name	From	To	Notes

Table M3/A.6 – Landscaped Areas (Activity 319)

Road No.	Road Name	From	To	Side	Type (1)	Approx. area or width (m^2)	Specific details

Note (1): Type refers to the different types of planting beds described in Specification RMS M321 as follows:
Type 1: Landscape planting bed for formal planting in mulch/scoria.
Type 2: Landscape planting bed for bushland planting in mulch.
Type 3: Landscape planting bed for trees in grass areas (Mown)
Type 4: Landscape planting bed for trees in grass areas (Unmown).

Table M3/A.7 – Principal Owned Vacant Property (Activity 331)

Road No.	Road Name	Location	Intervention Standard

Table M3/A.8 – Litter Collection Schedule (Activity 339)

Road No.	Road Name	From	To	Side	Intervention Standard

Note: The above schedule replaces intervention requirements specified elsewhere in this specification.

Table M3/A.9 – Pavement Sweeping Schedule (Activity 339)

Road No.	Road Name	From	To	Side	Frequency of sweeping

Note: The above schedule specifies the minimum level of pavement sweeping required for the nominated road sections.

SWEEPING OF KERBS, GUTTERS AND INTERSECTIONS

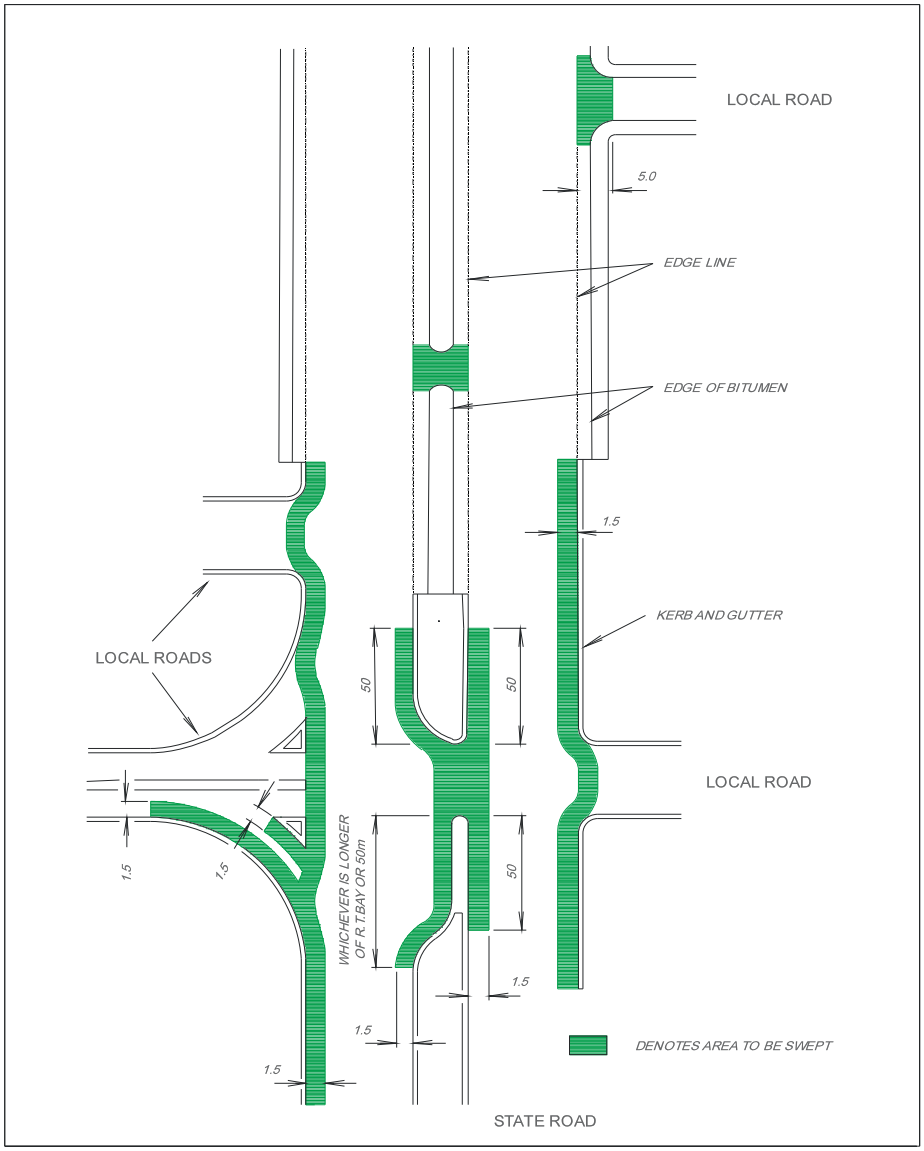

FIGURE M3/A.1 – PAVEMENT AREAS TO BE SWEPT

Table M3/A.10 – Slopes and Retaining Walls (Activity 351)

Road No.	Name of Site	Location	Frequency of inspection	Comment (reference any relevant Slope Risk Management Plan)

Table M3/A.11 – Rest Areas and Toilets (Activity 421, 425 and 428)

Road No.	Name of site	Location	Intervention Standard		
			Cleaning	Effluent Treatment	Effluent Disposal
Permanent Sites					
Portable Toilets					

Table M3/A.12 – Stormwater Devices (Activity Group 517 and 518)

Road No.	Road Name	Type	Location	Volume (m^3)	Intervention Standard

Table M3/A.13 – Seasonal signs (Activity 601)

Road No.	Road Name	Location	Type	Maintenance requirements

Table M3/A.14 – Emergency Vehicles and Stores (Activity Group 800)

General	The following items must be available at all times. All vehicles used to attend to emergencies must be equipped with either mobile phones or two way communication equipment.
Required Locations:	Emergency vehicles must be strategically located to allow for rapid response to emergencies at all times.
Compound for Impounding Vehicles	The compound must be fully enclosed with a 2 metre high man-proof fence and locked gate. The compound must be separate from other activities undertaken in the depot and must have restricted access.
Emergency vehicles and trailers	Emergency vehicles fitted out with emergency response equipment and materials. A lockable registered trailer or other vehicle approved by the Principal fitted out with emergency response equipment and materials.
Signs and traffic control items:	(a) Traffic accident signs. (b) 20 Barrier board sets with lights. (c) Warning signs; prepare to stop, workmen ahead, flagman ahead, stop/slow x 6 night and day signs. (d) Traffic hazard ahead signs x 6. (e) Traffic accident ahead signs x 6. (f) Water over road signs x 6. (g) Road closed signs x 6. (h) Detour signs, 6 “Right” & 6 “Left”. (i) 100 traffic cones.
Equipment / Materials:	(a) Site to base communication system. (b) Shovels. (c) Axe. (d) Bolt Cutters. (e) Crowbar (spud & wreckers). (f) Floodlights. (g) Mobile generator (silenced). (h) Mobile chemical/fuel spill containment and clean up kit. (i) Chainsaws. (j) Miscellaneous tools for basic fencing, sign and fixture dismemberment / removal etc, and tree and branch removal. (k) Brooms. (l) Torches, batteries, wands. (m) Personal protection equipment for all weather conditions, day and night

ANNEXURE M3/B – MEASUREMENT AND PAYMENT

The maintenance activities and units of measure (shown in parentheses) are listed below.

M3/B.1 LIST OF REACTIVE MAINTENANCE ACTIVITIES

101 Prompted Inspection (each)

201 Repair Pothole (each)

202 Repair Pavement Edge (metre)

203 Repair Wearing Surface (square metre)

204 Minor Pavement Patch (square metre)

301 Remove Obstruction and Offensive Litter (each)

302 Remove Graffiti (square metre)

303 Reactive Roadside Maintenance (each)

601 Reactive Traffic Facility Maintenance (each)

701 Reactive Bridge and Tunnel Maintenance (each)

M3/B.2 LIST OF ROUTINE MAINTENANCE ACTIVITIES

M3/B.2.1 Routine Pavement Maintenance

111 Routine Inspection (each)

112 Nominated Inspection (each)

211 Seal Pavement Crack (square metre)

213 Cross-Stitch Crack or Joint (each)

214 Repair Joint in Concrete Pavement (metre)

215 Repair Spall in Concrete Pavement (metre)

221 Grade Formation (kilometre)

222 Resheet Formation (kilometre)

223 Incorporate New Base Material (cubic metre)

224 Formation Earthworks (cubic metre)

231 Stabilise Concrete Slab (square metre)

241 Grade Shoulder (kilometre)

242 Resheet Shoulder (kilometre)

243 Incorporate New Shoulder Material (cubic metre)

271 Retexture Road Surface (square metre)

M3/B.2.2 Routine Roadside Maintenance

311 Control Ground Vegetation (square metre)

312 Trim Tree (each)

316 Remove Tree (each)

317 Create New Fire Break (kilometre)
319 Maintain Landscaping (square metre)
331 Service Vacant Property (each)
333 Renew Boundary Fence (metre)
336 Renew Noise Wall (metre)
339 Collect Roadside Litter and Sweep Roadway (kilometre)
351 Maintain Roadside Slope (each)
354 Renew Rockfall Protection Fencing or Netting (each)
355 Renew Retaining Wall (each)
363 Snow Clearing Operations (hours)
421 Service Toilet (each)
422 Renew Toilet (each)
424 Permanently Close Toilet or Rest Area (each)
425 Install, Service and Remove Portable Toilet (each)
428 Service Rest Area (each)
429 Renew Rest Area (each)
511 Renew Surface Drain (each)
512 Renew Subsoil Drain (metre)
513 Clean Culvert (each)
515 Clean Drainage Pit (each)
516 Renew Drainage Structure (each)
517 Clean Sedimentation Basin (each)
518 Clean Gross Pollution Trap (each)

M3/B.2.3 Routine Traffic Facility Maintenance

611 Maintain Non-Pavement Delineation (each)
612 Renew Safety Barrier (metre)
613 Renew Pedestrian Fence (metre)
614 Repair Sign (each)
615 Renew Small Sign (each)
616 Renew Large Sign (each)
617 Renew Longitudinal Linemarking (kilometre)
618 Renew Pavement Marking (square metre)
619 Renew Raised Pavement Marker (each)

M3/B.2.4 Routine Bridge Maintenance

711 Repair Timber Element (each)
712 Repair Painted Surface (square metre)

713 Repair Concrete (square metre)

714 Repair Masonry and Brick (square metre)

715 Repair Bridge Railing (metre)

716 Repair Bridge Bearing (each)

717 Repair Bridge Joint (each)

718 Clean Tunnel and Steelwork (metre)

719 Repair Scour Protection System (each)

M3/B.3 LIST OF INCIDENT RESPONSE ACTIVITIES

801 Traffic Incident (each)

802 Weather Related Incident (each)

803 Other Incident (each)

804 Recoverable Work (each)

M3/B.4 PAYMENT

Payment for the activities associated with completing the work detailed in this Specification is in accordance with provisions outlined in the Contract.

ANNEXURE M3/C – SCHEDULES OF HOLD POINTS

Refer to Clause 1.2.2.

Clause	Type	Description
3.3	Hold	Approval of Routine Maintenance Annual Plan.

ANNEXURES M3/D TO M3/L – (NOT USED)

ANNEXURE M3/M – REFERENCE DOCUMENTS

RMS Specifications

B204	Welding of Bridges and other Road Structures
B220	Protective Treatment of Bridge Steelwork
B223	Management of Lead, Chromium and Asbestos in Bridge Maintenance Painting
B240	Supply of Bolts, Nuts, Screws and Washers
B345	Supply of Bridge Nameplates
M211	Crack Sealing (Bituminous Surface)
M212	Routing and Sealing of Cracks and Joints (Concrete Pavement)
M213	Cross Stitching of Cracks and Joints (Concrete Pavement)
M214	Repair of Joint seals in Concrete Pavement
M215	Repair of Spalls in Concrete Pavement
M220	Formation Grading of Unsealed Roads
M231	Pressure Grouting for Slab Jacking / Stabilisation
M232	Injected Expanding Foam Slab Jacking / stabilisation
M240	Shoulder Grading
M250	Heavy Patching
M258	Slab Replacement (Concrete Pavement)
M290	Pavement Rebuilding (Bound and Unbound Materials)
M321	Landscape Maintenance
M620	Maintenance of Road Safety Barriers
M757	Timber Truss Repairs - Construction
M769	Concrete Bridge Repairs - Construction
M772	Concrete Bridge Repairs - Investigation
M783	Bridge Bearing Repairs - Construction
M788	Bridge Deck Joint Repairs - Construction
R11	Stormwater Drainage
R15	Kerbs and Gutters
R93	Diamond Grinding of Concrete Pavement
R33	Trench Drains
R38	Edge Drains
R44	Earthworks
R53	Concrete (for general use) Mortar and Grout
R55	Rock Filled Gabions and Mattresses
R101	Cold Milling of Road Pavement Materials
R103	High Pressure Water Blasting

R110	Coloured Surface Coatings for Bus Lanes
R131	Guide Posts
R132	Safety Barrier Systems
R141	Pavement Marking
R142	Retroreflective Raised Pavement Markers
R143	Signposting
R145	Pavement Marking (Performance Based)
R161	Fencing
R173	General Concrete Paving
R178	Vegetation
R201	Fencing
R271	Design and Construction of Noise Walls
G22	Work Health and Safety (Construction and Maintenance Works)
G36	Environmental Protection
Q	Quality Management System

Australian Standards

AS 1742	Manual of Uniform Traffic Control Devices.
AS 2312	Guide to the Protection of Iron and Steel Against Exterior Atmospheric Corrosion.
AS 4373	Part 1: General Introduction and Index of Signs.
AS 1906.3	Retroreflective Materials and Devices for Road Traffic Control Purposes.
AS 1627.4	Metal Finishing - Preparation and Pre-Treatment of Surfaces - Abrasive Blast Cleaning of Steel.
AS 1554	Structural Steel Welding - Welding of Reinforcing Steel.

Other Technical Documents

RMS Guide	Geotechnical Instrumentation and Monitoring of Road Formation Structures.
RMS Guide	Procedures Manual for Structural Integrity Inspection and Condition Assessment of Road Traffic Structure Assets.
RMS Guide	Road Design Guide.
RMS Guide	Selection of Treatments for Slopes and Retaining Structures.
RMS Guide	Slope Risk Analysis.
RMS Guide	Timber Bridge Manual (Part 4).
RMS Guide	Treatment Selection at Rock Fall Sites.
RMS Guide	Rest Area Planning Principles and Design.
ILC-AM-TP1-401	Technical Procedure: Management of Skid Resistance.
PTD 2013/004	Technical Direction: Selection of Surface Treatments to Improve Skid Resistance.