



**Unsealed Road
Maintenance Plan**

Version 1.8 – August 2019

Document Control					
Version No.	Date	Revision Details	Author	Reviewer	Approved
1.1	25 th May 2012	Unsealed - Washout Erosion defect added. Damaged advisory / warning sign response times increased to 60 and 90 days Sealed – wheel path rutting amendments to specifications to add Cat 3 defect for >50mm deep > 40m ² Sealed – Seal Failure stripping now includes loss of skid resistance. Sealed - Edge Break amendment to size of cat 2 defect.	S.G.		
1.2	9 th Dec 2016	Updated General Guidance for 'Category 1' Emergency Defects, General Guidance for 'Category 2' (Routine Maintenance) Conditions Added General Guidance for 'Category 3' (Periodic Maintenance) Conditions Appendix A - Defect Specification Appendix B –Maintenance Guideline/Repair Methods	YX		
1.3	31/01/2017	General review of document and comments inserted.		JS	
1.4	25/05/2018	Update terminology, prepare for consultation	ME		
1.5	10/07/2018	Update minor details, moved work methods to procedures, further preparation for consultation	ME & SM		
1.6	10/08/2018	Updated Hierarchy	ME		
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1 Introduction

The purpose of the Unsealed Road Maintenance Plan is to establish a management system for Council to inspect, maintain and repair its public roads based on policy and operational objectives having regard to available resources. It also sets the relevant standard in relation to discharge of duties in the performance of those road maintenance functions. The key elements of the Unsealed Road Maintenance Plan include:

- The Asset Management System that Council uses to manage maintenance of its public road network, predict future renewal programs and financially manage Council infrastructure.
- Road Maintenance Service Levels that details maintenance standards and practices used by Council.

The Unsealed road Maintenance Plan relates to part of Alexandrina Councils Infrastructure & Asset Management Plan 2009. The Roads and Footpath Infrastructure and Asset Management Plan have been developed to outline the key elements involved in managing particular assets. It combines management, financial, engineering and technical practices to ensure that the level of service required by user groups is provided at the lowest long term cost to the community within the limits of any fiscal constraints that may be imposed by Council.

(See reference document – Alexandrina Council Road & Footpath Infrastructure and Asset Management Plan)

2 Inspection Regime

For roads, the inspection regime is based on road hierarchy. A risk assessment has been undertaken of the various size and modes of failure to determine intervention levels and response times.

To facilitate this, the field inspection recording process will involve the use of GPS (Global Positioning System) and Laptop computers which can identify the defects and their locations to determine the intervention level and response time.

Once the data has been recorded at the end of each day/week's round of inspections, the priority works are reviewed, remedial works program developed and incorporated into the weekly maintenance program via "Works Orders" to relevant works team.

The data collected will be exported into a format that is able to be integrated into Council's existing Asset Management System. An outcome of this process will be the ability to leverage defect data as part of Council's ongoing renewal modelling process.

Any urgent maintenance works are detailed on a "Works Order" to make temporary repairs and/or erect warning signs and/or barricading on the same day and then referred to works crews for action on the following and subsequent workdays.

3 System Procedure Security

The Field Service Unit of the Alexandrina Council is to carry out the Inspection Service for Council Assets under its control. The service will adhere and conduct inspections in accordance with the details specified within this plan.

A delegated member of staff is required to carry out inspections and the issuing of work, as defined within the Asset Maintenance system. The Assets and GIS team are responsible for administering the inspection system. Security shall be maintained by allocating each Inspector/Team Leader/Manager, a Username login based upon their initials, together with an appropriate and unique password. The combination of name and log-in details is also used to determine which Inspector carried out an inspection and how the results were entered into the system, either manually or electronically.

4 Inspection Arrangements

Any inspections carried out by observations from a car may require up to two members of staff, with the passenger/observer defined as 'The Inspector' and the driver as the Assistant. Inspections carried out on foot may generally only require one person, designated as 'The Inspector'. However, any road section where there is a combination of car travel and walking and/or where there are walked inspections with footpaths on either side of the carriageway, an 'Assistant' may be required.

Night inspections are to be carried out in accordance to an isolated work procedure and use after hours call for WHS compliance. All inspections (Day or Night) are to be carried out at a speed so as to be able to see all defects or hazards. Public Inquiries are to be actioned by the appropriate Team Leader within 48 hours of the inquiry being reported.

5 Required Actions

On finding defects, the Inspector shall record them in the mobile software using a tablet if they relate to the surface of the carriageway. The action to be taken is categorised as follows:

5.1 Category 1 (Emergency Safety)

This category is reserved for defects that are likely to represent imminent danger to road users. Defects recorded as a Category 1 require some form of make safe action to be taken within 48 hours; either permanent and/or temporary. This could include the erection of warning signs for example. If a Temporary action is recorded, there must also be a Permanent action to accompany it. Defect Intervention Levels are as stated in Defect Specification.

All 'Category 1' defects shall be notified to the relevant Supervisor as soon as is practicable. This notification is recorded as an 'Urgent' action. Extremely hazardous defects e.g. a missing manhole cover, shall not be left by the Inspector who must notify the relevant Team Leader and either wait until emergency help arrives, or where appropriate, sign and barricade the defect to make safe.

CARRIAGEWAY DEFECTS

- Potholes in the traffic lane of an unsealed pavement greater than 200 mm deep and 700mm in diameter.
- Large corrugation greater than 50mm deep and 100m in length;
- Large washout erosion in unsealed pavement greater than 150mm deep and 4m in length, exposed subgrade greater than $>500 \text{ m}^2$ and $<1000 \text{ m}^2$;
- Sand blowouts or slippery clay patches greater than 150mm deep across more than 50% of the road width and greater than 20 m^2 ;
- Fallen trees or other windblown debris creating a dangerous obstruction;
- Silt, mud or sand washed/blown onto the carriageway;

MISCELLANEOUS DEFECTS

- Signs which have fallen into the roadway or are in an unsafe condition;
- Dirty, obscured or missing regulatory and hazard signs;
- Damage to other furniture (safety fences, bus shelters, pedestrian guardrail, bollards) which results in either an obstruction of the road or a danger to the public (eg. missing parapets, damaged projecting parts etc);
- Missing RPMs and road side delineators at a critical location on Unsealed Link and Collector Roads;
- Visibility (sight vision) obstructed due to overgrown vegetation (to be completed by the tree trimming contractor);

In addition, the following items shall be reported if observed and considered a safety hazard:

- Completely or nearly (75% or greater) blocked pits, pipes and obstructed channels and "V" drains;
- Drift Sand encroaching on roadway

5.2 Category 2 (Proactive Maintenance)

This category is used for less urgent repairs. Defects recorded as a Category 2 are to be treated as normal proactive maintenance. It is intended that these defects will be completed as part of a planned routine maintenance program of work over a greater period of time. Defect Intervention Levels are as stated in defect specification.

CARRIAGEWAY DEFECTS

- Widespread potholes in the traffic lane of an unsealed pavement between 100mm and 200mm deep and 300mm and 700mm over an area greater than 400m².
- Corrugation greater than 30mm deep over more than a 100m in length;
- Large washout erosion in unsealed pavement greater than 70mm deep and 10m in length;
- Sand blowouts or slippery clay patches greater than 150mm deep across more than 50% of the road and greater than 20m²;
- Loose stone results from patrol grading, mud, debris and any slippery fluid/substance greater than 40mm thick and greater than 20 m² on the carriageway which create a danger;
- Shape loss and rutting greater than 80mm under a 1.2m straight edge over 50 % of the segment.

MISCELLANEOUS DEFECTS

- Dirty, obscured or missing traffic signs other than the types identified for Emergency defects;
- Poor/non-existent reflectivity of mandatory and directional signs;
- Damage to sign post;
- Blocked pits & pipes of between 50% and 75%, blocked and obstructed channels and "V" drains;
- Visibility restricted due to overgrown vegetation (to be completed by the tree trimming contractor);
- Cracked/broken covers in heavily trafficked areas that are deemed safe;
- Dead/dying branch - report for specialist tree inspection;

5.3 Category 3 (Reactive Maintenance)

This category is used for periodic repairs. Defects recorded as a Category 3 are to be treated as normal periodic maintenance. It is intended that these defects will be completed as part of a planned Council Capital Works of work over a greater period of time. Defect Intervention Levels are as stated in the defect specification.

CARRIAGEWAY DEFECTS

- Large washout erosion in unsealed pavement greater than 1000 m²;
- Sand blowouts or slippery clay patches greater than 70mm deep and exposed subgrade greater than 1000m²;

MISCELLANEOUS DEFECTS

- Deficiency in stormwater infrastructure that requires a new pipe under the road – which would need to be identified and programmed through Council's Stormwater Expansion capital works;
- Trees that are within the clearance envelope (to be completed by the tree trimming contractor).

6 Inspector Details

Inspectors shall be suitably experienced and competent to carry out the tasks of unsealed roadway inspections as described in this manual. They shall have a good working knowledge of relevant inspection procedures; safety requirements; road materials and construction, together with knowledge for the use of appropriate inspection equipment and software.

They shall also have knowledge and understanding pertaining to:

- The Australian Standard 1742 Part 3 - 2009 Traffic Control Devices for Works on Roads
- Occupational Health & Safety Act 2004
- Current Work Zone Traffic Management Certificate

Inspectors shall carry out inspections to a pre-determined schedule and program and to a uniform standard across the municipality. This is particularly important when deciding on a suitable category and treatment of repair for the defect or observation. If the parties responsible for the issue and/or repair of the works consider that the selection of any item or treatment code is incorrect, then full details of the correct information shall be passed to the Inspector for future reference eg: signage changes.

Inspectors shall respond to Customer Action Requests within the timeframe as per Council's documented policy and procedure for customer service. Once on site Inspectors shall determine if the defect reaches the documented intervention levels and either lodge an inspection with comments or transfer the request into a "works orders" for processing in Council's defect management system.

7 Defect Condition Definitions and Treatments

An Inspector shall record the location for every defect via the mobile software using a tablet.

Treatments identified shall be those as specified in the Unsealed Road Maintenance Plan or Unsealed Road Renewal Model.

Every effort is to be made to assign the appropriate treatments to the recorded defects and conditions.

If urgent defects are found the day before any weekend or public holiday, the inspector shall notify the relevant Works Supervisor to ensure that the defect is made safe/repared and not left until after the holiday period.

8 Inspection Data

From the inspection data it is possible to ascertain the identity of the Inspector, date and type of inspection. Inspection data will be linked to the parent asset and stored in the Councils defect management system.

Inspection data will also be periodically extracted from the defect system to be used within Council's Asset Management renewal prediction software

9 Site Analysis and Safety

Attention to the safe and efficient movement of traffic around or through a work site will enhance employee safety. It should be noted that failure to correctly apply the principals of Traffic Management could result in death or serious injury to the employee, and/or other staff and road users.

Council staff shall be sufficiently trained on the most recent Occupational Health & Safety policies and procedures.

10 Appendix A - Defect Specification

Disclaimer – the resolution times are to be viewed as a measure of performance at an aggregated level. In the event Council have operational resources dedicated to the remedy of issues related to unpredictable weather events individual cases may vary.

Road Defects	Category	Hierarchy	Intervention Level	Resolution Time (Days)	Repair type
Unsealed – Potholes Pothole Type 1- Widespread deep potholes across a large section of the segment that requires grading and significant importation of material. The potholes create a dangerous traffic hazard and require immediate attention.	1	Major	Potholes >200mm deep and > 700mm in diameter.	7	Maintenance Patch-A
		Local, Minor		12	
		Track, Lane, Carpark		60	
Pothole Type 2- Widespread potholes across a large section of the segment that requires grading and importation of material.	2	Major	Potholes 100mm - 200mm deep and 300mm - 700mm in diameter and area greater than 200m ²	30	Maintenance Patch-A
		Local		30	
		Minor		60	
Pothole Type 3- Widespread potholes across a small section of road that doesn't require patrol grading and can be patched with flocon.	2	Major	Potholes 50mm - 100mm deep and 30mm – 300mm in diameter greater than 100m ²	30	Maintenance Patch-B
		Local		30	
		Minor		60	
Pothole Type 4- Minor potholes that can be repaired with a patrol grade using the material within the road.	3	Major	Potholes < 50mm deep and < 30mm in diameter greater than 50m ² in the road area.	365	Capital Renewal Program OR Maintenance Patch-B
		Local		365	
		Minor		N/A	
Unsealed – Corrugations Treatment of isolated areas of pavement for corrugations or roughness	1	Major	Corrugations exceeding 50mm in depth over more than a 100m in length	14	Patrol Grade
		Local, Minor, Track, Lane, Carpark		30	
	2	Major	Corrugations exceeding 30mm in depth over more than a 100m in length	30	Patrol Grade
		Local		30	
		Minor		90	
	Unsealed - Washout Erosion Defects on unsealed pavement that are erosion washouts that present a hazard to the road user at the operating speed	1	Major	Erosion >150mm deep >4m in length. Exposed subgrade greater than >500 m ² and <1000m ²	7
Local, Minor, Track, Lane, Carpark			14		
2		Major	Erosion >70mm deep >10m in length.	14	Maintenance Patch-B
		Local		30	

		Minor		30	
	3	Major, Local, Minor	Erosion that causes exposed subgrade greater than 1000 m ² .	N/A	Resheet
Unsealed – Blow out Defects on unsealed pavement that are sand blowouts or slippery clay patches that present a hazard to the road user at the operating speed.	1	Major	Blowout >150mm deep across more than 50% of the road width >20m ² .	7	Maintenance Patch-A
		Local, Minor, Track, Lane, Carpark		14	
	2	Major	Blowout >70mm deep and >20m ² .	14	Maintenance Patch-A
		Local		30	
		Minor		60	
	3	Major	Blowout >70mm deep exposed subgrade greater than >1000m ² .	N/A	Resheet
Local		N/A			
Unsealed – Stormwater drainage Deficiency in stormwater infrastructure (pipes) that requires a new pipe under the road.	3	Major, Local	When a pipe is required to transfer water from one side of the road to the other to eliminate scour and ponding. Or pipe is silting up due to inadequate fall on the outflow.	N/A	Periodic Maintenance Program Or Capital Works Program (New work must be reported to the assets department.)
Unsealed – Excessive loose gravel Defects on unsealed pavement that result from patrol grading.	2	Major	Excessive loose gravel greater than 40mm thick > 20 m ² .	30	Periodic Maintenance Program and / or Signage
		Local		60	
		Minor		90	
Unsealed – Shape loss / Surface Deformation Shape loss on an unsealed road that prevents drainage and causes build-up of the loos material between the wheel paths	2	Major	Build-up of material greater than 80mm under a 1.2m straight edge over 50% of the segment.	30	Patrol Grade and / or Capital Renewal Program
		Local		60	
		Minor		90	
Unsealed – Drain maintenance	1	Major	When there is ponding covering half of	12	Drain Maintenance

Cleaning and reshaping of side drains and cut off drains to maintain water flow and protect the road and roadside from scour.	2	Local, Minor, Track, Lane, Carpark	carriage way. When infrastructure is damaged or threatened.	30	
		Major	Cut offs are silted up and are causing minor ponding and scour of roadsides	60	
		Local		120	
		Minor		180	
Damaged regulatory sign Maintenance - Repair or straightening of regulatory sign.	1	Major	Any sign that is damaged and is causing a hazard to the public at a critical location.	2	Roadside Furniture Repair
Local		2		Roadside Furniture Repair	
	2	Major	Regulatory sign damaged.	14	Roadside Furniture Repair
		Local		30	Roadside Furniture Repair
Missing regulatory sign Replacement of regulatory sign that is missing.	1	Major	Any sign that is missing and is causing a hazard to the public at a critical location and requires a new sign	2	Roadside Furniture Repair
Local		2		Roadside Furniture Repair	
	2	Major	Regulatory sign missing or old sign that needs replacement	14	Roadside Furniture Repair
		Local		30	Roadside Furniture Repair
Dirty regulatory sign Cleaning of regulatory sign.	1	Major	Any sign that is un clear and is causing a hazard to the public at a critical location.	2	Roadside Furniture Repair
Local		2		Roadside Furniture Repair	
	2	Major	Regulatory sign unclear due to the build up of dirt.	14	Roadside Furniture Repair
		Local		30	Roadside Furniture Repair
Damaged advisory / warning sign Maintenance - Repair or straightening of warning sign.	1	Major	Any sign that is damaged and is causing a hazard to the public at a critical location.	7	Roadside Furniture Repair
Local		7		Roadside Furniture Repair	
	2	Major	Warning sign damaged.	60	Roadside Furniture Repair
		Local		90	Roadside Furniture Repair
Missing advisory / warning sign Replacement of warning sign that is missing.	1	Major	Any sign that is missing and is causing a hazard to the public at a critical location and requires a new sign	7	Roadside Furniture Repair
Local		7		Roadside Furniture Repair	

	2	Major	warning sign missing or old sign that needs replacement	60	Roadside Furniture Repair
		Local		90	Roadside Furniture Repair
Dirty Advisory / warning sign Cleaning of advisory / warning sign.	1	Major	Any sign that is unclear or missing and is causing a hazard to the public at a critical location.	7	Roadside Furniture Repair
		Local		7	Roadside Furniture Repair
	2	Major	Regulatory sign unclear due to the build up of dirt.	60	Roadside Furniture Repair
		Local		90	Roadside Furniture Repair
Damaged other sign Maintenance - Repair, or straightening of other sign.	1	Major	Any sign that is damaged and is causing a hazard to the public at a critical location.	7	Roadside Furniture Repair
		Local		7	Roadside Furniture Repair
	2	Major	Other sign damaged.	60	Roadside Furniture Repair
		Local		90	Roadside Furniture Repair
Missing other sign Replacement of other sign that is missing.	1	Major	Any sign that is missing and is causing a hazard to the public at a critical location and requires a new sign	7	Roadside Furniture Repair
		Local		7	Roadside Furniture Repair
	2	Major	other sign missing or old sign that needs replacement	60	Roadside Furniture Repair
		Local		90	Roadside Furniture Repair
Dirty other sign Cleaning of other sign.	1	Major	Any sign that is unclear or missing and is causing a hazard to the public at a critical location.	7	Roadside Furniture Repair
		Local		7	Roadside Furniture Repair
	2	Major	Other sign unclear due to the build up of dirt.	60	Roadside Furniture Repair
		Local		90	Roadside Furniture Repair
White posts Cleaning, straightening, and/or replacement of white posts	1	Major	Guide posts missing or damaged at critical location	30	Roadside Furniture Repair
		Local		90	Roadside Furniture Repair
	2	Major	Guide post missing or bent	60	Roadside Furniture Repair
		Local		120	Roadside Furniture Repair
Graffiti removal of graffiti from council assets	All	Major	Where graffiti is offensive or otherwise	2	Roadside Furniture Repair
		Local		2	Roadside Furniture Repair

11 Appendix B – Inspection Types

Inspection Types	Purpose	Inspection Performed by and reporting requirements
Reactive Customer / Safety Inspection	Reactive customer / safety inspections are designed to identify defects that are likely to create danger or serious inconvenience to users of the road network and wider community	Council representative with knowledge of road maintenance techniques
	Safety inspections are implemented as a result of, formal defect inspections or observations from the general public, council staff or elected members (process required) while undertaking their normal duties that are reported to Councils through the customer service module.	Recording to identify specific safety defect, time inspected by whom as well as initial request number or reference or name.
Routine Maintenance Inspection	Inspections undertaken to identify defects that may create danger or serious inconvenience to the users of the road network, and to ensure that road assets comply with the levels of service specified in the Asset Management Plan.	Council engineer or experienced staff with knowledge of road maintenance techniques.
	Maintenance inspections are to be completed as per the schedule in Appendix D with "no defect found" to be recorded where no defect was apparent.	
Condition Inspection	An inspection specifically to identify deficiencies in the structural integrity of various assets of the road infrastructure.	Inspections / surveys will be undertaken under the direction of the Infrastructure Engineer approximately every 4 years.
	Condition inspections are used to determine long term renewal programs as well as the overall condition of the road and its related value.	Specific data to be recorded will be determined by the Assets department and recorded as part of the Councils Asset Management data.
Night Inspections	An inspection to check the safety of road signs under night time conditions. Relevant only to Collector and Distributor classed roads	Council engineer or experienced staff with knowledge of road maintenance techniques. Inspections will be undertaken every twelve months
Road Safety audit		

12 Appendix C – Repair Method

Repair Type	Description
Maintenance Patch A	Maintenance Patch A is undertaken to repair large defects that require a grader, roller, additional material or significant operating labour to repair the unsealed maintenance defects.
Maintenance Patch B	Maintenance Patch B is undertaken to repair small defects that only require minimal material and can be undertaken by a Flocon unit with a small amount of operating labour in a short amount of time.
Patrol Grade	A patrol grade is to be undertaken by the patrol grading team. The use of grading teeth is left up to the relevant supervisor to decide on, given the time of year, nature of the road.
Renewal	These defects are to be considered as part of the renewal program and may require alteration of the current renewal program.
Drain Maintenance	Drain maintenance is to be undertaken by the civil maintenance teams using in-house resources.
Periodic Maintenance Program	These defects will be considered as part of the Periodic Maintenance Program.
Roadside Furniture Repair	These repairs will be considered as part of the roadside furniture.

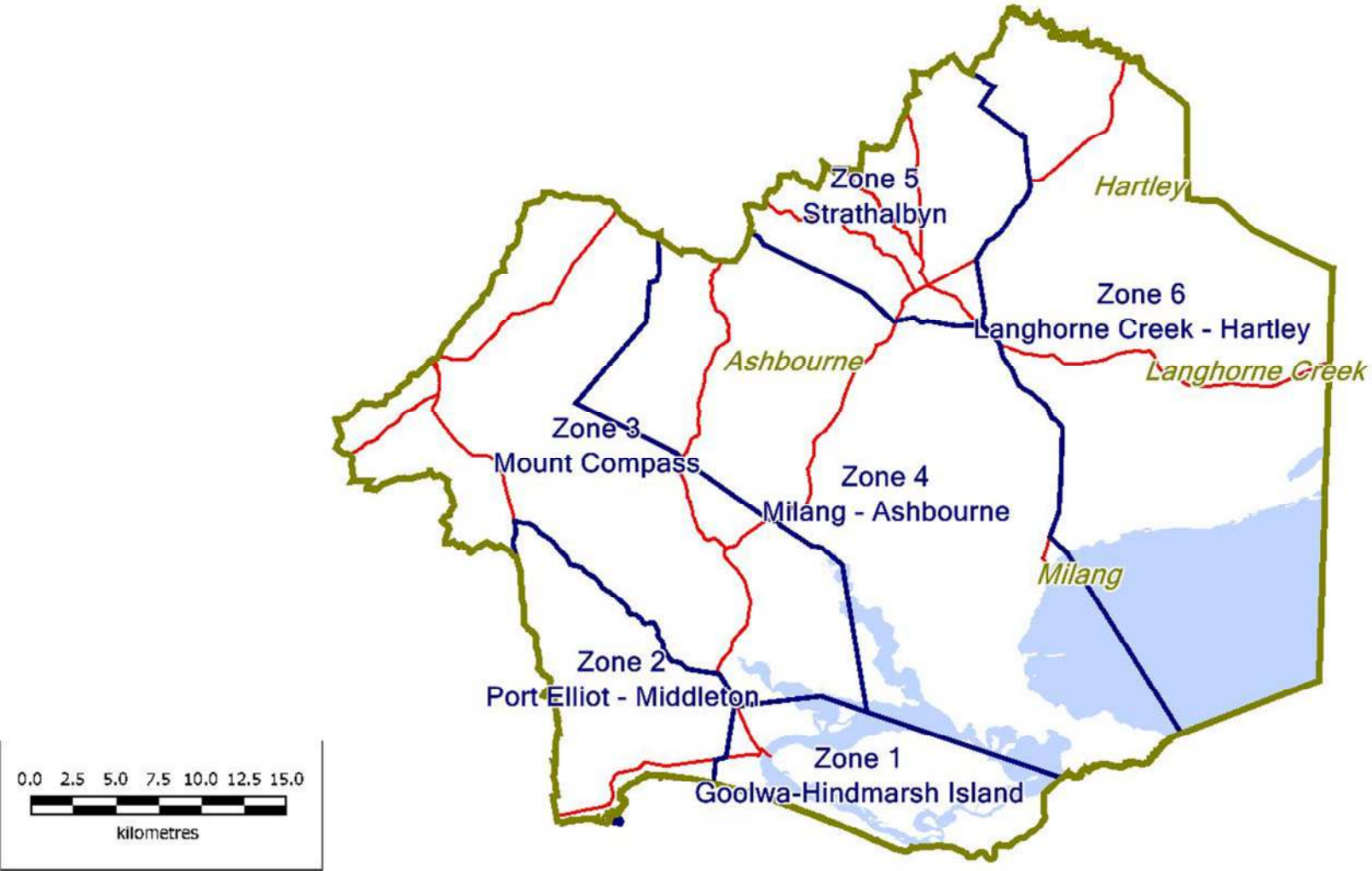
13 Appendix D - Inspection Program

Routine Maintenance	January	February	March	April	May	June	July	August	September	October	November	December
Unsealed Major - Rural	Zone 3	Zone 6	Zone 1	Zone 5	Zone 2	Zone 4	Zone 3	Zone 6	Zone 1	Zone 5	Zone 3	Zone 4
Unsealed Major - Urban	Zone 5 & 3	Zone 2	Zone 1 & 4	Zone 5 & 3	Zone 2	Zone 4&1	Zone 5 & 3	Zone 2	Zone 4 & 1	Zone 5 & 3	Zone 2	Zone 1 & 4
Unsealed Local - Rural		Zone 6	Zone 1	Zone 5	Zone 2	Zone 4	Zone 3	Zone 6				
Access Track - Rural		Zone 6	Zone 1	Zone 5	Zone 2	Zone 4	Zone 3	Zone 6				
Unsealed Local - Urban		Zone 6	Zone 1	Zone 5	Zone 2	Zone 4	Zone 3	Zone 6				
Access Lane - Urban		Zone 6	Zone 1	Zone 5	Zone 2	Zone 4	Zone 3	Zone 6				

Night Time Inspections	January	February	March	April	May	June	July	August	September	October	November	December
Unsealed Major								Zone 1,2 & 3	Zone 4,5 & 6			

Zone	Description
Zone 1	Goolwa and Hindmarsh Island
Zone 2	Port Elliot , Middleton north to the Goolwa Mt Compass Road
Zone 3	Mount Compass and area east of Goolwa - Blackwood Road , Black fellows Creek Road
Zone 4	McHargs Creek, Clayton and Milang
Zone 5	Strathalbyn and northern area to Wistow
Zone 6	Langhorne Creek, Woodchester and Hartley

14 Appendix E – Zone Map



15 Appendix F – Inspection and Maintenance Flow Chart

