

FAR NORTH DISTRICT **MAINTENANCE INTERVENTION STRATEGY**

Acknowledgements
The NZTA publications: "State Highway Network Outcomes Contract Visual Audit Guideline"
"ONRC Road Maintenance Visual Guide"
Austroads publication: "A guide to the Visual Assessment of Pavement Condition"



**Te Kaunihera
o Te Hiku o te Ika**
Far North District Council

THE FNDC MAINTENANCE INTERVENTION STRATEGY - INTRODUCTION

This Maintenance Intervention Strategy (MIS) has been developed to be used in a number of ways by FNDC. It provides a set of maintenance “standards” or levels of service for all key road asset and sub asset classes.

It is part of an “all faults” strategy where all identified faults are captured and rated for severity and logged into AWM. Fault severity is rated between 1 and 5 with 1 being acceptable condition – no damage and fit for purpose to 5 Very poor, safety compromised and requires immediate attention.

The advantage of a measure and value contract is that Council can vary the intervention level between assets (from 1 to 5) based on budgets, climate, customer need etc.).

New contracts have a starting level of service, which is reflected in Version 1 of the MIS, with most asset intervention levels set at intervening at level 4 or 5, with level 3 being monitored on a monthly basis (some assets have a level 3 intervention). During each inspection, existing faults are re-rated to monitor deterioration and new/or the changed condition of faults logged in AWM. The result of these inspections will inform the basis of a 3-month indicative programme and monthly detailed programmes. The diagram on page 3 shows the theory behind the fault levels and shows optimal intervention timing and highlights that intervening below the optimal intervention line will cost \$4 to \$5 where an earlier intervention would only cost \$1. This is the basis of FNDC’s proactive, preventative maintenance strategy.

On the sealed network the ‘find and fix’ crews will intervene on faults at an earlier level than 4 or 5, fixing whatever level of fault they find and logging those which require more input.

The MIS contains over 100 specific fault types, each one is detailed in a quantified table and by a set of photographs. Each fault has 5 images demonstrating the level 1 to 5 condition of the asset.

The MIS covers all key road asset classes including:

- Pavement condition (sealed and unsealed) including night inspection faults
- Drainage
- Vegetation
- Footpaths
- Signs
- Pavement Marking

The MIS sets out the key criteria for identifying and completing routine road maintenance activities within the Far North District. It is designed to ensure a consistent and rational approach to maintenance across the District.

The MIS is a key pillar of the management and operation of the new measure and value-based maintenance contracts, it will also be helpful in full and summarised versions for:

- Council to publish and advise customers (via website or other communications) of Council’s “target” level of service and when contractors are expected to intervene to repair an asset,
- for help desk staff to better understand what road faults ‘really look like’,
- for Council and network management staff to ensure uniform levels of service are applied across the district,
- Contractors and Council staff to ensure they are inspecting the network through the same ‘lense’.

The key outcomes of this MIS is to quantify network maintenance requirements and ensure

budgets are efficiently applied to achieve sustainable, consistent and appropriate levels of service across the district, maximising asset lives by providing a safe, convenient, comfortable and cost-effective roading system for the movement of people, goods and vehicles. Council focus is to move to a structured, planned preventative maintenance strategy to build resilience and reduce its reactive maintenance demands.

These standards and strategies will always be under review and will continue to evolve based on variables such as budget, climate, council policy, etc.

This document has been developed to compliment the Road Efficiency Group (REG) work on the One Network Road Classification (ONRC). Recognising that lower classification roads may not need the same urgent attention that some of our higher classification roads need. The intervention triggers are the same across all classifications but inspection frequencies and response times differ with road classification.

The MIS provides an outline of the maintenance requirements on the network with respect to the following key maintenance activities:

An unsealed road strategy will be developed which will cover A,E,F,G,H and I multi-year program:

(A) - General Maintenance

The Network is inspected using an all-faults system which is logged into RAMM/AWM Contractor, Pocket RAMM/AWM for programming of future work and prioritisation. Work is then aligned with budgets and submitted to the Contract Engineer every month. The visual intervention strategy is used to ensure consistency is applied throughout the network. The Network inspectors then continue to inspect the network to rate the condition of assets, update faults in the system and record new faults.

(B) - Resurfacing

Road sections are identified to be re-surfaced. Pre-seal repairs are targeted to be completed in the prior year/season. The works programme is based on condition of the seal coat, crash data, age of the asset and maintenance costs. A 10-year work programme has been developed with a three-year validated programme which is reviewed annually.

(C) - Rehabilitation

Road sections that are identified in programme to be reconstructed. Programme developed based on the condition of the pavement, safety and maintenance costs. The all-faults inspection is a critical tool to ensure that rehabilitation, location, timing and cost effectiveness is optimised.

(D) - Pre-Seal/Digouts

Maintenance work is identified when planning resurfacing works. High-quality repairs are undertaken to ensure all pavement and drainage repairs are completed before the resurfacing. A minimum 12-year life is expected from pre-seal and resurfacing. A digout program to repair isolated and individual failed pavement sections is developed through an indicative 3-year and detailed 1-year programme to align with resurfacing and rehabilitation programmes.

THE FNDC MAINTENANCE INTERVENTION STRATEGY - INTRODUCTION

(E) - Drainage Improvements

Drainage and shoulder maintenance or improvements identified to ensure debris is removed and water tables are formed and free flowing and that high/low shoulders are repaired. This work protects the pavement from water damage and assists in road safety by preventing ponding on the surface. The network inspectors will prioritise shoulder maintenance and ensure that there is no ponding on the pavement or edge of seal.

(F) - Traction Seals

A moderate program of traction sealing of short steep sections can be undertaken using unsealed road maintenance funds. A programme will be developed and implemented with the majority of the programme funding applied for through NZTA's low-cost low-risk funding category. The moderate program will be implemented annually using maintenance funds.

(G) Unsealed Road Upgrades

Multiyear program developed for pavement upgrades to unsealed roads based on hierarchy and use.

(H) Seal Extensions

Subsidy will be sought for seal extensions

(I) Dust Control

All unsealed road AWM sections will be "run" through the NZTA dust matrix to confirm which sections will attract subsidy. Council to develop dust control strategy.

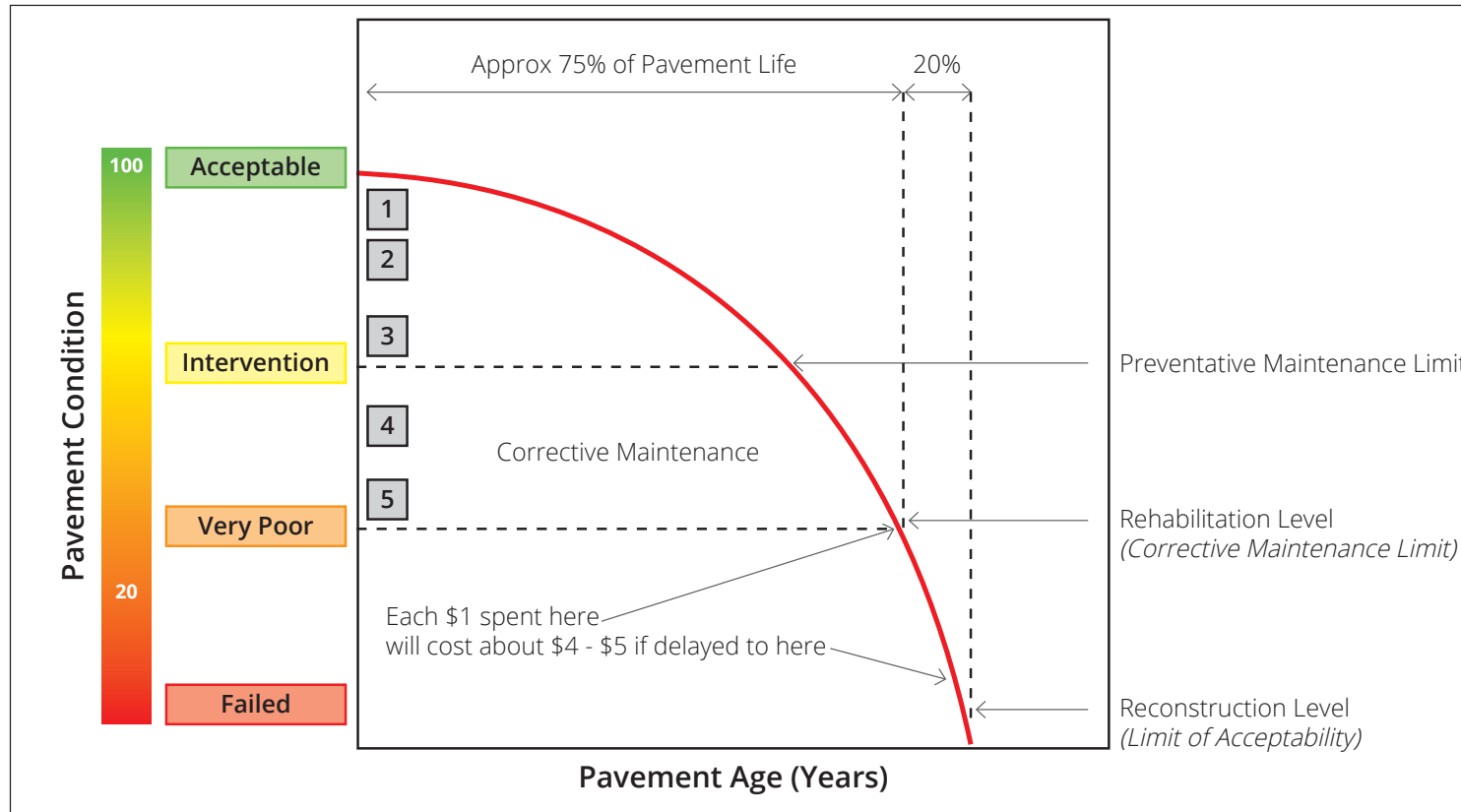
(J) Cyclic Maintenance

Cyclic Maintenance is an important task in ensuring that safety and customer levels of service are being achieved. The Visual Intervention Strategy (refer to pictures included) sets out the requirements for maintenance items and general cyclic items. The MIS is designed to take away assumptions and set the level of service Council can afford and that will be provided. This guide is a key tool in having customers clearly understand the level of service and subsequently reduce customer complaints and ensuring maintenance work is completed at the right time, in the right place.

ALL-FAULTS PROCESS

Council will operate an “All-Faults Database” which is a system where the network is inspected in its entirety with all faults identified, rated for severity and programmed into AWM Contractor. The data is then used along with various tools (GIS mapping, Q GIS) to determine network condition

and develop programmes of work. The All-Faults Database allows for accurate forecasting, budget management, future capital works and network condition assessment. The Engineer will use the Database to set budgets and approve long-term programmes.



The diagram above shows the optimal proactive time to intervene to ensure the level of service and asset condition doesn't drop below the rehabilitation level/corrective maintenance limit, which can cost five dollars compared to an earlier intervention cost of one dollar.

The All-faults system will be applied to the network to map out the location of the level 3, 4 and 5 faults.

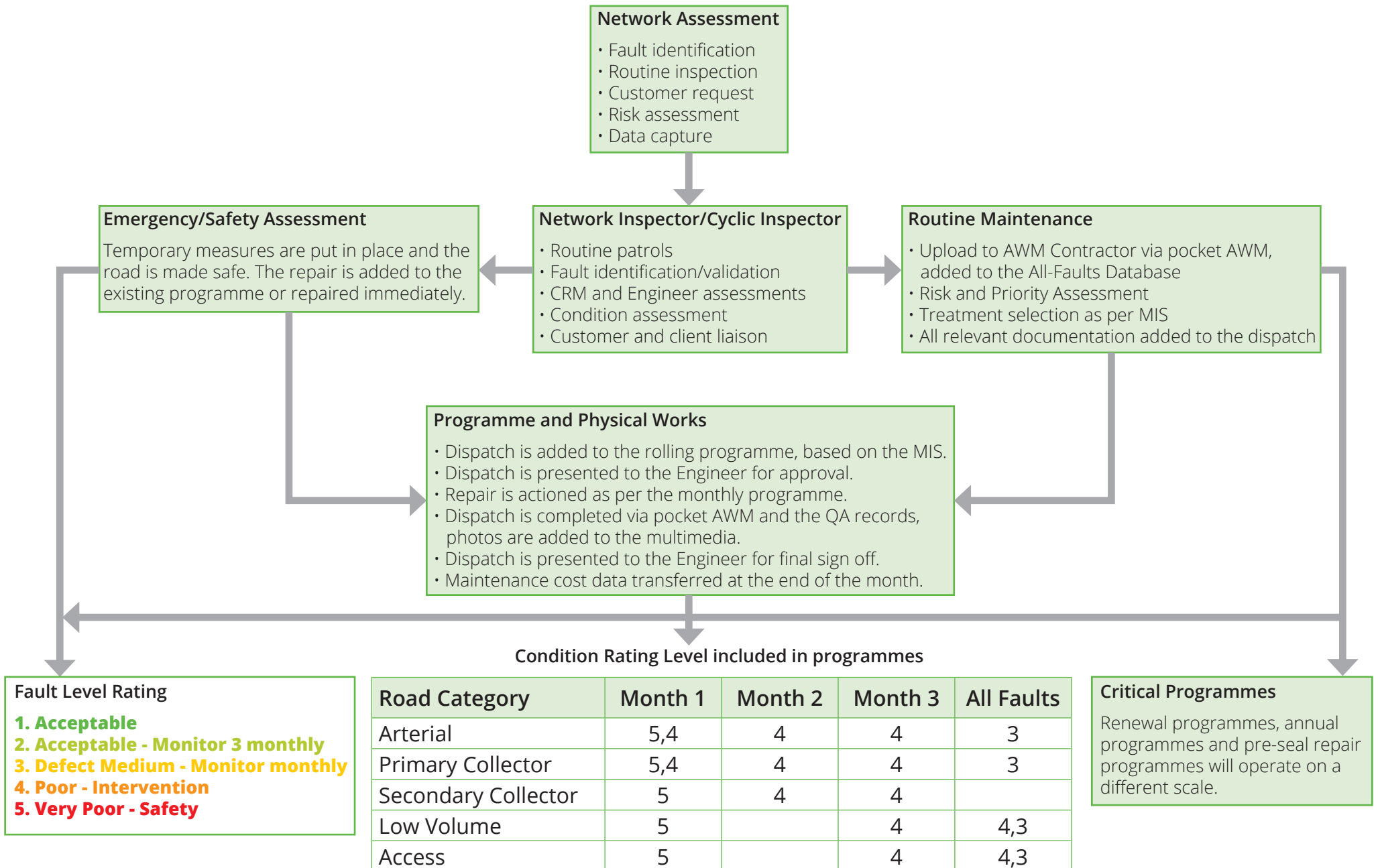
The Contractor will make safe and repair level 5 faults immediately or within the month upon identification.

Level 3 faults will be monitored and validated in accordance with the ONRC category. (Some faults will have an intervention level of 3).

In most cases the Contractor will prioritise and programme and complete work on level 4 faults, with a three month indicative and monthly detailed programmes developed giving priority to repairing faults on higher road classifications, road safety, customer requests and Engineer requests.

The network inspectors play a critical role in populating and managing the All-Faults Database which allows the Engineer to understand network condition, and where to allocate funding. It gives confidence to both the Principal and Contractor that the network is safe, functional and managed in a robust manner.

NETWORK MAINTENANCE IDENTIFICATION PROCESS



FAULT LEVEL RATING DETAIL

1	ACCEPTABLE The Asset is in an acceptable condition, with some wear and tear and minor deterioration but no damage. The road is fit for purpose and only has minor operational wear and tear. The shoulders and watertables are free flowing.
2	DEFECT MONITOR - NO INTERVENTION The Asset is in a reasonable condition but has deteriorated with some damage. The Asset is still functional and fit for purpose. The road is functional with some operational wear and tear. The shoulders and watertables are flowing.
3	DEFECT MARGINAL (SATISFACTORY - INTERVENTION MAY BE REQUIRED) The Asset condition is marginal and may require consideration in the near future. There is visible damage, but the asset is still fully operational. The road is functional but has developed minor faults throughout, but below the intervention threshold. High shoulder and watertables are becoming uneven and there is minor build up before the water eventually gets away. "Requires monitoring".

GENERAL INTERVENTION LINE*

*Some sub asset faults will have a level 3 intervention (e.g. sealed road potholes)

4	POOR (INTERVENTION IS REQUIRED) The Asset condition is poor and requires some form of intervention. There is damage or deterioration to the asset and the functionality/integrity is compromised. "Asset requires intervention".
5	VERY POOR - SAFETY (IMMEDIATE INTERVENTION REQUIRED) The Asset condition requires immediate attention. There is damage to the asset which is no longer functional. The road has failures throughout and has become a safety concern/hazard, temporary measures are required to slow vehicles down. "Immediate Intervention".

THE FNDC MAINTENANCE INTERVENTION STRATEGY

Key performance measures are used to ensure that the network users are provided with a safe and functional network that allows for positive journeys. These requirements all fall under the *One Network Road Classification (ONRC)* issued by the Road Efficiency Group (REG).

The strategy is a balance between network level of service vs budget constraints and in most situations the level of intervention best sits at Level of Service 4. There are some items that may require a higher level of service; this will be referenced in the strategy and contract document and directed by the Engineer. The intervention level could change to meet network demand, budgets and Councils strategic drivers. The Engineer may increase or decrease intervention levels for any particular item to ensure that Councils key transport objectives are achieved.

Inspections, Programming and Intervention

Faults are triggered by an an asset condition falling below an agreed level of service and generally the same trigger applies to an Access Low Volume Road as a Primary Collector or Arterial. Whilst the triggers may be the same the frequency of visual inspections and response time is not, with Arterial and Primary collector roads requiring a higher level of service (faster response times) than lower hierarchy roads.

To give the contractor flexibility to manage the network in a cost effective and efficient way, most response times across categories of road are 3 months to allow the contractor to group optimal sized packages of work together. However, some items do require more urgent attention and the Engineer and Contractor will specifically programme these works. Potholes in sealed and unsealed roads and corrugations in unsealed roads are exceptions and have shorter response times.

Inspection Frequencies

Sealed Roads Inspection Frequency		
ONRC Classification	Inspection Frequency	Night Audit Inspection
Sealed Primary Collector/Arterial	2 weekly	6 monthly
Sealed Secondary Collector	Monthly	6 monthly
Sealed Access Low Volume/Access	3 monthly	6 monthly

The Engineer and Contractor will use the inspection and Intervention process to review cyclic performance to determine when to intervene.

Intervention is required before the asset becomes non-conforming; i.e. to ensure the asset does not exceed the maximum tolerance (as shown in the tables). The Contractor will develop and implement programmes to manage cyclic performance so that the asset does not become non-conforming.

Sealed Road Cyclic Patrols

Cyclic patrol crews will patrol the sealed network on an agreed cycle using a “find and fix” philosophy – to locate and repair basis maintenance items such as potholes, depressions, vegetation and drainage. The patrol crews will repair what they find as they find it and will log faults that are too severe to repair straight away. These faults will be ‘rated’ and entered into the all-faults database and programmed for future repair. The number of patrol crews may be adjusted depending on the need.

Unsealed Roads – Inspection driven response

Unsealed roads will be inspected on a cycle with pothole crews being deployed as needed. Grading will be programmed in cycles by specific areas.

Communication, transparency and planning are going to be critical for the Contractor and Council to ensure the cyclic outcomes are achieved. The Engineer and Council will collectively plan and programme works.

Unsealed Roads Inspection Frequency		
Classification	Inspection Frequency	Night Audit Inspection
Arterial/Primary Collector	N/A	N/A
Secondary Collector	Monthly	N/A
Access/Low Volume	3 monthly	N/A

FNDC MAINTENANCE INTERVENTION CRITERIA

LOW VOLUME/ACCESS - SECONDARY COLLECTORS/PRIMARY COLLECTORS AND ARTERIAL ROADS

Work Category	Activity			Intervention Level Trigger	Timeframe Low Volume Access and Access		Timeframe Secondary Collectors		Timeframe Primary Collector and Arterial Roads	
		Fault	Remedy		Inspections	Programmed Response	Inspections	Programmed Response	Inspections	Programmed Response
111 Sealed Pavement Maintenance	Pavement Repairs	Cracking - mm	Crack sealing	Level 3,4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Cracking - m ²	Crack sealing	Level 3,4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Cracking - A/C - mm	Crack sealing	Level 3,4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Cracking - A/C - m ²	Crack sealing	Level 3,4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Crack - width - mm	Crack filling	Level 3,4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Crack - length - m	Crack filling	Level 3,4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Stripping and scabbing - m ²	Surfacing repair	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Stripping and scabbing - chip loss	Surfacing repair	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Flushing - straight alignment - m ²	Re-chipping	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Flushing - on curve - m	Re-chipping	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Bleeding - m	Gritting	Level 4,5	Reactive	The same day	Monthly	The same day	Weekly	The same day
		Depression - mm	Mill and inlay/fill	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Depression - Area - m ²	Mill and linlay	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months

FATIGUE/ALLIGATOR/ISOLATED CRACKING

Potential causes / issues	Fatigued asphalt, weak subgrade, water in the subgrade and base layers that is being pumped into the seal by traffic, as it passes the affected area.				
Example Defects	Cracking of the surface layer in wheel path, leaking water services in wheel path, bad drainage (trapping water), and AC paving joints opening up.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM INTERVENTION	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description - Isolated cracking	Pavement in good working order no cracking	Very fine cracking in small areas, not pumping, shoving or potholes	Cracking less than 5mm and less than 10m in length	Cracking >5mm and/or longer than 10m	Heavy cracking
Defect Description - Alligator cracking	Pavement in good working order no cracking	Very fine cracking in small areas, not pumping, shoving or potholes	Cracking less than 5mm and less than 10m ² in area	Cracking greater than 5mm and/or more than 10m ² in area or clear signs of pumping or water seeping	Heavy cracking, subgrade is pumping through and water is ponding
Typical Treatment	None	Monitor	Monitor/Crack sealing	Digout, crackfill, rip and remake, look for drainage improvement and mill and fill	Full digout, stabilisation look for drainage improvement
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	3 months from notification

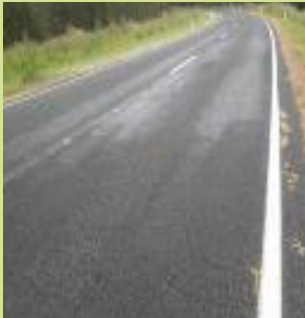
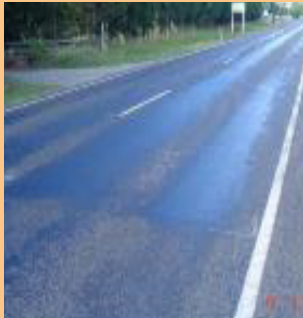
Intervention - Level 3, 4 and 5

SCABBING/STRIPPING

Potential causes / issues	Chip loss from the surface generally on old seals/AC where the binder has become brittle and hardened by sunlight.				
Example Defects	Loss of chip on old asphalt and seals.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM INTERVENTION	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Pavements in good order no scabbing or loss of chip	Chip loss very isolated	Small areas <15m² but watertight	Large areas of scabbing >15m² >50% Chip loss - but still watertight	Heavy scabbing with exposed base course over larger area
Typical Treatment	None	Monitor	Monitor (Cyclic)	Chipseal	Chipseal rip and remake
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

FLUSHING

Potential causes / issues	Flushing area within a trafficked lane or in a high tyre/friction demand area >10m ² that is considered a potential safety hazard.				
Example Defects	Sealed surface flushed and binder rise.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Pavements in good order no flushing or very minimal showing	Flushed area <10m ² and not approaching an intersection or crossing or corner	Flushed area >10m ² and ≤20m ² and not approaching intersection or crossing or corner	Flushed area >10m ² and ≤30m ² or approaching intersection or crossing or corner	Flushed area ≥30m ² or approaching intersection or crossing or corner
Typical Treatment	None	Monitor	Monitor (Cyclic)	Water cut or reseal or rip and remake	Water cut or reseal or rip and remake
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

FNDC MAINTENANCE INTERVENTION CRITERIA

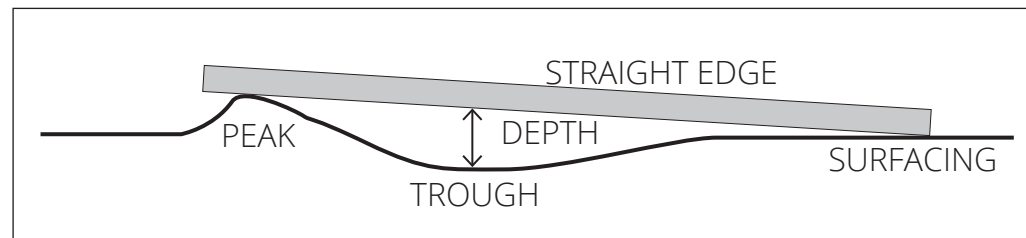
LOW VOLUME/ACCESS - SECONDARY COLLECTORS/PRIMARY COLLECTORS AND ARTERIAL ROADS

Work Category	Activity			Intervention Level Trigger	Timeframe Low Volume Access and Access		Timeframe Secondary Collectors		Timeframe Primary Collector and Arterial Roads	
		Fault	Remedy		Inspections	Programmed Response	Inspections	Programmed Response	Inspections	Programmed Response
111 Sealed Pavement Maintenance	Pavement Repairs	Shoving - mm	Digouts	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Rutting - mm	Digouts	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Shoving or Rutting - length - m	Digouts	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Shoving - mm	Stabilising	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Rutting - mm	Stabilising	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Shoving or Rutting - length - m	Stabilising	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Depression - mm	Rip and remake	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Depression - area - m ²	Rip and remake	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Depression - mm	Premix shaping	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Depression - area - m ²	Premix shaping	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
	Edgebreak	Edgebreak - encroachment (from edge of seal)	Edgebreak repair	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Edgebreak - length	Edgebreak repair	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
	Shoulder Maintenance	Low shoulder - depth - mm	Low shoulder filling	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
		Low shoulder - length - mm	Low shoulder filling	Level 4,5	3 monthly	3 months	Monthly	3 months	Weekly	3 months
	Potholes	Pothole - depth - mm	Pothole repair	Level 3,4,5	3 monthly	2 weeks	Monthly	1 week	Weekly	3 days
		Rural pothole - diameter - mm	Rural pothole repair	Level 3,4,5	3 monthly	2 weeks	Monthly	1 week	Weekly	3 days
		Urban pothole - diameter - mm	Urban pothole repair	Level 3,4,5	3 monthly	1 week	Monthly	2 days	Weekly	2 days
		Pothole - A/C	Pothole repair	Level 3,4,5	3 monthly	1 week	Monthly	2 days	Weekly	2 days

DEFORMATIONS, HEAVES AND SHOES

Potential causes / issues	Deformation, heave or shove with height or depth > 50mm within the sealed pavement area (when measured from peak to trough).				
Example Defects	Uneven surface, heaves, shoves, minor subsidence, ponding or potential to pond.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Pavements in good order no deformation showing	Small deformation in pavement surface starting to develop <30mm height or depth	Surface deformation with height or depth >30mm and less than 50mm	Surface deformation with height or depth >50mm and less than 100mm	Surface deformation with height or depth >100mm
Typical Treatment	None	Monitor	Monitor monthly inspection	Stabilise/Rip and Remake/ Dig out AC minor level to depressions	Dig out or Stabilisation
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

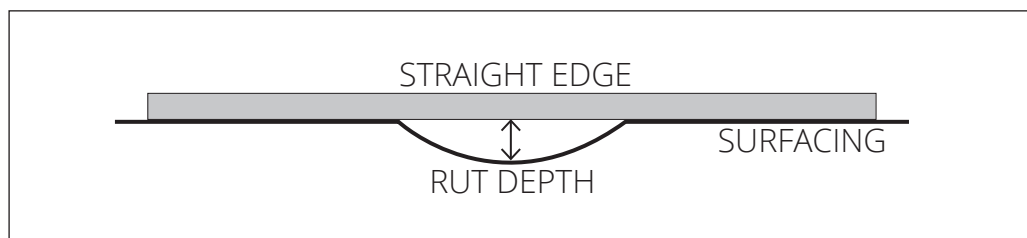


Straight edge laid across the carriage way and a tape measure or ruler used to determine the height from peak to trough of the deformation.

RUTTING

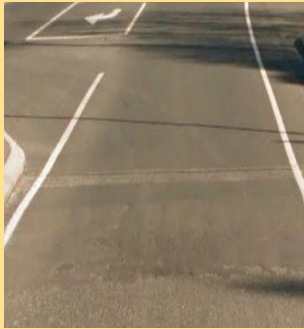
Potential causes / issues	Ponding or potential to pond >15 mm depth and considered a potential safety hazard.				
Example Defects	Wheel track rutting, peat road settlement and trench settlement.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Pavements in good order no deformation showing	Rutting <15 mm but no pavement damage	Rutting >15 mm and <30mm and miss shaped	Rutting >30 mm and <50mm and evidence of pavement damage	Rutting >50 mm and rapid deterioration of pavement
Typical Treatment	None	Monitor	Monitor (Cyclic)	Planned maintenance (rip and remake, stabilisation, mill and fill or minor level)	Make safe - Heavy maintenance (Stabilise, rip and remake or digout)
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5



Straight edge laid across the carriage way and a tape measure or ruler used to determine the depth of the rut.

SURFACE BUMPS/SURFACE TRANSITION

Potential causes / issues	Surface bump within a wheel path or cycle lane/path > ± 20mm. Lip which causes a noise, vibration or ride nuisance.				
Example Defects	Settlement of pavement repair, trench or bridge abutment and reseal/rehab/renewal joints.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	No surface bump, joint in good order	Surface bump <10mm lip at the joint	Surface bump <30mm lip at the joint	Surface bump >30mm lip at the joint	Surface bump >30mm lip at the joint
Typical Treatment	None	Monitor	Monitor (Cyclic)	Rip and remake chipseal/hotmix finish	Rip and remake chipseal/hotmix finish
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

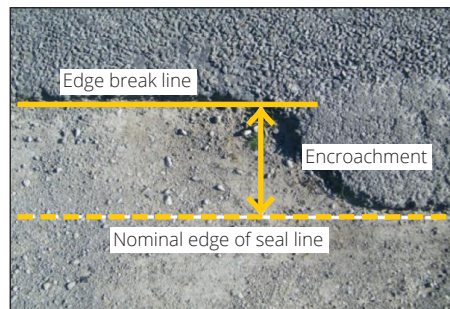
EDGE BREAK/LOW SHOULDER

Potential causes / issues	>2m of continuous edge breaks or encroachment into the seal at any point.				
Example Defects	Fretting or breaking of the edge of a bituminous surface.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Pavements in good order no edge break showing	Edge break starting to form, need to monitor	≤2m of continuous edge break and < 100mm encroachment	>2m of continuous edge break and >100mm encroachment into the seal.	Continuous edge break where encroachment is significant
Typical Treatment	None	Monitor	Monitor (cyclic) Asphalt edge break repair if >50mm	Low shoulder (intervention first), Edge break repair (Asphalt)	Stabilise, rip and remake and widening
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	3 months from notification

Intervention - Level 3, 4 and 5

Edge break: Treatment is generally a premix repair with an emulsion tack coat. However, if the Edge break is >50 deep with minimal encroachment it should be treated as a low shoulder.

Repeated Edge Breaks in an area may point to a need to seal a wider shoulder or address reasons for vehicle tracking over the shoulder. Highlight problem areas to the Engineer for potential improvement treatments.



LOW SHOULDER

Potential causes / issues	No shoulder support, significant drop between edge of seal and top of feather edge.				
Example Defects	50mm> drop on the edge of seal, damage due to no shoulder support.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Shoulder is supported	Minor drop but shoulder is sound	Small drop, possible intervention	50mm> drop, water ponding, edge of seal damage more noticeable	Major drop, edge of seal has no support. Potential for an accident
Typical Treatment	None	Monitor	Monitor (Cyclic)	Major – Repair shoulder, Map 40 or 20 overlay	Serious – Intervention required, stabilise or Map 40 or 20 overlay
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	3 months from notification



Less than 100mm acceptable.



Drop greater than 100mm not acceptable.

POTHOLES

Potential causes / issues	Potholes in surface allowing water to access the pavement.				
Example Defects	Potholes in sealed pavements.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Pavements in good order, no potholes forming	Pothole is starting to form	Pothole partially forming and starting to affect the asset	Pothole is affecting both customers and damaging the asset. Diameter >100mm & Depth >40mm	Major potholes greater than 500mm ² (area) ie: 700mm x 700mm
Typical Treatment	None	Monitor	Monitor (Cyclic)	Pothole mix – asphalt repair (Cyclic)	Pothole is made safe and a suitable repair is programmed
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	3 months from notification

Intervention - Level 3, 4 and 5

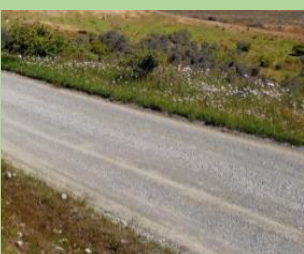
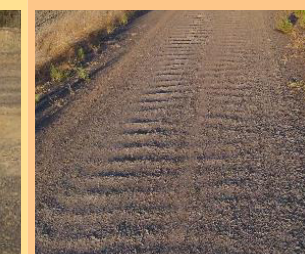
Pothole: Potholes need to be squared off and compacted with a suitable compactor (not a vehicle tire).

FNDC MAINTENANCE INTERVENTION CRITERIA - ANCILLARY ITEMS

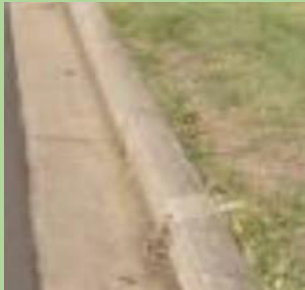
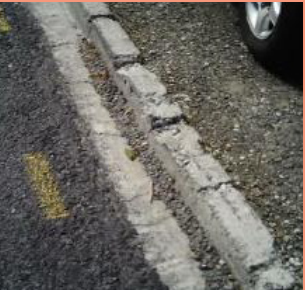
LOW VOLUME/ACCESS - SECONDARY COLLECTORS/PRIMARY COLLECTORS AND ARTERIAL ROADS

Work Category	Activity			Intervention Level Trigger	Timeframe Low Volume Access and Access		Timeframe Secondary Collectors		Timeframe - Primary Collector and Arterial Roads	
		Fault	Remedy		Inspections	Response	Inspections	Response	Inspections	Response
112 Unsealed Pavement Maintenance	Unsealed Pavement Repairs	Routine Maintenance:					No unsealed roads in this category	No unsealed roads in this category		
		Corrugation - mm	Regrade	Level 4,5	3 monthly	1 month				
		Corrugation - m	Regrade	Level 4,5	3 monthly	1 month				
		Potholes - depth - mm	Pothole filling	Level 4,5	3 monthly	2 weeks				
		Potholes - diameter - mm	Pothole filling	Level 4,5	3 monthly	2 weeks				
		Loose aggregate (skidding) - mm	Wet and Roll	Level 4,5	3 monthly	3 months				
		Cross-fall	Regrade	Level 4,5	3 monthly	3 months				
		Rutting	Regrade	Level 4,5	3 monthly	1 month				
		Shoving and Rutting	Digouts	Level 4,5	3 monthly	3 months				
			Stabilising	Level 4,5	3 monthly	3 months				
	113 Routine drainage maintenance	Stormwater structure obstructed	Stormwater structure clearance	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Culvert blockage - % blocked	Culvert cleaning	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Surface water channels - % blocked	Surface water channel cleaning	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Surface water channels - frequency	Surface water channel cleaning	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		High shoulder - Height - mm	Cut down / regrade	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		High shoulder - Length - m	Cut down / regrade	Level 4,5	3 monthly		Monthly		2 weekly	
114 Structures Maintenance	Structure Maintenance	Routine bridge maintenance	Inspections	Level 4,5	3 monthly		2 monthly		2 weekly	
		Routine bridge maintenance (eg blocked drains)	Repairs	Level 4,5	3 monthly	3 months	2 monthly	3 months	2 weekly	3 months
		Routine structure maintenance	Inspections	Level 4,5	3 monthly	3 months	2 monthly	3 months	2 weekly	3 months
		Routine structure maintenance	Repairs	Level 4,5	3 monthly	3 months	2 monthly	3 months	2 weekly	3 months
	Barrier Maintenance	Damaged Barrier	Barrier Maintenance	Level 4,5	3 monthly	3 months	2 monthly	3 months	2 weekly	3 months

UNSEALED ROADS

Potential causes / issues	Normal wear and tear, poor drainage, storm damage				
Example Defects	Rutting, corrugation, potholes, loose aggregate, shoving, crossfall				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
					
Defect Description	Well-formed road	Minor defects	• Potholes <300 Dia or <50mm deep • Corrugation <30mm and <10m long • Loose Aggregate <20mm depth • Rutting <60mm • Shoving <100mm • Crossfall between 4% & 6%	• Potholes >300 Dia or >50mm deep • Corrugation >30mm and >10m long • Loose Aggregate >20mm depth • Rutting >60mm • Shoving >100mm • Crossfall <4% and >6%	
Typical Treatment	None	Monitor	Monitor	Clean, straighten,	Renew or repair
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial <i>Inspection cycle - 2 weekly</i>			3 days from notification (potholes) 3 months from notification (items shown other than potholes)	3 days from notification (potholes) 3 months from notification (items shown other than potholes)	3 days from notification (potholes) 3 months from notification (items shown other than potholes)
ONRC - Secondary Collector <i>Inspection cycle - Monthly</i>			1 week from notification (potholes) 3 months from notification (items shown other than potholes)	1 week from notification (potholes) 3 months from notification (items shown other than potholes)	1 week from notification (potholes) 3 months from notification (items shown other than potholes)
ONRC - Low Volume / LV Access <i>Inspection cycle - 3 monthly</i>			2 weeks from notification 3 months from notification (items shown other than potholes)	2 weeks from notification (potholes) 3 months from notification (items shown other than potholes)	2 weeks from notification (potholes) 3 months from notification (items shown other than potholes)

KERB AND CHANNEL (RENEWAL)

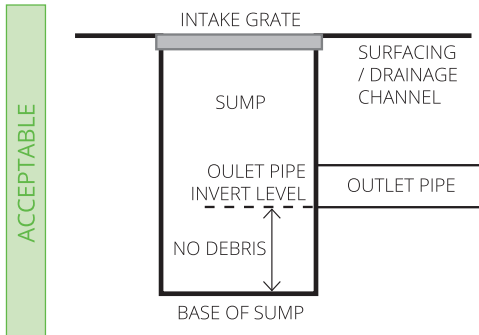
Potential causes / issues	Any damage that allows water to pond or enter the pavement.				
Example Defects	Cracking in the channel and kerb block, water ponding or signs of these.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	No damage or ponding and functioning well	Minor damage but cosmetic only	Single cracks in both channel and water retained in channel	Multiple cracks in channel, water ponding, pavement exposed	Complete failure, pavement is compromised.
Typical Treatment	None	Monitor	Monitor (Cyclic)	Maintenance and renewal	Full renewal
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

Where the affected length is large enough, and the kerb is old and in poor condition, it may move from being a minor maintenance repair to a full renewal.

Catchpit cleaning minimum standard below:

Minimum Standard - Intervention required when sump is 50% full




Defects:

- Detritus and litter in the sump or catchpit grate.
- Ponding on the road and footpath due to blocked catchpit.
- Defects to the structure.

Example defects:
Catchpit full of debris causing ponding and damage to the pavement and footpath.

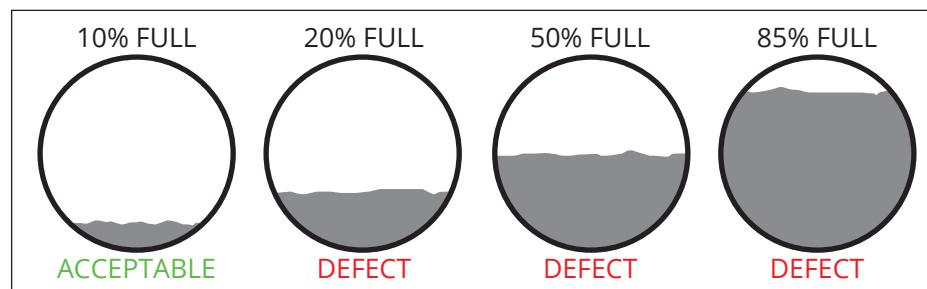
Assessment:
Regular inspection to ensure the structure is detritus free.
Annual inspection to assess the integrity of the asset.

CULVERTS, SUBSOIL AND SIDE (HORIZONTAL) CULVERTS

Potential causes / issues	> 20% of the cross-sectional area of the culvert inlet and outlet or barrel filled with debris.				
Example Defects	Blocked culvert, subsoil, etc.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Culvert inlet/outlet and barrel clean and functioning	>10% of the cross-sectional area of culvert inlet blocked	>20% of the cross-sectional area of culvert inlet blocked	>50% of the cross-sectional area of culvert inlet or outlet blocked	>80% of the cross-sectional area of culvert inlet blocked
Typical Treatment	None	Monitor	Monitor (Cyclic)	Hand clean, jet or program	Jet/digger and truck or replacement
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			weekly from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			fortnightly from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			monthly from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

Culvert Inlets and Outlets - A 2m radius will be maintained around the inlet and outlet of the stormwater structures allowing for free-flowing channels to enter and exit the stormwater structure. The 2m radius will be maintained so that no material is pushed down the structure in a heavy rain event.



CULVERTS

Potential causes / issues	Broken wingwall, scouring behind wingwall and broken damaged pipes.				
Example Defects	Dis-jointed culvert, broken/cracked wingwall, broken/damaged pipe ends and scouring.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Good operating culvert	Slight spalling/fine cracks but culvert functioning	Partly damaged end, end exposed but still functioning	Culvert pipe misaligned/clear damage	Culvert pipe has failed
Typical Treatment	No action required	Monitor	Monitor (Cyclic)	Repair or look at renewal	Renewal required
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			weekly from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			fortnightly from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			monthly from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5. Level 3 defects such as damaged ends may require repair if presenting a road user hazard.

SURFACE WATER CHANNEL CLEANING - LINED CHANNELS

Potential causes / issues	Blocked kerb and channel, blocked dish channel.				
Example Defects	Isolated blockage that allows water to pond or flow onto the carriageway or undermine the asset integrity.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos - Urban					
Example Photos - Rural					
Defect Description	No debris blocking kerb and channel	Debris blocking dish channel that would not result in water flowing onto the carriageway during period of rain	Dish channel with less than <25% of hydraulic cross-section inoperative due to debris built-up	Dish channel with more than 25% of hydraulic cross-section inoperative due to debris built-up	Dish channel with 100% of hydraulic cross-section inoperative due to debris built-up
Typical Treatment	None	Monitor	Monitor (Cyclic)	Clean and remove debris	Clean and remove debris
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			weekly from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			fortnightly from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			monthly from notification	3 months from notification	3 months from notification

Intervention - Level 3, 4 and 5

WATER TABLE - UNLINED CHANNELS

Potential causes / issues	Water ponding and saturating the pavement and aquaplaning could potential occur.				
Example Defects	Water stationary, Water table higher than the carriageway, positive slope towards the carriageway.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Water is free flowing	Water is channelised	Water is getting away but may not cope in a heavy event	Water table is higher than the carriageway. Water will pond	No water table, nowhere for the water to go but on the carriageway
Typical Treatment	None	Monitor	Monitor (Cyclic)	Clean and reshape existing water table, look at culvert position	Form new water table
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			weekly from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			fortnightly from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			monthly from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

HIGH SHOULDER

Potential causes / issues	Ponding of water on the carriageway due to high lip vegetation.				
Example Defects	Vegetation growth, long grass, build-up of silt's, ponding and organic material.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Water is free flowing	Minor lip, but water is getting away	Vegetation lip is forming, minor intervention required	Vegetation is high, water is ponding and starting to damage pavement	Vegetation is very high, water is starting to pond, potential for aquaplaning once water level rises
Typical Treatment	None	Monitor	Monitor (Cyclic)	Remove lip – ensure water is free flowing	Serious, remove lip and ensure water is free flowing
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			weekly from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			fortnightly from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			monthly from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

BRIDGE STRUCTURE MAINTENANCE

Clean and functional

Water channels and drainage scuppers need to be clear of detritus that impedes flow so that water does not pond on the bridge deck.

Manholes/Droppers/Catchpits and Grates

Clear of Obstructive Debris

Manholes and Catchpits shall be clear to the bottom and free flowing with the catchpit grate having a maximum of 10% cover of the usable surface at all times.

ACCEPTABLE



Defects:

- Blocked drainage system
- Undesirable drainage discharge point
- Ponding on the structure

STRUCTURE JOINT MAINTENANCE

Clean and functional

Expansion joints on structure decks need to be kept clear of debris that can damage the joint and impede movement.

Minimum standard below:

ACCEPTABLE



Defects:

- Aggregate/debris/vegetation filling up joint
- Dislodged expansion joint
- Material impeding joint movement

Example Defect:

Debris impeding joint movement or damaging the joint.

Assessment:

Individual asset inspection.

SIGHT RAILS

Potential causes / issues	Loose, damaged or missing sight rails.				
Example Defects	Damaged, graffitied, ineffective paint, stickers etc				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Clean, upright, clearly visible	Clean, upright, well fixed and secure, no damage but paint faded	Loose rail	Visibility obscured (vegetation) Damaged/missing rails	Broken/missing rails
Typical Treatment	None	None – schedule for next repainting	Monitor (Cyclic)	Repair and replace	Renew or repair
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			weekly from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			fortnightly from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			monthly from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

FNDC MAINTENANCE INTERVENTION CRITERIA - ANCILLARY ITEMS

LOW VOLUME/ACCESS - SECONDARY COLLECTORS/PRIMARY COLLECTORS AND ARTERIAL ROADS

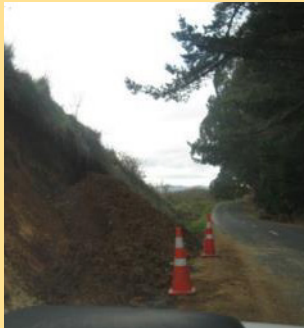
Work Category	Activity			Intervention Level Trigger	Timeframe Low Volume Access		Timeframe Secondary Collectors		Timeframe - Primary Collector and Arterial Roads	
	Activity	Fault	Remedy		Inspections	Response	Inspections	Response	Inspections	Response
	Abandoned vehicles	Abandoned vehicle	Abandoned vehicle removal	n/a	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
	Minor slip and detritus removal	Minor slip	Minor slip removal	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Detritus	Detritus removal	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
	Mowing	Rural >300mm, Urban >200mm	Road berms cyclic as directed by the Engineer	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
	Roadside vegetation spraying - Rural	Live vegetation <2m from seal edge, or	Vegetation control	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Live vegetation <50mm from back of kerb	Vegetation control	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Live vegetation in channel	Vegetation control	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Furniture, railing, posts or delineators not clearly visible	Vegetation control	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Live vegetation in culvert inlets/ outlets	Vegetation control	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
	Roadside vegetation spraying - Urban	Live vegetation <50mm from seal edge or,	Vegetation control	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Live vegetation <200mm from back of kerb	Vegetation control	Level 4,5	3 months	3 months	Monthly	3 months	2 weekly	3 months
		Furniture, railing, posts or delineators not clearly visible	Vegetation control	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Live vegetation <50mm from footpath and against buildings and street furniture	Vegetation control	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Live weeds around and on traffic islands and at the interface between footpaths and kerb	Vegetation control	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
Footpaths	Maintenance	Trip hazard	High foot traffic areas	Level 4,5	3 monthly	1 month	Monthly	1 month	2 weekly	1 month
			All other locations	Level 4,5	3 monthly	1 month	Monthly	1 month	2 weekly	1 month
	Renewals	Footpath failure	Footpath renewal	Level 4	Annual inspection	3 months	Annual inspection	3 months	Annual inspection	3 months

STREET CLEANING/ENVIRONMENTAL/RUBBISH

Potential causes / issues	Litter, abandoned vehicles, Minor slip/detritus				
Example Defects	Rutting, corrugation, pot holes, loose aggregate, shoving, crossfall				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Clean – no rubbish	Occasional Item / not visible from road	ew items visible from road <10 items per 1 km	Multiple items >10 items per 1 km	Large quantity (fly tipping) Abandoned vehicles
Typical Treatment	None	Monitor	Monitor (Cyclic)	Litter picking	Removal/clearance
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			Weekly from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			Fortnightly from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			Monthly from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

SLIPS

Potential causes / issues	Erosion of earth banks and batters that block SWC or block one or more lanes of traffic.				
Example Defects	Water stationary, water table higher than the carriageway.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	SWC partly blocked	SWC blocked, but carriageway is functional	Slip over 0.5m³ SWC blocked, but carriageway is still functional	SWC blocked and carriageway blocked	Road completely blocked
Typical Treatment	Monitor	Under 0.5m³ remove (cyclic)	Monitor (Cyclic)	Make safe and programme removal	Make safe and open the road
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			Weekly from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			Fortnightly from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			Monthly from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

OVERGROWN VEGETATION

Potential causes / issues	Overgrown vegetation obstructs visibility at intersections and hides edge marker posts.				
Example Defects	Vegetation obscures visibility.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Recently cut Vegetation	Vegetation within tolerance	Vegetation is higher than 300mm but less than 500mm	Footpath obstructed / reduced visibility / grass exceeding 300mm on Type 1 or 500mm on Type 2 roads	Visibility obscured / EMP hidden grass exceeding 300mm on Type 1 or 500mm on Type 2 roads
Typical Treatment	None	None	Monitor (Cyclic)	Intervention Mowing	Mowing
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			Weekly from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			Fortnightly from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			Monthly from notification	3 months from notification	3 months from notification

Intervention - Level 4 and 5

VEGETATION CONTROL

Vegetation Free Envelope

All legally sized vehicles must be able to freely pass along all public roads. Vehicles must be able to stay in their lane without risking damage from vegetation encroaching into the carriageway (beside or above).

Maximum legal vehicle height is 4.25m, however a safety margin is required to ensure new growth, and wet weather etc. does not cause this to be compromised.

Rural Roads

Rural roads will be maintained so that vegetation which encroaches within 1.5m from edge of seal or unsealed edge of trafficable carriageway (hinge point) of 4.5m above the roadway shall be cut back.

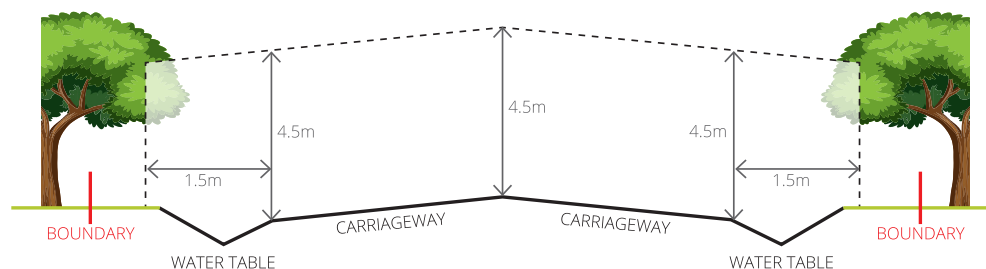


Figure 1: Vegetation Envelope for a typical Rural road (Sealed and Unsealed)

Urban Roads

Urban roads will be maintained so that vegetation which encroaches within 1.5m from back of kerb, edge of seal, or 4.5m above the roadway shall be cut back.

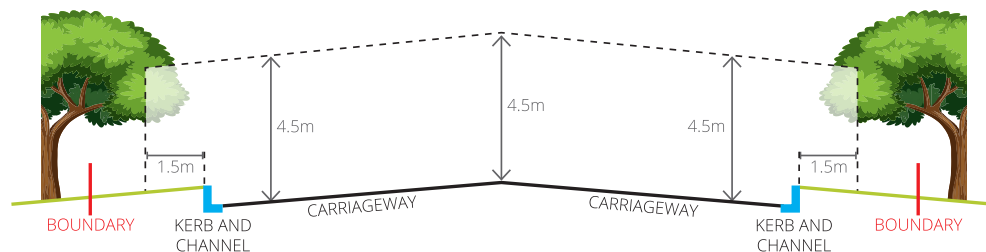


Figure 2: Vegetation Envelope for a typical Urban road (Kerb and Channel)

Shared Paths

Shared paths will be maintained so that vegetation which encroaches within 0.5m from outer edge of shared path or 2.5m above the shared path shall be cut back. Where 0.5m cannot be achieved all vegetation must be kept in line with wall, fence or back of path.

Roadside Mowing (including reach mowing)

Some urban areas adjacent to State Highways are either unsafe or unreasonable for private property owners to mow. These areas need to be maintained to a good standard to promote the impression that towns in the district are attractive and well kept.

Visibility Mowing

In addition to the verge control mowing described, the contractor shall also mow to preserve lines of sight around important features. This includes, but is not limited to intersections, through tight curves, school entrances, and road signs and at railway crossings. This is a road safety priority and the contractor is expected to train mowing operators to identify and respond to these mowing needs, remembering driver eye-level is around 1m above the sealed road surface.

Intersections

Vegetation shall also be removed to ensure intervisibility from curves, intersections and railway crossings. At these areas the Contractor is to ensure that the line-of-sight requirements specified in Austroads Guide to Road Design Part 4A (and shown in Table 1 below) are met.

Safe Intersection Sight Distance (SISD) ¹	50 km/h	60 km/h	70 km/h	80 km/h	90 km/h	100 km/h
Austroads	97m	123m	151m	181m	214m	248m

¹ Based on Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersection (2017). Values are based on a reaction time of 2 seconds.

Example Defects:

Overgrown vegetation around culvert markers, headwalls, retaining structures, guardrails, sight rails, surface water channels, kerb and channel, side drains, culvert waterways, bridges and roadside furniture.

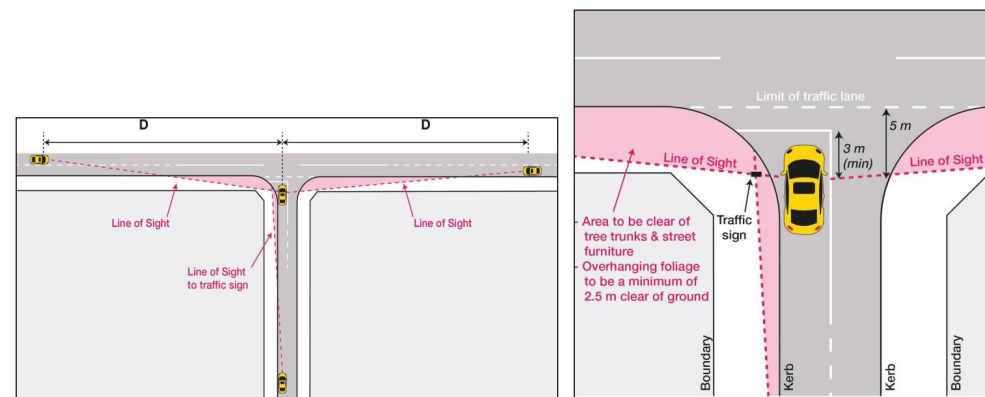


Figure 3: Intersection Line of Sight (far)

Figure 4: Intersection Line of Sight (close)

FNDC MAINTENANCE INTERVENTION CRITERIA - ANCILLARY ITEMS

LOW VOLUME/ACCESS - SECONDARY COLLECTORS/PRIMARY COLLECTORS AND ARTERIAL ROADS

Work Category	Activity			Intervention Level Trigger	Timeframe Low Volume/Access		Timeframe Secondary Collectors		Timeframe - Primary Collector and Arterial Roads	
	Activity	Fault	Remedy		Inspections	Response	Inspections	Response	Inspections	Response
122 Traffic Services Maintenance	Signs Maintenance	Signs dirty - % refelctivity	Signs cleaning	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Signs damaged - degrees off vertical	Straighten signs	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
		Regulatory signs damaged / missing	Sign repair or replacement	Level 4,5	3 monthly	Repair or replace within 24 hours	Monthly	Repair or replace within 24 hours	2 weekly	Repair or replace within 24 hours
		Other advisory signs damaged / missing	Crack Sign repair or replacement	Level 4,5	3 monthly	Repair or replace within 7 days	Monthly	Repair or replace within 7 days	2 weekly	Repair or replace within 7 days
		Other signs damaged - inspection	Crack Sign repair or replacement	Level 4,5	3 monthly	Repair or replace within 1 month	Monthly	Repair or replace within 1 month	2 weekly	Repair or replace within 1 month
	Sight Rail Maintenance	Sight rail damaged	Sight rail maintenance	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
	EMP Maintenance	Dirty EMP	EMP cleaning	Level 4,5	3 months / 6 monthly night audit	3 months	3 months / 6 monthly night audit	3 months	3 months / 6 monthly night audit	3 months
		Damaged / missing EMP	EMP replacement	Level 4,5	3 monthly	3 months	Monthly	3 months	2 weekly	3 months
	RRPM Maintenance	Damaged / missing RRPM	RRPM replacement	Level 4,5	3 months / 6 monthly night audit	3 months	3 months / 6 monthly night audit	3 months	3 months / 6 monthly night audit	3 months
	Pavement Marking Maintenance	Faded road markings	Remark	Level 4,5	Annually	To be done during November - March	Annually	Annual reline during November - March	Annually	Annually during November - March

SIGNS MAINTENANCE

Potential causes / issues	Dirty, damaged or missing advisory and/or regulatory traffic signs				
Example Defects	Poor reflectivity/leaning, damaged or unreadable.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Defect Description	Clean, upright, clearly visible Good reflectivity at night	Sign pole is leaning <5 degs Sign in good condition >50% reflectivity	Damaged but still effective Sign leaning <5 Degs >50% reflectivity	Vegetation partially obscuring sign Sign Damaged or lean >5 degs defaced and ineffective or unreadable <50% reflectivity	Ineffective/obscured by vegetation broken/damaged/missing Low reflectivity
Typical Treatment	None	Monitor	Monitor (Cyclic)	Clear vegetation, clean, straighten, Repair or replace	Clear vegetation
ONRC RESPONSE TIMES					
Example Photos REGULATORY SIGNS					
ONRC - Primary Collector and Arterial			Weekly from notification	Clean or straighten within 1 month Repair or replace within 24 hours	Within 24 hours of notification
ONRC - Secondary Collector			Fortnightly from notification	Clean or straighten within 1 month Repair or replace within 24 hours	Within 24 hours of notification
ONRC - Low Volume / LV Access			Monthly from notification	Clean or straighten within 1 month Repair or replace within 24 hours	Within 24 hours of notification
Example Photos ADVISORY SIGNS					
ONRC - Primary Collector and Arterial			Weekly from notification	Clean or straighten within 1 month Repair or replace within 7 days	7 days
ONRC - Secondary Collector			Fortnightly from notification	Clean or straighten within 1 month Repair or replace within 7 days	7 days
ONRC - Low Volume/LV Access			Monthly from notification	Clean or straighten within 1 month Repair or replace within 7 days	7 days

Intervention - Level 4 and 5

EDGE MARKER POSTS

Potential causes / issues	Bend, broken, flattened,				
Example Defects	Vegetation obscuring visibility.				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Example Photos - Night Audit					
Defect Description	Clean, upright, clearly visible	Slightly leaning but clearly visible	Intervention required – Vegetation partially obscuring EMP Dirty or leaning >5 degs	Leaning or obscured EMP Heavy dirt/grime Not showing up at night	Broken/damaged/missing Not visible at night
Typical Treatment	None	None	Monitor (Cyclic)	Clean, straighten, vegetation clearance	Renew or repair
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	3 months from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	3 months from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	3 months from notification

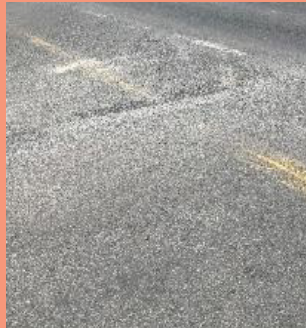
Intervention - Level 4 and 5

REFLECTIVE RAISED PAVEMENT MARKERS (RRPM)

Potential causes / issues	Broken, dirty or missing				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	6 monthly night Inspections >80m on low beam (4 RRPM) >150m on full beam (ie 7 RRPM)	6 monthly night Inspections >80m on low beam (4 RRPM) >150m on full beam (ie 7 RRPM)	Intervention Required <80m visibility on low beam <150m visibility on high beam	Poor advance visibility Missing, damaged or dirty RRPM	No RRPM's visible Broken/damaged/missing
Typical Treatment	None	None	Monitor 6 monthly inspection	Clean, renew or repair	Renew or repair
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial			3 months from notification	3 months from notification	1 month from notification
ONRC - Secondary Collector			3 months from notification	3 months from notification	1 month from notification
ONRC - Low Volume/LV Access			3 months from notification	3 months from notification	1 month from notification

Intervention - Level 4 and 5

PAVEMENT MARKINGS

Potential causes / issues	Faded markings, worn out, patches over markings				
Example Defects	Rutting, corrugation, pot holes, loose aggregate, shoving, crossfall				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	Freshly painted, Clearly visible road markings.	Clearly visible road marking	Patched/worn but still effective Not a high risk area	At High Risk Areas/ intersections faded/difficult to see or read Patches/worn	Faded Stop line at high risk area. Not visible on approach.
Typical Treatment	None (Annual repaint)	None (Annual repaint)	Monitor (Cyclic)	Repaint	Repaint
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial	Annual Relining	Annual Relining	Weekly from notification	1 month from notification	1 month from notification
ONRC - Secondary Collector	Annual Relining	Annual Relining	Fortnightly from notification	1 month from notification	1 month from notification
ONRC - Low Volume/LV Access	Annual Relining	Annual Relining	Monthly from notification	1 month from notification	1 month from notification

Intervention - Level 4 and 5

GRAFFITI

Potential causes / issues	Defacing of signs, sight rails, other highway structures and assets				
Condition	1 - ACCEPTABLE	2 - ACCEPTABLE MONITOR	3 - DEFECT MEDIUM	4 - POOR INTERVENTION	5 - VERY POOR SAFETY
Example Photos					
Defect Description	None	Monitor - Minor graffiti on underside of structure – not visible to public	Graffiti on Highway assets – not visible to pedestrians or typical road users	Graffiti visible from road or footpath Graffiti on Highway Assets le Bus shelters, Bridge abutments	Graffiti on Traffic Signs Regulatory or Advisory
Typical Treatment	Monitor (Cyclic)	Monitor (Cyclic)	Graffiti Removal	Graffiti Removal	Graffiti Removal
ONRC RESPONSE TIMES					
ONRC - Primary Collector and Arterial	weekly from notification	weekly from notification	48 hours from notification	48 hours from notification	48 hours from notification
ONRC - Secondary Collector	fortnightly from notification	fortnightly from notification	48 hours from notification	48 hours from notification	48 hours from notification
ONRC - Low Volume/LV Access	monthly from notification	monthly from notification	48 hours from notification	48 hours from notification	48 hours from notification

Intervention - Level 4 and 5

GRAFFITI

Tidy and Presentable District

There should be no graffiti visible to typical road users on structures, retaining walls, bridges, rural street furniture and carriageways.

Defects:

- Graffiti visible to footpath users from <50m
- Graffiti or stickers on sign face and back or barriers
- Graffiti in rural area visible from the road from <100m
- Graffiti on bus shelters

NOT ACCEPTABLE



