



Volume 4

# MAINTENANCE SPECIFICATION

<<insert Network Name>> Network Outcomes Contract  
Contract No: <<insert Contract Number>>



NZ TRANSPORT AGENCY  
WAKA KOTAHI



Safer Journeys

New Zealand Government

Sections	Duration	Week Commencing	Status
1+2	1 week	23 July	Complete
3+4	1 week	30 July	Pending
5	2 weeks	6 August	Pending
6	3 weeks	20 August	Pending
7+8+9	2 weeks	10 August	Pending
<b>TOTAL TIME</b>	9 weeks		

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# DOCUMENT CHANGE FORMAT CODES

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## <<Guidance Notes>>

Blue text with yellow h are guidance notes for tender document rele <<insert Network Name>> Network Outcomes Contract to Contract No: <<insert Contract Number>>

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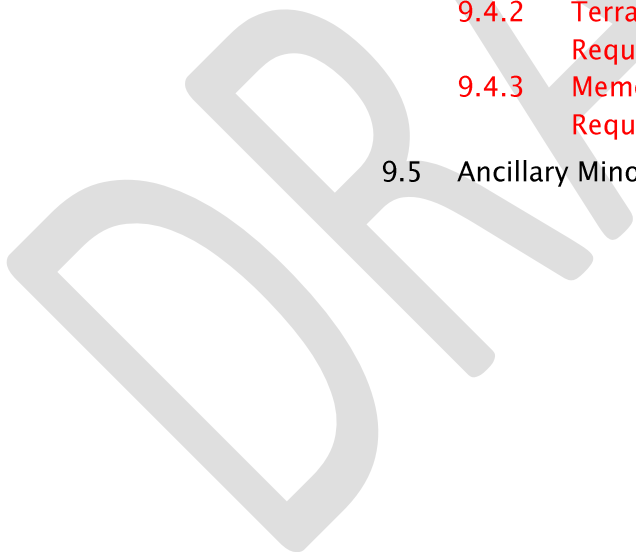
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# 1 Contract Works

## 1.1 WORKING TOGETHER

This Maintenance Specification describes the Principal's requirements for the Network management and maintenance of the road Network. Sections 1 to 8 and the Appendices describe the Contractor's and other parties' obligations under the contract.

The performance framework, Contract Risk Profile and Basis of Payment have been designed to bring the Contractor's practices and decision-making processes into line with the Principal's goals and objectives. However, the Principal has further expectations:

- The Principal requires a responsible Network stewardship from the Contractor's team, along with respect for the value that the road transport Network provides to the community and nation.
- The Principal requires a Contractor who will foster a culture of strong delivery and robust asset management to achieve excellent long term care of the asset, maximising its safe and efficient function while optimising asset lives.
- The Principal wishes to engage in a working relationship with the Contractor that fosters coordination of effort between the Contractor's own resources and the Principal's resources, including the Principal's internal business teams.
- The Principal requires a "no surprises" relationship. That is, in delegating responsibility for the management of particular functions, the Principal expects to be advised immediately if the Contractor becomes aware of situations where the Principal's image, the public, or the asset may be significantly affected.
- The Principal requires trust in the Contractor to ensure self-compliance monitoring and auditing activities are being carried out honestly and evidence of appropriate approvals being obtained.
- The Principal requires all parties to the contract, including Sub-contractors, to adhere to a good faith doctrine: "Good faith refers to state of mind – honest belief, absence of malice, and absence of design to defraud or to seek an unconscionable advantage. One should not use technicalities of law or lack of full information to take unfair advantage of another".
- The Principal requires the Contractor to honour commitments made within the tender submission.

The Contractor shall contact the Principal when behaviours that conflict with the Principal's known intent occur, including commercial gaming practices that result in sub-optimal outcomes for the Principal. The Contractor is required to be fully conversant with the Principal's objectives and ~~at all times~~ to behave in accordance with these objectives **at all times**.

A Contract Board (CB) will be set up, composed of ~~two~~ representatives from both the Contractor's and the Principal's organisations. The CB will provide integrated

governance leadership; however, the Contractor and Principal will remain responsible for making decisions relating to their respective businesses.

The **Principal** CB will also conduct a 6-monthly Relationship Survey that formally monitors the health of the relationship between all participating parties (including Sub-contractors) within the context of this contract and the opportunities it offers for ~~co-operation~~ **collaboration**.

The Contractor and Principal are expected to work together with a sound understanding and acceptance of the objectives and goals of each party. The working relationship between the parties will be based on the key elements shown in Table 1.1.

**TABLE 1.1: KEY ELEMENTS**

ELEMENT	ELEMENT DESCRIPTION
Trust	An environment of mutual trust to be developed.
Empowerment	Individuals are empowered to deliver outcomes rather than controlled through the process of delivering them.
Honesty	Honesty in all dealings.
Openness	An environment where each party communicates freely in an open manner on all issues.
Co-operation	An environment of mutual co-operation.
Fair	All issues to be considered with fairness to the parties involved.
Courageous	Looking for innovative solutions to achieve specified outcomes.
Unconstrained	Requirements specified in the contract should not be considered as constraints.
Respect	The capabilities, knowledge and functions of the parties to be respected.
Reasoned requirements	Wherever possible, requirements communicated to either party will also specify the reason for the requirement.

Within 3 months of contract commencement, the Contractor and Principal shall participate in a formally facilitated one-day partnering workshop. In the spirit of partnering, the costs of this will be shared equally by the parties. At minimum, participants shall include the ~~Principal's and the Contractor's~~ CB and Contract Management Team (CMT) representatives, who will together develop a Partnering Charter.

~~If there is any conflict between this Maintenance Specification and the Conditions of Contract, the Conditions of Contract will prevail.~~

## 1.2 DEFINITIONS

In addition to the First Schedule, Part B, clause 1.2 Definitions, Appendix 1.1, Definitions, provide clarification of the meaning of many specification-related words.

## 1.3 ACRONYMS

Appendix 1.2, Acronyms, includes a table of acronyms that are used throughout the Contract Documents.

## 1.4 CONTRACT DESCRIPTION

This is a combined Lump Sum and Measure and Value Contract. In summary, the contract:

- a) Includes most Network management functions
- b) Includes all physical work necessary to maintain approximately <<insert Length>> km of Network road within the <<insert Name>> Network of the Principal's Region <<insert Region Number>> Area, see Appendix 1.3, Location of Works
- c) Includes all physical work necessary to maintain approximately <<insert Length>> km of alternative paths, see Appendix 1.3, Location of Works
- c) Provides opportunities for financial and Contract Period rewards based on performance
- d) Provides mechanisms for financial and Contract Period reduction based on performance.
- e) <<allow for any other specifics such as joint Principal arrangements>>

The core scope of work typically includes, but is not limited to, Maintenance and Operations and Renewals.

The core scope of work typically excludes the following:

1. Transport planning
2. ITS maintenance and management
3. Capital works
4. Emergency works reinstatement
5. Traffic Operation Centre activities
6. Bridge and other structures management and repairs.

## 1.5 CONTRACT OUTCOMES

The Principal's overall objective is to drive improved performance outcomes, with a particular interest in the following key areas:

- a) **Safety** – Safety is of paramount importance on the journey to zero harm. Measure achievement and commitment to health and safety outcomes. Measure opportunities to improve safety outcomes for customers.
- b) **Customer** – Customers' access needs are always considered. Respond to customers' requests and manage their expectations.

- c) ~~**Sustainability**~~ – Maintain a sustainable and engaged contracting market. Contribute to a transport system that adds positively to New Zealand’s economic, social and environmental welfare by adopting good practice and acting in a responsible manner.
- d) ~~**Assurance and Value**~~ – Quality outcomes underpinned by accurate Network information and knowledge. Make sound investment recommendations and decisions based on reliable, robust and proven evidence.
- e) ~~**Network Performance**~~ – Ensure the physical indicators of service quality have been provided. Demonstrate that promises made during tendering add value and are delivered. Give customers timely and accurate information so they can make informed choices, and schedule works to minimise disruption.
- f) ~~**Health of the Relationship**~~ – The Principal intends to establish a working relationship with the Contractor that fosters open and honest dialogue and feedback, including greater involvement of Subcontractors and recognition of their value.

All outcomes from work carried out under this contract shall support the Principal’s over-arching purpose statement, which is;

**“We maintain our network for safe access”**

The Principal’s overall objective is to drive improved performance outcomes for customers, with particular interest in key areas outlined in Table 1.5.1.

**TABLE 1.5.1: CUSTOMER VALUE PROPOSITION**

AREA	DESCRIPTION
<b>Safety</b>	<p><b>Safe customer journeys</b> – help contribute to safe customer journeys</p> <p><b>Maintain a safe environment</b> – undertake work that improves safety</p> <p><b>Act safely</b> – undertake work in a safe manner</p>
<b>Access</b>	<p><b>Communicate</b> – inform customers early, provide options</p> <p><b>All transport matters</b> – consider all road users</p> <p><b>Be responsive</b> – proactively minimise disruption impact for customers</p> <p><b>Connect</b> – connect people, communities and regions</p>
<b>Environment</b>	<p><b>Care</b> – understand, protect and enhance environmental values, manage environmental asset functionality and amenity</p> <p><b>Respect and protect</b> – minimise environmental, social and cultural impact for future generations</p> <p><b>Sustain</b> – help protect natural resources through resource efficiency</p>

**TABLE 1.5.1: CUSTOMER VALUE PROPOSITION**

AREA	DESCRIPTION
<b>Value for Money</b>	<p><b>Efficient and Effective</b> – do it once, do it well</p> <p><b>Work Smarter</b> – embrace innovation and technology</p> <p><b>Share learnings</b> – learn and work together</p>

All work carried out by the Contractor is to fully embrace the Customer Value Proposition (CVP).

The CVP are reflected in the Principal's Key Result Areas (KRAs). The performance framework system for this contract is defined in Section 2, Value Management Proposition.

The KRA is a single performance framework that provides opportunity for the Contractor to earn rewards above the Contracted Price, excluding Provisional Sums, and Contract Period.

Road users are those who travel and operate within the Network, such as motorists, motorcyclists, cyclists and pedestrians.

Customers include road users, and persons or a community affected or influenced by any of the Principal's operations within the Network.

Table 1.5.2 defines the key customers and what is important to them which ultimately will provide successful outcomes for both the Principal and customers.

**TABLE 1.5.2: CUSTOMER GROUPS AND WHAT IS IMPORTANT**

NETWORK USER	WHAT IS IMPORTANT FROM A MAINTENANCE PERSPECTIVE
<b>Adjoining Neighbours</b>	<p>Personal safety around worksites</p> <p>Safe access to the Network</p> <p>Minimal nuisance caused by the contract works, including noise and vibration</p> <p>Informed when there is work that directly affects them</p> <p>Contract works are carried out discreetly and efficiently to minimise disruption</p> <p>Following work completion, the site is left in a tidy condition</p> <p>Value for money is being observed</p>
<b>Communities</b>	<p>Personal safety</p> <p>Accessibility to roads and streets</p> <p>Activities acknowledge the needs of the community</p>

TABLE 1.5.2: CUSTOMER GROUPS AND WHAT IS IMPORTANT

NETWORK USER	WHAT IS IMPORTANT FROM A MAINTENANCE PERSPECTIVE
<b>Commuters</b>	Safe access and network condition Journey reliability Information to help make decisions on journey options Cost of travel
<b>Cyclists, Walkers, Mobility Scooter users and Horse riders</b>	Safe and attractive Pathways are well maintained and free from detritus Access to pathways and Networks Universal access/accessibility
<b>Emergency Services</b>	Information to help make decisions on emergency access Minimal delays in the journey
<b>Freight Operators</b>	Safe access and network condition Minimal delays in the journey Road corridor free of overhanging obstructions Ride quality Clean rest areas
<b>General Motorists</b>	Safe access and network condition Information to help make decisions on journey options Value for money is being observed
<b>Holiday Makers and Tourists</b>	Safe access and network condition Information to help make decisions on journey options Clear delineation and signage Quality stopping places Resilience of the journey route

The Contractor shall consider, prioritise and balance all customers' needs and requirements when planning, implementing and reacting to all activities required by this contract. Proactive thinking around the customer's perspective will lead to enhancing the Principal's reputation.

The above outcomes make up the Principal's Key Result Areas (KRAs). The performance framework system for this contract is defined in Section 2, Value Management Proposition.

Appendix 2.4, Process Maps, includes the Customer Service process map.



The KRA is a single performance framework that provides opportunity for the Contractor to earn rewards above the Contracted Price, excluding Provisional Sums, and Contract Period.

## 1.6 CONTRACT ROLES

The roles of each party within 'Governance', 'Management' and 'Implementation' are defined throughout the Contract Documents.

There are areas of responsibility that overlap, which will require that high levels of data and information flow between each party, with timely communication and effective coordination.

Table 1.6 and Figure 1.6 define the roles and descriptions that are assigned for this contract.

**TABLE 1.6: ROLES AND DESCRIPTIONS**

ROLE	DESCRIPTION
Principal	The Principal is defined in the Conditions of Contract. The client(s) of the Contractor. The Engineer's Representative will be an employee of the Principal.
Contractor	The Contractor is defined in the Conditions of Contract. The Network supplier (a single team delivering both physical works and professional services) who provides the services stated in the Maintenance Specification. The lead Contractor could either be a professional consultant or physical works contractor.
Contract Board	Provide collaborative governance for the contract.
Contract Management Team	A combined team comprising representatives of both the Contractor and Principal to provide coordination and leadership for the contract.
Engineer to Contract	As per NZS 3917. Also refer to the Special Conditions.
Principal's Advisor	Advisor to the Principal.
Separate Contractors	Separate Contractors who have a contractual relationship with the Principal in completing professional services or physical works that the Contractor needs to be aware of.

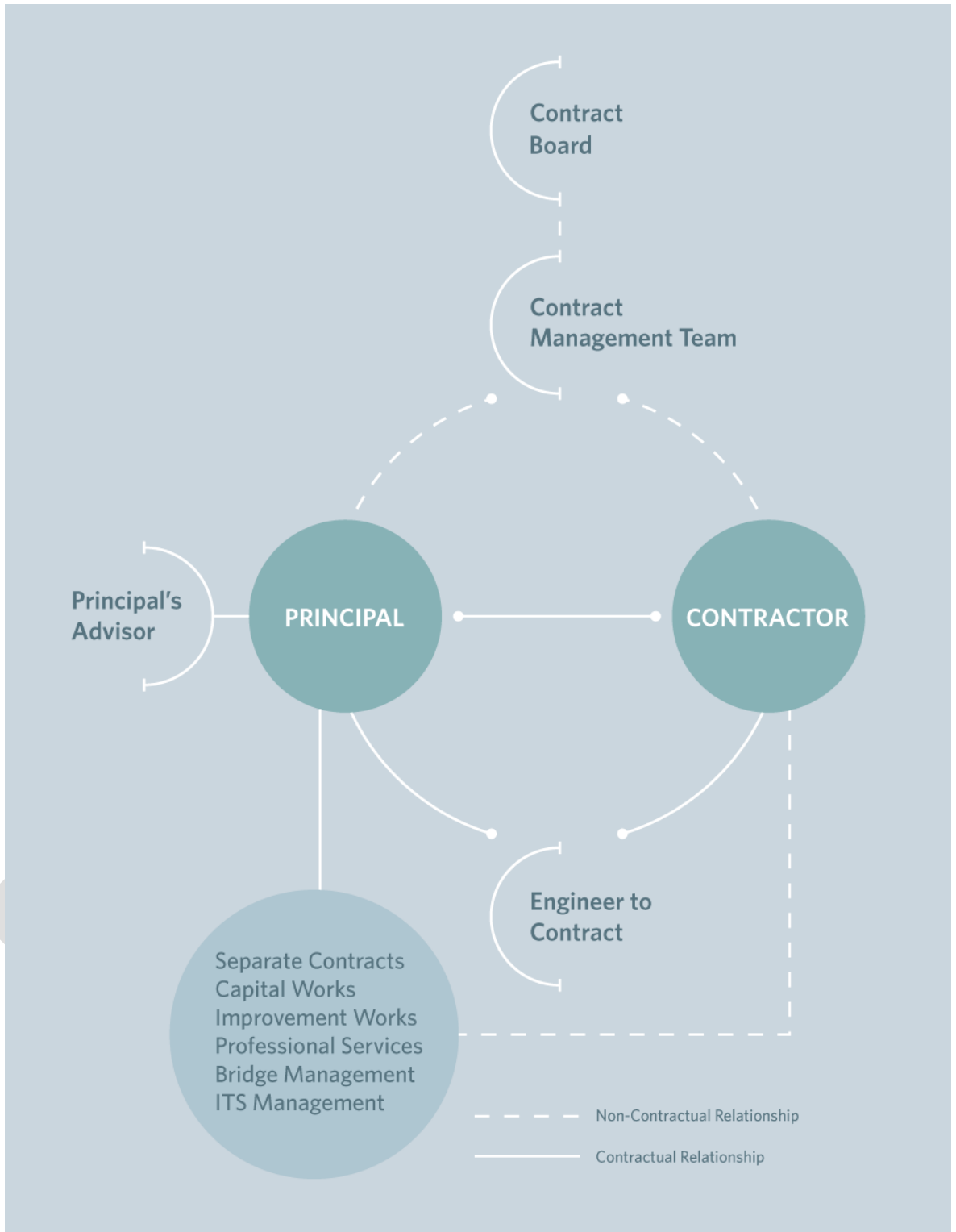


Figure 1.6: Roles and Responsibility Relationship Diagram

Within the Principal's organisation there are a number of key personnel that will be involved in respect of the contract. Key roles, responsibilities and personnel by name are included in Appendix 1.4, Key Roles within the Principal's Organisation.

## 1.7 NETWORK DESCRIPTION

The extent of the Network is shown in Appendix 1.5, Network Extents.

TABLE 1.7: SUMMARY OF ROAD CLASSIFICATIONS									
ROAD CLASSIFICATION	TOTAL LENGTH (M)	TRAFFIC MANAGEMENT LEVEL LENGTHS (M)				URBAN/ RURAL (M)		SEALED/ UNSEALED (M)	
		LV	1	2	3	U	R	S	U
State Highway									
NSHVH (Motorways and Expressways)	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
NSHVH (Other)	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
NSH	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
RSH	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
RCH	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
RDH	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
Total	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
Local Authority									
R2	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
R3	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
R4	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
Total	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA
Grand Total	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA

The Principal has adopted the One Network Road Classification (ONRC) which divides New Zealand's roads into six categories based on how busy they are, whether they connect to important destinations, or are the only route available.

Descriptions of road classifications can be found in the State Highway Asset Management Plan (SHAMP):

The Network includes:

- All roadways, cycle lanes, **bridle routes**, bridges, other structures, drainage structures (culverts, water channels, etc.), guardrails, noise barriers, landscaping

and other facilities that are owned and managed by the Principal and occupy the road reserve.

The Contractor must note that there are significant variations in the road reserve width throughout the Network. This is particularly important regarding vegetation control and drainage in rural areas. Where the distance between the centreline and the road boundary has not been specifically identified in Appendix 1.6, Specific Distance between the Centreline and the Road Boundary, it shall be taken as the distance from centreline to fenceline, where a road boundary fence exists.

Otherwise, the greater of the following distances:

- 10.0 metres from the road centreline
- 10.0 metres from the outside lane dividing line on multi-lane roads
- To a point 6.0 metres below the base of the edge-marker posts on fill slopes (Refer to diagram in Appendix 1.1, Definitions) where the fill slope is steeper than 3:1
- To a point 6.0 metres above the base of the edge-marker posts on cut slopes (Refer to diagram in Appendix 1.1, Definitions) where the cut slope is steeper than 3:1.

The Contractor shall maintain the existing seal widths and sealed areas within the Network excluding areas within 5m from any rail unless a Memorandum of Understanding has been agreed with KiwiRail.

For rural private entranceways, the maintenance limit is the theoretical edge of seal across the entranceway.

- b) For Rural Areas, where local roads intersect the Limit of Works, the Contractor must maintain, including resurfacing, all items associated with intersection control at the local road for a distance of 10m from the position of the limit lines on sealed roads, or to the far end of a physical splitter island if one is installed, whichever is greater. In addition, any regulatory or advance warning signs on the side road approaches to the highway which relate to the highway intersection are included in the scope.
- c) For Urban Areas, the boundaries are the same as for Rural Areas, except the Contractor need only maintain Principal owned assets as defined in the RAMM database, unless specifically excluded in Appendix 1.9. ~~the pavement, surfacing and drainage road assets and associated structures between and including the carriageway kerb lines or channels. All islands and refuges (including vegetation) within the carriageway are to be maintained by the Contractor. Berm mounted assets, such as streetlights and signs, owned by the Principal shall also be maintained.~~
- d) Cycle, motorcycle, bridle and foot paths as per Appendix 1.5, Network Extents. Local variations to the extent of the Network are included in Appendix 1.6, Specific Distances between the Centreline and the road reserve boundary; Appendix 1.8,

Maintenance Responsibility Maps; and Appendix 1.9, Current Local Authority Maintenance Agreements (MOUs).

DRAFT

## 2 Value Management Proposition

The Principal wants to work with the Contractor and deliver a step change in providing value to the Network condition and integrity. The Principal intends to form a working relationship that shares ideas and information to initiate advanced asset management, providing great customer service, real innovation, and successful business outcomes for all parties.

The Contractor has a vital role in maintaining and managing a strategic road Network for the region and the country. The road Network has several purposes:

- a) Enabling customers to travel across the Network quickly and efficiently
- b) Providing a convenient and robust route for freight
- c) Connecting communities.

The Contractor's top priority is to maintain a safe, reliable and resilient Network for the Principal's customers, while taking responsibility for its **workers'** ~~employees'~~ health and safety and the safety of the Principal's customers.

During a period of tighter fiscal control and increasing customer expectations, a more cooperative and consistent approach is required. This will be achieved through a national performance framework that will establish a single Network contract standard, improved service, tighter Contractor control of productivity, coordinated asset management, and incentives for delivering Principal savings.

### 2.1 INTRODUCTION

The Key Result Area (KRA) and Key Performance Indicator (KPI) framework is a new contract performance management system for this contract. The performance framework is aligned to the required contract outcomes and the strategic objectives of the Principal.

The purpose of the framework is to make it easier for the partners of the contract relationship to measure, discuss and improve performance. Performance measurement will form the basis for all parties to work together to find opportunities for improved performance. Areas of high performance will be acknowledged and rewarded. Performance measurement provides the context for any areas of poor performance to be addressed.

The Guide to the KRA Performance Framework, refer Appendix 2.1, Guide to the KRA Framework, provides further detail on the framework for the KRA and KPI elements of the Contract. It does not relate to the at-risk payment mechanism for compliance with the operational performance measures (OPMs).

The key elements are shown in the diagram in Figure 2.1.

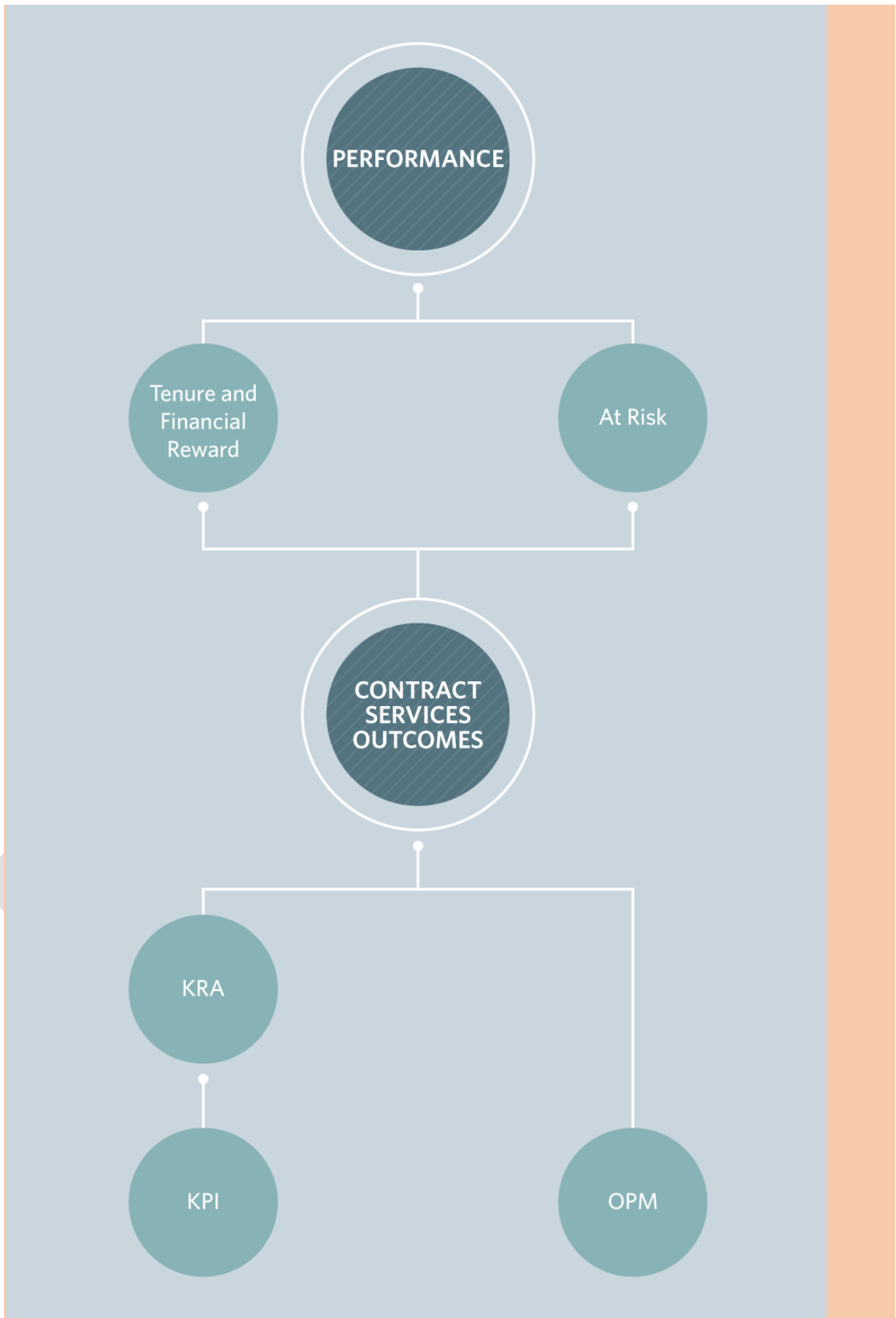


Figure 2.1: Performance Framework Diagram

The design and implementation of the Performance Framework is intended to keep the Contractor's quality, performance and relationship strategies firmly in line with the Principal's responsibilities to government direction.

The performance framework has several purposes:

- Clearly set out the method by which the Contractor's achievement of the KRA's and KPI's is measured and evaluated. In some cases, the Principal's influence will also be assessed, together with the effect this has had on the Contractor's ability to achieve the desired outcomes. The Principal will use the evidence-based results for calculating the Contractor's achievement of KRA and KPI results and contract outcomes. The Contractor's achievement of KRA's and KPI's will lead to opportunities for contract tenure extension and financial gain.
- Implement a repeatable approach, across a national one-network road transport system, to assist in providing transparent and consistent benchmarking. The Principal's intent is to bring all the performance, quality and customer-satisfaction information together, enabling the Principal to identify and understand the effectiveness of its processes, standards and Network performance.
- Provide visibility and transparency of performance to the Principal, the Contractor and the industry based on a single reliable and consistent source of information.

The outcomes expected from the performance framework:

- Enhance the Principal's ability to focus on areas requiring improved customer service, safety, environmental and social responsibility, quality, Network availability, reliability, innovation and working relationships.
- Will be contractual in nature and reflect the undertakings made by the Contractor to the Principal in their response to the RFP contract documentation.
- Foster a spirit of stewardship whereby the Contractor and team take ownership, accountability for and pride in the services delivered and quality of work done.
- Establish transparency and alignment between the Principal and Contractor, with the emphasis on continuous improvement, with the right people in the right areas for the right reasons.
- Form a tool for greater understanding, sector benchmarking and performance comparison between contract areas and contractors, with particular attention given to the activities that lead to improvements.
- Enable a comparative annual national report to be published, giving the achievement of the various performance measures, for each contract, for each contractor.

This is a self-compliance auditing and reporting contract, in which the Principal has set the compliance reporting frequency for each of the KRA, KPI and OPM measures.

## 2.2 KEY RESULT AREAS

The KRAs have been put in place to assist the Principal in achieving the Government's strategic objectives, the corresponding Principal's Strategic Intent, strategic priorities,



compliance with the Land Transport Management Act and the Resource Management Act and the outcomes identified from the Maintenance and Operations review.

A suite of KRAs with supporting KPI's is to be implemented within this contract.

Table 2.2.1 provides a high-level summary of the KRAs to be used in this contract.

**TABLE 2.2.1: KEY RESULT AREA CATEGORY**

KRA	WEIGHTING	REASONING
Health and Safety	1	Safety is of paramount importance on the journey to zero harm. Measure achievement and commitment to health and safety outcomes.
Road User Safety	1	Measure opportunities to improve safety outcomes for customers.
Customer	1	Customers' access needs are always considered. Respond to customers' requests and manage their expectations.
Environment, Social Responsibility and Sustainability	1	Maintain a sustainable and engaged contracting market. Contribute to a transport system that adds positively to New Zealand's economic, social and environmental welfare, by adopting good practice and acting in responsible manner. Competency and adherence to good practice in environmental and social/ cultural management matters is apparent throughout the Contractors business. Foster a culture of/ demonstrate/facilitate innovative thinking/ solutions for better resource efficiency outcomes.
Assurance and Value	1	Quality outcomes underpinned by accurate Network information and knowledge. Make sound investment recommendations and decisions based on reliable, robust and proven evidence.
Network Performance	1	Ensure the physical indicators of service quality have been provided. Demonstrate that promises made during tendering add value and are delivered. Give customers timely and accurate information so they can make informed choices and schedule works to minimise disruption.
Health of the Relationship	0	The Principal intends to establish a working relationship with the Contractor that fosters open and honest dialogue and

**TABLE 2.2.1: KEY RESULT AREA CATEGORY**

KRA	WEIGHTING	REASONING
		feedback, including greater involvement of Sub-contractors and recognition of their value.
<b>TOTAL</b>	<b>6</b>	

The Contractor will be given <<(Guidance note: Refer CC, 10.5.2, Part b to ensure alignment with Grace period assessment)>> months from the date of possession of the Site before the KRA/KPI Performance Framework will come into effect.

Each KPI within a given KRA will be formally reported in the CB tri-annual (every four months) report. The format of the report will be developed jointly between the Contractor and the Principal (ensuring a nationally consistent framework is adopted) to ensure visibility to all, and to enable the provision of clear assessment of performance over the Contract Period. Refer to Conditions of Contract, First Schedule, Part B, clause 10.8 for the reporting periods.

An annual contract performance report will be required during July every year.

### 2.2.1 KRA/KPI Flexibility

The mechanisms of the KRA framework are designed to place the people at the appropriate contract interfaces in areas where they have maximum effect and accountability. The KPIs provide a way to measure the Contractor's success in a given KRA. They are defined performance indicators that specify what will be measured in assessing the KRA.

Each KRA and KPI will be assigned individual weightings. The weightings of KRAs and KPIs may be changed throughout the term of the contract, so may the KPIs themselves. Any changes to indicators or weightings may be recommended by the CB to the Principal's Senior Managements Team ~~Value Assurance Committee (VAC)~~:

Reasons for changing KRAs, KPIs or their weightings could include unreasonable or easily achieved targets, refocusing the contract on new priorities, perverse incentives that drive the wrong behaviour, or putting more emphasis on areas where under-achievement is a nationally consistent issue.

The purpose of having only the Principal's Senior Managements Team ~~VAC~~ able to sign off is to ensure a consistent application of the performance framework, and ultimately to allow the benchmarking of contracts and Networks nationally. The Principal's Senior Management Team ~~VAC~~ will annually review the weightings of both the KRAs and KPIs, based on CB recommendations and the Principal's Senior Managements Team's ~~VAC's~~ own assessment of the value being delivered from a specified KRA.

The Principal's performance will also be assessed and reported to the CB. Internal key performance indicators that measure the Principal's ability to enable or hinder the Contractor's performance will also be published and visible to all parties to the relationship.

The Principal has developed a more comprehensive guide to the KRA performance framework, the concepts and mechanisms supporting successful achievement, and details of the metric measure, responsibility, process and data source. Refer to the Appendix 2.1, Guide to the KRA Performance Framework. The current version can be found at:

[www.nzta.govt.nz/roads-and-rail/highways-information-portal/technical-disciplines/network-outcomes-contracts/resources-and-manuals/guidelines-and-reference-documents/](http://www.nzta.govt.nz/roads-and-rail/highways-information-portal/technical-disciplines/network-outcomes-contracts/resources-and-manuals/guidelines-and-reference-documents/)

## 2.3 OPERATIONAL PERFORMANCE MEASURES

OPMs in part reflect the Principal's expectation of the Network's day-to-day serviceability and reliability and the Contractor's capability to manage and maintain the Network for the customers use.

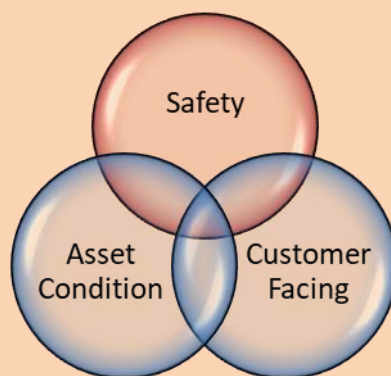
OPMs are the performance criteria that reflect the Contractor's ability to successfully manage the Network, physical works programmes, incidents and customer care. OPMs for this contract are detailed throughout the Contract Document.

The OPM approach is structured to motivate the Contractor to deliver the contractual requirements and to report achievement of those requirements at a frequency and scale (sample size) predetermined by the Principal.

There are three OPM types that reflect the agency's priorities. They are described as follows:

- Safety OPMs
- Customer facing OPMs
- Asset condition OPMs

### Relationship of the OPM's



The determination of whether an OPM is asset or customer facing or safety related is purely arbitrary as in many cases and OPM can relate to multiple areas as the diagram above depicts.

- The Principal is committed to ensuring that our customers do not get harmed whilst using the network. Safety OPM's are intended to identify where a deficiency is experienced that could result in direct injury to the customer. The importance of this OPM is reflected in the weighting.
- Customer facing OPM's are where a customer can directly observe and attribute that observation to the Principal. It may also reflect the contractor's inability to act to resolve the situation. One of the primary drivers of the OPM is to minimise the incidents of reported customer complaints and engagements.
- Asset condition OPM's are intended to demonstrate a whole of life approach to asset management, this includes planning and design through the scheduling and delivery of work on the ground. Asset Condition OPMs are also where the deterioration and condition of the asset could have a longer term effect on the service delivery, eventually resulting in the triggering of customer facing and or safety OPM's.

- ~~Asset Condition OPMs (Night-time) – relate to the physical night-time condition of an asset, where compliance is measured by 100% sample on road class or road class grouping. The night condition measure is a snapshot in time, for which the compliance audit and result is reported every six months and quarterly as per Appendix 2.2, OPM Sample Sizes and Audit Frequencies.~~
- ~~Construction Quality OPMs – representing the physical quality of all completed renewal and pavement marking programmes (100% sample), as well as the occurrence of rework on the Contractor's general maintenance activities (10% sample by audit sections). Compliance audits and results are to be in accordance with Appendix 2.2, OPM Sample Sizes and Audit Frequencies.~~ <<Guidance note Appendix needs to be updated to align with contract classifications>>

The Principal acknowledges that it is almost impossible to have a fully compliant Network at all times; therefore an “at-risk payment” system has been introduced that recognises:

- a) The need for honest identification of non-compliances
- b) The need to encourage the Contractor to identify potential non-compliances and implement improvements
- c) That some non-compliances are more significant than others.

### 2.3.1 Monthly at-Risk Payment

The Principal has set a maximum monthly value of the “at-risk payment” at 10% of the Contractor's monthly tendered base lump sum, being 1/12<sup>th</sup> of the annualised total tendered sum of the lump sum items (Schedule of Prices, Section 1), less:

- Schedule of Prices, Schedule Item 1.1, Contract Establishment (Non-Time Related Costs)
- ~~Schedule of Prices, Schedule Item 6.2, Pavement Rehabilitation~~
- ~~Schedule of Prices, Schedule Item 6.4, Sealed Road Resurfacing.~~

This annual value will remain the same for the full term of the contract. Refer to the Basis of Payment for the financial calculations.

The number of OPMs measured per month that will make up the at-risk payment calculation will vary, based on the reporting frequency predetermined by the Principal in Appendix 2.2, OPM Sample Sizes and Audit Frequencies.

The Contractor will be given four months from the date of possession of the Site before the Operational Performance Framework (being the “at-risk payment”) will come into effect. During this period, the Contractor and the Principal may agree different Monthly Evaluation Score parameters from those as stated in the Basis of Payment for which the monthly lump-sum deductions will have effect. Any change to the Monthly Evaluation Score parameters will require contract board endorsement and recommendation for principal approval.

### 2.3.2 Levels of Compliance

An OPM for all intents and purposes is the Principal’s levels of service. Each OPM level of service is defined by a contract standard. A contract standard represents the level of tolerance (or number of defects) for an asset type that the Principal accepts as a reasonable level of condition for that asset and for that road class (or road-class grouping). A visual intervention audit guideline is provided for the Contractor to aid in the self-assessment of a defect, refer Appendix 2.3, Visual Audit Guideline.

Different roads within the Network may have different road-classes and therefore different contract standards. To reflect compliance for each OPM, for a given road class (or road-class grouping), either one of the following will occur:

- A (number of) discrete section(s), known as an audit section, will be used to represent the level of compliance for that road class (or road-class grouping) for the Network. An audit section will always be of one road class, but the level of compliance may represent a road-class grouping. This will occur when a 10% sample size has been specified for the OPM, by the Principal.
- The full stated road class length and all corresponding assets contained within the Principal’s asset registers will be used to represent the level of compliance for that road class (or road-class grouping) for the Network. This will occur when a 100% sample size has been specified for the OPM by the Principal.
- The quality and completeness of all management activities over the reporting period will be used to represent the level of compliance.

For each OPM, the Contractor must comply with the contract standard.

For OPMs that are 10% sample size audited, an OPM non-compliance can be generated for each audit section that is non-compliant. The number of occurrences of the same non-compliance is dependent on the number of audit sections. Note that for each OPM audited, only one instance of a specific non-compliance can be generated per audit section.

For Management OPMs, only one occurrence of an OPM non-compliance can be generated each month, irrespective and independent of the number of breaches of the contract standard.

The Contractor is required to develop and implement a compliance monitoring system to demonstrate that the contract standards are being achieved for each OPM.

#### Sample Size and Measured Frequency

Sample size means the size of the sample that the Contractor shall use to measure compliance with the contract standard. Sample size is stated for each OPM group and will be either approximately 10% or 100%. All management and some physical works activities have a sample size of 100%. Only physical works may have a sample size of 10%.

The measured frequency means the frequency with which the Contractor is required to demonstrate compliance for each OPM. The sample size and measured frequencies have been predetermined by the Principal and are stated in the maintenance specification and summarised in the Appendix 2.2, OPM Sample Sizes and Audit Frequencies. Some examples are provided as follows:

- 100% sample size, measured annually – means demonstrating compliance with the contract standard, using the complete Principal’s asset register within the Limit of Works, relative to that being measured, once a year.
- 10% sample size, measured monthly – means demonstrating compliance with the contract standard once a month, using the condition results from the complete Principal’s asset register from randomly generated audit sections, totalling 10% of the network length.

It may be necessary for the Contractor to undertake inspections more regularly than required by the measured frequency. This would verify that the contract standards are being achieved and reduce the Contractor’s risk exposure in indemnifying the Principal from claims arising from defects, or occurrence of monthly at-risk payment deductions.

### **Contract Standard**

In respect of OPMs, contract standard means the minimum standard the Contractor is required to comply with, and report compliance with, regardless of whether defects have been programmed for repair or not.

Each contract standard is made up of one or more defects. A non-compliance is generated when the total number of defects exceeds the specified contract standard for the stated road class (or road-class grouping).

Each OPM has one contract standard.

### **Road Class**

Road class means the roads classification that has been developed by the Principal and assigned to that road within the Network.

Where the road class is stated to be “All Roads”, or multiple road classes (or a road-class grouping), then any non-compliance will be recorded against the road class of the audited section. The Contractor will then need to demonstrate compliance for that contract standard for those road classes only the road class that the non-compliance was recorded against.

Where the road class is a single road class then any non-compliance will only be recorded against that road class. The Contractor will then only need to demonstrate compliance for that contract standard for that road class.

### **Principal’s Intervention Period (PIP)**

Principal's Intervention Period (PIP) means the period in which the Contractor must rectify any particular instance of a defect that is identified by a third party, the Principal or the Contractor, and constitutes a potential safety hazard, may adversely reflect on the Principal or is considered offensive, regardless of whether or not compliance with the contract standard is being achieved.

PIPs are not exclusive to audit sections.

Events deemed to be an immediate safety hazard will be managed as an incident response.

### **Key Operational Performance Measures**

Key Operational Performance Measures means a subset of the OPMs that are more significant than others. These are the Key Operational Performance Measures for this contract:

- ~~OPM 1 – Key Reporting~~
- ~~OPM 14 – Skid Resistance Management~~
- ~~OPM 42 – Pavement Rehabilitation Rework~~
- ~~OPM 44 – AC Surfacing Rework~~
- ~~OPMs 55 to 57 – Vulnerable Flooding Areas~~
- ~~OPMs 69 to 70 – Frost, Ice Gritting and Snow Clearance – Mobilise and Establish On-Site~~
- ~~OPMs 71 to 72 – Ice Gritting and CMA – Treatment Decisions and Compliance~~
- ~~OPMs 127 to 128 – Incident Response.~~

### **Safety-related Operational Performance Measures**

Safety-related Operational Performance Measures means a subset of the OPMs that have a greater safety impact. These are the Safety-related Operational Performance Measures for this contract:

- ~~OPMs 24 to 27 – Potholes~~
- ~~OPMs 28 to 29 – Deformation and Heaves and Shoves~~
- ~~OPMs 64 to 67 – Barrier and Handrail Damage Repairs~~
- ~~OPMs 77 to 80 – Vegetation Control (applies to forward sight visibility defect only)~~
- ~~OPMs 90 – Sight-Line Vegetation Control~~
- ~~OPMs 94 to 96 – Detritus~~
- ~~OPMs 115 to 116 – Marker Posts.~~

### **OPM Exclusions**

When undertaking compliance audits, the Contractor need not take into account the presence of defects, on current year and year 1 pavement rehabilitations and capital works, when determining the levels of compliance for the following OPM groups:

- OPM Group 6.1.2; Surface Bumps

- ~~OPM Group 6.1.3, Potholes~~
- ~~OPM Group 6.1.4, Deformations, Heaves and Shoves~~
- ~~OPM Group 6.1.5, Rutting~~
- ~~OPM Group 6.1.5, Flushing~~
- ~~OPM Group 6.1.6, Edge Break~~
- ~~OPM Group 6.1.7, Shoulder Maintenance.~~

This is to acknowledge lower levels of service on imminently programmed work activities.

This does not preclude the Contractor from meeting the requirements for incident response, intervention to address safety hazards and requested PIP remedial works.

### 2.3.3 Compliance Sampling and Auditing Process

The Principal has defined a road classification based on the importance of the road and, in part, its contribution to both national and regional economic development.

The Principal requires the Contractor to establish and demonstrate compliance with the contract standards for each road class. This shall be by means of a self-auditing regime that has a greater degree of scrutiny of the more strategic road classifications for the Network.

The Contractor's compliance monitoring system must be clearly articulated within the Quality Management Plan (refer Section 4.2, Quality Management Plan) inclusive of the following elements:

- a) The personnel responsible for implementing and managing the system, including training needs. The Contractor's personnel carrying out the audits must be independent of the contract team and approved by the Principal.
- b) The process for objectively recording and reporting their compliance with each of the OPMs, including contract standard and frequency.
- c) Demonstration that, when requested by the Principal to address a defect, the Contractor has completed the defect rectification within the appropriate intervention period.
- d) The use of visual-condition trend graphs that demonstrate the percentage compliance of the contract standard for each OPM where appropriate.

Sealed shoulders used for cycle routes and cycle lanes must be included in the compliance inspections when the adjacent section has been selected as part of the compliance audit programme.

Separated cycleways and shared paths must be audited by travelling the route that ensures that the facilities are effectively audited to ensure that defects are appropriately detected and managed.

The Contractor is encouraged to involve the Principal in the carrying out of such compliance audits.

Results shall be expressed as either "Compliance" or "Non-Compliance".

All internal non-compliance items must be clearly identified in the monthly Report.



Results may be subject to random office audits to confirm the accuracy of the assessment.

The results of the Contractor's self-compliance monitoring system shall be included within the monthly report section titled "Monthly Contract Performance Report".

### **10% Audit Sampling** ~~Asset Condition & Construction Quality Sampling~~

The Principal has predetermined those OPMs where compliance will be based on a minimum sample size of approximately 10% of the Network length (referred to as the **audit length**), and to be audited and reported in accordance with Appendix 2.2, OPM Sample Sizes and Audit Frequencies. The network includes cycleway, cycle lane, footpath and unsealed road where applicable. The number of OPMs reported on in any given month will vary depending upon the reporting frequency and relevance. Each audit length is to be broken into discrete 5-kilometre sections known as **audit sections**.

The following weightings have been assigned to the Network. This is to make sure that a specified number of audit sections are included in the monthly OPM compliance self-auditing regime, for each of the road classifications, in order to establish a higher degree of scrutiny.

**TABLE 2.3.1: NETWORK SAMPLING WEIGHTINGS BY ROAD CLASS**

<b>ROAD CLASS</b>	<b>NUMBER OF AUDIT SECTIONS (APPROXIMATELY 10% OF TOTAL NETWORK LENGTH)</b>
National high volume	TBC
National	TBC
Regional	TBC
Arterial	TBC
Primary collector	TBC
Secondary collector	TBC
Access	TBC
Low volume	TBC
<b>Total</b>	<<Total length of the 5km audit sections must be approximately 10% of the Network length.>>

The Contractor will follow these requirements:

- Split the Network into discrete 5-kilometre carriageway sections, or close to, where possible. Each audit section must be of one road-class type only
- Instigate, in the first instance, a methodology for randomly selecting audit sections

- c) Proactively seek Principal involvement in finalising the audit section programme. This is to confirm appropriate coverage of the Network, assess the Network dispersion of sections and agree on any nominated specific audit sections.

The Contractor will complete these compliance audits and report the outcomes to the Principal in accordance with the stated reporting frequency allocated for each OPM group in Appendix 2.2, OPM Sample Sizes and Audit Frequencies.

It is expected that an audit section is a reflection of the overall compliance of the OPM and associated contract standard. While the occurrence of only one non-compliance may have been generated in several audit sections of a similar road class (or road-class grouping), that road class (or road-class grouping) is deemed non-compliant for the entire Network. A monthly payment reduction will only occur when a significant number of non-compliances are identified in any audit.

Cycle lanes and paths shall be included in the compliance inspections when the adjacent road carriageway has been selected as part of the compliance audit programme.

In the event that the same defect triggers multiple OPM non-compliance results, then only one OPM non-compliance shall be recorded, being the OPM with the same or greater weighting as per Table 2.3.2. An example of this situation possibly occurring with regard to Edge breaks i.e. OPM's 2830 to 2933 and 34 to 35

Once a correction or corrective action has resulted in an individual non-compliance being rectified to the Principal's satisfaction, it is removed from the Monthly Network Compliance Score.

### 100% Sampling

The Principal has predetermined those OPMs where compliance will be based on 100% of the Network, its assets, or all renewal work and management activities completed (~~Asset Condition, Construction Quality and Management OPMs~~). For these OPMs, Audit Length and Audit Section are the same.

The Contractor will complete these compliance audits and report the outcomes to the Principal in accordance with the stated reporting frequency allocated for each OPM group, in accordance with Appendix 2.2, OPM Sample Sizes and Audit Frequencies.

~~Compliance auditing for OPM Group 6.1.5 Rutting and OPM Group 6.1.6 Flushing which have a 100% sample size and are measured every six months using the following approach: 3.3 b and c~~

- ~~• Once a year one assessment will be undertaken using the output from the Principal's annual high speed data survey~~
- ~~• Six months later an assessment will be undertaken using an infield visual inspection of works completed by the Contractor that has addressed rutting and flushing defects.~~

### Managing Defects

In accordance with Section 3.6.1, Routine Contract Inspections, the Contractor must complete routine inspections at regular intervals. This is so that all defects are identified, programmed and repaired according to the Contract Documents and to the

level necessary to achieve the performance framework requirements and reporting frequency.

When a contract standard is not achieved and a non-compliance is generated, this indicates that the road class (or road class grouping) is deficient. It is not sufficient to address only those defects identified in just the audit sections or lengths alone. The Contractor must demonstrate to the Principal that the non-compliance has been addressed for the entire applicable road class. Demonstration of compliance may be provided through the next monthly audit. However, a second non-compliance for the same contract standard will result in an increased sub-weighting multiplication (duration) factor.

Where a defect is identified and is requested to be rectified within the Principal's Intervention Period, the Contractor must demonstrate in the monthly report that the defect has been rectified, or programmed to be rectified, within the appropriate intervention period for that contract standard.

The Contractor shall rectify all defects identified in any compliance report within 12 months, regardless of whether or not compliance with the contract standard is being achieved.

The standard of rectification shall be a permanent repair in accordance with the Contractor's MMP, Principal's specification, best practice, or as agreed with the Principal.

Appendix 2.4, Process Maps, includes the Defect Intervention Options process map.

#### **Non-compliance identified by Principal**

The intent of the Principal's ability to provide a non-compliance notice is reserved for serious or repeated non-compliances, or where the Contractor's compliance system has failed to identify faults.

Non-compliances identified by the Principal or an independent review or audit (as detailed in Section 2.5, Reviews and Audits) will carry a greater weighting. Identified non-compliances shall be limited to the following examples:

- OPMs within the audit sections
- Anywhere within the Network that, in the opinion of the Principal, represents an immediate safety hazard
- Anywhere within the Network that, in the opinion of the Principal, will cause immediate damage to vehicles or assets
- Defects identified by the Principal as requiring rectification in line with the PIP and the timeframe agreed by the Contractor, which have not been rectified within the intervention period for that OPM
- Anywhere within the Network that, in the opinion of the Principal, will cause a non-compliance with any designation conditions statutory approvals and subsequent conditions that are managed and monitored by the Contractor as identified in CS-VUE (an online environmental management and compliance system) and/or have been identified within the Appendices.

### **2.3.4 Monthly Performance Evaluation**

For the OPMs that are audited by audit section, the monthly network evaluation is limited to a single non-compliance per OPM, per audit section, for items that are audited.

For the OPMs which have an audit sample size of 100%, the monthly network evaluation is limited to a single non-compliance per OPM. The following components contribute to the Monthly Evaluation:

#### **Operational Performance Measures**

The number of occurrences of Asset Condition OPM non-compliance is limited to a single non-compliance per OPM, per audit section.

#### **Key Operational Performance Measures**

Such is the importance of the Safety Operational Performance Measures that they attract higher consequences in the Performance System if they are non-compliant. Where non-compliance is recorded against a Single Operational Performance Measure, then only the higher weighting is recorded. The monthly Network evaluation for Key Operational Performance Measures is limited to a single non-compliance per OPM, per audit section, for items that are audited.

#### **Customer Operational Performance Measures**

Such is the importance of the Customer Operational Performance Measures that they attract higher consequences in the Performance System if they are non-compliant. Where non-compliance is recorded against a Safety-related Operational Performance Measure, then only the higher weighting is recorded. The monthly Network evaluation for Safety-related Operational Performance Measures is limited to a single non-compliance per OPM, per audit section, for items that are audited.

#### **Corrective Actions**

Corrective action is an action undertaken by the Contractor to remove an instance of non-compliance.

If non-compliance has been identified in a reported result:

- For non-field audited OPMs (e.g. key reports) – the non-compliance score effect will repeat each subsequent audited month, incurring increased penalties, until the Principal-approved corrective action is completed and signed off by the Principal.
- For all other OPMs – the non-compliance score effect will repeat each subsequent audited month, incurring increased penalties, until the Contractor can formally demonstrate that the OPM and 100% of the respective OPM Road Class (or Road-class grouping) has been brought back into compliance with the OPM standard, and signed off by the Principal.
- For construction quality OPMs the non-compliance score effect will only occur in the month that it was reported and duration does not apply.

#### **Monthly Evaluation Formula**

The Monthly Evaluation is calculated using the following equation:

$$MNCS = \Sigma (\text{Number of occurrences} * \text{Weighting} * \text{Duration})$$

Where: *Number of occurrences* = Number relating to non-compliance in each audit section.

*Weighting* = The severity weighting applied.

*Duration* = The number of consecutive months that a non-compliance has been identified for the same OPM (note this applies to the OPM, not to an individual defect).

Table 2.3.2 details the non-compliance weightings for the purpose of calculating the Monthly Evaluation.

TABLE 2.3.2: OPM MONTHLY EVALUATION WEIGHTINGS			
NON-COMPLIANCE RELATING TO:	NUMBER OF OCCURRENCES OF NON-COMPLIANCE	MULTIPLICATION FACTOR	
		WEIGHTING	DURATION
Safety related OPMs	#	4	Number of consecutive months with non-compliance relating to the same key OPM contract standard.
Customer facing OPMs	#	2	Number of consecutive months with non-compliance relating to the same safety OPM contract standard.
Asset condition OPMs	#	1	Number of consecutive months with non-compliance relating to the same OPM contract standard.
OPM non-compliance identified by Principal or representative and not identified by Contractor	#	5	Number of consecutive months with non-compliance relating to the same OPM contract standard.

Refer to Appendix 2.5, OPM Monthly Evaluation Example, for a worked example.

### RENEWAL QUANTITY MANAGEMENT REWARD

It is the Principal's wish that the Contractor, as Network steward, seeks opportunities in respect of asset management and effective routine maintenance and construction techniques in order to reduce the need for the following renewal activities:

- ~~Pavement rehabilitation~~
- ~~Asphalt surfacing.~~

The Principal has assessed the future Network need for these asset renewal activities based on Network knowledge, pavement modelling, expected improved processes and updated level of service (LOS) thresholds. The base renewal preservation quantities nominated by the Principal are stated in Section 6. Whilst the Contractor has been required to develop a Maintenance Management Plan that describes the Contractor's methodology for applying this investment level across the Network, the Principal wishes the Contractor to challenge the need for these quantities throughout the Contract Period.

The Contractor must work collaboratively with the Principal as soon as an opportunity is identified to reduce the pavement rehabilitation or asphalt surfacing base renewal preservation quantity. If it is jointly agreed, on a year 1 SM018 justified pavement rehabilitation or asphalt surfacing renewal, to implement an alternative non-pavement rehabilitation or asphalt surfacing, then the Principal will fully fund the initial alternative strategy over the length in question, including repairs, in conjunction with a prior agreed Period of Defects Liability. The Contractor is free to pursue earlier intervention strategies than year 1 treatments, to reduce the need for pavement rehabilitation or asphalt surfacing, at the Contractor's risk.

If, at the end of the Contract Period, the Contractor and Principal have been able to manage the Network so that the total base renewal preservation quantity investment has not been necessary, constituting savings for the Principal, then the Principal shall share these savings with the Contractor in the spirit of true collaboration.

The savings share to the Contractor shall be calculated using the formulas included in Basis of Payment, Preamble.

The Principal reserves the right for the actual granting of a reward. Before the settlement of any base renewal preservation quantity management reward, the Principal will assess the following elements to determine the appropriateness of a reward:

- The future integrity of the Contractor's final submitted ten-year forward works programme
- The Network condition and the Contractor's consistent achievement of the pavement and surfacing-related OPMs
- The Contractor must have earned the full number of available contract years for the term of the contract.

The recommendation of any reward will be via the CB, to the Principal.

For the purposes of the reward calculation, the average sealed lane width has been assessed as ~~[[xx]]~~ m.

Appendix 2.4, Process Maps, includes the Renewal Quantity Management Reward process map.

## 2.4 CONTRACT FLEXIBILITY

To effectively and efficiently pursue the contract outcomes stated in Section 1.5, Contract Outcomes, the Principal has chosen to combine the flexibility features of measure and value scoped items with the ownership and outcome focus of lump sum style contracts.

Flexibility is important to the Principal in order to be able to react to varying customer needs, funding limitations, any and asset changes, and being able to make the best choices for the Network.

The following flexibility features are included within the contract:

- General measure and value items, where annual programmes are developed by the Contractor based on Network need, but approved by the Principal (refer to Schedule of Prices)
- Changes to the tactical or strategic focus of the team can be adjusted through alteration of the KRA weightings (refer to Section 2.2.1, KRA/KPI Flexibility)
- The trust in the self-compliance nature of the contract can be enhanced by the ability to adjust the focus of the 10% monthly Network condition assessments across the road classes (refer to Section 2.3.3, Compliance Sampling and Auditing Process)
- ~~The Contractor will be offered incentives to apply advanced asset management practices through its Maintenance Management Plan. The Contractor will only carry out pavement and asphalt surfacing renewals on the Network when necessary. This will provide the Principal with the flexibility to unlock potential savings and reinvest in other higher priority regional or national projects (refer to Section 2.4, Renewal Quantity Management Reward)~~
- Standard growth in assets on the Network can be efficiently incorporated within the scope of works without compromising the lump sum, and at tender tensioned rates (refer to Section 2.4.1, Asset Growth)
- The Principal has a suite of tender-valued pavement and surfacing designs within this contract at their disposal. These can be used to commercially tension whole-of-life calculations, and enable quick assessment of the appropriate treatment to apply to the asset (refer to Section 2.4.2, Pavement and Surfacing Design)
- Pavement, surfacing and drainage renewal investments can be applied to the Network based on actual Network need, whilst maintaining integrity in the Contractor's tendered Maintenance Management Plan and original tendered lump sum (refer to Section 2.4.3, Principal Risk Non-Routine Maintenance Treatments).

### 2.4.1 Asset Growth

This contract has been let on the basis of maintaining the existing asset base at the time of tender, and the Principal acknowledges that over the term of the contract, additional assets are likely to be added to the Network. Examples include increased pavement areas, increased signage, lighting and hazard protection barriers.

To fairly offset the possible increase or decrease in base assets, and thus maintain the integrity of the lump sum, the Principal has set up an asset reconciliation process to annually reconcile the overall increase or decrease in base assets during the Contract Period.

A tendered rate for each base asset will be secured as part of the Schedule of Prices, being an annual extra over-rate (or under) for each individual addition to the Network asset inventory.

From contract commencement, the Contractor shall maintain a register of Principal-approved improvement projects that adjust the base asset quantities. An example of this register is included in Appendix 2.6, Example of an Asset Reconciliation Register and Cost Calculation. This asset reconciliation register shall quantify the base asset effect of each improvement project.

The tendered base asset rates shall be applied to asset growth (or reduction) reconciliation annually, with standard contract cost escalation being applicable to each rate respectively.

Any assets added to the register that do not have applicable tendered rates shall be reported to the Principal, and rates negotiated accordingly.

The following points should be noted:

- This asset reconciliation process is only for standard asset growth, not Network centreline length growth/reduction resulting from major capital improvements, revocations or declarations. Significant asset changes of this magnitude shall be valued and agreed as per the Conditions of Contract for valuing variations. at CB level
- The Contractor shall not use the asset reconciliation process as a tool to field-validate the Principal's asset registers supplied during tendering, and subsequently seek compensation based on any asset quantity inaccuracies.

#### 2.4.2 Pavement and Surfacing Designs

The Contractor is responsible for building up and justifying the annual pavement and surfacing programme, along with design and construction activities. Early renewal investigation and design is required to minimise programme risk. The sites to be treated, including the level of investment in early testing and design, designed level of investment for each treatment shall be agreed between the Principal and Contractor, at both the initial concept development phase and final approval phase.

The schedule of prices has been built up from a series of base rates, with extra over-rates for enhanced (or moderated) design parameters. This pricing structure has several advantages:

- Enables the Contractor to use close to real costs in the required engineering and economic assessment processes for the justification of each treatment
- Enables the Principal to quickly and accurately consider the cost of viable treatments during concept option development phases, ensuring value for money decision making
- Provides a sound base for both parties to quickly and efficiently negotiate other design option rates that are not covered, as they arise
- De-risks the services for all parties, and removes the need for contingency allowances by the Contractor when pricing its tender response.

#### 2.4.3 Principal Risk Non-Routine Maintenance Treatments

If a Principal risk item occurs (refer Conditions of Contract, 18<sup>th</sup> Schedule, Contract Risk Profile) or provisional sum activity is requested, a number of routine maintenance



treatment options that are included within the Schedule of Prices will be used by the Principal to maintain value for money during the Contract Period.

Typically, the activities that these items will cover, but not necessarily be limited to; include:

- ***Under Slip Repairs, Railway Crossing Repairs, Vibration and Noise Complaints***

Where deemed to be Principal's risk, quantities have been included within the schedule for pavement and surfacing repairs such as asphalt levelling, and rip and remake.

- ***Changes to the Annual Renewal Investment***

Where deemed to be the Principal's risk, quantities have been included within the Schedule of Prices for pavement and surfacing repairs such as asphalt levelling, maintenance patches, and water cutting, to be applied in accordance with Section 2.4.4, Changes to Annual Renewal Investment Levels of this Maintenance Specification.

- ***Skid Resistance Treatments***

Where deemed to be the Principal's risk, quantities have been included within the Schedule of Prices for pavement and surfacing repairs such as water cutting, patch repairs, and rip and remake.

- ***Guardrail and Wire Rope Damage***

Where deemed to be the Principal's risk, quantities have been included within the Schedule of Prices for guardrail and wire rope repairs.

- ***Peak Roughness and Rut Filling Treatments***

The Principal may undertake, from time to time, a programme to remedy pavement roughness and rutting issues on the Network, refer to Section 5.2.4, Annual Plan Development 6.1.1, of this Maintenance Specification. Quantities have been included within the Schedule of Prices for pavement smoothing such as asphalt levelling, rip and remake, patches and rutting repairs.

- ***Heavy Maintenance***

Heavy maintenance is repair work that is over and above the requirements for pre-reseal repairs and applied to extend the life of the existing pavement beyond the life of the resurfacing. The SM018 NPV Instructions for High Cost Pavement Treatments provides guidance on determining heavy maintenance treatment needs.

In all cases heavy maintenance will be a treatment option that arises as a result of considering a pavement rehabilitation proposal in a NPV analysis.

Heavy maintenance is Principal's risk and includes only work agreed by the Principal that is over and above pre-reseal repair work. If the Principal does not approve heavy maintenance it is expected that the reseal would proceed and still achieve the agreed design life.

For all Principal risk non-routine maintenance treatments, the Contractor is required to comply with the following specifications.

## Pavement Digout Repairs

The Contractor must design and construct all digout repairs with a minimum life of 10 years, unless indicated otherwise in the MMP.

The Contractor must have a documented procedure for determining design life including:

- a) Inspection
- b) Investigation, including laboratory and field testing
- c) Where appropriate, determining quantity of any make up aggregate required to restore grading requirements for the basecourse
- d) Marking on the pavement surface the location and extent of all proposed digout repairs.

If reusing the in-situ material is the preferred repair method, the Contractor must demonstrate that other lower-priced methods are inappropriate **obtain prior written approval from the Principal.**

Where the pavement depths have not been designed the following shall apply:

- a) For digouts up to 200mm deep, basecourse shall be used. Where a thin asphalt concrete layer is required, the basecourse shall terminate a nominal depth of 20mm or 2.5 times the maximum asphalt concrete stone size below the finished pavement surface, whichever is greater
- b) For digouts deeper than 200mm, backfill of the top 200mm shall be basecourse material. Backfilling below this depth shall meet the requirements for sub-base backfill up to the design pavement depth. Backfill required below the design pavement depth shall meet the requirements for subgrade material. Where a thin asphalt concrete layer is required, the basecourse shall terminate a nominal depth that is 2.5 times the maximum asphalt concrete stone size below the finished pavement surface
- c) For digouts in structural asphalt concrete, the depth of asphalt concrete backfill shall match the existing asphalt concrete depth. The type of AC should have properties that are the same or similar to the surrounding AC.

All materials used in the repair shall meet the requirements of the appropriate Principal's specification.

Subgrade material used as backfill shall have permeability no higher than subgrade material surrounding the repair area. The material shall have a soaked CBR value of not less than 10 unless a higher value is specified in the Contract Documents.

Unless otherwise agreed, all sub-base material must have these characteristics:

- a) Minimum soaked CBR value of 40
- b) Maximum aggregate size no greater than 0.4 times the compacted layer thickness
- c) Sand equivalent of greater than 35, or a sand equivalent of less than 35, but shall be well graded with no more than 10% by mass passing through a 0.425mm sieve.

All basecourse aggregate must either comply with Transport Agency M/4 or other materials proven suitable for use as a basecourse.

Thin asphalt concrete shall comply with Transport Agency M/10 or any other mix approved by the Principal. A grade 5 chip seal shall be applied to the repair surface before applying the asphalt concrete. There shall be sufficient windows left between the chip to ensure an adequate bond between the asphalt and the binder of the chip seal. Unless required in the Contract Documents, no diluents shall be used.

Structural asphalt concrete shall be in accordance with Transport Agency M/10 or any other mix approved by the Principal.

The perimeter of each repair shall be cut with suitable cutting equipment before executing the remainder of the work. The sealed surface outside the perimeter of the repair area must not be disturbed to the extent that the bond between the sealed surface and the basecourse is destroyed. Ragged edges will not be permitted.

The backfilling of the repair area, up to the levels of the subgrade adjacent to the repair, shall be carried out in layers which will allow compaction to a standard no lower than the adjacent subgrade.

Sub-base and basecourse backfill shall be placed in layers of uniform thickness and compacted to provide dense, stable layers that do not weave or creep under the action of compaction equipment or road traffic.

All material surplus to requirements shall be removed to approved disposal Sites and stockpile areas in accordance with Appendix 3.5, Stockpile Sites and Disposal Areas.

All repaired areas shall be left clean and tidy on completion of the work, including removal of loose chip on the surface or shoulders.

#### **Pavement Stabilisation Repairs**

A stabilisation repair includes stabilising the in-situ material and surfacing together with any make up aggregate if required.

The Contractor must design and construct all stabilisation repairs with a minimum life of 10 years unless indicated otherwise in the MMP.

The Contractor must have a documented procedure for determining design life including:

- a) Inspection
- b) Investigation, including laboratory and field testing
- c) Where appropriate, determining any make up aggregate required to restore grading requirements for the basecourse
- d) Marking on the pavement surface the location and extent of all proposed stabilisation repairs.

~~If reusing the in-situ material is the preferred repair method, the Contractor must demonstrate that other lower-priced methods are inappropriate.~~

All materials used in the repair shall meet the requirements of the appropriate Principal's specification.

All basecourse aggregate must either comply with Transport Agency M/4, Transport Agency M/22 or other materials proven suitable for use as a basecourse.

Thin asphalt concrete shall comply with Transport Agency M/10 or any other mix approved by the Principal. A grade 5 chip seal shall be applied to the repair surface before applying the asphalt concrete. There shall be sufficient windows left between the chip to ensure an adequate bond between the asphalt and the binder of the chip seal. Unless required in the Contract Documents, no diluents shall be used.

Structural asphalt concrete shall be in accordance with Transport Agency M/10 or any other mix approved by the Principal.

The perimeter of repairs shall be cut with suitable cutting equipment before executing the remainder of the work. This is so that the sealed surface outside the perimeter of the repair area is not disturbed to the extent that the bond between the sealed surface and the basecourse is destroyed. Ragged edges will not be permitted.

The quantity of stabilising agent (2% cement or lime) shall be thoroughly mixed into the in-situ material and compacted.

All material surplus to requirements shall be removed to approved disposal Sites and stockpile areas in accordance with Appendix 3.5, Stockpile Sites and Disposal Areas.

All repaired areas shall be left clean and tidy on completion of the work, including removal of loose chip on the surface or shoulders.

#### **Rip and Remake**

The perimeter of repairs shall be cut with suitable cutting equipment before executing the remainder of the work. This is so that the sealed surface outside the perimeter of the repair area is not disturbed to the extent that the bond between the sealed surface and the basecourse is destroyed. Ragged edges will not be permitted.

Removal of existing surfacing materials, followed by placement and compaction of unbound basecourse to an acceptable shape, and first coat sealing or premix surfacing where the surrounding road is surfaced with premix.

The rip and remake of existing pavements must include:

- a) Cutting the perimeter of the repair
- b) Ripping the existing pavement
- c) Supplying and completely constructing up to 100mm depth of unbound basecourse so the reshaped surface conforms to the shape and nature of the surrounding pavement
- d) Surfacing.

Generally, the thickness of surfacing material to be removed will not exceed 100mm and in many cases, will be less than that, except that, when repairing surface openings, material shall be removed to the full depth of the basecourse layer.

When removing the existing seal, care shall be taken to remove the minimum practical amount of underlying pavement material.

Basecourse material may need to be imported to replace surfacing and other material removed. All basecourse aggregate must comply with Transport Agency M/4,

Transport Agency M/22 or other materials proven suitable for use as a basecourse subject to the Principal's approval.

Material shall be constructed so that, upon completion of the work, a uniformly dense and stable layer that does not weave or creep under the action of compaction equipment or road traffic is produced.

Compaction equipment employed shall be appropriate for the shape of the surface being corrected. Drum and plate dimensions shall be so chosen that edge compaction is attained without bridging.

~~A temporary holding coat shall be applied if the Contractor cannot complete a first coat seal within two days.~~

### **Premix Reshaping**

Reinstatement of acceptable shape using premix material shall be placed and compacted on the existing surface.

Standard premix is to be used for depression repairs. Other premixed materials such as OGEM premix must not be used for depression repairs unless approved by the Principal. Approval will be subject to the Contractor demonstrating that the other premixed materials will not deform or result in subsequent flushing of the pavement surfacing.

The perimeter of the area within which re-shaping is required shall be determined by the Contractor. The basic area shall be the minimum required with such additional area as is necessary to establish straight lines to the edge of the repair and shall be clearly marked on the road surface.

Areas to be treated shall be free from excess moisture and prepared by removing any grit, detritus or other deleterious matter prior to the application of a tack coat.

A tack coat of quick breaking emulsion shall be applied prior to placing any premix material. Tack coat shall be applied to a dry surface and shall have "broken" just before premix is placed.

Areas where tack coat has not been covered with premix material shall also be treated with sand or grit to prevent pick up.

To ensure satisfactory jointing of the new premix layer with the adjacent layer, it will be necessary to remove some of the old surfacing material from around the perimeter of the area to be reshaped. Joints shall be prepared to provide a true line and vertical face by saw-cutting the perimeter. Straight line final-treatment boundaries shall be established by the Contractor prior to cutting. The depth of material to be removed shall be such that a finishing layer of the required thickness can be constructed over the entire area of reshaping.

A waterproof sealcoat using a grade 5 chip shall be applied before the premix is laid.

The premix shall not be less than 15mm thick, and will generally correspond with the thickness of adjacent surfacing.

### **Cold Mill and Inlay**

Inlay material shall be asphalt concrete to the requirements of Transport Agency M/10 or any other mix approved by the Principal.

The cold milling and inlaying of existing pavements must include:

- a) Cold milling the existing pavement
- b) Supplying and completely constructing up to 65mm depth of asphalt concrete infill, so the reshaped surface conforms to the shape of the surrounding pavement
- c) Surfacing.

The perimeter of the area within which re-shaping is required shall be established by the Contractor. The basic area shall be the minimum required, with such additional area as is necessary to establish straight lines to the edge of the repair, and shall be clearly marked on the road surface.

Generally, the thickness of surfacing material to be removed will not exceed 100mm, and in many cases, will be less than that. However, when repairing surface openings, material shall be removed to the full depth of the basecourse layer.

When removing the existing seal, care shall be taken to remove the minimum practical amount of underlying pavement material.

### **Crack Sealing**

The Contractor shall ensure that cracks are effectively sealed, and shall be responsible for the chip size, binder type and quantity proposed for use in the particular repair.

Crack sealing shall be completed to a sufficient width to ensure that the crack is fully covered with sealing product.

The Contractor shall ensure that the final surface texture matches the existing surface texture, and that no bleeding or flushing occurs during the Contract Period.

### **Crack Filling**

When crack filling is specified either prior to sealing or as a single treatment, it is the Contractor's responsibility to ensure that areas to be treated are free from excess moisture. The area to be treated must be prepared by removing any grit, dirt, detritus or other deleterious matter prior to the filling of the cracks with one of the following materials, or an approved alternative material.

- a) Cracks not wider than 5mm.  
A bituminous binder.
- b) Cracks wider than 5mm, but not wider than 20mm.  
A bituminous binder with filler. A waterproofing seal coat shall be applied following crack sealing.
- c) Cracks wider than 20mm.  
A fine premix material. A light tack coat shall be applied to the sides of the cracks to be filled, and a waterproofing seal coat shall be applied following crack sealing.
- d) Polymer-modified proprietary materials.

Such materials shall be applied strictly in accordance with the manufacturers' instructions. These may be used for all cracks over 5mm in width. In asphalt concrete, polymer-modified material shall be applied over all cracks in a 100mm wide strip as a stress-absorbing bandage.

### Scabbing and Stripping

Only the area of scabbing or stripping shall be treated, and this shall be marked on the road surface.

Areas to be treated shall be free from excess moisture, and prepared by removing any grit, dirt, detritus or other deleterious matter prior to the application of binder.

Binder shall be applied in a fine mist spray.

a) Scabbing.

Binder shall be applied only to the area of scabbing. Care must be taken to avoid spraying binder on to the surrounding pavement.

b) Stripping.

Binder shall be applied to the width specified by the Principal.

### Watercutting

If high-pressure water treatment is proposed, then it must be performed in accordance with Transport Agency P/26.

### Slurry Rut-Filling

Slurry rut-filling is for the treatment of wheel track rutting by means of an overlay within the wheel tracks.

Bitumen used for emulsion shall comply with Transport Agency M/1. If additives or modifiers are added to the bitumen or emulsion, the Contractor shall choose the type and quantity.

Aggregates and filler shall be obtained from crushed stone or crushed gravel, or a combination of the two. Any other material, such as treated and crushed slag, which can meet the requirements of this specification, may be used.

When tested in accordance with the requirements of BS 812: Part 114:1990, the parent aggregate or material shall have a Polished Stone Value in accordance with Transport Agency T/10. The combined aggregate and filler grading shall be selected by the Contractor to suit the slurry to be supplied. When tested in accordance with NZS 4407 Test 3.11, the weathering resistance of the aggregate shall be AA, AB or BA.

The Contractor shall design the slurry, in accordance with the requirements of ISSA A143, to have a maximum wet-track abrasion loss of 807 g/m<sup>2</sup>, following a soak period of 6 days.

The Contractor must remove all loose materials and detritus matter from the road surface before applying the rut fill material.

To minimise construction joints, the mixing equipment shall have a truck-mounted, self-propelled, microsurfacing (slurry) machine capable of storing and continuously mixing. This machine shall be specifically designed and manufactured to lay slurry seal.

The machine shall be able to accurately deliver and proportion the aggregate emulsified asphalt, mineral filler, control setting additive and water to a revolving mixer and discharge the mixed product in a continuous flow. The machine shall have sufficient storage capacity for aggregate, emulsified asphalt, mineral filler, control

setting additive and water to maintain an adequate supply to the proportioning controls.

The slurry mix shall be applied to the existing surface so that no segregation of the mix occurs, and so that a uniform layer thickness and surface texture is maintained.

### **W-Section barrier**

All barrier repairs shall be undertaken in accordance with Transport Agency M/23

W-section steel guardrail shall be supplied and installed in compliance with Transport Agency M/23 and AS/NZ 3845:1999 – Road Safety Barrier Systems and Transport Agency M/17P. It shall be an approved system complying with NCHRP Report – 350 Test Level 3.

All material supplied and installed shall be new and in compliance with the manufacturer's recommendations. The erected guardrail shall be true to the line level and curvature required. All timber or steel posts and backing blocks shall be ground treated and all bolts and washers and other fixings be galvanised steel as specified.

All guardrail shall be set out and installed from the fixed end if this exists (i.e. bridge or concrete barrier). There shall be no cutting or modifying any guardrail sections and no drilling of new or existing holes of any section of guardrail, posts and other proprietary components.

### **Terminal Entry/Ends for W-Section Barrier**

All barrier end terminal repairs shall be undertaken in accordance with Transport Agency M/23.

End treatment for W-section guardrail shall consist of terminals supplied and installed in compliance with Transport Agency M/23 and AS/NZ 3845: 1999 – Road Safety Barrier Systems and shall be an approved system complying with NCHRP Report – 350 Test Level 3 or Manual for Assessing Safety Hardware (MASH).

The Contractor shall ensure that the terminals are the correct type for the application and are erected in compliance with the manufacturer's recommendations and function correctly.

The terminal end treatment shall be located as agreed with the Principal and confirmed on site.

After assembly, any areas of the galvanised coating that have been damaged or show signs of deterioration shall be wire brushed and washed to thoroughly clean down to fresh zinc or parent metal. They shall then be spot painted with two brush coats of un-thinned approved zinc rich paint (e.g. conforming to PASS-C/29/16) the first coat being applied to a dry surface immediately after cleaning.

The minimum performance level for semi-rigid barriers shall be Test Level 3.

### **Wire Rope Barrier**

All wire rope barrier repairs shall be undertaken in accordance with Transport Agency M/23.



Wire rope barrier shall be supplied and installed in compliance with Transport Agency M/23 and AS/NZ 3835:1999 – Road Safety Barrier Systems and Transport Agency M/17P. It shall be an approved system complying with NCHRP Report – 350 Test Level 3.

All material supplied and installed shall be new and in compliance with the manufacturer's recommendations. The erected wire rope barrier shall be true to the line level and curvature required. All steel posts and components shall be ground treated and all bolts and washers and other fixings shall be galvanised steel as specified.

All wire rope barrier shall be set out and installed from the fixed end if this exists (i.e. bridge or concrete barrier). There shall be no cutting or modifying any guardrail sections and no drilling of new or existing holes of any section of guardrail, posts and other proprietary components.

### Service Cover Adjustments

Where the pavement surface has to be penetrated to permit the service covers to be adjusted, a rectangular opening shall be saw cut into the pavement surface. The perimeter of the opening shall be cleanly cut so as to maintain the integrity of the adjacent pavement surface. Straight lines shall not deviate more than 50mm for a 1m straight edge between 2 points.

Covers shall be designed and supported within the pavement structure to withstand the applied loadings without settlement or rocking, Covers shall be adjusted to level using risers, adjusting rings, epoxy mortar, concrete or additional covers.

The top of the cover shall not exceed +10mm or be less than -0mm with respect to the surrounding pavement surface. The surrounding material shall be uniformly tapered from the top of the cover to the existing road surface.

Risers and covers shall be firmly held in place by adequate backfilling and compaction. A sufficient width of pavement around the riser or cover shall be excavated to ensure this. Acceptable widths are:

- 200mm for backfill depth less than or equal to 300mm
- 500mm for backfill depth greater than 300mm

The reinstated pavement surface around the cover shall:

- a) Be waterproof including the interface with the service cover.
- b) Have similar texture to the surrounding pavement.
- c) Have a smooth surface profile.
- d) Match the crossfall of the existing pavement

An acceptable method of ensuring the joint between the pavement surface and the service cover waterproof shall be:

- a) For asphaltic concrete surfaces: A waterproof seal coat sprayed or painted to vertical surfaces of the service cover within the surfacing layer
- b) For chip seal surfaces: A waterproof seal coat sprayed to overlap the service cover frame.

## Hot Chipping

Where deemed to be the Principal's risk, quantities have been included within the Schedule of Prices for hot chipping. All hot chipping must be undertaken during suitable periods of warm weather when the ambient temperature is at least above 15°C. When establishing a source of appropriate plant to sufficiently heat the chip, the contractor must take into account its proximity to the areas to be treated and a suitable means by which to transport the heated chip to site to ensure that the chip is able to be spread at optimum temperature (normally in the range of 160 to 190°C).

Hot chip can be used on its own without pre-coating. Chip shall be washed before heating such that the heated chip is dust free to ensure maximum adhesion. The grade of chip shall be selected based on the size of surrounding chip, traffic stress at the site to be treated and the amount of 'free' available binder in the flushed areas to be treated. Grades 4, 5 and 6 can be used where no additional binder is required.

If the available binder is contaminated with fines a sufficient bond with the hot chip may not occur in which case pre-coating is recommended.

Pre-coated chip shall not be heated above 170°C to prevent pre-aging or oxidising of the binder if using binder as a pre-coat.

Hot chipping is to be performed under traffic control similar to the level required for a chip sealing operation. Areas to be treated shall be clearly marked and agreed with the Principal. If ambient temperatures are not warm enough to ensure that the viscosity of the existing free binder in the flushed areas to be treated is becoming 'tacky' then a 'mist' spray application of kerosene can be applied to soften the binder and aid its ability to adhere to the chip. Care must be exercised if this approach is taken as an application of kerosene that is too high can cause the existing binder to become too soft and quickly susceptible to tracking under traffic tyre action. To avoid the risk of this occurring application of a cutter such as kerosene must only be carried out under lane closure.

Hot chip is to be spread as soon as the chip arrives to site. Rolling can be carried out using an appropriately sized PTR roller, or steel wheel roller, with the aim to 'punch' the chip into the available binder and roll the chip into its average least dimension (ALD) position but without such compaction effort that the chip is crushed.

Careful trafficking of the site post operation is essential to the successful adherence of the chip. Normal sweeping and line marking of the site can occur after sufficient active trafficking and traffic management has remained in place long enough to ensure a sufficient 'take' of the hot chip. A re-sweeping of the site may be required to remove loose chip prior to removal of traffic management.

## Geotextile Seal Repairs

Where deemed to be the Principal's risk, quantities have been included within the Schedule of Prices for geotextile sealing. All geotextile sealing shall be constructed in accordance with the guidance provided in Chipsealing in New Zealand. A 'tack' coat of binder shall be applied to the existing surface to be sealed at an application rate in the order of 1l/m<sup>2</sup>. Care is required in selecting an appropriate rate to ensure that the geotextile mat is sufficiently saturated taking into account the amount of free binder

over which the geotextile is to be laid. Large amounts of free binder on the existing surface may require reduction of the tack coat application rate to allow for absorption of the excess binder.

The geotextile fabric shall then be laid on top of the first layer of binder. Guidance on typical rates required for this shall also be sought from geotextile manufactures. A conventional seal coat with 'normal' application rates shall then be constructed on top of the geotextile mat.

Geotextile sealing is to be performed under traffic control to the level required for a chip sealing operation. Areas to be treated shall be clearly marked and agreed with the Principal.

Careful trafficking of site post operation is essential to the successful construction of the geotextile seal. Normal sweeping and line marking of the site can occur after sufficient active trafficking and traffic management has remained in place long enough to ensure a sufficient set up of the chip seal surface. A re-sweeping of the site may be required to remove loose chip prior to removal of traffic management.

<<Specify any others>>

*Add any that are specific to the local network.*

#### 2.4.4 Changes to Annual Renewal Investment Levels

The Contractor has tendered lump sums for many elements of this contract, and, because the Principal desires the Contractor to adopt a stewardship role over the Network, the Principal has nominated renewal investment levels for the Contract Period (Base Renewal Preservation quantities). ~~This also provides a sound opportunity for the Contractor to build up the lump sum elements.~~

These quantities have been derived from the Principal's assessment of what is required to adequately preserve the Network's assets over the Contract Period and beyond. This assessment then needs to be balanced by an appropriate routine maintenance strategy.

During the tender phase, it will be necessary for the Contractor to carry out detailed Network assessment and modelling to formulate their overall maintenance strategy, and corresponding lump sum requirements. The Contractor will need to integrate the Principal's nominated renewal investment levels with their own routine maintenance strategy for the entire Contract Period. The Contractor's comprehensive Network maintenance strategy shall be expressed within a Maintenance Management Plan (MMP).

As part of the Contractor's ~~MMP Maintenance Management Plan~~, the Contractor is required to articulate their Base Renewal Preservation quantity distribution strategy (by lane length) over the Contract Period through separate Baseline Plans. These are summarised in Table 2.5.

**TABLE 2.5: BASELINE PLAN STRATEGIES**

RENEWAL INVESTMENT	BASELINE PLAN NAME	PLAN DEVELOPMENT TIMING
Pavement rehabilitation base preservation cumulative lane lengths – As per Table 5.3.1	Baseline Plan for pavement rehabilitation  Pavement Rehabilitation Baseline Plan	Time of Tender
Resurfacing base preservation cumulative lane lengths – As per Table 5.3.3	Baseline Plan for resurfacing  Resurfacing Baseline Plan	Time of Tender
Skid Resistance Renewal Quantities – As per Table 5.3.7	N/A	Annually – as per Transport Agency T/10 annual Skid Exception Report instructions
Base Preservation Drainage Lengths – As per Table 5.3.6	N/A	Annually – as per Annual Plan Instructions Manual (SM018)

Although the ~~Baseline Plans for pavement rehabilitation and resurfacing~~ ~~Pavement Rehabilitation and Resurfacing Baseline Plans~~ have been developed prior to contract commencement by the Contractor, it ~~will~~ ~~may~~ still be necessary for the Contractor to carry out detailed modelling, programme optimisation and prioritisation on an annual basis in accordance with Section 5.2.2. The ~~Baseline Plans for pavement and rehabilitation and resurfacing will not include for the contract extension period.~~ The Contractor will then need to make a case to the Principal, in order to be able to apply the Base Renewal Preservation quantities. This is in accordance with the Annual Plan process, The *Annual Plan Instructions Manual* (SM018), and the Principal's nominated prioritisation process.

To serve the best needs of national Network prioritisation, and to take account of the funding capabilities of the Principal, the Base Renewal Preservation quantities may still vary from the quantities nominated within the contract. If this occurs, the Baseline Plans will become a reference point during ~~each year of~~ the Contract Period, to quantify the impacts of any interference with the previously developed investment levels.

The Principal understands the need to protect the integrity of the tendered lump sums and the Contractor's tendered ~~MMP~~ ~~Maintenance Management Plan~~. Therefore, fair and reasonable formal processes for respecting the impacts of possible renewal increases or decreases are described below.

### Drainage

The Principal has a firm commitment to the first principles of good pavement drainage in road asset management, and the Base-Renewal Preservation drainage lengths stated in Section 5.3.6, Drainage, are not expected to change during the Contract Period.

No tender Baseline Plan is required from the Contractor. Annually, the Contractor shall develop the drainage renewal programme based on Network need, and the requirements of Section 5.3.6, Drainage. It is unlikely that the Principal will fund beyond the stated levels.

In the event that the Principal is unable to fund justifiable best-for-Network drainage renewal programmes to the annual investment levels stated, then the Contractor will be able to seek a variation to the extent that the Contractor is able to demonstrate using reliable and objective evidence of a direct increase in cost to the Contractor in providing the maintenance services on the Contractor's overall maintenance management strategy.

The Contractor will not be entitled to seek a variation, if when assessing the Network need annually, the Contractor's proposed drainage renewal programme is only justified to a level lower than the Base-Renewal Preservation drainage lengths stated in Section 5.3.6, Drainage.

### **Pavement Rehabilitation Base Preservation**

Whilst the Principal has initially set the Contract Period total renewal investment level, the Contractor has been entrusted with formulating and implementing an overall balanced maintenance strategy. The annual updating of the pavement rehabilitation short, medium and long-term forward works programmes will be the responsibility of the Contractor as per Maintenance Specification, Sections 5 and 6 of this Maintenance Specification, and the following process maps (as further described in Appendix 2.4, Process Maps):

- FWP Development,
- Annual Renewals Programme Development.

The Principal's *The Annual Plan Instructions Manual* (SM018) and *NZ Guide to Pavement Evaluation and Treatment Design* contains key renewal project justification requirements that will need to be met by the Contractor, in order to implement the Contractor's Baseline Plan strategy.

Pavement maintenance risk will pass over to the Principal if the Principal is unable to, or chooses not to, fund SM018 justified pavement rehabilitation renewal projects where this results in the Contractor being prevented from implementing the renewal investment levels as set out in the Contractor's Baseline Plan for pavement rehabilitation. ~~Pavement Rehabilitation Baseline Plan.~~

Pavement maintenance risk will remain with the Contractor if the ~~Pavement Rehabilitation Baseline Plan for pavement rehabilitation~~ investment levels have not been applied to the Network owing to incorrect justification, or if the reactive maintenance levels have not justified the need for each individual renewal project or if the Contractor does not physically deliver their justified and approved programme.

Refer to Appendix 2.4, Process Maps, Management of Annual Pavement Rehabilitation Quantity.

### Risk Transfer to Principal

In the event that the annual pavement rehabilitation programme reconciliation has identified that a 1 year holding-cost risk transfer to the Principal is required, then the following further guidance is provided:

- a) In August each year, a joint Site inspection is to be undertaken, on the year 1 highest priority non-funded sites, over a length equal to the reconciliation differential.
- b) The Principal and Contractor shall jointly agree the required pavement and surfacing repairs required to be undertaken in order to hold this road length to the minimum safety condition approved by the Principal.
- c) The Contractor shall complete the agreed holding treatments to the conditions as outlined in Section 2.4.3, **Principal Risk Non-Routine Maintenance**, and any other agreed Site-specific special conditions.
- d) The Principal shall arrange payment to the Contractor for the agreed completed work, in accordance with the Basis of Payment, **Principal Risk Non-Routine Maintenance Treatments**.
- e) Any new defects that occur within the 12-month period, which were not previously identified, and require intervention, shall be carried out by the Contractor, and payment made by the Principal. Agreement with the Principal will be required before any such further repairs are undertaken.
- f) Non-routine pavement and surfacing repairs, such as potholes, shall also be the Principal's risk.

### Credit Transfer to Principal

In the event that the 3-yearly NLTP delivered rehabilitation programme exceeds the Contractor's tendered baseline plan for that NLTP period, then a 1 year holding-cost credit transfer to the Principal is required to reflect the reduced maintenance cost. The following further guidance is provided:

- a) In August at the end of each 3-yearly NLTP funding block period, the lowest-priority funded sites are assessed based on their approved Net Present Value (NPV) project justification, over a length equal to the reconciliation differential. The NPV year 1 do minimum holding maintenance costs will be used to value the credit owed to the Principal.

### Resurfacing Base Preservation

As with pavement rehabilitation, the Principal has initially set the Contract Period total renewal investment level, with the Contractor entrusted with formulating and implementing an overall balanced maintenance strategy, of which resurfacing plays a significant role. The annual build-up of the resurfacing programmes by the Contractor is described as in Sections 5 and 6 of this Maintenance Specification, and the following process maps (as further described in Appendix 2.4, Process Maps):

- FWP Development,
- Annual Renewals Programme Development.

The Principal's *Annual Plan Instructions Manual* (SM018) contains the asphalt-surfacing renewal project justification requirements. For chip seal resurfacing the Contractor is required to develop their own engineering and economic assessment processes for the justification of chip seal resurfacing treatments, and submit these as part of the **Tender submission**. ~~Request for Tender phase~~. These justification processes will need to be followed and met by the Contractor, in order to implement the Contractor's Baseline Plan strategy.

The Contractor shall also use the Principal's *The Annual Plan Instructions Manual* (SM018) prioritisation methodology when developing the annual renewal programmes.

Pavement maintenance risk remains with the Contractor if **the Resurfacing Baseline Plan for resurfacing** investment levels have not been applied to the Network owing to incorrect justification, or the justification processes have not supported the need to apply the individual renewal treatments **or the Contractor does not physically deliver their justified and approved programme**.

Pavement maintenance risk will pass over to the Principal if the Principal is unable to, or chooses not to, fund mutually agreed justified resurfacing renewal projects, which prevents the Contractor from implementing the renewal investment levels to within 10% of the Contractor's ~~Resurfacing Baseline Plan~~ **for resurfacing**.

Refer to Appendix 2.4, Process Maps, Management of Annual Resurfacing Quantity. In the event that the annual resurfacing renewal programme reconciliation has found that a risk transfer to the Principal is required, then the following further guidance is provided:

For all Sites beyond 10%:

- a) In August each year, a joint Site inspection is to be undertaken on each Site:
  - As part of the lump sum, the Contractor shall schedule and complete all necessary pre-reseal repairs that would have been undertaken if the resurfacing had been completed as planned.
  - The Principal and Contractor shall jointly agree any other required surfacing repairs (and any other Site-specific needs) that are required to be undertaken in order to hold this road length to a Principal-approved minimum asset and safety condition. The Principal shall arrange payment to the Contractor for these agreed works once they are completed, in accordance with the Basis of Payment, Principal Risk Non-Routine Maintenance Treatments.
- b) Until such time as a resurfacing or pavement rehabilitation renewal has been completed, any new defects that occur on the Site shall be repaired by the Contractor, and payment made by the Principal. Agreement with the Principal will be required before any such further repairs are undertaken.
- c) Non-routine pavement and surfacing repairs, such as potholes, shall also be the Principal's risk.

### Skid Resistance Renewal

The Principal has assessed the future skid-resistance renewal treatment length need for the Network. ~~This is expressed as an annual indication only~~. The actual annual

skid-resistance renewal programme will be built up by the Contractor from inputs from the Annual SCRIM Exception report, assessment process and Principal approval.

The Skid-Resistance Renewal Quantities are separate from the Resurfacing Base Preservation Cumulative Lane Lengths, and are not to be included within the Contractor's ~~Baseline Plan for resurfacing~~ Resurfacing Baseline Plan.

~~The Contractor is required to manage and implement the necessary pre-reseal repairs for any required skid-resistance renewal treatments, up to the annual level stated in Table 6.1.6, Skid Resistance Renewal Quantities.~~

The Contractor is not required to include the skid-resistance renewal quantities in the NOMAD FWP deliveries, but shall be mindful of and report to the Principal on the predicted ongoing needs of the Network ~~relative to the quantities stated in Table 6.1.6, Skid Resistance Renewal Quantities.~~

The Principal's Annual SCRIM Exception Report instructions contain key renewal project justification requirements that will need to be met by the Contractor, in order to carry out skid-resistance renewal treatments.

Pavement and surfacing maintenance risk, within the limits set out in the 18<sup>th</sup> Schedule to the Conditions of Contract, 18<sup>th</sup> Schedule, will remain with the Contractor if the skid-resistance renewal investment levels have not been applied to the Network owing to incorrect justification, or the reactive maintenance levels have not been justified, or the Transport Agency T/10 decision process does not call for renewal, or the Principal is unable to fund the desired intervention.

~~The Contractor is required to manage and implement the necessary pre-reseal repairs for any required skid-resistance renewal treatments and will be funded by the Principal as below: In the event that the annual skid-resistance renewal need is more than that stated in Table 6.1.6, Skid Resistance Renewal Quantities, and is funded by the Principal, then the following further guidance is provided:~~

~~For all Sites beyond the stated annual Table 6.1.6, Skid Resistance Renewal Quantities:~~

- a) At an appropriate time before renewal treatment, a joint Site inspection is to be undertaken where the Principal and Contractor shall jointly agree the required pre-reseal repairs ~~beyond any maintenance contract standard requirements.~~
- b) The Contractor shall complete the agreed pre-reseal repairs to the conditions as outlined in Section 2.4.3, Principal Risk Non-Routine Maintenance Treatments, and any other agreed Site-specific special conditions.
- c) The Principal shall arrange payment to the Contractor for the agreed completed work, in accordance with the Basis of Payment, Schedule Item 2.4, Principal Risk Non-Routine Maintenance Treatments.

## 2.5 REVIEWS AND AUDITS

The Principal will review the Contractor's systems, procedures and records to determine their effectiveness in ensuring that the contract requirements are being achieved.

The Principal's reviews in themselves will provide a direct input (where applicable) into both the OPM monthly evaluation and the appropriate KRA.



The Principal's reviews may concentrate on areas where the Contractor's compliance monitoring system has identified a systemic failure or consistently outstanding performance. However, the Principal may review the Contractor's procedures and work activities and may conduct specific asset inspections at any time.

The Principal's reviews will in no way limit the Contractor's responsibility to develop, implement and manage a Contractor's compliance monitoring system.

The Principal reserves the right to engage an independent party or representative to conduct reviews or audits on its behalf, at any time. Reviews and audits could include, but are not limited to:

- a) Contract management reviews
- b) Review and Prioritisation Teams site inspections
- c) Peer review of Contractor's Designs
- d) Temporary Traffic Management Sites Audits
- e) Onsite audits of renewals works during and after construction
- f) Health and Safety audits
- g) Environmental performance audits
- h) Contractor system compliance audits
- i) Evidence of any required approvals
- j) Data quality audits
- k) Model applicability assessments
- l) Special purpose reviews
- m) Level of compliance with performance measures
- n) Random verification testing.

Results of any reviews will be formally communicated to the Contractor. In the event that the Contractor is not providing the level of service or quality required in the Contractor's Contract Plan or this Maintenance Specification, the Principal may increase the level of surveillance for varying periods of time to ensure compliance. The cost of this will be borne by the Contractor.

The Principal has a national Contract Management Review (CMR) programme, in which the Contractor is expected to participate when required. It is expected that one CMR will be undertaken during the Contract Period. These reviews generally take up to 2 days, and the Contractor's key management staff Contract Manager will need to be available for the duration.

## 3 Contract Management

### 3.1 WORKING HOURS

The Contract Works may be completed at any time during the Contract Period, including sensitive periods if agreed with the Principal. Sensitive periods include:

- a) Periods of peak traffic flow in urban areas.
- b) At night, between the hours of 10pm and 6am the following day.
- c) Recognised holiday periods.
- d) From mid-day on the day before holiday periods, and until mid-day following holiday periods, on high volume, national and regionalally Strategic road corridors and Regionally Strategic Road Corridors.
- e) Significant events (planned and unplanned).
- f) The Christmas shut-down period, typically from 24 December to 5 January inclusive, unless otherwise agreed with the Principal. Actual dates will be notified by the Principal for each Christmas period.
- g) <<Specify any others>>

However, the Contractor will be required to respond to any work falling under the Incident Response Section, at any time, on any day.

The obligations on the Contractor are to maintain the Network at all times.

### 3.2 PUBLICITY AND PUBLICATIONS

The Contractor will observe the following restrictions:

- a) Do not communicate with the media on any issues relating to the Network or Contract Works without specific approval from the Principal.
- b) Do not publish or provide to any third-party information pertaining to any of the Contract Works without the Principal's prior approval. This requirement includes conference papers, presentations, workshop discussions, and any similar material.
- c) Do allow access to the Site to any person(s) designated by the Principal to take photographs.
- d) May display non-illuminated signs attached to their site accommodation giving the name of their firm(s) and contact numbers. No other promotional publicity is permitted.

#### 3.2.1 Branding of Vehicles

The Contractor may elect to co-brand brand vehicles in accordance with the Transport Agency's Brand Manual, section J.8 found at:

<https://www.nzta.govt.nz/assets/resources/visual-identity/NZ-Transport-Agency-brand-guidelines.pdf>.

### 3.3 CONTRACTOR'S ESTABLISHMENT

The Contractor must have adequate materials, labour and plant in place prior to the commencement of the contract. This particularly applies to dealing with incident response and road user safety type activities.

<<The following clause should only be used where high-risk implications to the Network are likely>>

To enable timely and efficient response to incidents the Contractor must establish a permanent depot at the following strategic low-medium hazard locations:

- a) Xxx;
- b) Xxx.

### 3.4 INFORMATION MANAGEMENT

#### 3.4.1 Information provided prior to Contract Commencement

The following documents, relating to the Network, will be given to the Contractor prior to the commencement of the contract.

<<Regions to select appropriate docs

- a) Highway Information Sheets
- b) Ten-Year Programme (including the Maintenance and Capital Works Programmes)
- c) Emergency Procedures and Preparedness Manual Plan
- d) Geological hazard Register
- e) Crash Reduction Studies
- f) Strategy Studies
- g) Falling Weight Deflectometer survey data
- ~~h) RAMM health check~~
- h) KiwiRAP Assessment
  - i) Current SWIPP Hapai spreadsheet
  - j) The Activity Risk File, to include as a minimum:
    - Risk Register (with associated Action Register)
    - Contract Closeout Risk Report <<only applicable where there is a preceding Network Outcomes Contract>>
  - k) Renewal Design Reports for undelivered projects
  - l) Renewal Completion Reports
  - m) Statutory Approvals (CS-VUE) database access

n) Access to MAPHub Limited Access Road (LAR) information and crossing point notices.

o) <<add any others>>.

### 3.4.2 LRMS Updates ~~Network Update~~

When requested by the Principal, the Contractor shall complete supply the following, in accordance with the *Location Reference Management System Manual* (SM051) and the *State Highway Database Operations Manual* (SM050):

- a) Obtain all information necessary and provide this information to the Principal to ensure that the ~~Network Model~~ LRMS Model is kept up to date
- b) Supply the Principal with Network LRMS updates, when required.
- c) Once the LRMS update is complete, the Contractor is responsible for ensuring that asset data from any Network change is updated in the appropriate RAMM asset table in accordance with State Highway Database Operations Manual SM050.

### 3.4.3 Electronic Information

The Principal currently uses the following applications for the electronic processing of data, which may be upgraded during the course of the Contract Period:

- a) Microsoft Access
- b) Microsoft Project
- c) Microsoft Excel
- d) Microsoft Word
- e) Microsoft PowerPoint
- f) Microsoft Outlook
- g) RAMM for Windows
- h) Adobe Professional
- i) SAP and CRMS
- j) CS-VUE
- k) CAR Manager
- l) Zero Harm Portal and mobile app
- m) FREIS Incident Management System

The Contractor's electronic data transfer will be in a format directly compatible with these applications, unless agreed otherwise with the Principal. All information required by the Principal will be made available in native digital format and transferred electronically where possible.

The maintenance of electronic records will be carried out by the Contractor using one of the specified methods:

- a) The Principal's application from which the data was supplied
- b) The data form in which it was extracted from the Principal's application

- c) In the Contractor's own system, but supplied back to the Principal using an agreed **electronic format interface** such as Excel, XML messages or application-specific formats.

### 3.4.4 Geospatial Information

The Principal is increasing its capability to host and supply geospatial information, using standards-based methodologies and standard compliant systems.

~~To support this~~ When requested by the Contractor shall supply to the Principal the Contractor shall supply geospatial-generated information pertaining to this contract. The frequency of updates and format of information will be agreed with the Principal for each dataset. These datasets will be agreed with the Principal over the course of the contract, as the Principal's need to use and ability to manage and disseminate datasets matures.

As a minimum, the Principal will require:

a) For vector data (i.e. points, lines and polygons):

- Drawings as raw DXF files
- MapInfo or ESRI format using NZTM projection.

b) For raster data (i.e. grids and pixels):

- Georeferenced JPEG, TIFF or GeoTIFF
- Digital elevation models.

### 3.4.5 Network Information Requests

The Contractor must seek approval from the Principal before responding to all requests for Network information received from third parties.

### 3.4.6 ~~Web-based Portal~~ Information Sharing

The Principal expects **internet web** access to key Contractor Network management systems to improve communication and provide:

- a) Efficient knowledge transfer
- b) Visibility of Network condition, defects and performance
- c) Enhanced team coordination.

As a minimum, the following information relating to the requirements of this contract shall be web-accessible to the Principal:

- Reports
- Weekly, monthly and annual Programmes
- Quality assurance and compliance data
- Temporary traffic activity.

During the Contract Period, the Contractor and Principal shall review the type of content stored and make any necessary alterations to ensure good communication is being achieved.

The Principal has adopted Tempo Box for key deliverables to be delivered to, as requested by the Principal from time to time. Access to this system will be provided to the Contractor and information contained within the system shall be maintained by the Contractor during the Contract Period.

The Principal encourages the Contractor to propose other means to transfer files to the Principal's system in native digital format.

### **Sub-Networks**

The Principal requires the Contractor to manage the Network as a set of sub-Networks based around the road classifications; these are listed in Section 1.7, Network Description, of this Maintenance Specification. The Contractor will need to manage information and reporting requirements as specified for each sub-Network.

## **3.5 CONTRACT MANAGEMENT OF THE CONTRACT**

### **3.5.1 Contract Meetings**

Meetings between the Principal and Contractor are essential for effective communication and coordinated management of this contract. They provide an opportunity to confirm alignment of expectations and are necessary for functions such as:

- a) Decision making
- b) Strategic direction
- c) Review and reporting
- d) Issue identification and resolution
- e) Risk Management
- f) Programme achievement and financial management.

Formal Network meetings shall be held in accordance with the Specifications on a monthly basis and shall be for a duration sufficient to cover the agenda. The meetings will be held at an agreed time and venue.

The Contractor shall prepare and issue minutes. The Contractor's Contract Manager and Deputy Contract Manager shall attend the meetings.

The Contract Manager will be appropriately briefed on bridging and other structures issues for those months in which a meeting with the Regional Bridging Consultant is not scheduled. Urgent issues will be addressed through normal communications outside of the formal Network meetings.

Others of the Contractor's team may also attend those portions of the monthly meetings directly related to their personal responsibilities. This may include for example health and safety personnel from the Principal and Contractor.

Informal meetings will be scheduled on an ongoing basis as agreed by both parties. The Contractor or the Principal may call additional one-off meetings, with reasonable

notice, for the purposes of updating, gaining comments, approvals and discussing issues.

### 3.5.2 Contract Board

The Contractor and Principal must nominate <<two/three, delete as appropriate>> members each, as senior company representatives, to attend and participate in ~~quarterly~~ CB meetings every four months. The Contractor's Contract Manager and the Engineer's Representative will attend each meeting to provide operational information and reporting. The Contractor's Contract Manager and the Engineer's Representative will not be sitting members of the CB.

The intent of the CB is to provide:

- Leadership to add value
- Effective decision making, conflict resolution or escalation
- Effective actions to address any significant issues or concerns
- Objective performance framework monitoring, including review of the KRA achievement results
- Understanding of stakeholder relations and customer experience that support the customer value proposition
- Risk and opportunity management overview
- Overview of people and capability, including sub-contractor involvement
- Overview of any surveys (customer, relationship and sub-contractor)
- Health & safety performance overview
- Monitoring programme achievement and ensuring resources are sufficient to deliver the contract works
- Compliance and incentive monitoring
- Annual performance workshop facilitation
- A working relationship with the CMT to understand challenges, consider opportunities for improvement, monitor performance and provide support
- Assessment of whether any changes to the Conditions of Contract is required
- Review of the CMT's CB report
- When possible, annual performance inspection drive-overs of the Network
- Awareness of any media reports, stakeholder concerns and providing guidance on managing potential impacts.

~~A summary of the CB~~ The functions of the CB include the following:

#### a) Objective

The members of the CB are responsible for fully representing their relevant organisations in terms of governing the required contract outcomes, nurturing a

collaborative contract culture, and addressing reviewing the commercial health interests of their organisations. The Principal is responsible for addressing their statutory, policy and national operational requirements. The CB structure should facilitate consistency and deliver change as necessary to achieve collaborative, expected outcomes from the contract in line with the Principal's strategy to ensure improved customer experience.

**b) Key Role**

The CB has several key roles:

**Objective Performance Framework Monitoring**—Review contract progress in terms of physical achievement and contract performance measures, and provide strategic support to the Contractor's Contract Manager and the Engineer's Representative.

Review the annual KRA achievement result and make recommendations to the Transport Agency VAC on the appropriate tenure implications and reward achievement, and facilitate an annual performance workshop.

**Resolving Conflict**—Where issues cannot be resolved at Contract Manager and Engineer's Representative level, the CB provides a forum for managing conflict between the contracted parties. The CB looks at the broader context of the contract, rather than the day-to-day contract business. In this way, it can offer a different perspective on problems. Contractual issues that cannot be resolved at CB level will be referred to the Engineer for review in accordance with Conditions of Contract, clause 13.2.

**Contract Conditions**—The CB can make recommendations on contractual points. Where recommendations have contractual implications or implications that will impact on the business of the Contractor or a Sub-contractor, they will be submitted to the parties for detailed consideration. Where the Principal and Contractor agree to follow any recommendations by the CB the Engineer will then implement any agreed recommendations through the appropriate contract channels, including the issuing of formal notices. Recommendations may include:

- significant reprioritisation of deliverables
- adjustments to KRA and KPI weightings
- changes to OPMs or KPIs
- Renewal Quantity Management Reward
- Agreed implications and mitigation of significant Network changes
- Resourcing issues or concerns.

The CB cannot make any ultimate or final decisions on contractual points, nor can it issue directions to the Principal or Contractor. Their function is to make recommendations only, and any decisions on contractual points or other issues which will impact the business of the Contractor or Sub-contractor are to be made by the Principal, Contractor and/or Sub-contractor.



~~**Compliance and Incentive** – The CB must approve all major performance-related events, Financial and Tenure related events, but excluding any impact on monthly “at-risk payments”.~~

~~**Risk** – The CB shall be responsible for providing strategic governance and risk leadership, and for defining and enforcing the contract Risk Management Policy.~~

**Determination of Purpose** – The CB leads the development of goals set out in the contract, and its strategy to achieve those goals.

**Contract Management Overview / Governance Culture / Conflict Resolution** – The CB will work as a team to deal effectively with the right issues at the right time and in the right manner. It will operate within a high-performance culture that celebrates debate, thoughtful challenge and dissent, commitment, candour and trust, characterised by effective relationships within the CB and with management, customers and key stakeholders.

The CB has a role to resolve conflict particularly where issues cannot be resolved at contract manager and Engineer’s Representative level, the CB provides a forum for managing conflict between the contracted parties. The CB looks at the broader context of the contract, rather than the day-to-day contract business. In this way, it can offer a different perspective on problems. Contractual issues that cannot be resolved at CB level may be referred to the Engineer for review in accordance with Conditions of Contract, clause 13.2.

The CB will hold the CMT strictly and continuously to account through informed, astute, effective and professional oversight. It does not provide management duties, but it ensures the purpose and strategy is understood by management and implemented with a clear plan with proper resource deployment, task allocation and performance management.

**Compliance / Conformance / Performance** – The CB must have oversight of the Contractor’s financial viability. It will ensure the process and the accuracy of compliance with regulatory environments. It ensures that all risks, existing and prospective, affecting the contract and Contractor’s ability to fulfil its fundamental purpose are identified and managed.

The CB will validate and endorse the KRA results which are then submitted to the Performance Team for moderation. Moderation is undertaken to ensure national consistency of the Contractor’s performance self-assessment.

**Risk Management** – The culture of the CB towards risk is a big driver of success or failure and quality of decision-making within the Contract. Top down strategic risk management is therefore critical. The CB shall identify strategic level threats and opportunities by considering what threats represent contract failure at a contract/organisational level or what opportunities represent contract success. For the CB to achieve the necessary focus on strategic management of risk, the CB shall:

- Clearly define and articulate their risk tolerance – this could be most easily achieved by linking it to outcomes.
- Identify the possible causes of the “bad” outcomes (these causes are often labelled “risks”).

- Understand the likelihood of these outcomes occurring and the impact of steps taken, or those which could be taken, to reduce their likelihood.
- Review these regularly at each CB meeting together with lessons learned.
- Align with bottom-up operational risk management through risk tolerance analysis and an escalation process.

The Contractor shall provide a risk update to the CB at each meeting on operational risk status, in particular changes to an identified risk, and any emerging or new risks.

### c) **Commitment**

The CB must agree on a programme of meetings during the Contract Period, based on three meetings each year and an annual CB Network inspection. The Contractor is expected to coordinate these meetings unless agreed otherwise. However, the parties will share responsibility for providing the chairperson and the venue.

The CB shall monitor the health of the relationship between all participating parties (and Sub-contractors) within the context of this contract and its collaboration opportunities. This will be carried out by a formal review of the results of a six-monthly Network Outcomes Contract Relationship Survey, undertaken by the Principal.

A quorum is four members and all decisions must be unanimous. Failure to reach unanimity may be referred to the Engineer. The chairperson does not have a casting vote. Resolutions may be passed by written minutes signed or agreed to by each member of the CB.

The Contractor will ensure meeting minutes are accurately recorded and reported back.

A key input into each CB meeting shall be a CMT report, jointly developed by the Engineer's Representative and Contractor's contract manager, to give the CB the information they need to perform their duties.

### **Contract Board Consolidation**

Consolidated CBs are permitted for those contractors who have more than one existing Network Outcomes Contract.

Contracts which have a Territorial Local Authority (TLA) component may choose to remain as an individual CB.

Where CBs have been consolidated representation will increase from four to six members (three from the Contractor and three from the Principal). Unconsolidated CBs remain at four Board members.

A quorum of four (two from each party) is required for any consolidated CB meeting.

## **3.5.3 Contract Management Team**

The Contract Management Team (CMT) is responsible for the day-to-day management and **effective** leadership of the contract teams to ensure that the contract outcomes, including OPMs, KRAs and KPIs, are being **considered** reviewed and managed

appropriately, the relationships within the team (and externally) are effective, and contract risks are being appropriately managed. The Contract Management Team CMT is also responsible for overseeing cost-effective and innovative practices. The CMT shall include the Contractor's Contract Manager and the Engineer's Representative along with specialists in the areas of safety and asset management from time to time. Representation of the Contractor's sub-contractors Subcontractors is encouraged also required.

It is expected that the working relationship between all the parties is based on the key elements listed in Table 1.1, Key Elements. The premise of the relationship will be that the Contractor is correct and has the interests of the Principal in mind. This will only change if there are deficiencies in the contract performance. When the Contractor has rectified the deficiency, the parties must look for opportunities to reinstate the preferred premise.

The Contractor and the Principal will communicate regularly to the CB on the health of relationships. In the event that tensions develop between the operational staff, the CB will act as appropriate to correct these tensions where possible.

The CMT team members are empowered to manage the contract across all the outcomes with support from specialist staff as required. The CMT will meet monthly to review the health of the contract relationship, address issues, respond to direction from the Board and report to the Board as required. It will also monitor the Contractor's performance against the KRAs and OPMs.

The Contractor will ensure meeting minutes are accurately recorded and reported back.

At each CMT meeting, the Contractor's monthly report will give the CMT members the information they need in performing their duties.

### 3.5.4 Annual Performance Workshop

Once a year, the Contractor is responsible for organising one team performance workshop that will be facilitated by the CB, and attended by the CMT and the wider operational teams from both the Principal's and Contractor's organisations. This is to include Sub-contractor participation. The purpose of the workshop is to cover the following:

- Performance framework results from the previous year
- Challenges and performance expectations going forward
- Refresh the partnering charter
- Provide all participants with information about the outcome performance measures,
- Any major Contract Plan or policy changes
- Confirm and reinforce alignment with Principal's strategic direction.

### 3.5.5 Sub-contractors

The approach to managing sub-contractors Subcontractors is based on the following guiding principles:

- a) Effective channels of communications will be clearly defined and established.
- b) Each Sub-contractor will have its roles, responsibilities and authorities clearly defined and recorded, including health and safety, environmental and social management to ensure overlapping duties are identified and managed appropriately.
- c) Each Sub-contractor will have its deliverables identified and required content clearly specified, including health and safety.
- d) The services each Sub-contractor is responsible for providing will be clearly identified and described.
- e) All constraints imposed on the Sub-contractor will be clearly identified, including schedule and budget constraints.
- f) Each Sub-contractor will have the requirements for quality clearly identified, including the requirement to allow independent quality inspections of materials and processes.
- g) All products and services provided by the Sub-contractor will be subject to the acceptance of the Contractor.
- h) Each Sub-contract will contain appropriate terms and conditions, including but not limited to, alignment with the Construction Contract Act 2002 and Construction Contract Amendment Act 2015.
- i) Adequate facilities will be provided to meet the needs of the Sub-contractors.
- j) The Contractor will support Sub-contractors in processing invoices and payments, subject to the invoices being delivered to the Contractor in an acceptable format for consolidation and remittance. To this end, the Contractor will establish format requirements for invoices.

The work of all Sub-contractors will be coordinated by the Contractor. This is so the efforts of all parties are integrated by means of concurrent engineering processes and project control at a senior level.

The Contractor must be kept aware of the overall progress of the contract. This includes the progress of each Sub-contractor and their performance which shall be formerly reported to the Principal.

Systems of monitoring the work that the Sub-contractors are completing are crucial to reducing the risk of inappropriate work being done, resulting in unplanned, costly rework. These checkpoints are to be established at regular periodic intervals and at key contract milestones.

## 3.6 INSPECTIONS

### 3.6.1 Routine Contract Inspections

The Contractor must complete routine inspections at intervals, including, if required, night time and side road inspections, so that all faults are identified, programmed and

repaired according to the Contract Documents and to the level necessary to achieve the performance framework requirements and interval reporting.

Side road inspections shall assess the status and condition of all Principal owned assets, such as advanced warning signs.

When the Contractor's personnel are carrying out work, inspections or travelling within the Network on business, it is expected that they will identify, as a matter of course, carry out general Network safety inspections at the same time, as part of their responsibility for maintaining the Network, any issues that require attention. These may result in immediate corrective actions.

Inspections may be completed by the Principal to monitor the Contractor's progress and performance.

~~It is the Principal's expectation~~ As a minimum the Contractor is required to undertake ~~duty-of-care inspections~~ such that the entire Network will be covered by ~~duty-of-care inspections~~ as follows:

~~a) Fortnightly on NSHVH, NSH and RSH~~

~~b) Monthly on RCH and RDH road classifications:~~

- a) Weekly on national (high volume)
- b) Weekly for motorcycle routes
- c) Fortnightly on regional and arterial, primary and secondary collectors
- d) Monthly for pedestrian and cycle routes
- e) Monthly on access and access (low volume) road classifications
- f) Quarterly for bridle routes

The results from these and all other inspections shall be recorded in the Contractor's defect management system. These shall be defined as non-OPM audit, fault inspection results. This includes all defects identified within the Contractor's compliance monitoring system refer Section 2.3.2.

The Contractor is required to develop a fault weighting classification system within their Maintenance Management Plan and Quality Management Plan systems. All identified faults from inspections shall be recorded in the defect management system. Recorded data shall as a minimum contain, date identified, location, description of the fault including Contractors fault weighting classification and must clearly differentiate whether the fault has breached an OPM defect level and also whether the fault has become a potential safety hazard.

The Principal wishes to work with the Contractor during the Contract Period to develop a single system to be a repository for all fault data to be recorded. Such a system is intended to standardise the method of weighting and description classification of faults on a national basis across all contracts. The Contractor shall allow within their tender methodology provision to develop and expand their systems to have the potential to interface and migrate to such a system during the contract term.

~~Appendix 2.4, Process Maps, includes the Defect Intervention Options process map.~~

### 3.6.2 Coordinated Inspections

At least four combined inspections, involving the contract team, must be undertaken annually to cover such activities as:

- a) On Site discussions relating to Network issues affecting all parties
- b) Confirming the annual FWP and project prioritisation
- c) A Contract Board annual Network tour.

### 3.6.3 Unscheduled Inspections

When requested by the Principal, the Contractor shall carry out unscheduled inspections when requested by the Principal. These inspections may become necessary throughout the Contract Period to identify any defect that may affect the level of service provided by the Network. Typically, unscheduled inspections may be required for the following:

- a) Before an event
- b) After a significant event
- c) Specific data collection.

### 3.6.4 Road Safety Inspections

The Contractor shall carry out the following annual Network road safety inspections:

- day-time
- night-time
- side roads (day-time)
- side roads (night-time).

These inspections shall identify:

- Areas of confusion and/or distraction from a driver perspective
- Matters requiring protection
- Issues that have the potential to contribute to crashes and/or crash severity from a safe roads and roadsides perspective.

The inspection team shall consist of the Road Safety Engineer, and another inspector from outside the Network. At least one of the inspectors shall have completed the Safe System Engineering Workshop, or agreed equivalent.

The methodology and outputs for these inspections shall be documented within the Road Safety Management Plan. The outcomes from the inspections shall be entered into the Safety Improvements Database and/or Safety Projects Programme.

### 3.6.5 Superficial Inspections of Bridges and Other Structures

Superficial inspections of bridges and other structures can be performed by non-specialist structural personnel and shall form part of the regular Network inspections.

The Contractor shall complete Superficial inspections of bridges (except for underpasses) and other structures included in Appendix 5.7, Inventory of Bridge and Other Structures, every six months unless the inspection coincides with either a

Routine Surveillance inspection or with the Regional Bridge Consultant's General Inspections.

The inspections are for obvious deficiencies that could lead to an incident or unnecessary high maintenance costs. Common examples include, but not limited to:

- Collision damage
- Road settlement
- Water Seepage
- Defective equipment
- Build-up of flood debris
- Erosion risks.

Although these may be informal, keeping basic records of routine surveillance inspections is required.

### 3.6.6 Routine Surveillance Inspections of Bridges and Other Structures

Routine Surveillance Inspections of bridges and other structures These can be performed by non-specialist structural personnel who are competent to identify superficial faults, and shall form part of the regular Network inspections.

The Contractor shall complete Routine Surveillance Inspections of the bridges and, ~~large sign gantries, other road structures~~ included in Appendix 5.7, Inventory of Bridge and Other Structures, and retaining structures in accordance with ~~Bridges and Other Highways Structures Inspection Policy (Transport Agency S/6)~~ or as required by any Statutory Approvals granted for the asset. ~~Every two years unless otherwise stated in the contract or requested by the Principal. Inspections shall be programmed so that they do not coincide with the Further to S/6, Appendix A, each asset is to be inspected at least once every two years but in the alternate year than that of, on those structures not programmed for a General or a Principal inspections being undertaken by the Regional Bridge Consultant in the year under consideration, in accordance with Bridges and Other Highways Structures Inspection Policy (Transport Agency S/6). This is effectively a 50% inspection programme of all bridges and other structures to be completed each year. The inspections shall be coordinated with the Regional Bridge Consultant's Inspections to enable effective programming and response to all routine maintenance works identified.~~

The inspections shall identify any obvious defect which may affect the safety of road users or anything else needing urgent attention, such as those items listed below:

- Impact damage from vehicles, especially to structural elements, guardrails and handrails
- Build-up of flood debris
- Adequacy of signs (including fixings) and road marking
- Erosion damage
- Deck drainage function and road side drainage function (i.e. flumes, bunds, drains, manholes) where these affect bridges and other structures

- Road Approach settlement in tunnels or on bridge approaches and condition of road and deck surfacing
- Expansion joint function
- Water seepage in tunnels
- Movement or cracking of bridge substructures, retaining walls, tunnel lining and tunnel portal walls.

Outcomes from inspections shall be documented using the proforma routine surveillance inspection reports from Appendix C of Transport Agency S/6, and reported to the Principal and intervention programmed and completed to comply with Section 6.5, Structures.

The results of these inspections shall also be formally reported to the Regional Bridge Consultant, including identified faults or issues that are not the responsibility of the Contractor, but require attention. Timing and delivery of the inspection reports shall be agreed with the Regional Bridge Consultant.

Significant defects shall be reported immediately to the Principal and Regional Bridge Consultant.

Where previous reports have identified that maintenance of structures is required, the verification that such maintenance has been completed shall be made at the time of inspection and noted on the inspection reports.

### 3.6.7 Electronic Warning Sign Inspections

The Contractor shall undertake a basic maintenance inspection on those sign types listed in Appendix 6.13, Electronic Sign Scope and Responsibility, using the checklist included in Appendix 3.1, Basic Electronic Warning Sign Maintenance Checklist. This shall be completed on an ~~an six-monthly~~ annual basis with results provided to the Principal. The Principal may or may not engage the Contractor to complete the necessary maintenance or repairs to the signs.

~~Cleaning and obscurity maintenance requirements are included within the scope of works.~~

The Contractor shall undertake an annual maintenance inspection on those sign types listed in Appendix 6.11, Electronic Sign Scope and Responsibility, covering the following:

- Completing the basic maintenance checklist.
- Confirm that the LED luminance intensity adjusts in response to changes in ambient light intensity (should dim as ambient light reduces).
- Check the security of cabinet door hinges and locking system. Oil both.
- Check for indications of water entry/corrosion.
- Check that glanded cable holes provide an adequate seal.
- Check the integrity of any insect-screen covering weep holes.
- Remove any insect infestation or spider webs, and if necessary apply insect spray.



- If solar powered, check the solar controller and confirm the system is delivering adequate charge.
- If mains powered, check mains input and earth leakage.
- If batteries present, confirm each battery's operation.
- Check all wiring, connections, and components are secure.
- Complete other checks as appropriate.
- <<Add any other check procedures specific to particular asset types, for example HMI's SID Operations and Maintenance Manual, HMI's Cycle Awareness Manual and the Signopsys EWS Operations and Maintenance Manual>>.

The results of the above annual inspection shall be reported to the Principal in sufficient detail that the extent of repairs required can be clearly understood. The Principal may or may not engage the Contractor to complete the necessary maintenance or repairs.

### 3.6.8 Other Inspections

There are other inspections throughout the specification which the Contractor must be aware of.

## 3.7 HANDOVER AND HAND BACKS

### 3.7.1 Handover of Assets from Incumbent Supplier Contractor

The Principal will be responsible for negotiating with the incumbent supplier regarding handover of the Assets to the Contractor.

The incumbent supplier uses various equipment and material including:

- a) Temporary signs and signals
- b) Fencing
- c) Miscellaneous tools and materials.

Any equipment or material that is the property of the Principal will be made available to the Contractor by the commencement date of the contract at no charge. The Contractor shall ensure continuity of all Temporary Works that are provided to mitigate a safety hazard.

A handover inspection will be held a minimum of four weeks before the date of possession of the Site.

The inspection will involve the Contractor, the Principal and the incumbent supplier. The purpose of the inspection is to determine and agree the extent of work required to be completed before the Contractor receives possession of the Site.

### 3.7.2 Hand back of Assets from other Contractors

A joint inspection, conducted by the Principal and the Contractor on practical completion of separate contracts, will identify any particular maintenance or omission responsibilities of the other contractor that may exist at the date of practical completion. This inspection is organised by the other contractor Contractor. The

Contractor will be responsible for ongoing maintenance to any assets that lie within the Limit of Works of separate contracts, between the date of practical completion and the end of the ~~Period of Defects Liability~~ ~~Notification Period~~ period of those separate contracts, unless specified by the Principal.

~~If invited~~ ~~When requested by the Principal~~, the Contractor must participate in a Stage 4 Safety Audit conducted on practical completion of separate contracts within the Limit of Works, to identify any particular safety-related responsibilities of the other contractor that may exist at the date of practical completion. This Safety Audit may be performed at the same time as the above joint inspection conducted by the Principal and the Contractor.

A joint inspection, conducted by the Principal and the Contractor at the end of the ~~Defects Notification Period~~ ~~Period of Defects Liability~~ under the separate contracts, will identify any particular maintenance or omission responsibilities of the other contractor that may exist at the end of the relevant ~~Defects Notification Period~~ ~~Period of Defects Liability~~. The Contractor will not resume responsibility for the Assets in question until the identified reasonable responsibilities of the other contractor are discharged.

An outcome of completion of some contracts is the forwarding of an Asset Owner's Manual for the completed works detailed in *Minimum Standard Z/15 – Asset Owner's Manual*. This document details maintenance considerations. The Contractor shall ensure that these considerations are passed on to the relevant contractors, incorporated into subsequent contracts, and taken into account in the Contractor's future inspections, programming, information and asset management databases.

~~When requested by the Principal, the Contractor shall set up the new location reference management system (LRMS) into RAMM and load the supplied update asset information and Network changes.~~

### 3.7.3 Hand back of Assets at end of Contract Period

A hand back inspection will be held a minimum of four weeks before practical completion. The Principal may not require a full handover report if the Contractor is awarded the subsequent contract, but the Principal may require a brief report on any outstanding or unresolved issues. The Principal will notify the Contractor of whether a full handover report or a brief report is required.

The inspection will involve the Contractor, the Principal and the new supplier. The purpose of the inspections is to determine and agree the extent of work required to be completed before the Contractor hands the Site over at the end of the Contract Period.

If required, all remedial work must be completed within the agreed time frames and before the Defects Notification Certificate is issued.

Where the Principal requires a full handover report, in addition to detailing the specific strategies and design methodologies developed during this contract, the report will include the following items:

1. Summarise previous reports and unresolved issues.
2. All data and deliverables, including, but not limited to, updates to the Network model, and uneconomic project economic analyses that may have not been previously forwarded, or which are required by the succeeding supplier.

3. Provide the following details:

a. Maintenance Activities:

- A summary maintenance performance report, summarising the previous year's physical maintenance works. ~~checking expenditure per month reported against actual expenditure incurred and totally for the year.~~
- A brief report on current and recently completed physical works contracts under the direct management of the Contractor.
- A maintenance detail database for the previous three years' activity (and earlier if it goes back further) and clarification of its accuracy in relation to works completed under all maintenance activities.
- ~~Closing status for activity reports~~ Confirmation that all maintenance activity records are loaded into RAMM.
- Copies of the current Forward Works Programme and the various current strategies, including the Maintenance Intervention Strategy, ~~the Safety Intervention Strategy, Pavement Management Strategy and Safety Management Strategy~~, as at completion date.
- A schedule of outstanding defect liabilities.
- Any unresolved issues, especially those that may impact on the next supplier.
- Details of any sensitive issues.
- Any ongoing special monitoring needs.

b. Financial Reports:

- ~~Detailed status report on contract payments including paid to date, retention levels, liquidated damages.~~
- Debt recovery report on outstanding efforts to trace culprits including, but not limited to, damage to road furniture and signs, for Principal risk items as per Conditions of Contract, 18<sup>th</sup> Schedule, Contract Risk Profile.
- Contingent liability report on perceived contingent liabilities at time of termination. Report on the status of existing liabilities.
- ~~Large contract financial report.~~

c. Planning Activities:

- Outstanding inspections and work relating to all statutory approvals, crossing place audits ~~Notice of Consent~~, Licence to Occupy and similar, including the dates of the future "end of maintenance period" for which the applicant will be responsible.
- Details of the status of liaison and planning for future works provided to service authorities.

d. Databases:

- Copies of all databases required to be managed under this contract.
- Certification that all database updates have been carried out as specified.

- Status of disposal Sites, materials held by contractor(s) or consultant(s), or in stockpile which is “managed” by the Contractor.
- Uploading of all statutory approval compliance evidence into CS-VUE.

### 3.7.4 Post-Contract Period Responsibilities

After the Contract Period, the Contractor may be required to provide further services including:

- a) Remaining responsible for any contract administrative or management issue that relates to contracts for which the Contractor has provided the management and surveillance phase of professional services. For outstanding physical works programmed to continue beyond the time when the contract is terminated, the Principal will decide whether the remaining management and surveillance of professional services will be handed to another supplier.
- b) The **Defects Notification Period** ~~Period of Defects Liability~~ for physical works may extend beyond the time when this contract is terminated. The Contractor will remain responsible under this contract for resolving any issues relating to defect liability in accordance with Conditions of Contract, First Schedule, clause 11.1.1.
- c) The Contractor will still be responsible for the updating of all databases, registers and the maintenance achievement and activity cost records following the completion of all physical works for which the Contractor provides management and surveillance professional services.
- d) The Contractor acknowledges that the strategies and methodologies related to the Network, developed during this contract, are the property of the Principal, and shall be handed on in full and such that the incoming supplier is fully conversant with their application.

The contract shall remain in force between the parties for the duration of any such services.

## 3.8 REPORTING

### 3.8.1 Monthly Report

The Principal shall agree with the Contractor the content of the monthly report. Annually the CMT shall review the report and revise its contents. The following points are to be considered as items to be contained in the report:

~~The Contractor's Monthly Report will include as a minimum:~~

- a) Contents Page
- b) Contract Manager's Report – summary of items of particular importance, actions and recommendations (where appropriate)
- c) Minutes and actions from previous meeting
- d) Monthly Progress Claim referenced to the Principal's financial system and Work Categories

- e) Updated Transparently show the Contractor's lump-sum maintenance and renewal three-monthly rolling programmes. Confirmation that the Contractor has updated the monthly Renewals tracker and submitting any required forms.
- f) Updated Cashflow - this must show, on a year-to-date basis, the actual percentage of the annual contract value expended against each work category, and the forecast cash flow for the balance of the year
- g) Incident Management Response Reports
- h) Health and Safety, Environment and Consent issues (risk based), opportunities and compliance summary
- i) Environmental incident reporting
- j) Summary of planning and consenting works both currently underway and planned
- k) Cost Recovery Register
- l) OPM compliance results in line with all designated reporting intervals
- m) A Measure and Value Achievement status report
- n) Risk information as defined in the Risk Management Plan
- o) Asset Register update and maintenance activity summary
- p) Achievement lengths for re-seals, pavement rehabilitation and drainage renewals per month and cumulative measured against target lengths
- q) T/10 Skid Resistance Programme Achievement status report
- r) <<Provide other items deemed to be important for the Principal.>>

It is expected that the report content shall be amended to reflect the Contractor's ongoing deliverables. The use of "traffic light" systems to highlight areas of good achievement or concern and executive summaries will help drive focus for the CMT.

### **Mid-Year and End of Year Achievement Reports**

The Contractor shall compile, maintain and submit in a timely manner the following information for the programmes for pavement rehabilitation, resurfacing and drainage renewals on an annual basis:

1. Data required for the Principal's Mid-Year Achievement and February Target Performance reporting. The achievement report provides a summary (by category) of the work completed in comparison with the Annual Plan. The Contractor will report planned and achieved lengths and costs against the breakdown of the renewal work types.
2. Data required for the Principal's Annual End of Year Reporting (as at 30<sup>th</sup> June); this will comprise the information required for 1 above and any additional information as requested by the Principal.

The work activity quantities reported shall be calculated from the Principal's Asset Register, other registers and financial results from SAP.

### **3.8.2 Work-site Incident Accident Reports**

The Contractor shall immediately notify the Principal and appropriate authorities (e.g. Police, District Council, OSH WorkSafe etc) of all accidents resulting in:

- deaths fatalities and other lost-time injuries to its staff or its sub-contractors;
- non-worker employee injuries (public);
- damage to plant or equipment;
- all actual or potential damage to the environment, including but not limited to, spills, dust, emissions, or discharges which are referred to as environmental incident's as defined by the Principal (refer to Transport Agency Minimum Standards for Reporting Health and Safety Incidents);
- fire.

Immediate notification is to be followed by confirmed in writing full written details within 24 hours.

The Contractor must provide incident reporting via the Transport Agency's Reporting Site which can be found at <http://nzta-reportingv2.azurewebsites.net/>.

The Contractor shall also report any accident associated with the contract where there is a possibility or allegation of Contractor-initiated actions or inaction being associated with the accident, or where there is a possibility or allegation that the road condition was a contributing factor.

### 3.8.3 Key Reporting

Table 3.8 below is a list of key reports included within the contract, which is indicative of the management and technical skills required to deliver the key components of the contract.

The Contractor shall pursue all the inputs, including inputs from third parties and the Principal, required to achieve the contract standards and deliverable timeframes.

**TABLE 3.8: KEY REPORTING DELIVERABLE SCHEDULE**

DELIVERABLE	CONTRACT STANDARD	REPORTING INTERVAL
Value Management		
Annual Contract Performance Report	Refer to Section 2.2	Annually
Asset Growth Register	Refer to Section 2.5.1	Annually
Contract Management		
Monthly Report	Refer to Section 3.8.1	By the 8 <sup>th</sup> day of each month.
Work Site Accident/Incident Reports	Refer to Section 3.8.2	Various

**TABLE 3.8: KEY REPORTING DELIVERABLE SCHEDULE**

DELIVERABLE	CONTRACT STANDARD	REPORTING INTERVAL
Contract Plan		
Safety Management Delineation Strategy	Refer to Section 4.9.1	Annually
Network Management		
Principal's Asset Registers Updating	Refer to Section 5.1.4	By the 7 <sup>th</sup> 20 <sup>th</sup> calendar day (or next working day) of the following month.
Maintenance Activity Cost Model	Refer to Section 5.2.3	Annually
Annual Renewals Programme (Annual Plan)	Refer to Section 5.2.4	Annually (refer to SM018)
Incident Response Report	Refer to Section 5.3.5	Various
Planning Assessment Reports	Refer to Section 5.3.9	To ensure the Principal can achieve their statutory RMA requirements
Pavement Rehabilitation Design Report	Refer to Section 5.3.2	Annually
Rehabilitation Quality Plan	Refer to Section 6.2.1	Annually
Pavement Rehabilitation Construction Completion Report	Refer to Section 5.3.2	Annually
Pavement Rehabilitation Post-Construction Design Assessment Report	Refer to Section 5.3.2	Annually
Resurfacing Design Report	Refer to Section 5.3.3	1 <sup>st</sup> August Annually
Resurfacing Quality Plan	Refer to Section 6.3.1	Annually

**TABLE 3.8: KEY REPORTING DELIVERABLE SCHEDULE**

DELIVERABLE	CONTRACT STANDARD	REPORTING INTERVAL
AC Post-Construction Design Assessment Report	Refer to Section 5.3.3	Annually
Resurfacing Construction Completion Report	Refer to Section 5.3.3	Annually
Resurfacing Post-Construction Design Assessment Report	Refer to Section 5.3.3	Annually
Flushing Assessment Report	Refer to Section 5.3.5	Annually
T/10 Skid Resistance Treatment Programme SCRIM-Exception Compliance Report	Refer to Section 5.3.5	Annually
Surfacing Aggregate Performance Report	Refer to Section 5.5.5	Annually
Safety Reports	Refer to Section 5.5.7	Various
Death and Serious Injury Crash Report	Refer to Section 5.8.8	Draft report within 2 working days, final report within 10 working days
Physical Works		
Pavement Rehabilitation Design Report	Refer to Section 6.1.2	Annually
Rehabilitation Quality Plan	Refer to Section 6.1.2	Annually
Pavement Rehabilitation Construction Completion Report	Refer to Section 6.1.2	Annually
Pavement Rehabilitation Post-Construction Design Assessment Report	Refer to Section 6.1.2	Annually



**TABLE 3.8: KEY REPORTING DELIVERABLE SCHEDULE**

DELIVERABLE	CONTRACT STANDARD	REPORTING INTERVAL
Resurfacing Design Report	Refer to Section 6.1.3	1 <sup>st</sup> August Annually
Resurfacing Quality Plan	Refer to Section 6.1.3	Annually
Resurfacing Construction Completion Report	Refer to Section 6.1.3	Annually
Resurfacing Post-Construction Design Assessment Report	Refer to Section 6.1.3	Annually
Annual Drainage Renewal Programme	Refer to Section 6.2.2	Annually
Winter Services Requirements Reporting	Refer to Section 6.6.1	Monthly, when applicable
Annual Pavement Marking Programme	Refer to Section 6.7.1	1 September Annually
<b>Local Roads</b>		
<<Specify>>	Refer to Section 8	<<Specify>>
<b>Tunnels</b>		
<<Specify>>	Refer to Section 9	<<Specify>>

**OPM GROUP 3.8.1: KEY REPORTING (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
1	All Roads	No defects.	Key report not delivered to a Principal accepted standard, within agreed time frame.	2 weeks

**KEY REPORTING (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
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**KEY REPORTING (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
1	All Roads	No defects.	Key report not delivered to a Principal accepted standard, within agreed time frame.	4	2 weeks

**3.8.4 Other Reports**

There are other reports throughout the specification which the Contractor must be aware of.

**3.9 BYLAWS**

The Contractor shall compile, maintain and submit in a timely manner amendments required to the Principal's Bylaws, including, but not limited to, no-stopping, parking restrictions and speed limits.

The Contractor shall also complete an annual validation of the assets relevant to bylaws, such as no-stopping, parking restrictions and speed limits, to ensure the asset information system remains accurate. The Contractor shall advise the Principal of any changes that are required to update the bylaw schedules pertinent to the Network.

**3.10 EXISTING SERVICES**

It shall be the Contractor's responsibility to protect the road asset, plus drainage features, environmental assets, traffic control devices, weather sensors, intelligent traffic systems, roadside furniture and all other assets during the course of the contract.

All existing services assets, such as traffic counting inductance loops, inductance loops relating to traffic counting and traffic signal control must be protected at all times. The Contractor must liaise with the person responsible for the applicable services assets inductance loops (such as a traffic signal maintenance contractor, traffic counting contractor or ITS contractor), where physical work is likely to affect operation.

When services assets loops are required to be reinstated, the Contractor shall only use a supplier who has been approved by the Principal for the reinstatement activity.

**3.11 SEPARATE CONTRACTORS**

Separate Contractors may be working within the Network at various times (see Conditions of Contract, First Schedule, clause 5.5). This work may include, but is not limited to, Capital projects, service installations and other maintenance contractors.

The presence of Separate Contractors does not relieve the Contractor of the Contractor's obligations to maintain the Network according to the Contract Documents, unless the presence of Separate Contractors directly affects the Contract Works or a maintenance responsibility while a construction agreement is in place.

Local authorities are responsible for some maintenance activities in some areas. These areas are defined in Appendix 3.2, Local Authority Maintenance Activities and Locations.

These areas are defined in the maintenance agreements contained in Appendix 1.9, Current Local Authority Maintenance Agreements (MOUs).

Appendix 3.3, Sections of the Network under the Current or Future Control of Separate Contractors, lists sections of the Network under the current or future control of other contractors, in particular:

- a) type of work
- b) start date
- c) due date of contract completion and/or period of defects notification defects liability
- d) contact person and contact numbers.

### 3.12 REPAIR OF DAMAGE

Any preventable damage caused to assets by the Contractor shall be made good at the Contractor's expense unless agreed with the prior approval of the Principal. This includes damage caused by snow clearance activities.

All damage to existing service(s) caused by the Contractor, including traffic detection hardware, private services, such as domestic water supply, must be immediately reported to the appropriate service authority. The Contractor must meet all costs associated with the service(s) repair.

All damage must be repaired to the appropriate Principal's Standards within 24 hours from the time the damage occurred or within the timeframe agreed with the Principal.

### 3.13 COST RECOVERY

Any cost recovery requires agreement with the Principal prior to pursuit of costs, but this agreement will not be unduly withheld unless the event causing the cost recovery need is sensitive in nature. At all times when in the pursuit of cost recovery, the Contractor must always act in good faith and not do anything that is likely to damage the reputation of the Principal.

The Contractor is to follow the process outlined in the Transport Agency *State Highway Control Manual* (SHCM) (SM012) Part 3 and Part 11.

In the event of costs incurred, such as temporary traffic management, or damage to the Assets, which is the responsibility of the Contractor to repair at its cost under the contract, then the Contractor may attempt to recover costs from the party causing the damage. Any monies recovered in that event shall belong to the Contractor. The Principal shall be under no obligation to assist in such cost recovery other than to provide the Contractor with delegated authority to seek recovery. Upon acceptance by the Principal that the Contractor wishes to recover any costs, the process will be the same as if the cost of repair falls on the Principal however the Principal will credit the Contractor upon receipt of any cost recovery. This is to ensure the crash damage cost recovery process is strictly followed within the SHCM.

In the event of costs incurred or damage to the Assets, the cost of repair of which falls on the Principal under the contract (outside the Contractor's risk profile), then as part of the Contract Works, if so required by the Principal, the Contractor must take all reasonable steps to recover the costs of any expenses or repair works from the persons responsible for any damage. The recovered costs, less any associated costs incurred by the Contractor in recovering such monies, shall belong to the Principal.

If required by the Principal, the Contractor must submit to the Principal a detailed report containing all relevant information that is suitable for cost-recovery pursuit purposes and the undertaking of any repairs. The Contractor may be required to liaise with the Police involved during the incident as part of this process. The detailed information must include:

- a) Details of damage incurred, including evidence such as photographs, statements taken.
- b) Details and evidence of the party responsible for asset damage.
- c) Details of work carried out, including emergency attendance and repairs.
- d) Breakdown of the cost of repairs. Actual and reasonable costs are to be used, because the derivation of the costs needs to be fully transparent for insurance companies.
- e) Invoices for components, and other related documents.

Costs recovered from parties causing damage to the Assets shall be limited to the actual and reasonable costs incurred in repairing the damage to the Assets, together with any actual and reasonable costs incurred in recovering such monies.

### 3.14 PUBLICATIONS AND STANDARDS

In addition to this Maintenance Specification, several standard specifications and publications also form part of, but are not reproduced in, the Contract Documents. If there is any ambiguity or contradiction between this Maintenance Specification and any publication or standard specification, this Maintenance Specification will take precedence.

Unless otherwise stated:

- a) Reference to a standard specification refers to the edition listed in Appendix 3.4, Standard Specifications
- b) Reference to a publication refers to the edition listed in Appendix 3.5, Other Publications
- c) It is the Contractor's responsibility to make reference to its own set of these publications.

Revised publications and standards may be issued during the Contract Period. The Principal reserves the right to negotiate the requirements of these documents as a variation to the contract.

~~The Contractor shall maintain a register of publication and standards version changes and shall document any agreed variations to be implemented because of these changes. The register shall be updated monthly and reflect any variation discussions.~~

### 3.15 BENCHMARK AND CALIBRATIONS SECTIONS

Road benchmark and calibration section locations within the Network are listed in Appendix 3.6, Benchmark and Calibration Sections. listed in Table 3.15:

**TABLE 3.15: ROAD BENCHMARK AND CALIBRATION SECTION LOCATIONS**

ROAD NAME	START LOCATION (M)	END LOCATION (M)	LENGTH (M)	CLASSIFICATION	TLA
<<to complete>>					

Specific Principal requirements are to be adhered to by the Contractor for each Site, as contained within the *State Highway Database Operations Manual* (SM050).

The completed Long-Term Pavement Performance (LTPP) site-maintenance database for each financial year shall be submitted to the Transportation Asset Management Group, Transport Agency National Office, annually by the end of July.

### 3.16 STOCKPILE AND DISPOSAL AREAS

Appendix 3.7, Stockpile Sites and Disposal Areas, list the stockpile and disposal areas that the Contractor may use for the sole use of this contract. The specific conditions for their use are also referenced.

In general, these areas must be maintained to a clean and tidy condition to present an acceptable appearance. The condition must be no worse than that existing at the date of Site possession, including avoiding the introduction of noxious weeds and pests.

The areas are to be managed to be free of pest plants and any other weed species of concern identified by the Principal to ensure stockpiled material does not allow for the introduction of pest plants and weeds to other areas.

For other stockpile and disposal areas the Contractor:

- a) Is responsible for locating, gaining legal entry to, establishing, maintaining access and drainage, controlling work and reinstatement, in accordance with local authority and Department of Conservation requirements.
- b) Must inform the Principal where all the disposal Sites are located and, before they are used, must submit copies of any statutory approvals, e.g. resource consent(s), required for these areas.

- c) Must provide recorded written evidence that the conditions have been fulfilled and the compliance is updated in CS-VUE.

### 3.17 LAND ENTRY AGREEMENTS

Appendix 3.8, Land Entry Agreements, lists the land entry agreements that have been made for access into adjoining properties to complete routine maintenance work, such as drainage structure maintenance.

The Contractor must comply with the specific requirements of each agreement.

The Contractor shall obtain any additional land entry agreements required to perform the Contract Works. Any formal land entry agreements required to be obtained by the Contractor shall be forwarded to the Principal's Property Manager for approval prior to entry.

### 3.18 CULTURAL HERITAGE

The Principal's approach to cultural heritage is provided at the following website link: <https://nzta.govt.nz/roads-and-rail/highways-information-portal/technical-disciplines/cultural-and-historic-heritage/>

The Contractor must manage cultural heritage issues, including archaeological sites and discoveries, in accordance with the Environmental and Social Management Plan.

#### 3.18.1 Archaeological Tools

The Principal has a number of tools available to aid in identifying potential archaeological risk. The tools also identify recorded sites in the New Zealand Archaeological Association (NZAA) archaeological database, historic heritage sites with the New Zealand Heritage New Zealand Pouhere Taonga List/Rarangi Korero and sites listed on District and Regional Plan schedules.

It is expected that the Contractor will shall utilise the Principal's environmental expertise and the appropriate tools prior to carrying out earthworks or activities that disturb previously unmodified ground or could harm archaeological and historic heritage sites.

#### 3.18.2 Discovery of Archaeological and Cultural Material

Further to clause 5.14.1 of the General Conditions of Contract, if any artefacts or remains of an archaeological and cultural nature are discovered on site, the Contractor shall immediately consult with the Principal and comply with the requirements of the Principal's Accidental Discovery Protocol *Specification for managing accidental archaeological discoveries* (Transport Agency P/45), which can be found at <https://nzta.govt.nz/about-us/consultations/archive/draft-revised-accidental-archaeological-discovery-specification/>.

## 4 Contract Plan

The Contractor shall prepare an all-encompassing Contract Plan (CP) to meet all statutory and Principal requirements. The CP shall clearly demonstrate an integrated working system and strategic-level framework for the management, planning and execution of the contract.

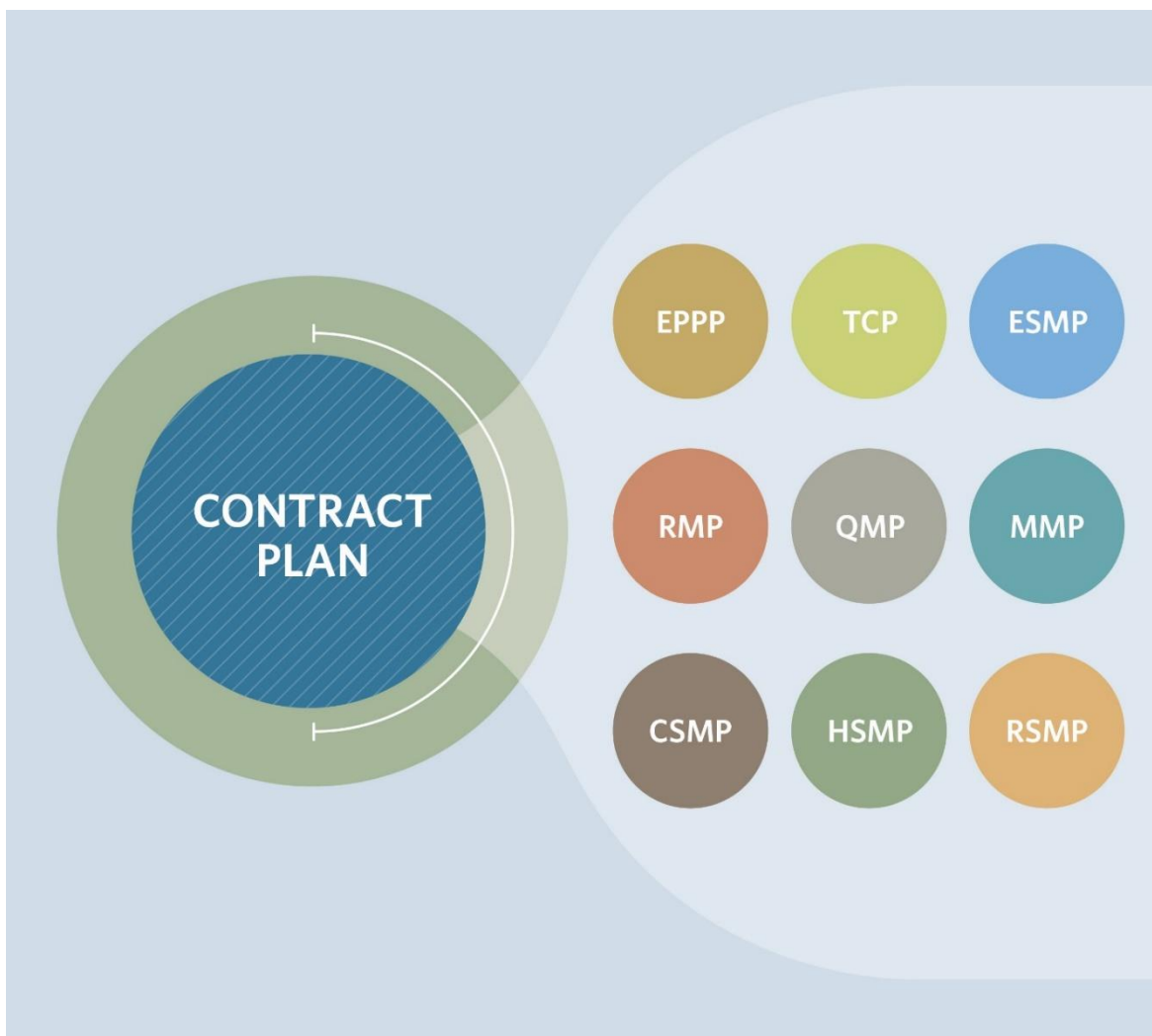
Detail shall include ~~required~~ the following information:

- a) Purpose
- b) Charter
- c) Policy statements on health and safety, quality, risk management, environment and customer services
- d) Brief description of each individual management plan and of how these will integrate across each work discipline within the services
- e) Key Contractor contacts particularly in relation to champions of individual management plans, roles of the Contractor and Sub-contractors and lessons learnt migration across work streams
- f) Consortium and multi-supplier relationships, communication strategy and key accountabilities
- g) Sub-contractor management system, including information transfer and assurance of quality results to achieve KRA objectives in the presence of a long supply chain
- h) Organisational structure
- i) Succession-planning methodology for the Key Personnel outlined in the Information for Tenderers.

The following management plans shall form sub-sections of the Contract Plan:

1. Health and Safety Management Plan (HSMP)
2. Quality Management Plan (QMP)
3. Traffic Control Plan (TCP)
4. Environmental and Social Management Plan (ESMP)
5. Customer and Stakeholder ~~Communication~~ Management Plan (CSEMP)
6. Risk Management Plan (RMP)
7. Emergency Procedures and Preparedness Plan (EPPP)
8. Maintenance Management Plan (MMP)
9. Road Safety Management Plan (RSMP).

Figure 4.0 diagrammatically represents this framework.



**Figure 4.0: Contract Plan Framework**

The Contractor must allow, at minimum, 10 working days for the Principal to undertake each review:

The Principal recognises the initial effort to setup the physical presence, systems, processes and plant for this style of contract. The following sub-sections are required to be set up and accepted prior to contract commencement:

- Health and Safety Management Plan
- Traffic Control Plan
- Emergency Procedures and Preparedness Plan.

The Contractor has four months from possession of Site to obtain acceptance for all plans except the Maintenance Management Plan. The Contractor has eight months from possession of Site to obtain acceptance for the Contract Plan including the Maintenance Management Plan, but excluding all other sub-sections.

It is expected that the Contractor shall regularly review the appropriateness of all management plans, at least annually, and keep them up to date as any changes occur.



Any significant changes to the Contract Plan or sub-sections must be agreed by the Principal.

The Contractor must allow, at minimum, 10 working days for the Principal to undertake each review.

The Contract Plan is supported by the following sub-section management plans:

#### 4.1 HEALTH AND SAFETY MANAGEMENT PLAN

The nature of the Contract Works may lead the Contractor's workers personnel being frequently exposed to hazardous situations that pose a the risk of various degrees of harm to the contracting staff and the public.

In addition to the requirements for the protection of persons and property as set out in the General Conditions of Contract, the Contractor must prepare a Health and Safety Management Plan (HSMP).

The HSMP shall be complied with by the Contractor's personnel and all Sub-contractors and suppliers at all times always.

The purpose of the Contractor's HSMP is to foster a responsible and proactive culture attitude towards occupational health and safety, and to comply with the provisions of the *Health and Safety at Work Act 2015*, its regulations, associated supporting codes of practice's and the NZ Transport Agency's Minimum Standard Z/5.

The Contractor must meet the requirements of the Principal's Safety in Design minimum standard for roading projects <https://www.nzta.govt.nz/roads-and-rail/highways-information-portal/technical-disciplines/zero-harm-minimum-standards/>

The Contractor shall ensure that the HSMP provided to the Principal complies with any standards that have been communicated to the Contractor by the Principal as applying to HSMPs at that time.

The Contractor shall comply with any reasonable requirements by the Principal in relation to the Contractor's performance of the Contract Works. This includes the provision of information relating to the Contractor's health and safety management system or the Contractor's operations generally, including, but not limited to the following:

- training and other records of their workers verifying currency of their competency, including any regulatory licensing and associated refresher training
- methods of selection and induction of their workers-employees and their Sub-contractor's workers
- hazard identification and risk management
- lone working procedures
- operational procedures
- selection, engagement and management of Sub-contractors
- workers roles and responsibilities staff participation in the contract HSMP

- compliance with legal obligations under the Health and Safety at Work Act 2015, its regulations and associated and codes of practice or guidelines issued by regulatory authorities
- incident investigation and reporting by the Contractor and Sub-contractors
- cooperation with any inspection, audit or review of the Contractor's involvement in any aspect of the Contract Works by the Principal or their a nominated representative.

Situations will arise where when it is not practicable to eliminate or minimise isolate significant, identified hazards. In these situations, the hazards must first be risk assessed and minimised by applying the hierarchy of controls ensuring planned the appropriate control methods are regularly reviewed protection systems (such as equipment, clothing) are actually used.

The Contractor shall provide, maintain and enforce the appropriate use of Personal Protective Equipment (PPE) complying with the provisions of the Principal's PPE Minimum Requirement document, refer Appendix 4.1, Minimum Requirements for PPE.

The Principal requires that for the Contractor's workers personnel and all Sub-contractor's workers working on the network must have a minimum entry requirement of ConstructSafe Tier 1 Accreditation (or alternative approved independent competency assessment scheme aligned to ConstructSafe). The Contractor's workers personnel and all Sub-contractors shall complete and obtain Construct Safe Tier 1 Accreditation (Foundation Health and Safety Competence) by 1 July 2017. Contractor's workers personnel and all Sub-contractors who have not attained ConstructSafe Tier 1 are not authorised to work on the network. or must be supervised at all times while on the Network.

The Principal recommends that all workers personnel regularly working within 5 metres of hot bitumen be appropriately trained, by a recognised training provider, in the safe handling of bitumen.

The Contractor's Contract Management Team shall provide evidence of having achieved health and safety management competency training commensurate with their responsibilities under the contract complete the IOSH Managing Safely course within six months of the commencement of the contract.

Throughout the contract the Contractor will report in line with the Principal's minimum standard reporting guidelines. <https://www.nzta.govt.nz/roads-and-rail/highways-information-portal/technical-disciplines/zero-harm-minimum-standards/> The Contractor must report by the 9th calendar day of the following month on the project's Health and Safety data, including both the lead and lag indicators of their direct workers-employees and sub-contractors/consultants.

The Contractor must provide Monthly KPI H&S reporting and incident reporting via the Transport Agency's Reporting Site which can be found at <http://nzta-reportingv2.azurewebsites.net/>

All hazards and notifiable activities shall be monitored by a competent safety supervisor to ensure that all necessary controls have been applied and precautions are being taken to comply with the HSMP and relevant Acts and Regulations.

The Principal recognises the requirements of Roadng NZ's "Guideline for Controlling Reversing Vehicles" as best practice and recommends that all suppliers working on the Network comply with it as a minimum. The web address is [http://www.roadngnz.org.nz/sites/roadngnz.org.nz/files/Reversing%20Guidelines\\_0.pdf](http://www.roadngnz.org.nz/sites/roadngnz.org.nz/files/Reversing%20Guidelines_0.pdf).

The Contractor shall incorporate within the Health Safety Management Plan processes and procedures for any activities within the railway safety zone. The following clarification is provided for any work that could potentially fall within or conflict with the railway safety zone. In cases where the Contractor's work is closer than 4m from the nearest rail track, the Contractor is required to provide and have on site a suitably trained and qualified Rail Protection Officer at all times. Any such work requires written approval from KiwiRail, and may require a 'Permit to Enter'.

Permit to Enter documentation and processes are available on KiwiRail's website. Note that the Contractor's and sub-contractor's workers requiring access to the rail corridor will also require a KiwiRail induction as a minimum. The web address is <http://www.kiwirail.co.nz/infrastructure/northern-region-rail.html>

When planning an activity, the Contractor is to consider any object that may pass into the safety zone or conflict with overhead traction cables (e.g. transporting or erecting lighting columns, survey equipment and movement of plant.). Refer to the KiwiRail Traction Overhead Wires poster and KiwiRail DC Traction Overhead Wires Minimum Approach Distances poster within the website.

The typical detail of the HSMP shall include:

1. Contractor's Health and Safety Policy.
2. Contract Specific Roles and Responsibilities.
3. Health and Safety notifications and registrations.
4. Health and Safety hazard and risk assessment and proposed control measures.
5. Proposed method statements to demonstrate a safe system of work, including working alone or in remote locations.
6. Provisions for emergency management.
7. ~~Planning and response.~~
8. Training and other competency records.
9. Methods of selection and induction of workers employees and including their Sub-contractors workers.
10. Drug and alcohol policy testing requirements.
11. Sub-contractor, selection, engagement and management procedures including management and labour hire.
12. Accident reporting, recording and investigation procedures including causal analysis, corrective actions and lessons learnt.
13. An outline of accountabilities and responsibilities for continuous improvement, internal and external auditing, inspections and reviews.
14. Schedule for safety audits and reviews.

15. Health and Safety Management structure, and an effective communication and recording system that supports health and safety management.
16. Any other relevant matters.

An operative HSMP shall be provided to the Principal prior to possession of the Site.

## 4.2 QUALITY MANAGEMENT PLAN

The purpose of the Quality Management Plan (QMP) is to integrate the contract standard and performance framework requirements of the Contract Documents with the Contractor's systems to deliver the Contract Works. It also provides assurance to the Principal that the Contractor will take pride in completing all activities to minimise rework as required by the customer value proposition.

The QMP must be prepared in accordance with Principal's Minimum Standard Transport Agency Z/1, Quality Management Plan.

Typical detail shall include:

- a) Quality standards applied to achieve compliance, including the Contractor's inspection and test plan procedures for each element of work
- b) Procedures for QMP implementation and management
- c) The system for reporting the achievement or otherwise of the performance framework KRAs, KPIs and OPMs, and the management of condition inspection records to be made available to the Principal
- d) The Contractor's maintenance management system that monitors the management of the Network defect programme and progress of works
- e) The Contractor's internal non-conformance and corrective-action system to be applied
- f) Methodology of information collection and intended use towards advanced asset management
- g) A description of the systems, procedures and methods that will be used to deliver and monitor compliance of the Contract Works
- h) Procedures for collecting records and calculating the input values for cost fluctuations
- i) How continual improvement will be applied through a combination of non-compliance and other learnings throughout the Contract Period
- j) The Contractor's internal system audit programme.

Appendix 4.4, Minimum Scope for Plans, includes additional information for the Contractor to use for preparing the Quality Management Plan.

In addition to the QMP, for pavement rehabilitation and resurfacing activities, Renewal Quality Plans are required to be prepared by the Contractor for site-specific situations. Any lessons learnt as a result of the Renewal Quality Plan(s) implementation will be reflected back into the QMP.

### 4.2.1 Data Quality

A key component of the QMP will be the need for a data quality Section. The overall objective of the data quality Section is to document the people, processes and technology that will be implemented and used throughout the Contract Period to ensure the objectives of accurate and current asset registers are achieved. In this context, the asset registers encompass RAMM (FWP and maintenance activities inclusive) and the various registers listed in Appendix 4.2, Principal's Asset Registers Overview, and Appendix 4.3, Other Registers to be maintained by the Contractor. The data quality Section shall document, as a minimum, the following:

1. The key personnel who are responsible for the management of road asset information, and provide evidence that the minimum training requirements have been met and will be maintained throughout the Contract Period.
2. The process that will be used to update the asset registers.
3. How the quality of data (accuracy and completeness) will be assured prior to entry into the Principal's Asset Registers.
4. The equipment and technology that will be used to collect and manage asset information data (such as GPS equipment and mobile computers) in accordance with the minimum data requirements and data accuracy requirements specified in *State Highway Database Operations Manual* (SM050).
5. The scope and frequency of self-data-auditing and corrective measures that will be in place to verify that all components are collectively delivering complete, up-to-date and accurate asset registers.
6. The performance-monitoring system, including a monthly report on errors, omissions and corrective actions.
7. The process for reconciliation between the assets that are added, changed or removed within the Network, and the corresponding changes to the asset register.
8. The improvement and implementation processes to be applied to the overall management of asset data.
9. ~~Data improvement strategy, refer Section 5.1.3.~~

### 4.3 TRAFFIC CONTROL PLAN

The Traffic Control Plan (TCP) establishes the practices for traffic management at a Network level, project level and customer level that fully supports the customer value proposition.

~~All TMPs required to perform the Contract Works must be developed by the Contractor and accepted by the Principal.~~

The objectives of the TCP are to shall:

- a) Clearly define and document the responsibilities and chain of command for the development, implementation and management of traffic control measures and systems that fully support the customer value proposition.
- b) Ensure the Contractor and its Sub-contractors carry out work with minimal impact on customers. This will may include coordinating all road work activities.

- c) Outline accountabilities and responsibilities for continuous improvement and internal auditing.
- d) Establish the minimum requirements for temporary traffic control.
- e) ~~Establish the procedure for annual benchmarking of the potential effects of the Contractor's activities on customer travel time and reliability.~~
- e) Provide appropriate transitions, and enable safe and efficient traffic flow into, through and out of work Sites.
- f) Protect the Contractor's personnel at all times.
- g) Protect the Assets and the Contractor's resources at all times
- h) Describe the Contractor's methodology for undertaking Traffic Management Plan audits of the Contractor's and third party works. This shall include the audit frequency, actions to be taken and how lessons learnt are incorporated back into the process.

The TCP must, as a minimum, comply with the *Code of Practice for Temporary Traffic Management (CoPTTM)* for the traffic levels advised by the Principal, as they may change from time to time. Current minimum standards for temporary traffic control are shown in Appendix 1.5, Network Extents 4.4, Minimum Standard for Temporary Traffic Control. From time to time it may be necessary to exceed the requirements of the code to provide for the safe passage of traffic in all Site and traffic conditions. The Principal will carry out assume the responsibilities and authorities of the Engineer's role described in CoPTTM the code.

Pedestrians and cyclists must be accommodated when developing TMPs on routes that are identified as part of a pedestrian, cycle, motorcycle or bridle Network, refer to Appendix 1.5, Network Extents.

Appendix 4.4, Minimum Scope for Plans, includes additional information for the Contractor to use for preparing the Traffic Control Plan.

Typical detail shall include:

- 1. ~~A documented process for preparation, review and approval of TMPs.~~
- 2. ~~The process for approval of any temporary speed limits and ongoing variations~~
- 3. ~~A document tracking and control system to ensure that only the latest operative copy of the TMP is in circulation.~~
- 4. ~~Contact details for Contractor, Principal, emergency services and other stakeholders.~~
- 5. ~~Layout diagrams, method statements etc. for the implementation of traffic control while undertaking each aspect of the Services (including Site-specific layout diagrams and method statements if the Services require traffic control measures not covered by standard codes of practice).~~
- 6. ~~Input from the police, emergency services and other stakeholders to encourage compliance from these parties.~~
- 7. ~~A documented systematic approach to coordinating all road work activities that affect road users, and including coordination with adjacent Network contracts. The RAMM CAR system may assist with this.~~

8. ~~Processes and procedures to be used to fulfil the Traffic Management Coordinator (TMC) role.~~

All TMPs required to perform the Contractor's activities must be developed by the Contractor.

An operative TCP shall be provided to the Principal prior to possession of Site.

#### 4.4 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The Principal is committed to protecting and enhancing the natural, cultural and built environment within the road reserve and minimising effects on sensitive receiving environments within and outside the road reserve as appropriate. The Principal's Environmental and Social Responsibility Policy explains how the Principal will exhibit a sense of social and environmental responsibility. ~~This commitment is set out within the Principal's environmental and social responsibility policy.~~ The *Highway and Network Operations Environmental and Social Responsibility Standard* provides tools, references and resources for the Contractor to ensure that it appropriately considers and provides for environmental and social matters, including to meet the Principal's environmental and social responsibilities. The Principals' Highways Information Portal (HIP) provides relevant resources. The web address is <https://www.nzta.govt.nz/resources/guideline-for-preparing-environmental-social-management-plan/?category=&subcategory=&audience=&term=preparing+guidelines+for+environmental+policy+operable+by+setting+standards,+guidelines,+tools+and+templates+listed+in+the+Environmental+and+Social+Responsibility+Manual> that are to be used in their achievement.

The Environmental and Social Management Plan (ESMP) provides the system for meeting these environmental and social responsibilities. The Contractor shall prepare the ESMP in accordance with the *Environmental and Social Management Plan Guidelines Framework*. This guideline Framework complies with and gives effect to the *Environmental and Social Responsibility Standard*. ~~This standard sets out all other standards, guidelines, tools and templates that are to be used, as applicable, to meet the Principal's environmental and social responsibilities.~~

The Contractor shall give effect to the ESMP requirements by integration and implementation within the overall Contract Plan. Further, the Contractor shall make sure the ESMP requirements are embedded within all management, physical work and reporting processes undertaken by the Contractor(s), Sub-contractors and their ~~workers~~ employees under the control of the Contractor in the performance of the contract and check for compliance.

The Contractor shall include in the ESMP the process for proactively identifying opportunities to optimise statutory approvals required for the contract; including global consenting, consents that could be surrendered or combined, and the proactive renewal of consents as required.

The Principal has in place an online consent compliance management system called CS-VUE that is used to manage consents and monitor consent compliance. The Contractor will be given access to this system and shall regularly maintain the relevant information and include adequate detail to evidence compliance

~~In undertaking work that involves environmental risks, emphasis should be on the fundamentals, such as how to avoid various offences:~~

The ESMP shall identify environmental effects specific to this contract and how the Contractor shall manage these. Environmental effects include discharges to air, land and water and disturbance to people, cultural heritage, flora and fauna. Potential environmental effects associated with the different work activities shall be captured in the Environmental Risk Register, which forms part of the ESMP. Environmental effects may include but are not limited to:

- a) ~~Air and water pollution (by screening, filtering, channelling and washing at approved sites)~~
- b) Disturbance/harm to threatened protected indigenous wildlife
- c) ~~Unlawful hazardous waste disposal, by containment, storage and dumping by approved methods at approved sites~~
- d) Noise and vibration disturbance to sensitive receiving environments (e.g. schools)
- e) Chemical spills and non-target effects ~~(by appropriate maintenance of suitable equipment)~~
- f) ~~Contamination (by cleaning equipment at an approved site after each job).~~
- g) Disturbance to archaeological and cultural heritage sites
- h) Biosecurity issues such as pest plants, pest animals and other biosecurity risks such as kauri dieback.

The Contractor shall develop an ESMP that meets the requirements of the Principal's *Environmental and Social Management Plan Guidelines*, which provides the minimum standards required.

~~The ESMP must incorporate reporting and recording of environmental incidents. It is a requirement of this contract that any such incident be advised promptly to the Principal.~~

~~The ESMP shall, as a minimum, address sediment and storm water control, noise control, plant pest control, control of application of herbicides, storage of hazardous substances and refuelling of plant.~~

Typical detail shall include:

1. All obligations with respect to environmental matters including each specific consent requirement and conditions.
2. Integration and maintenance of the Principal's CS-VUE compliance monitoring system.
3. Activities for which permission must be obtained before undertaking any work.
4. Systems, work practices and actions to manage environmental outcome expectations as stated in the *Environmental and Social Management Plan Guideline Framework*.
5. The potential effects a particular activity may have on the environment. ~~hazards to which the environment may be exposed in the process of carrying out work.~~



6. The appropriate protective measures to be used and any standard practices for environmental risk mitigation to be used.
- ~~7. Any standard practices for environmental risk mitigation.~~
8. Consistency with the relevant Regional Pest Management Strategies, Regional District Plans, and Pest Management Plans and any applicable national strategies.
9. The development and maintenance of vegetation and pest management sub-plans.
10. Air-quality monitoring responsibilities of the Principal within the relevant Local Authorities.
11. Areas within the Network with specific environmental issues are to be addressed appropriately in any physical works, in terms of environmental management best practice.
12. Environmentally sensitive areas on the Network, including areas with ecological value, heritage sites and archaeological areas. All sites within or adjoining the road reserve are to be included, even those not considered to be particularly vulnerable to negative effects through operation and maintenance activities.
13. Stopping places and rest areas.
14. An up-to-date schedule of no-spray zones.
15. Any emergency procedures for dealing with accidental pollution or imminent danger.

The Contractor shall nominate an environmental and social responsibility champion who will:

1. Have the appropriate level of environmental competency having completed all of the Principal's e-learning environment modules (allow for up to 3 days to complete) and the NZIHT course "Environmental Risks of Construction".
2. Be key in developing and maintaining the ESMP to ensure it remains appropriate and fit-for-purpose and links to the associated Plans.
3. Be responsible for updating the ESMP to reflect any changes resulting in changes in the environment, activities and/or methodologies.
4. Keep the environmental risk register to up to date and promote its use in works programming (including environmentally sensitive areas on the risk register).
5. Enable environmental best practice and continuous improvement across the Contractor's and Sub-contractor's activities including opportunities to achieve better environmental outcomes e.g. biodiversity enhancement.
6. Be responsible for ensuring the team adopt any changes to the ESMP.
7. Ensure the effects of all activities minimise the impact on the environment (such as noise, dust, vibration and ecology disturbances).
8. Develop a process for identifying and agreeing consenting strategies in consultation with the Principal.
9. Ensure and document compliance with statutory approvals.

The Contractor shall give effect to the ESMP requirements by integration and implementation within the overall Contract Plan, including the Health and Safety Plan. Further, the Contractor shall make sure the ESMP requirements are embedded within all management, physical work and reporting processes undertaken by the Contractor, Sub-contractors and their workers under the control of the Contractor in the performance of the contract and check for compliance. This includes consent compliance through the management system called CS-VUE.

The ESMP must incorporate reporting and recording of environmental incidents. It is a requirement of this contract that any such incident be advised promptly to the Principal.

A current schedule of sensitive areas is shown in Appendix 4.5, Sensitive Environmental, Social and Cultural Heritage Areas ~~Vegetation Areas~~.

Appendix 4.4, Minimum Scope for Plans, includes additional information for the Contractor to use for preparing the ESMP. The ESMP must include sub-plans for Vegetation Management and Pest Management.

## 4.5 CUSTOMER AND STAKEHOLDER COMMUNICATIONS MANAGEMENT PLAN

A Customer and Stakeholder Communications Management Plan (CSEMP) is essential for the effective and efficient coordinated achievement of Principal's objectives.

The purpose of the CSEMP is to capture the essential protocols and procedures for ~~managing the impacts on customers and stakeholders, including communications and interaction that will fully support the customer value proposition~~. Of particular importance is establishing clear lines of responsibilities between the Principal and the Contractor regarding daily customer interaction.

The 0800 4 Highways (0800 44 44 49) phone number is one of the Principal's key tools for communicating to customers on road closures, road conditions or major delays that may affect their journeys. This service shall be promoted within the CSMP.

The Principal has a desire for the Contractor to keep iwi/hapu/marae informed of maintenance works, especially when those works are in the vicinity of marae, waahi tapu and freshwater and environmentally sensitive sites. The Contractor will need to obtain its own iwi advisory and cultural services to aid in this process and develop its Māori Engagement Sub-Plan.

Typical detail shall include:

1. ~~Alignment to the Principal public engagement manual~~
2. ~~Media management and communication protocols~~
3. ~~Stakeholder communication protocols according to the Principal's requirements~~
4. ~~The integration of the Principal's CRM system (refer Section 5.3.2 of this Maintenance Specification) into the Contractor's processes and procedures~~
5. ~~Contract records and communication management~~
6. ~~Network controls management systems and procedures~~

Appendix 4.4, Minimum Scope for Plans, includes additional information for the Contractor to use for preparing the Customer and Stakeholder Management Plan.

The Customer and Stakeholder Management Plan shall allow the Contractor to be naturally communicative and proactive and will demonstrate how the Contractor will:

- Communicate clearly with a range of people, stakeholders, and customers.
- Apply a customer focussed approach to the way they work and the communications they develop.
- Develop knowledge of the concerns and preferences of customers, communities, stakeholders and partners and use this as evidence for a strong customer focus. This includes groups such as (but not limited to) freight, iwi, road controlling authorities, emergency services, land owners and occupiers and so on.
- Apply knowledge of the customer, stakeholder, community and partner groups affected by planned activities and the risks that need to be mitigated or managed.
- Influence the Contractor's operations ensuring a strong customer focus that fully aligns with the customer value proposition.
- Work closely with the TOC, utility companies, adjoining Network Outcome Contracts and our one network partners to show an understanding of how the impacts on customers can be minimised.
- Mitigate customer and community impacts arising from planned works located within the region as well as planned works across contract boundaries.
- Ensure the Customer and Stakeholder Management Plan is being implemented and continuously updated.

The Principal requires a Customer and Stakeholder Manager to deliver these outcomes for this contract. The Customer and Stakeholder Manager should be suitably qualified and experienced to deliver the outcomes being sought.

The Customer and Stakeholder Manager shall be naturally communicative and proactive and will possess the ability to:

- Communicate clearly with a range of people, stakeholders, and customers
- Demonstrate a customer focussed approach to the way they work and the communications they develop
- Influence the Contractor's operations ensuring a strong customer focus that fully aligns with the customer value proposition.

Further to fulfilling the responsibilities described in this Section, Sections 5.4.1 and 5.4.2, the Contractor shall also support the Principal's prompt communications relating to all Network issues, including but not limited to:

- Advising the Principal of planned community events with the potential of increased traffic flows, any works that are planned at the time and what mitigation measures could be considered
- Working closely with the TOC and our one network partners

- Supporting the Principal's work to ensure multiple channels for customer feedback are developed, easily accessible and promoted widely to customers, communities and stakeholders
- Supporting the Principal with the promotion of topical campaigns that occur from time to time.
- The 0800 4 Highways phone number and the online form on the Principal's website are the Principal's key tools for communicating to customers, communities and stakeholders on road closures, road conditions or major delays that may affect their journeys. The CSMP shall show how these services will be promoted by the Contractor.

The performance of the customer and stakeholder management activities should be considered by the CMT.

## 4.6 RISK MANAGEMENT PLAN

The purpose of the Risk Management Plan (RMP) is to provide surety to the Principal that objectives will be delivered through appropriately applied risk management processes and procedures.

The Contractor shall produce a Risk Management Plan (RMP). The purpose of the RMP is shall:

1. To Describe how the conduct of risk management within the contract will meet the needs of the contract and satisfy the requirements of the Principal's Minimum Standard Z/44 – Risk Management (downloadable from <http://www.nzta.govt.nz/resources/minimum-standard-z-44-risk-management/>).
2. To Describe the practices, procedures, controls and reporting processes for the management of risk.
3. To Demonstrate to the Principal that risks will be effectively managed.

The Contractor shall use the Principal's Risk Management Plan Template (downloadable from <http://www.nzta.govt.nz/resources/minimum-standard-z-44-risk-management/index.html>).

## 4.7 EMERGENCY PROCEDURES AND PREPAREDNESS PLAN

The Emergency Procedures and Preparedness Plan (EPPP) defines the roles, practices and procedures in preparation for and during an incident response event. The EPPP must be developed by the Contractor and agreed with the Principal and any other stakeholders the Principal may identify.

As part of the EPPP the Contractor shall develop and/or maintain detour plans for every section of the Network in GIS format that are able to be loaded and viewed in <https://detours-staging.myworksites.co.nz/>. These Plans and maps plans are included to provide an immediate list of the signs, including Variable Message Signs (VMS), barriers, and the locations at which they must be erected for detours. These maps plans shall also include details of the additional time and distance of the detour and any

physical or vehicle restrictions that should be considered when using the detour. The maps plans will also need to show how specialist vehicles (such as HPMVs) will be managed, which may include such aspects as where they could be parked if they are unable to use the detour route. This includes advisory signage for alternative routes, which may not be suitable for certain vehicle types. On an annual basis, the Contractor will need to confirm the on-going use of the relevant detour plans with each Local Authority affected and in some instances also with the adjoining Network contractor.

The Principal has in place location-specific plans as listed in Appendix 4.6, Site-specific Operations and Emergency Management Plans, which present serious issues with connectivity of the Network. In some cases a draft plan has been prepared to document a procedure to be followed when a particular condition threshold is triggered. The Contractor will be expected to work with the Principal and other third parties as detailed in the location-specific plans in finalising and implementing the procedures in the EPPP.

The Principal has undertaken, by a Memorandum of Understanding (MOU) with the Police and other parties, to manage all incidents under the Coordinated Incident Management System (CIMS) model. A copy of the MOU is included in Appendix 4.7, Highway Incident Management Protocol – MOU.

The EPPP should include all the safeguards established to protect the Contractor's personnel and road users.

The Contractor shall use the Principal's Emergency Procedures and Preparedness Plan Template (downloadable from <http://www.nzta.govt.nz/roads-and-rail/highways-information-portal/technical-disciplines/network-outcomes-contracts/resources-and-manuals/guidelines-and-reference-documents/>).

Typical detail shall include:

1. — ~~An effective communication and recording system.~~
2. — ~~Procedures for integration with the Principal's call centre systems, e.g. TREIS, TOC. This will also include procedures for the provision of timely and accurate information updates to the Principal and the training of staff.~~
3. — ~~The name, contact number and specific duties of the personnel nominated to respond to an emergency event.~~
4. — ~~The nominated Incident Manager, including specific winter services Incident Manager.~~
5. — ~~The contact numbers of other parties required to be notified of the emergency event (e.g. New Zealand Police).~~
6. — ~~Detailed response procedures for all emergency events.~~
7. — ~~All detour plans and signage required to close a road at any point, including the appropriate use of all Network VMSs including neighbouring VMSs.~~
8. — ~~Pre- and Post-seasonal extreme weather event planning, management and close-out processes.~~
9. — ~~Sustainability of resources (people and plant) during extreme weather events over an extended period and beyond the Contractor's capability.~~

~~10. Cross-Network boundary coordination processes.~~

~~11. Procedures to be followed to meet the specified service targets set out in the Winter Services Requirements.~~

An operative EPPP shall be provided to the Principal prior to possession of Site.

## 4.8 MAINTENANCE MANAGEMENT PLAN

The Maintenance Management Plan (MMP) will document the processes and methodologies that will be used by the Contractor to produce maintenance work that:

1. Results in the best value for money in line with the performance-outcome expectations of the contract for all asset types.
2. Fully supports the customer value proposition.

The MMP must be compatible with the requirements of the current versions of the following NZ Transport Agency manuals:

1. *State Highway Asset Management Manual* (SM020)
2. *Annual Plan Instructions* (SM018)
3. Transport Agency T/10 Skid Resistance Investigation and Treatment, including the notes to this specification.

The MMP will document the Contractor's maintenance strategy for all asset classes across the Network. It will detail the monitoring, planning, programming and intervention strategies to be employed to ensure the contract KRA, KPI, and OPM performance targets are achieved.

The MMP will show how all routine maintenance activities for all asset classes will be planned around the forward works programme for asset renewal and capital development. The expectation is that the strategies adopted will maximise the life of assets, extending the need for renewal and achieving the best outcome possible within the resources available.

The MMP will give effect to the Principal's objectives of managing assets:

- to achieve cost effective whole-of-life outcomes
- to deliver value for money
- to ensure both best for network and best for customer outcomes.

The outcome of the MMP processes must deliver evidence to support all investment recommendations.

The MMP will clearly articulate the Contractor's asset management analysis, decision processes and intervention thresholds across all asset classes in order to achieve compliance with the performance framework.

The MMP will indicate how routine maintenance and renewals work will be optimised, planned, prioritised and managed to reflect the various different levels of service and risk associated with the different road classifications assigned to the Network.

The MMP will outline what analysis, optimisation and validation methods the Contractor intends to use as input into developing the Forward Works Programme (FWP) and assigning the base level of specified renewals across the Network.

The MMP shall include a Maintenance Intervention Strategy (MIS), being a detailed statement of the maintenance activities that shall be carried out within the treatment lengths identified in the Forward Works Programme. The MIS shall be prepared and reviewed in accordance with the Principal's *State Highway Asset Management Manual* (SM020) and provided with each FWP review. The Contractor will ensure the MIS takes account of all future capital works and safety improvement sites.

Appendix 4.4, Minimum Scope for Plans, includes additional information for the Contractor to use for preparing the MMP. The Contractor may present the final MMP with a layout suitable for the intended audience as long as the topics detailed in Appendix 4.4, Minimum Scope for Plans, appear within the MMP, with the index or cross reference making it easy to locate them.

Appendix 4.8, MMP Minimum Scope Content, includes the Principal's minimum requirements for the MMP.

Typically, MMP detail shall also include:

1. How data will be used in decision making and in achieving advanced asset management procedures for a systematic and well-informed approach to the development of maintenance programmes.
2. Procedures for the development, updating and use of a maintenance activity cost model that underpins renewal investment timing.
3. Procedures for the development and maintenance of FWP over a 10-year planning period for all assets.
4. How the MMP links with the QMP.
5. How the Contractor will comply with the defect management requirements, along with a proposal for the frequency of the duty of care inspections.
6. Strategies that will be adopted to maximise the life of assets, reducing the need for renewal and achieving the best outcome possible within the resources available.
7. The procedures that will be undertaken during the design and construction of all pavement repair and renewals to impart a high degree of confidence that design life will be achieved.
8. Trend analysis to demonstrate effectiveness of maintenance strategies, techniques and material performance.
9. How the Contractor will pursue continual improvement of the MIS.
10. The Baseline Plan for pavement rehabilitation Pavement Rehabilitation Baseline Plan, stating the Contractor's tender planned annual quantities for the Contract Period.
11. The Baseline Plan for resurfacing Resurfacing Baseline Plan, stating the Contractor's tender planned annual quantities for the Contract Period.

## 4.9 ROAD SAFETY MANAGEMENT PLAN

The Road Safety Management Plan (RSMP) will document the processes and methodologies that will be used by the Contractor to guide and encourage a

responsible attitude towards the Principal's objective of a safe system free of death and serious injury. The RSMP integrates the Contractor's systems and performance requirements and the Principal's systems to achieve a safe system for the Network.

Typically, RSMP detail shall include:

1. The key workers who are responsible for road safety management and information and lines of responsibility.
2. Identification of the various parties involved with the RSMP
3. Evidence that the Contractor's workers have complied with the relevant terms of the contract including attending and meeting the training requirements of relevant workshops/conferences that will enable them to undertake the various road safety related activities, evidence that these individuals are suitably qualified and evidence of how this compliance will be maintained throughout the Contract Period.
4. The Contractor's road safety inspection programme.
5. How data will be collected from the variety of different sources, including road inspections, crashes, information from key stakeholders and the public.
6. The process and activities that will be used to update databases and tools.
7. How data will be analysed. Analysis can include using data, tools and activities that have been developed for pavement and geometry programmes, various crash and road safety reports and system tools, and using analysed information from key stakeholders.
8. Documentation with regard to the manner in which the Contractor proposes to carry out analysis to identify developing crash trends.
9. Crash trend analysis of the Network in comparison with regional/national averages.
10. The procedures that will be undertaken during the Contractor's design and/or construction of renewals to give the Principal a high degree of confidence that road safety design elements have been considered and incorporated as appropriate.
11. How specific road safety projects (maintenance or capital) will be identified, through specific activities and processes (e.g. crash reduction studies CRS, Network trend analysis, KiwiRAP, improvement and prioritisation databases, and the KAT tool, and liaison with key stakeholders).
12. Once road safety projects have been programmed for implementation how they will be designed and delivered to ensure appropriate standards are met.
13. Once road safety projects have been delivered, what methods will be used to evaluate and monitor the safety effectiveness, and determine whether the design is achieving the road safety outcomes anticipated.
14. How the Contractor will manage safety management delineation as recorded in their Safety Management Delineation Sub-Plan.
15. How the RSMP links with the national policies and strategies such as the RMP, MMP and in particular the Principal's current Safety Strategy.



The Contractor shall use the Principal's Road Safety Management Plan Template (downloadable from <https://www.nzta.govt.nz/resources/state-highway-safe-network-management-activity-manual/>).

The Principal and Contractor will work collaboratively to develop the RSMP and both parties can expect that there will be changes in Network road safety management best practice over the duration of the contract. To this end open communication is encouraged to ensure that any changes positively enhance the management of Network road safety outcomes.

The Principal requires at least **[[one]]** full time equivalent Road Safety Engineer to be responsible for all road safety aspects of this contract. The Road Safety Engineer will:

- have successfully completed a tertiary civil engineering qualification
- have worked for more than five years as a road safety or transport engineering professional
- completed the Safe System Engineering Workshop, or agreed equivalent.

The Road Safety Engineer shall be proactive in road safety initiatives and will possess the ability to:

- Communicate clearly with a range of people, stakeholders, and customers
- Demonstrate a road safety focused approach to the way they work
- Influence the Contractor's operations ensuring a strong road safety focus that fully aligns with the customer value proposition.

Appendix 4.4, Minimum Scope for Plans, includes additional information for the Contractor to use for preparing the RSMP.

## 5 Network Management

This Section sets out the requirements for all standard components of managing the Network for the Principal including renewal programme development and design.

The Principal wishes to minimise disruption to the road users, and maximise its customers' experience of safe, efficient and enjoyable journeys within the Network in support of the customer value proposition. To this end the Contractor is to be fully conversant with all the Principal's activities within the Network (e.g. Maintenance, Operations and Capital).

### 5.1 ASSET INFORMATION MANAGEMENT

The Principal recognises that effective asset management is underpinned by an accurate and current asset register. The Contractor shall complete all work required by this Section in accordance with the specific requirements in this Section and the following NZ Transport Agency manuals:

1. *State Highway Database Operations Manual* (SM050)
2. *Linear Referencing Management System Manual* (SM051)
3. *State Highway Asset Management Manual* (SM020)
4. <<Insert Name>>, (*Local Roads Documentation*).

The Principal's asset register is currently maintained in a proprietary, web-based, software system called RAMM (Road Assessment and Maintenance Management System). The tables in RAMM that shall be maintained by the Contractor, plus others, are listed in Appendix 4.2, Principal's Asset Registers Overview.

The Contractor is able to use their own data management systems and software packages to manage the Principal's assets. However, the minimum requirement is that the Principal's asset databases and registers are updated to the frequency and quality standards as stated in this Maintenance Specification, including personnel qualification requirements.

#### 5.1.1 Other Registers

Appendix 4.3, Other Registers to be Maintained by the Contractor, outlines the other registers that need to be maintained and updated by the Contractor that are currently maintained outside of the Principal's asset register.

Specific responsibilities of the Contractor for these other registers include:

- Collecting data to update the register
- Presenting of data in the required format for updating
- Updating of the electronic records if required
- Maintaining quality system records demonstrating that the registers are current

- Identifying quality of data for works affecting the registers but not supervised under this Contract
- Forwarding details of activities (adds, updates, deletes) in these registers to the Principal in the monthly report
- Reviewing the Asset Owners Manuals that may provide register update information
- Monitoring activity within the Network and identifying new structures or modified structures that need to be referred to the Regional Bridge Consultant and included in the Roadside Structures Register.

### 5.1.2 Information Management of Maintenance Activities

The identification of asset defects is part of a proactive maintenance intervention strategy. Successful asset management uses accurate data to prioritise decisions about interventions.

The Contractor shall:

1. Appoint inspectors trained to use quality measures of a standard agreed with the Principal to capture the elements for each asset defect. Refer to *State Highway Database Operations Manual* (SM050), section 12 for requirements.
2. Ensure that all asset defects are captured, updated, managed and closed off in a system; refer to Section 4.2, Quality Management Plan.
3. Supply records of completed maintenance activities that have been loaded into the Principal's Asset Register no later than the 7<sup>th</sup> 20<sup>th</sup> calendar day (or the next working day) of the month following that in which the maintenance activity was carried out.

### 5.1.3 RAMM Health Check Data Improvement Plan

The Principal has carried out a RAMM health check to indicate the status of the asset register at the time of tendering. Within the first 12 months of the Contract, the Contractor shall use this check and their own examination of examine all data information available RAMM to identify the shortfalls and improvement opportunities for the register. An improvement strategy to raise the integrity of the register RAMM shall be provided in the QMP for the Principal's consideration ('Data Improvement Plan'). It is expected that the improvement plan shall focus on the data that contributes to the Contractor's efficiency and asset investment decisions as a priority, with other less critical improvements delivered over time. The Data Improvement Plan is not to include data management process improvements related to the Contractor's responsibilities, as defined within the scope of this contract, or for complying with SM050. Instead, the Contractor shall identify the key data deficiencies from the register and present the business case that addresses the following topics:

- The benefits that this data improvement will give the Principal and Contractor.
- List of prioritised asset data improvements from highest to lowest.
- The cost to improve this data.
- The time to improve the data.
- The process / methodology that the Contractor will employ to collect and update the data.

- Identification of the risk if the asset data improvement work(s) was not to be carried out.

The extent and timing of the data improvements will be agreed with the Principal.

The delivery of the Data Improvement Plan is a lump sum activity.

When requested by the Principal, any data improvement actions will be paid under the corresponding provisional sum.

#### 5.1.4 Principal's Asset Registers Updating

The Contractor has the primary responsibility for the collation and maintenance of all data contained in the asset registers resulting in changes made through:

1. Physical work completed by the Contractor (including but not limited to, maintenance, renewals, safety projects, capital works projects and emergency works reinstatement) –
2. Physical works completed by other suppliers (such as Capital Works projects and utility providers) – field collection is the other supplier's responsibility.

The Contractor is required to validate the data for completeness from other suppliers and notify the Principal of any data issues. When requested by the Principal, the Contractor will undertake further work to complete the update which will be paid as a provisional sum.

Refer to Appendix 4.2, Principal's Asset Registers Overview, and Appendix 4.3, Other Registers to be maintained by the Contractor, for the mandatory registers to be maintained by the Contractor.

The timing of registers updating is by the 7<sup>th</sup> 20<sup>th</sup> calendar day (or next working day) of the following month. Refer to SM050 for the reporting requirements.

The Contractor shall ensure the RAMM Test Pit table is populated with adjacent pavement layer and material descriptions from pavement repairs undertaken within the services, such as digouts or stabilised patches, leading to advanced asset information.

The Contractor shall be diligent in obtaining register information about activities being carried out by other contractors and pursuing the supply of the necessary information to update Principal's asset registers at completion of these works. The Principal will assist the Contractor in obtaining this information.

The Contractor is encouraged to engage early with, and work closely alongside, other contractors working within the Network, so that expectations regarding asset information can be communicated early and continuously throughout the Contract Period.

Reported works as stored within the Principal's asset registers will be used as the primary inputs for:

- Annual Base Renewal Preservation quantities programme achievement
- Monthly Bitumen Cost-Fluctuation Adjustment Calculation (Volumetrics).

The Principal will undertake asset database and completed work quality audits within the Network, and provide a report to the Contractor.

Any data errors or omissions identified during the auditing exercise shall be corrected by the Contractor.

### 5.1.5 RAMM Condition Rating

The Principal may organise a separate contract to complete RAMM Condition Rating within the Network and load the information into the RAMM database. ~~This is expected to occur annually and~~ **If this occurs** the data will be accessible to the Contractor when undertaken.

## 5.2 ASSET MANAGEMENT **PLANNING PROGRAMMING**

~~Key planning is completed on a three-year cycle ahead of each NLTP. Every three years a 3+7 (10) year programme shall be developed and Each year, an Annual Plan shall be developed to deliver the operative three-year programme that has been approved in principle, along with further updates to the 10-year programme in accordance with the Principal's Annual Plan instructions. The Annual Plan shall include all maintenance, operation and renewal work activities required for the Network and supports the forward work programme. During the interim years an Annual Plan update is required to be developed each year by the Contractor in accordance with the Principal's Annual Plan instructions.~~

**Updated Annual Plan instructions are provided annually by the Principal that reflect the Principal's requirements.**

### 5.2.1 Principal's Review Process

~~The Principal's Annual and Three-Year Plan Instructions detail the information that must be submitted to support the renewals programme. To supplement this, the Principal will publish instructions relating to the prioritisation process for renewal work from time to time. The Contractor will use these prioritisation instructions in programming renewal works and include the prioritisation data with the programme submitted for approval. The intent of prioritisation is to ensure that renewals are targeting the appropriate locations, and that high priority projects are assigned to the base level of renewals before considering additional projects.~~

The Principal will periodically undertake pavement-performance modelling to check the appropriateness of the base level of specified renewals. Currently, the Principal is using dTIMS for this modelling. The Principal will share all setup files and outputs (including any data improvement actions) with the Contractor. This is expected to occur every three years or sooner if there is a need to verify quantities.

### 5.2.2 Ten-year Forward Works Programme

~~The Contractor will undertake annual modelling (dTIMS for example) as part of their programme development to give the Principal confidence that the preservation quantities are optimally distributed across the Network.~~

**The Principal will undertake modelling at a Network level from time to time to validate the overall investment programme and the short and long-term condition outcomes expected from this. This modelling is used for investment planning purposes and will be calibrated at a national level. There are a number of objectives that the Principal will be considering including understanding the performance standards resulting from the**

optimised programme, and optimising the short-term programme for long term whole-of-life costs. The optimisation objectives will differ from those that would be used to optimise the available quantities across local Networks.

The Contractor will undertake modelling (dTIMS for example) as part of their programme development. The key objectives of this is to give the Principal confidence that the preservation quantities are optimally distributed across the Network. The optimisation objective functions will differ from those used in the National level modelling and the analysis may, for example, use commercial inputs such as a heavier emphasis on maintenance cost impacts.

The Contractor will report the expected condition outcome resulting from the distribution of renewal inputs across the Contract Period. If this is predicting an undesirable level of service outcome, the Contractor must revert to modelling using the standard IDS methodology and objective functions to the Principal opportunities to review the base preservation quantities available under the contract.

Before undertaking the modelling work the Contractor will ensure that at least:

1. The model is calibrated to the local Network
2. A robust review of the treatment length segmentation has been undertaken to ensure that these align with treatment length definition outlined in SM020
3. All cost inputs are updated.

Local Network modelling will be completed:

1. At the commencement of the contract and
2. As an input into the programme submitted for each 3-yearly NLTP submission

Where the Principal has concerns about the stability of the Contractor's forward works programme (FWP) then the Principal may request the Contractor to run the model outside the NLTP submission period. The cost of running the model will be shared equally between the Contractor and the Principal. Stability of the FWP will be measured by:

1. Good alignment to the Principal's NLTP approval process, being less than 10% by count of pavement or surfacing treatment renewals in any year of the three years programme submitted in the Annual Plan, found to be unjustified in the RAPT process.
2. Good alignment between modelling outputs and actual renewal programme delivered. Less than 5% by count of pavement or surfacing treatment renewals in any year, found to be deferred or advance after programmes have been approved by the principal.
3. Good alignment with modelling outputs. This will be evidenced by the programme put forward through the Annual Plan process varying less than 10% by count of treatments from the programme output from the Contractor's modelling work.
4. Stability of the programme. Between successive Annual Plan programme submissions there must be less than 10% of counts by treatment that change in type or timing as the forward works programme is rolled one year ahead.

These measures will be used as critical success factors within the Contractor's MMP.

These measures are intended to be used only to determine whether the extent of change is sufficient to justify more modelling input and in no way imply any definition of the robustness of the forward works programme. The assessment will exclude any

SCRIM or capital project related treatment needs such as second coat sealing of capital projects.

The Ten-year Forward Work Programme (FWP) is made up of:

1. A 10-year programme for maintenance renewals

The maintenance programme comprises a schedule of future maintenance-intervention needs, indicating any associated pre-treatment needs, and is provided in the Principal's FWP repository in RAMM. As a minimum, the programme will cover all pavement, surfacing and drainage renewals.

The programme for other assets is included in the Annual Plan process.

2. A 10-year programme for Capital and Safety Works

The Capital and Safety Works Programme comprises projects that have been identified as providing improvement to the Network. This is developed and will be maintained by the Principal, and the Contractor shall take steps to gain a comprehensive understanding of other works that can be coordinated with the maintenance programme.

These improvement programmes are indicative and aspirational only.

The Contractor shall maintain and annually update the Network maintenance FWP. Maintaining the programme includes reviewing forward maintenance works and reviewing the appropriateness of the sectioning of treatment lengths to confirm that they meet the definition requirements outlined in SM020. In the first year of this contract, the Annual Plan and FWP developed previously shall be adopted as the basis for the work required by this Section.

The Contractor is required to develop the optimal FWP for pavement rehabilitation while being cognisant of the Contractor's MMP and the Principal's desired outcomes.

The MMP provides the outline, analysis, optimisation and validation methods the Contractor intends to use as input into developing the FWP and assigning the base level of specified renewals across the Network.

The deliverable that is referred to as the FWP is a specific output from RAMM and essentially only addresses pavement and surfacing assets. The FWP is, in itself, only a part of the full scope of Forward Work and Financial Planning requirements that the Contractor is required to satisfy. The *Annual Plan Instructions* (SM018) provides guidance on how the forward works programmes for other assets should be presented.

The FWP will be linked to the Principal's Achievement Tracker for monitoring programme delivery. The Contractor will be given access to the Achievement Tracker and will be responsible for updating this monthly. Changes to the FWP must be undertaken in accordance with the annual plan adjustment instructions.

The Contractor shall carry out a formal review of the asset renewal programmes annually. The Contractor's review will follow the publishing of the approved financial programme for the next financial year. It is intended that the FWP will be under constant review and reconsideration by the Contractor.

The exact dates for delivery are detailed in the Asset Information Planner (Appendix 5 of SM050). These dates may be varied by the Principal. Other less formal updates of specific road sections shall be initiated by the Contractor as necessary.

Appendix 2.4, Process Maps, includes the FWP Development process map.

### 5.2.3 Maintenance Activity Cost Model

The Contractor shall develop, maintain and report on a model relevant to the Network that records historical maintenance activity at treatment-length level and predicts future maintenance needs. This model is to be used in renewal economic assessment and performance predictions. The Contractor shall maintain this model based on actual maintenance activity incurred within the Network. The model will be formally reviewed annually at a workshop with the Principal.

The Contractor shall develop and maintain a model relevant to the Network that utilises historical maintenance activity at treatment-length level and predicts future maintenance needs.

The purpose of the model is to:

- Assist with renewal economic assessment and performance predictions.
- Assessing the likely timing of renewal treatment decisions before carrying out full NPV analysis
- Utilise historical activity to provide realistic cost predictions post-construction for renewal proposals
- Inform decisions on non-renewal sites (e.g. in the consideration of preventative maintenance options)
- To provide a sensibility check and a more realistic forecast, especially for the “Do minimum” option.

The model will supplement the basic maintenance cost model incorporated in the Annual Plan Instructions, SM018, and will be formally reviewed annually at a workshop with the Principal.

### 5.2.4 Annual Plan Renewals Programme Development

An Annual Plan Renewals Programme (Annual Plan) shall be prepared by the Contractor in liaison with the Principal and in accordance with the requirements of the current version of the Annual Plan Instructions, SM018. A key deliverable of the Annual Plan is the 3 year asset renewal programme.. The Annual Plan will be delivered annually, and every third Annual Plan in alignment with the National Land Transport Planning cycle will be significantly more intensive than the requirements for the two following years in accordance with the requirements of the current version of SM018. The Contractor shall prepare the Annual Plan in liaison with the Principal. The Contractor shall meet the initial consultation requirements with key stakeholders, preparatory to developing a Regional Land Transport Programme as required under the Land Transport Management Act.

In relation to the 3-year renewals programme which is an element of the Annual Plan, Appendix 2.4, Process Maps, includes the Renewals Programme Development process map.

In order to contribute towards the Principal’s customer value proposition the Contractor shall consider walking, cycling and bridle facilities during the preparation of the Annual Plan by:



- Identifying opportunities for improvements to the sealed shoulder as part of planning for road resurfacing or pavement rehabilitation works and incorporate these into the Annual Plan process.
- Developing an appropriate pavement and surfacing renewal programme to maintain any cycle and footpath facilities.
- Developing appropriate renewal programmes for all route assets and incorporate these into the Annual Plan process.

When considering new works and route renewal (i.e. resealing or pavement rehabilitation where widening can be achieved above the current funding cut-off) the Contractor is to consider the inclusion of improvements refer to Appendix 5.1 – Pavement Rehabilitation Safety Assessment Form, and Appendix 5.2 – Pavement Rehabilitation and Resurfacing Widening Considerations.

The SHAMP and other relevant strategic documents, including but not limited to, corridor management plans, package or funding plans and strategic studies for the Network area are to be taken into account when developing the Annual Plan.

1. Annual Plan Revisions

The Annual Plan may require revision to balance individual Network area Annual Plans to match the Principal’s business unit or national needs. Also, between the preparation of the Annual Plan and its final approval, the Contractor may identify changes necessary as a result of changes in the Network condition.

A comprehensive list of preventive low cost, low risk and associated improvement maintenance projects using the Principal’s priority ranking system as stipulated in SM018 shall be maintained, including innovative, proactive repair-types based on early intervention, with low cost and high value results. This does not include detailed justification reporting. When requested by the Principal, further detailed design and investigation will be progressed at the Principal’s cost.

2. Approved Annual Plan

Following the Principal’s confirmation of the national allocations and the Principal’s approval of the last revision, the Contractor shall:

- Prepare the final approved Annual Plan
- Review and update the FWP.

**OPM GROUP 5.2.1: ANNUAL PLAN (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
2	All Roads	No defects.	Compliant Annual Plan not delivered in accordance with SM018.	N/A

### Peak Roughness Programme

As part of the Annual Plan development process the Contractor shall propose, for the Principal's approval, up to [[30]] sites annually, based on the most recent 20m roughness HSD, by means of an appropriate prioritisation process that takes account of roughness severity, safety risk, truck ride and potential damage to assets, such as bridge abutments.

The sites are not to be generated from defects that are covered by OPMs, or within pavement rehabilitation or resurfacing sites in the next two years' programme.

The Principal may or may not engage the Contractor to undertake the treatments.

### Rut Fill Programme

The Contractor shall also propose, for the Principal's approval, up to [[30]] sites annually where rutting is greater than 20mm or is both approaching 20mm and contributing to a safety or other negative customer or asset outcome. This shall be based on the most recent 20m rutting HSD, using an appropriate prioritisation process that takes account of rutting severity, safety risk and potential damage to assets.

The sites are not to be generated from defects within pavement rehabilitation sites in the next two years' programme unless agreed otherwise with the Principal.

The intended application of the rut filling programme is for the Contractor to develop a prioritisation process that takes account of adverse customer service, safety risk and potential damage to the asset that would assist the Principal in justifying specific treatment of rutting sites. The Contractor shall propose sites where:

- Isolated rut fill patches may address safety concerns or adverse customer service
- Isolated rut fill patches are unlikely to address the full extent of the rutting issue
- Whole of life analysis supports a targeted treatment rather than an area wide treatment.

The intent of including the Principal's risk rut filling programme is to provide a mechanism to allow a level of service, where the effects of rutting are causing issues. For example, flat sections with rutting where the water spray effects are compelling or beside footpaths in urban areas where pedestrians are being surface water sprayed.

The Principal cannot guarantee that any proposed sites will be funded.

### Project Level Analysis of Pavement Renewal Proposals

The methodology used to develop the Ten-year Forward Works Programme provides a medium-term optimisation of the type and timing of treatments across the Network. However, before committing treatments, the Principal requires a more detailed project-level analysis to confirm that the timing and type of treatment is correct based on current performance of the treatment-length in question. For each pavement-renewal project included in the Annual Renewals Programme, the Contractor will provide a robust NPV analysis and Economic Indicator to be undertaken in accordance with:

- *Annual Plan Instructions Manual (SM018)*
- *NZ Guide to Pavement Evaluation and Treatment Design*

- *Guide on Surfacing in Urban Environments*
- *Economic Evaluation Manual* (EEM1).

Appendix 2.4, Process Maps, includes the Management of 3-yearly NLTP Pavement Rehabilitation Quantity process map and the Management of Annual Resurfacing Quantity process map.

Whilst the Contractor has been required to develop a MMP that applies the investment level across the Network, the Principal wishes the Contractor to challenge the need for these quantities throughout the Contract Period.

The selection of the most cost-effective long-term treatment is paramount to restoring the required level of service (condition) for any asset component. The Contractor is required to explore and recommend the most appropriate treatment that provides the required outcome, yet has customer and environmental considerations. The Principal encourages cost-effective recycling and reuse of surface and pavement materials.

Albeit the renewal Baseline Plans have been developed by the Contractor before contract commencement, it will still be necessary for the Contractor to carry out detailed modelling, programme optimisation and prioritisation on a 3-yearly basis. It will be necessary to make any case to the Principal to be able to apply the Base Renewal Preservation Quantities. Refer to the annual plan process, *The Annual Plan Instructions Manual* (SM018), and the Contractor's tender-submitted MMP engineering and economic assessment process for chip-seal surfacing treatments.

The Principal's Annual SCRIM Exception Report instructions contain key renewal project justification requirements that will need to be met by the Contractor, in order to carry out the skid-resistance renewal quantities.

The Principal desires a certain level of flexibility with the application of renewals to account for funding challenges, changing Network need and National prioritisation. Refer to Section 2.4.4, Changes to Annual Renewal Investment Levels.

This project-level assessment will demonstrate that other forms of maintenance and renewal are no longer viable, and that the timing and nature of the preferred treatment option is economically justified for the treatment-length being assessed.

In addition to the requirements detailed in SM018:

- All costs will be derived from rates tendered under the contract and, where appropriate, shall include design costs.
- No improvement content is to be included in the renewal justification. Any improvements will require separate justification.

### 5.2.5 Review and Prioritisation Team Inspections

Review and Prioritisation Team (RAPT) inspections will require the Contractor's attendance using appropriate personnel. Typically, these could take up to a week, including preparation, fieldwork, debriefing and reporting. These inspections are carried out to review and tension, as appropriate, the works programme annually.

## OPM GROUP 5.2.2: YEAR 1 RENEWAL PROGRAMME INTEGRITY (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
3	All Roads	<25% of Defects:	RAPT Review priority assessment recommends deferring a site to a later year:	N/A

## 5.3 RENEWAL PROGRAMMING AND DESIGN

### Short Renewal Lengths less than 100m

Sections 5.3.1, Pavement Rehabilitation, and 5.3.3, Sealed Road resurfacing, refer to minimum lane metre lengths eligible for these activities drawing on the Baseline Plan.

Shorter sections which are necessary for genuine reasons may be accepted (on a case by case basis) by the Principal, as meeting the contract criteria for renewal, despite being shorter than the specified 100m (or 60m for Skid Resurfacing) continuous lane length criteria.

Genuine short sections may for example include bridge decks, intersections, slip sites where pavement has been replaced or resurfaced. There may be other legitimate circumstances which may be approved by the Principal.

The same programming, justification, payment, quality, performance and reporting criteria will apply for these short treatment length renewals as if they did exceed the specified minimum 100m treatment length.

Short treatment length sections that have been created based around, for example, a 70m section of isolated high maintenance needs resulting in short "rehabilitation" being programmed will not qualify as a renewal as they are less than 100m continuous lane metres long. Any works of this nature will remain the Contractor's responsibility.

### Expedited procedure for short length renewals

Where appropriate, the Principal will work with the Contractor to agree expedited procedures for the approval, investigation and design requirements for short sites greater than 100m, that become necessary as a result of unforeseen rapid deterioration. Any expedited procedures will not relieve the Contractor from quality, performance and reporting criteria.

These short treatment length sections will draw on the Contractor's Base Preservation Renewal quantities.

Continuous lane metres means 100m continuously in the same lane and that shorter sections of adjoining lanes in either the same or opposite direction cannot be added together in order to meet this criterion.

### 5.3.1 Pavement Rehabilitation Programming

Pavement Rehabilitation is defined as the treatment (including pavement recycling treatments) over a continuous lane length of at least 100 metres.

### ***Base Renewal Preservation Quantity for Pavement Rehabilitation–Base Preservation–Quantity***

The Contractor shall complete pavement rehabilitation works equal to the lane lengths specified in Table 5.3.1, all of which must meet the requirements of this Section unless otherwise agreed by the Principal.

<<Amend PERIOD column in table 5.3.1 so that each row represents a NLTP 3-year period or part thereof.>>

**Table 5.3.1: Pavement Rehabilitation Base Renewal Preservation Cumulative Lane Lengths for Pavement Rehabilitation**

PERIOD	BASE NO.1 – BASECOURSE OVERLAY (LANE.KM)	BASE NO.2 – IN-SITU STABILISATION (LANE.KM)	BASE NO.3 – GRANULAR REPLACEMENT (LANE.KM)	BASE NO.4 – STRUCTURAL AC (LANE.KM)	TOTAL
dd/mm/yy to dd/mm/yy	TBC	TBC	TBC	TBC	TBC
dd/mm/yy to dd/mm/yy	TBC	TBC	TBC	TBC	TBC
Contract extension period	TBA	TBA	TBA	TBA	TBA
<b>TOTAL</b>	<b>TBC</b>	<b>TBC</b>	<b>TBC</b>	<b>TBC</b>	<b>TBC</b>

If the Contract Period is extended (in accordance with the terms of the Contract) then an appropriate Base Renewal Preservation Quantity must be provided to the Principal for its review.

As part of the Contractor's MMP ~~Maintenance Management Plan~~, the Contractor is required to articulate their pavement rehabilitation renewal distribution strategy (by lane length) over the Contract Period through a Pavement Rehabilitation Baseline Plan.

Albeit the Pavement Rehabilitation Baseline Plan has been developed prior to contract commencement by the Contractor, it will still be necessary for the Contractor to carry out detailed modelling, programme optimisation and prioritisation ~~on an annual basis~~, and make any case to the Principal to be able to apply the base renewal preservation quantities. This will occur by means of the annual plan process, *Annual Plan Instructions Manual* (SM018).

The Principal desires a certain level of flexibility with the application of renewals to account for funding challenges, changing Network need and National prioritisation. Refer to Section 2.5.4, Changes to Annual Renewal Investment Levels.

Right-turn bays, wide shoulders (including bus lanes) and flush medians are not deemed to be additional lanes. On ramps, off ramps, passing lanes and slow-vehicle bays are classified as lane lengths with respect to the Base Renewal Preservation quantity.

### **Programme Development**

As stated in Section 5, the Contractor is required to develop the optimal forward works programme for pavement rehabilitation while being cognisant of the Contractor's MMP and the Principal's desired outcomes.

Also refer to Appendix 2.4, Process Maps:

- FWP Development
- Annual Renewals Programme Development.

The MMP provides the outline, analysis, optimisation and validation methods the Contractor intends to use as input into developing the FWP and assigning the base level of specified renewals across the Network.

The selection of the most cost-effective long-term treatment is paramount to restoring the required level of service (condition) for any asset component. The Contractor is required to explore and recommend the most appropriate treatment that provides the required outcome, yet has environmental considerations. The Principal encourages cost-effective recycling and reuse of surface and pavement materials.

Appendix 2.4, Process Maps, includes the Management of Annual 3-Yearly NLTP Rehabilitation Quantity process map.

Whilst the Contractor has been required to develop a Maintenance Management Plan that applies the above-mentioned investment level across the Network, the Principal wishes the Contractor to challenge the need for these quantities throughout the Contract Period. Appendix 2.4, Process Maps, includes the Renewal Quantity Management Reward process map.

### **5.3.2 Pavement Rehabilitation Design**

The Contractor shall compile a design report, as detailed in section 10 of *NZ Guide to Pavement Evaluation and Treatment Design*, for each proposed rehabilitation treatment using the specified treatments in Tables 5.3.2, 5.3.3, 5.3.4 and 5.3.5 as the starting base point. The report shall include as a minimum ~~[[three]]~~ practical design options; along with assessments of most cost-effective pavement design utilising best practice methodology and materials, and cost estimates, using the tendered rates. These design options must be economically justified in accordance with the Annual Plan instructions. This design report shall demonstrate that the final design meets the requirements of the latest *Austrroads Guide to Pavement Technology: Parts 2 & 5*, and the New Zealand supplements to the *Austrroads Guides* and the *Principal's Guide to Pavement Structural Design and Pavement Evaluation and Treatment Design*.

For all designs, the Contractor shall demonstrate that the suite of annual Rehabilitation Post-Construction Design Assessment Reports ~~have~~ ~~has~~ contributed towards evidenced-based design decisions.

All pavement designs and verifications shall be authorised by a Chartered Professional Engineer (CPEng) or person ~~acceptable~~ ~~accepted~~ ~~to~~ by the Principal.

The designs are to consider all modes of transport in order to support the customer value proposition. This may include target seal widths, superelevation, surfacing types and accessway and footpath provisions.

The design report shall include the Safety in Design (SiD) requirements in accordance with the Contractor's Health and Safety Management Plan and how SiD has been incorporated and implemented.

A Pavement Rehabilitation Safety Assessment Form shall be completed by the Contractor (refer to Appendix 5.1, Pavement Rehabilitation Safety Assessment Form) to inform the Principal of potential safety and customer related improvement initiatives.

The Principal will use this design report to consider and approve the most appropriate option and agree upon target design life and desired safety standards.

~~The detailed design for each Site shall be approved by the Principal at least two months prior to the programmed start date for the treatment~~ The detailed design must be submitted to the Principal to conduct their own review process as required and to approve the designs at least two months prior to the programme start date for the treatment. The Contractor must allow time for the possibility that designs or treatment selection and development may need to be revisited and resubmitted during this process. The detailed design shall provide the geometric standards previously approved by the Principal. This may or may not be in line with the current *Austrroads Guide to Road Design Part 3: Geometric Design*, depending on funding, existing site conditions, constraints and desired value for money outcomes.

If, in the interest of innovation, the Contractor wishes to use a design that deviates from the *Austrroads Guide to Pavement Technology: Parts 2 & 5* and *The New Zealand Supplements to the Austrroads Guides* and the Principal's *Guide to Pavement Structural Design and Pavement Evaluation and Treatment Design*, the Contractor shall be required to provide empirical or analytical documentation, to the satisfaction of the Principal, to demonstrate that the design can reasonably be expected to meet the design life requirement agreed. The Contractor is expected to use the Principal's specifications for materials and construction that are proven to achieve the outcomes, and, where alternatives are proposed, sufficient empirical or analytical evidence is required for the Principal to approve. Ultimately, the approval of alternative designs is at the Principal's discretion.

Base treatment types have been determined for this Network based on historic performance and experience. The rehabilitation lengths specified in Table 5.3.1 are in terms of the base treatments as specified in Tables 5.3.2, 5.3.3, and 5.3.4 and 5.3.5.

<<Four ~~Three~~ example base treatment types have been provided. The Description columns are to be modified to suit the specific Network requirements.>>

**TABLE 5.3.2: BASE TREATMENT FOR PAVEMENT REHABILITATION NO.1 – BASECOURSE OVERLAY**

ASPECT	SCOPE OF TREATMENT
Survey and geometric design	Included

**TABLE 5.3.2: BASE TREATMENT FOR PAVEMENT REHABILITATION NO.1 – BASECOURSE OVERLAY**

ASPECT	SCOPE OF TREATMENT
Site establishment, consultation, site preparation	Included
Traffic management	Level 1
Seal width	Same as existing
Shoulder slope	Removal of all high lip, shoulder vegetation and all earthworks required to form a 1:5 shoulder slope within 2m of the new edge of seal, if required.  Refer to Appendix 5.3, Typical Shoulder Slope Details for Pavement Rehabilitation, for the extent of shoulder treatment required
Pre-rehabilitation pavement repairs	<del>Included and standard as required to meet the design criteria. in accordance with Section 2.4.3, Principal Risk Non-Routine Maintenance Treatments</del>
Existing surface use	Rip
Existing pavement use	<del>&lt;&lt;describe the existing pavement use such as removal or replacement&gt;&gt;</del> N/A
Make up metal	N/A
Stabilisation depth	0mm depth
Stabilisation modification	None
Overlay	100mm using Transport Agency M/4 material
Inlay	None
Top surface	Single coat seal
Delineation reinstatement	Included ( <del>apart from</del> excluding ATP markings)
Transition approaches	included

**TABLE 5.3.3: BASE TREATMENT FOR PAVEMENT REHABILITATION NO.2 – IN-SITU STABILISATION (RIP AND REMAKE)**

ASPECT	SCOPE OF TREATMENT
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**TABLE 5.3.3: BASE TREATMENT FOR PAVEMENT REHABILITATION NO.2 – IN-SITU STABILISATION (RIP AND REMAKE)**

ASPECT	SCOPE OF TREATMENT
Survey and geometric design	Included
Site establishment, consultation, site preparation	Included
Traffic management	Level 1
Seal width	Same as existing
Shoulder slope	<p>Removal of all high lip, shoulder vegetation and all earthworks required to form a 1:5 shoulder slope within 2m of the new edge of seal, if required by the Principal.</p> <p>Refer to Appendix 5.3, Typical Shoulder Slope Details for Pavement Rehabilitation, for the extent of shoulder treatment required</p>
Pre-rehabilitation pavement repairs	Included as required by the Principal to meet the design criteria included and standard in accordance with Section 2.4.3, Principal Risk Non-Routine Maintenance Treatments
Existing surface use	Hoe in conjunction with stabilisation process
Existing pavement use	Recycle
Make up metal	Not included
Stabilisation depth	200mm depth
Stabilisation modification	2% cement
Overlay	None
Inlay	200mm deep N/A
Top surface	Single coat seal
Delineation reinstatement	Included (apart from excluding ATP markings)
Transition approaches	None

**TABLE 5.3.4: BASE TREATMENT FOR PAVEMENT REHABILITATION NO.3 – GRANULAR REPLACEMENT**

ASPECT	SCOPE OF TREATMENT
Survey and geometric design	Included
Site establishment, consultation, site preparation	Included
Traffic management	Level 1
Seal width	Same as existing
Shoulder slope	<p>Removal of all high lip, shoulder vegetation and all earthworks required to form a 1:5 shoulder slope within 2m of the new edge of seal, if required by the Principal.</p> <p>Refer to Appendix 5.3, Typical Shoulder Slope Details for Pavement Rehabilitation, for the extent of shoulder treatment required</p>
Pre-rehabilitation pavement repairs	Included as required by the Principal to meet the design criteria included and standard in accordance with Section 2.4.3, Principal Risk Non-Routine Maintenance Treatments
Existing surface use	Remove and dispose offsite
Existing pavement use	Remove 250mm depth and dispose offsite or re-use
Make up metal	<p><del>160mm AP65</del></p> <p>90mm Transport Agency M/4 AP40 material</p> <p>None</p>
Stabilisation depth	0mm depth
Stabilisation modification	None
Overlay	None
Inlay	<p><del>160mm</del> 150mm AP65</p> <p><del>90mm</del> 100mm Transport Agency M/4 AP40 material</p>
Top surface	Single Coat Seal
Delineation reinstatement	Included (apart from <del>excluding</del> ATP markings)
Transition approaches	None

**TABLE 5.3.5: BASE TREATMENT FOR PAVEMENT REHABILITATION NO.3 – STRUCTURAL ASPHALTIC CONCRETE**

ASPECT	SCOPE OF TREATMENT
Survey and geometric design	Included
Site establishment, consultation, site preparation	Included
Traffic management	Level 1
Seal width	Same as existing
Shoulder slope	Removal of all high lip, shoulder vegetation and all earthworks required to form a 1:5 shoulder slope within 2m of the new edge of seal, if required by the Principal.  Refer to Appendix 5.3, Typical Shoulder Slope Details for Pavement Rehabilitation, for the extent of shoulder treatment required by the Principal
Pre-rehabilitation pavement repairs	Included as required to meet the design criteria
Existing surface use	Remove and dispose offsite
Existing pavement use	Remove 180mm depth (combination of surface and pavement) and dispose offsite
Make up metal	N/A
Stabilisation depth	N/A
Stabilisation modification	None
Overlay	None
Inlay	130mm AC Mix 20
Top surface	50mm AC Mix 14
Delineation reinstatement	Included (apart from excluding ATP markings)
Transition approaches	None

In the event that the actual approved design does not differ from the base treatment option then the extra over-rates need not be used. However, where the design differs from any of the above base treatments, the extra over items within the Schedule of Prices shall be used by the Contractor and the Principal to value the approved design.

Appendix 2.4, Process Maps, includes the Annual Renewals Design and Construct process map.

### 5.3.3 Sealed Road Resurfacing

Resurfacing is defined as the resurfacing of a section of road, including shoulders, over a continuous length of at least:

- a) 60 lane metres for Site Category 1, see Transport Agency T/10
- b) 100 lane metres for Site Categories 2, 3, 4 and 5, see Transport Agency T/10.

All resurfacing shall be full width unless prior agreed with the Principal.

The treatment may include single or multi-layer chip seals, thin asphalt-surfacing or other surfacing treatments nominated by the Contractor and prior-approved by the Principal.

All resurfacing to be undertaken on a Bridge Structure must have prior approval from the Regional Bridge Consultant. The treatment proposed must consider the impact on the dead load limits of the Bridge Structure and may require removal of the existing surface prior to resurfacing.

First coat seals for pavement rehabilitation works are not part of this Section. Refer to Section 5.3.1, Pavement Rehabilitation.

Texturising seals are separate from the Resurfacing Base Preservation Lane Lengths, and are not to be included within the Contractor's Resurfacing Baseline Plan, where the texturising treatment is required to set up a site in preparation for a single coat seal.

Texturising seals are chipseals that are carried out to correct texture variation to ensure the successful application of the next, most appropriate chip seal surfacing. Chip Sealing in New Zealand provides guidance on when the texture variation within a site is outside the accepted tolerances for the next proposed chip seal surfacing to be successful. Texturising seals in this context are those treatments required to correct such texture variation where the contractor's own pavement or surfacing repair work within that site, during the contract, has not in itself contributed to the texture variation.

Texturising seals are distinct from void fill seals in this context, where void fill seals are a site wide treatment to reduce course texture and not a treatment to correct texture variation. Void fill seals in this context will be included in the Contractor's Resurfacing Baseline Plan.

#### ***Resurfacing Base Renewal Preservation Quantity for Resurfacing***

The Contractor shall complete resurfacing works equal to the lane lengths specified in Table 5.3.3, all of which must meet the requirements of this Section, unless otherwise agreed by the Principal.

**TABLE 5.3.3: RESURFACING BASE RENEWAL PRESERVATION CUMULATIVE LANE LENGTHS FOR RESURFACING**

PERIOD	CHIP SEAL LENGTH (LANE.KM)	THIN AC LENGTH (LANE.KM)
dd/mm/yy to dd/mm/yy	TBC	TBC
dd/mm/yy to dd/mm/yy	TBC	TBC
Contract extension period	N/ATBA	N/ATBA
<b>TOTAL</b>	<b>TBC</b>	<b>TBC</b>

If the Contract Period is extended (in accordance with the terms of the Contract) then an appropriate Base Renewal Preservation Quantity must be provided to the Principal for its review.

As part of the Contractor's Maintenance Management Plan, the Contractor is required to articulate their surfacing renewal distribution strategy (by lane length) over the Contract Period through a ~~Resurfacing~~ Baseline Plan for resurfacing.

The Principal desires a certain level of flexibility with the application of renewals to account for funding challenges, changing Network need and national prioritisation. Refer to Section 2.4.4, Changes to Annual Renewal Investment Levels.

Right-turn bays, wide shoulders (including bus lanes) and flush medians are not deemed to be additional lanes. On ramps, off ramps, passing lanes and slow-vehicle bays are classified as lane lengths with respect to the Base Renewal Preservation quantity.

### ***Programme Development***

~~As stated in Section 5,~~ The Contractor is required to develop the optimal forward works programme for resurfacing keeping in mind the Contractor's MMP and the Principal's desired outcomes and nominated seal selection process.

Also refer to Appendix 2.4, Process Maps:

- FWP Development
- Annual Renewals Programme Development.

The MMP provides the outline, analysis, optimisation and validation methods the Contractor intends to use as input into developing the FWP, and assigning the base level of specified renewals across the Network.

The selection of the most cost-effective long-term treatment is paramount to restoring the required level of service (condition) for any asset component. The Contractor is required to explore and recommend the most appropriate treatment that provides the required outcome, yet has environmental considerations. The Principal encourages cost-effective recycling and reuse of surface materials.

Appendix 2.4, Process Maps, includes the Management of Annual Resurfacing Quantity process map.

Whilst the Contractor has been required to develop an MMP that applies the above stated investment level across the Network, the Principal wishes the Contractor to

challenge the need for the asphalt-surfacing component of these quantities throughout the Contract Period. ~~Appendix 2.4, Process Maps, includes the Renewal Quantity Management Reward process map.~~

Albeit the Resurfacing Baseline Plan has been developed before contract commencement by the Contractor, it will still be necessary for the Contractor to carry out ~~detailed modelling~~, programme optimisation and prioritisation on an annual basis **and detailed modelling 3-yearly or as required**. It will be necessary to make any case to the Principal to be able to apply the base renewal preservation quantities. Refer to the annual plan process, *The Annual Plan Instructions Manual* (SM018), and the Contractor's tender-submitted engineering and economic assessment process for chip-seal surfacing treatments.

The Principal's Annual SCRIM Exception Report instructions contain key renewal project justification requirements that will need to be met by the Contractor, in order to carry out the skid-resistance renewal quantities.

### **Resurfacing Design**

Transport Agency P/17 sets the performance requirements for all the following works:

- Single-coat reseals using sealing chip with an average dimension greater than 5.5mm.
- Multi-layer seals using sealing chips in the range of grade 2 to grade 6, as defined in Transport Agency M/6. This includes both wet and dry locking coats.
- Texturising seals and void fills.

The following alterations to Transport Agency P/17 shall apply:

- All Sections, reference to the Engineer shall be replaced with the Principal.
- All Sections, reference to Defect Liability Period shall be replaced to that stated in Conditions of Contract, First Schedule, clause 11.1.1 or as agreed by Transport Agency P/17, section 4.8.
- Section 3, Quality Plan, is removed and replaced with the Resurfacing Quality Plan as described within this Maintenance Specification Section 6.
- Section 4.4 third bullet point is amended, deleting the requirement that payment for the section made at the tendered square metre rate for the construction reduced by 15%.
- Section 4.8, replace third bullet point with "period of one month following date of construction" to "period of contract".
- Section 9.2, Surface Texture, if the construction verification period is greater than 12 months, then the following equation shall be used to calculate the minimum texture depth TD for compliance.

$$TD_y = 0.07 ALD \log (Yd/y) + 0.9$$

Where:  $TD_y$  = minimum texture depth after y years, in mm

$y$  = number of years after construction when the assessment is performed

$Yd$  = design life in years

$ALD =$  average least dimension of the larger sealing chip

- Section 11 will only apply to the last two construction seasons of the contract and any deduction calculated shall be included in the **Resurfacing Design Achievement Annual Renewal Reconciliation** mechanism contained in Basis of Payment, Preamble, iv.
- Section 11, no additional payments are available for residual binder.

Transport Agency P/9, Transport Agency P/11 and Transport Agency M/10 provides the specification requirements for asphalt and OGPA surfacings.

The Contractor shall compile a design report for each proposed resurfacing treatment using the specified treatments in the Schedule of Prices. For each site, the report shall as a minimum:

- For chip seals, demonstrate that the final design meets the performance specification above, and requirements of the principles of the text book *Chipsealing in New Zealand*, or the asphalt equivalent, and the selection for sealing treatments as per Appendix 5.4, Selection of Sealing Treatments.
- For chip seals, any agreed alternative risk profile and associated performance criteria as per Transport Agency P/17.
- For asphalt, demonstrate that the final design meets the performance specification as per Transport Agency P/9, Transport Agency P/11 and Transport Agency M/10.
- For asphalt, confirmation that the surfacing treatment can accommodate the existing pavement deflections when measured with the FWD or Benkelman beams. The Contractor shall refer to industry best practice for guidance.
- Confirm that the original treatment selection justification, as demonstrated during the Annual Plan process, is still valid.
- Confirm the design aligns with what is important for the affected customer groups, refer Table 1.5.1 of this Specification.
- State the expected design life and the justification.
- Prove compliance with Transport Agency T/10.

For all designs the Contractor shall demonstrate that the annual Surfacing Aggregate Performance Report has contributed towards design decisions.

All resurfacing to be undertaken on a bridge structure must have prior approval from the Regional Bridge Consultant. The treatment proposed must consider the impact on the dead load limits of the Bridge Structure and may require removal of the existing surface prior to resurfacing.

All surfacing designs and verification shall be authorised by a Chartered Professional Engineer (CPEng) or person acceptable to the Principal. The Contractor's design report and surfacing programme must be submitted to the Principal by 1<sup>st</sup> August and agreed with the Principal by 1<sup>st</sup> September each year.

Base surfacing treatment types have been determined for this Network based on historical performance and lessons learnt, as listed in the Schedule of Prices.

If, in the interest of innovation, the Contractor wishes to use a design that deviates from the treatments listed in the Schedule of Prices, or the text book *Chipsealing in New Zealand*, the Contractor shall be required to provide evidence-based documentation, to the satisfaction of the Principal, to demonstrate that the design can reasonably be expected to meet the design-life requirement agreed. The Contractor is expected to use the Principal's specifications for materials and construction that are proven to achieve the outcomes and, where alternatives are proposed, evidence is required for the Principal to approve. Ultimately, the Principal has sole discretion regarding the approval of alternative designs.

Appendix 2.4, Process Maps, includes the Annual Renewals Design and Construct process map.

### 5.3.4 Accessway Sealing

The Contractor shall develop an annual programme for accessway sealing on high risk and favoured motorcycle route sections as defined within Appendix 1.5, Network Extents, for the Principal's consideration.

Accessways on both sides of the road, currently sealed or unsealed, are to be considered. If a currently sealed accessway only requires a pre-reseal treatment, such as pothole repairs, then treatment shall be the Principal's risk. Refer Basis of Payment, Schedule Item 2.4, Principal Risk Non-Routine Maintenance Treatments.

The extent of accessway sealing shall be either:

- 11m from the edge of the seal or to the boundary, whichever is least when there is evidence that gravel has migrated from the accessway onto the carriageway, or
- to the current extent of seal or the midpoint of the roadside drain, whichever is least excepting that if the landowner has extended the seal to the boundary it shall be given a second coat if needed but thereafter shall be the landowner's responsibility to seal.

The width of accessway sealing shall either be to the extent of the current seal width or, if currently unsealed, the edge of pavement formation. The Contractor is not to upgrade any accessways to the current Transport Agency standards unless agreed with the Principal.

The programme shall be prioritised to align with the annual renewal work and safety need where it is deemed to be high risk and on favoured motorcycle routes.

Programme details shall include:

- a) Location of the sites
- b) Recommended treatment (Contractor's design) at each site with associated costs involved
- c) Priority
- d) Timeline of when the accessway is recommended for treatment.

The Contractor shall develop the programme and obtain support of the programme by the Principal prior to the submission of the Annual Plan, refer section 5.2.4, Annual Plan.



### 5.3.5 Skid Resistance Management

The Contractor is to proactively manage Network skid resistance performance by including appropriate skid resistance considerations in all asset management decisions.

The Contractor shall complete annual skid-resistance resurfacing works all of which must meet the requirements of this section, unless otherwise agreed by the Principal.

The Contractor is required to identify and obtain the agreement of the Principal before undertaking the necessary pre-reseal repairs for any required skid-resistance renewal treatments.

The Skid Resistance Renewal Quantities are separate from the Resurfacing Base Preservation Lane Lengths, and are not to be included within the Contractor's Baseline Plan for resurfacing.

#### Flushing Assessment Report

The Principal has developed a flushing prediction model, which has a high degree of confidence in predicting sites (60m lengths, where the 20m mean profile depth (MPD) will be below 1mm) within the next 24 months.

The output from the model will be made available to the Contractor on an annual basis. The Contractor is required to take the outputs from the model and assess the lengths, which may flush and provide the Principal with a flushing assessment report covering:

- In field observations
- Where the site currently sits within the FWP
- Treatment considerations, and
- Funding stream and cost to treat (based on tendered rates)

Delivery of the flushing assessment report is an annual requirement due by the 31<sup>st</sup> of August each year. Following acceptance of the report the Principal will then advise the contractor whether any of the treatment recommendations can proceed.

#### SCRIM Exception Report

The Contractor will carry out the requirements outlined in *Skid Resistance Investigation and Treatment Selection* (Transport Agency T/10), and in consultation with the Road Safety Engineer and the Principal.

Typically, within two weeks after completion of the survey for a given area, the Principal will provide the Contractor with an annual SCRIM Exception Report and in a further two weeks the SAL's enabling the Contractor to commence for-treatment consideration. The Contractor shall comply with the following:

- Field inspect and assess each Site in accordance with Transport Agency T/10
- Report in accordance with Transport Agency T/10 for every Site, including:
  - ~~the programme to repair the defects that are the responsibility of the Contractor in accordance with Conditions of Contract, 18<sup>th</sup> Schedule, Risk Profile~~

- ⊖ the recommended programme to repair the defects that are the responsibility of the Principal in accordance with Conditions of Contract, 18<sup>th</sup> Schedule, Risk Profile
- including the cost based on tendered rates.

The Contractor A final report shall be provided to the Principal confirmation of which confirms completion of the programmes.

For skid resistance sites, In August each year, the Contractor shall provide the Principal with a Surfacing Aggregate Performance Report compiled in accordance with Transport Agency T/10, Chip Seal Post Verification Testing requirements and AC Post Verification Testing requirements.

**OPM GROUP 5.5.1: SKID RESISTANCE MANAGEMENT (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
14	All Roads	No defects.	Incomplete evidence that Transport Agency T/10 process has been adhered to for all exception reported sites.	1 month
15	All Roads	No defects.	Incomplete evidence that all Priority A sites have been addressed in accordance with Transport Agency T/10; within 3 months of receiving Annual Exception Report.	1 week

**SKID RESISTANCE MANAGEMENT (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
2	All Roads	No defects.	Incomplete evidence that Transport Agency T/10 process has been adhered to for all exception reported sites.	4	1 month

**5.3.6 Drainage Renewal Programming and Design Renewals**

### Programmed Drainage Maintenance

The pavement formation and associated drainage system is designed to allow water to drain off the pavement surface, and to drain out of the pavement, keeping the pavement layers and subgrade at its optimum water content.

For context those treatments listed in Table 5.3.6, Base Preservation Drainage Lengths are deemed planned drainage maintenance activities and are funded out of drainage maintenance for the purpose of the Annual Plan funding requests.

The objective of the programmed drainage maintenance renewals activity under this contract is to restore the pavement formation and drainage systems to achieve the objectives stated listed above.

Programmed drainage maintenance renewals should be programmed in order to extend the life of the pavement asset, including deferral of pavement renewals where possible, and to keep the surface safe and free from ponding for road users.

The Contractor shall develop annual programmes for the Principal's consideration that comply with the annual Base Renewal Preservation drainage lengths as specified in Table 5.3.6. The programme must be economically whole-of-life justified and best for the Network. The programme is required to be approved by the Principal prior to commencement of the works. SM018 provides the process and justification for developing this programme.

The programme development shall take into consideration, at a minimum, the following:

- Network need as identified through the Contractor's Network inspections and overall Maintenance Management Plan (MMP) processes
- Resurfacing and rehabilitation and other programmes
- The accepted MMP.

**TABLE 5.3.6: BASE PRESERVATION DRAINAGE LENGTHS**

PERIOD	HIGH LIP REMOVAL	REFORM UNLINED SURFACE WATER CHANNELS (SWC)	CLEARING AND REGRADING OF SIDE DRAINS	INSTALL SUBSOIL DRAINAGE LONGITUDINAL SUBSOIL DRAINAGE
Annually	TBCm [[15,000]]m representing 3% of the total Network length.	TBCm [[10,000]]m representing 2% of the total Network length.	TBCm [[10,000]]m representing 5% of the total side-drain length.	TBCm [[1,000]]m

The Contractor shall complete planned drainage maintenance renewal works equal to the lengths specified in Table 5.3.6, Base Preservation Drainage lengths. The programme is required to be approved by the Principal prior to commencement of the drainage renewal works.

### ***Intervention***

Planned drainage maintenance renewals shall be programmed to address one or more of the following requirements:

- Faults occurring in the pavement that relate to moisture build-up through lack of drainage
- Safety issues arising due to water being present on the pavement surface, such as aquaplaning
- In advance of pavement renewals where investment in drainage will extend the life of the asset; for example, ahead of resurfacing and pavement rehabilitation projects to arrest reactive pavement maintenance
- Risk of flooding caused by obstructions in the open drainage system.

### ***High Lip Removal***

Build-up of material on the unsealed shoulder or side slope occurs naturally over time, causing a high lip immediately adjacent to the sealed carriageway. This high lip prevents water to drain away drainage from the carriageway surface.

High lip removal is the removal of the build-up of material adjacent to the edge of the sealed carriageway, allowing water to positively drain from the carriageway surface. The Contractor shall complete high lip removal equal to or exceeding the lengths specified in Table 5.3.6, Base Preservation Drainage lengths. ***Reform Unlined Surface Water Channels***

Build-up of material on side slopes occurs naturally over time, resulting in a side slope of less than 6:1 (H:V). Refer to diagram in Appendix 1.7, Typical Cross-section for Drainage Renewals.

Reforming of unlined surface water channels (SWCs), including reshaping of unsealed shoulders (where they exist), side slopes and longitudinal regrading of the SWC invert, shall be carried out where water does not positively drain away from the sealed carriageway or out of the pavement layers. Reforming of unlined SWCs shall include high lip removal where this can be completed as part of the same operation. The Contractor shall complete reforming of SWCs equal to or exceeding the lengths specified in Table 5.3.6, Base Preservation Drainage lengths.

Reforming of the SWCs is not required where the side slope and SWCs comprises of free draining material or where the carriageway is in an embankment situation and water intrusion into the pavement is not detrimental to the pavement layers.

### ***Clearing and Regrading of Side Drains***

Vegetation, debris, and slump material can obstruct positive drainage through side drains to the overland drainage systems.

Clearing and regrading of side drains shall be carried out where the build-up of vegetation or material within a side drain introduces the risk of flooding within the

road corridor. The Contractor shall complete clearing and regrading of side drains equal to or exceeding the lengths specified in Table 5.3.6, Base Preservation Drainage lengths.

#### **Subsoil Drainage Longitudinal Subsoil Drainage**

Subsoil drainage could be carried out where:

- There is evidence that water from the subgrade is affecting the structural performance or life of the pavement
- A suitable side slope and SWC formation cannot be constructed owing to site constraints.

Falling Weight Deflectometer (FWD) or similar evidence will be required to justify the installation of new subsoil drains. The Contractor shall complete the installation of subsoil drainage equal to the lengths specified in Table 5.3.6, Base Preservation Drainage lengths.

### **5.3.7 Structures**

#### **Design of Barriers and Terminal Entry/Ends**

Any design shall be carried out by an experienced designer who has completed the Principal's Road Safety Barrier Design Workshop.

All safety barriers for use on this Network shall be approved for use in accordance with Transport Agency M/23. This includes all safety barrier hardware such as end terminals.

The general layout of barriers and transitions between barrier systems shall be approved by the Principal prior to installation with modification as required by the Principal to suit any proprietary system adopted for flexible and semi-rigid barriers.

Transitions between wire rope barrier and other systems (e.g. semi-rigid or rigid) shall be in accordance with the Transport Agency's Technical Memorandum TM-2013, Wire Rope Safety Barrier Transitions.

Where proprietary systems are used for flexible or semi-rigid safety barriers, the Contractor shall supply full details of the proposed system including:

- a) Details of barrier deflection and working width for the proposed system;
- b) Working drawings showing:
  - Details and location of intermediate anchorages/tension bays
  - Transition layouts
  - Leading and trailing end terminals
  - Post foundation details for both ground planted and surface mounted installations
  - Manufacturer's installation checklists and full methodology for installation.

The above information shall be submitted for approval to the Principal a minimum of 4 weeks prior to installation.

W-section steel guardrail shall comprise 2.7mm highway guardrail. The layout of the highway guardrail and trailing terminal ends shall be in accordance with this Project Specification and the agreed layout.

All leading end terminals shall be re-directive as classified in NCHRP 350.

## 5.4 NETWORK CONTROLS

The Contractor is responsible for the day-to-day management of Network controls that affect the efficiency, effectiveness, and safety of the Network. This includes the investigation, monitoring, reporting, liaison and actions relating to the activities shown in Table 5.4.1. Refer to the *State Highway Control Manual* (SM012) for guidance and the following sub-sections in implementing the required services.

**TABLE 5.4.1: INDICATIVE NETWORK CONTROL ANNUAL NUMBERS**

ACTIVITY	UNIT	INDICATIVE ANNUAL NUMBERS
Customer and stakeholder relations - CRMS interactions	No.	TBC
<del>Obstructions, partial closures and full closures</del> Unplanned events in Incident Management System	No.	TBC
Unplanned events greater than 10 hours in Incident Management System	No.	TBC
Congestion as recorded in Incident Management System	No.	TBC
Temporary traffic management and safety of work Sites approvals	No.	TBC
Corridor Access Management approvals	No.	TBC
Unauthorised Works	No.	TBC
Network and Adjacent Landowner-related Issues	No.	TBC
<del>Monitoring of</del> Number of existing Consent Activities (LUDs)	No.	TBC
Environmental Consents <del>Compliance Management in CS-VUE</del>	No.	TBC
<b>TOTAL</b>		

### 5.4.1 Customer and Stakeholder Relations

The Contractor shall manage all matters of customer relations conscientiously, proactively and with a personal commitment to the customer value proposition ~~Principal's visions and objectives~~. Specifically, through its Contractor, the Principal wishes to maintain and build on the Principal's reputation for fairness, openness, approachability and integrity. The Contractor is ~~expected~~ required to represent the

Principal in a positive manner to the general public, Local Authorities, Regional Authorities, Iwi and other agencies and groups.

The Contractor has the following responsibilities:

- Proactively plan activities in a time that will minimise the impact (i.e. stress and disruption) to customers
- Communicate disruptions clearly and provide options for customers. Emphasise with customers regarding activity impacts
- Advise the Principal promptly on any matters that may be contentious or affect the Principal's interests. The briefing shall include a draft response to the media, the public, or other parties, as appropriate for the Principal's consideration.
- When requested, accompany or represent the Principal on Site inspections, visits or meetings.
- Monitor, report and take action (as directed by the Principal) on the following:
  - Local issues or public relations matters
  - Media releases and reports
  - Liaise with landowners on matters such as entrances, visibility, obstruction, overhanging trees and damage
  - Where appropriate, arrange for letter drops if adjacent landowners will be affected by the contract activities
  - Liaise with personnel with delegated responsibility within the Principal's organisation. This will include regular liaison with the Principal's Stakeholder Manager.
- Respond expeditiously to queries from the public or other agencies, with investigation, assessment, solution and a written response for the Principal's consideration (copies to the Principal) as appropriate.

#### 5.4.2 Customer Database

The Principal operates a 24 hour, 7 day a week information call centre being, as at the date of this contract, (free phone 0800 4 Highways), which provides general information to customers and road users. The Principal's policy is for all customer enquiries to be directed to 0800 4 Highways (or any other phone number provided by the Principal for this purpose from time to time) and the call centre communicates directly with the Contractor regarding Network specific issues.

The Principal operates a Customer Relationship Management System (CRMS), which is live, interactive, and online, and is based on the SAP software platform.

The Contractor shall record all interactions with customers, including road users, stakeholders and the general public within the CRMS. These interactions shall be classified by the Contractor according to the classification structure(s) defined by the Principal. The Contractor will keep the Principal's CRMS up to date with all its interactions, accessing it by either:

- Using the web-browser-based, SAP software client operated by the Principal, or

- Using the business-to-business communication interfaces for systems integration (web services). Any interface will be required to satisfy the data and functional needs of the Principal's CRMS
- **Tasking the call centre, via a provided higher priority phone number, to make any necessary changes within CRMS.**

**These Both** options provide the Contractor with functionality to keep the Principal informed about customer interactions in near real time.

The Principal will provide training material to the Contractor, but will not be responsible for ongoing training of the Contractor's personnel in the use of the CRMS or its interfaces.

The Contractor must refer complaints, requests or enquiries outside the Principal's business activities to the appropriate authority for resolution.

Referral of a complaint, request or enquiry by the Contractor shall not absolve the Contractor of responsibility for tracking the satisfactory resolution of the complaint, request or enquiry.

### 5.4.3 Communications Database

The Contractor shall develop and maintain a communications database that records all the incoming correspondence (written or oral) and actions for all work completed in accordance with this Section.

The database shall typically detail at least the following:

- Notices to Engineer, Engineers' Representative and Principal
- Document transfer records
- Board Papers
- Date received
- Source and contact numbers
- Issue and type of activity
- Actions taken including dates.

**This database can be an agreed form of evidence for the Quality Management Plan referred to in section 4.2, Quality Management Plan.**

### 5.4.4 Local Authority Liaison Meetings

The Principal has a firm policy of involving the relevant Local Authorities in the formulation of solutions to problems regarding road Network issues, **connecting regions with communities and teaming up on future work opportunities.** The Contractor shall liaise and collaborate with those authorities on all requirements and issues to be considered, as instructed by the Principal.

The Contractor and Principal will be present at all the regular Local Authority Liaison meetings and answer any questions relating to the Network.

The purpose of these meetings is twofold:



- To encourage Local Authority input into the management of the Network and particular items of interest
- To facilitate the flow of information on the operation of the Network to the Local Authority of the area through which the roads pass.

The Contractor shall organise these meetings on a quarterly basis.

Local Authority liaison meeting minutes will be prepared by the Contractor, and forwarded to relevant parties within five working days of the meeting date.

#### 5.4.5 Incident Response Management

Incidents are unplanned events that can have significant effect on the operation of the Network, including traffic incidents and extreme weather events. Inter-agency coordination and cooperation is essential for efficient incident management operations. Agencies involved may include the adjacent Transport Agency contract areas, Police, Fire Service, Ambulance, local and regional Councils, as well as towing and recovery operators.

The customer value proposition must be considered when responding to incidents with a heightened focus on restoring access once the incident has been made safe.

Incident response management primarily follows the New Zealand Coordinated Incident Management System (CIMS) model used by all agencies. In this model, the senior first responder to arrive at the scene, which may be the Contractor, will take the role of Incident Controller until relieved by another. The Principal is also a party to a Highway Incident Management Protocol, which is a Memorandum of Understanding with the Police, NZ Fire Service, National Rural Fire Authority, St John and Wellington Free Ambulance. Refer to Appendix 4.7, Highway Incident Management Protocol – MOU.

The Contractor must comply with and provide the services required by the Memorandum. This will include:

- Attendance at incidents, initial assessment as to response required and liaison with Police and Emergency services
- Advice to the local Transport Traffic Operations Centre (TOC), in particular the status, and change of status, during any incident
- Provide immediate assistance to road users in high risk or critical locations
- Execute traffic control arrangements
- Undertake preventive and emergency road maintenance activities including removal of obstructions, debris, wandering stock, abandoned vehicles and other potential hazards within the appropriate statutory exemption provisions
- Cooperate with the relevant statutory authorities Regional and Local Councils to see that hazardous materials are handled and removed and disposed of appropriately.

The Contractor will also ensure that all emergencies are dealt with according to the requirements of the Emergency Procedures and Contingency Plan applicable to the Network.

The Contractor is required to provide a suitable communications system that will work for all of the Network, regardless of cell phone coverage and during civil defence emergencies (e.g. shortwave radio), for communication between work crews and the TOC.

The Contractor is required to operate the Principal's Incident Management System known as the *Traffic Road Event Information System* (TREIS). The Principal's overarching national philosophy with respect to control, design and display of road event messages is described in the *Incident Management System TREIS-National Operating Policy and Procedures*.

The Contractor's team responsible for the updating management of the Principal's Incident Management System shall complete the Principal's Incident Management System training course within four months of contract commencement. The Contractor shall be responsible for updating the Incident Management System during working hours. After hours the Contractor is responsible for informing the TOC of any updates required to the Incident Management System.

~~Where the incident is a motor vehicle crash that has a significant effect on road operations, the Contractor must complete a report that meets the requirements of the *Minimum Standard Z/13 – Incident Management Reporting*.~~

~~Further to *Clause 1.8.3F* of the *State Highway Control Manual* emergency situations themselves will generally determine whether the road(s) will be closed. Closing the road in emergency situations is delegated to the Contractor when necessary; however, the Police, the Principal and other Emergency Services may also close the road. The Contractor is to ensure the Principal is notified of closures immediately, and that the required closure records are retained.~~

The Principal shall be notified of the circumstances immediately the Contractor becomes aware of any emergency or any other incident that may affect the public and could result in any significant adverse media exposure or represents a liability risk to the Principal.

The Contractor shall immediately notify the Regional Bridge Consultant of any structure damage from crashes, weather events or any other cause that may affect the integrity of a structure and pose a hazard to users of the Network.

Civil Defence Plans and Civil Defence coordination are a Territorial Authority responsibility, with the Police having power over all land transport during a declared emergency. During a declared emergency, the Principal will assist each Local Authority in whatever capacity requested. It is intended that the Principal will communicate with the Civil Defence Emergency Management (CDEM) Group. Refer to the EPPP.

The Contractor shall assist the Principal and take part in the development or update and implementation of appropriate sections of the Regional Civil Defence Plan with the relevant Local Authorities.

The Contractor shall be responsible for producing all emergency works applications where deemed necessary.

After significant events, the Contractor and Principal shall collectively hold a 'lessons learnt' review to capture any learnings that will potentially benefit this contract as well as other Network Outcome Contracts. The Contractor will organise this review, in

conjunction with the Principal, and distribute the lesson learnt outcomes to the Principal within a reasonable timeframe following the event.

### Existing Weather Stations, Monitoring and Forecasting Information

The Principal has established weather recording stations at the locations shown in Table 5.4.2.

**TABLE 5.4.2: LOCATION OF ESTABLISHED WEATHER RECORDING STATIONS**

ROAD NAME	DISPL. (M)	SIDE	SITE DESCRIPTION
<<to complete>>			

The stations are linked to a Met Service-operated website which includes thermal mapping snow and ice prediction and other weather forecast services to assist with iceroad weather forecasting. Information from the weather stations and the Met Service website will be available for the Contractor to assist in the delivery of appropriate winter responses.

**OPM GROUP 5.3.1: INCIDENT RESPONSE MANAGEMENT (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
4	NSHVH, NSH	<5% defects.	Initial update not provided to the TOC/TREIS within physical response time requirement + 15 minutes.	N/A
5	RSH, RCH, RDH	<15% defects.	Initial update not provided to the TOC/TREIS within physical response time requirement + 15 minutes.	N/A
6	All Roads	<5% defects.	Updates not provided to the TOC/TREIS within 15 minutes of an event condition change.	N/A

### 5.4.6 Temporary Traffic Management and Safety of Work-sites

The Contractor shall have suitably qualified and experienced personnel with the appropriate qualifications as required by CoPTTM to fulfil the following responsibilities.

### Traffic Management Coordination

In accordance with CoPTTM the Principal will delegate Traffic Management Coordinator (TMC) duties to the Contractor's TMC.

The Principal seeks to minimise the impact of Network control activities and the Contractor's own activities on road users, with the intention of providing reliable travel times across the Network. In planning road works, the Contractor-TMC will consider the anticipated increase in delays caused by the road works, combined with delays that may be caused by other known road works, reasonably anticipated incidents or recurring congestion (where traffic demand exceeds capacity). Coordination with adjacent Networks is expected when this is required.

### Traffic Management Plan Approvals

The Contractor-TMC is required to act in an independent role to approve Traffic Management Plans (TMPs) for all works within on the road corridor, including third party applications, and require changes where necessary before their use.

Timing and spacing of roadwork sites and the type of traffic control applied can have a significant effect on driver attitude and behaviour. The Contractor-TMC shall coordinate TMP approvals with the customer value proposition in mind to eliminate conflicts between work-sites, particularly in respect to timing and journey-time reliability through fulfilling the TMC roles as required by CoPTTM.

The functions and powers in relation to setting temporary speed limits has been delegated to the Contractor. An appropriate delegation instrument will be provided to the Contractor at the commencement of the Contract Period to comply with the Traffic Control Devices Rule. The recording of temporary speed restrictions at work-sites is also delegated to the Contractor.

~~In accordance with the Traffic Control Devices Rule the a Manager – Systems Management State Highway Manager must approve all temporary speed limits. The recording of temporary speed restrictions at work-sites is however delegated to the Contractor.~~

The TMC shall ensure the following additional requirements are implemented when approving temporary traffic management plans for all works:

- The Contractor and other contractors' site traffic management supervisors (STMS) must notify the TOC immediately before (no more than 2 hours before) temporary traffic management is implemented that has the potential to cause disruption (as a minimum a lane closure).
- The TOC require 2 weeks' written notice before generic TMPs developed for use by the Contractor, and other contractors, are implemented.
- All STMS's must also call the TOC as soon as they become aware that a planned closure is to be cancelled or reprogrammed. This is to ensure that the TOC is always fully briefed and can forward the information to other stakeholders

including updating the Principal's traffic website (e.g. <http://www.nzta.govt.nz/traffic/current-conditions/index.html>).

- The Contractor's STMS must advise the TOC of any changes that could affect traffic conditions as soon as practicable and following removal of TTM to ensure that VMS messages, traveller information and traffic signal operation are always accurate and up to date.

#### OPM GROUP 5.3.2: TMP APPROVALS (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
7	All Roads	No defects.	Third party TMP not approved within the days specified in A7.6 of CoPTTM.	N/A

#### Traffic Management Plan Audits

The Contractor shall carry out TMP audits on work sites in accordance with the CoPTTM on the greater of either:

- a 5% random sample of all parties working within the road corridor per month
- a minimum of 10 per month between 30<sup>th</sup> November and 30<sup>th</sup> April or 5 per month between 1<sup>st</sup> May and 31<sup>st</sup> October

These audits include the Contractor's own activities. A proportion of these are to be completed at night on either attended or non-attended Sites.

#### OPM GROUP 5.3.3: TMP AUDITS (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
8	All Roads	No defects.	Less than 10 audits completed within the last month.	N/A
9	All Roads	No defects.	An audit score classified as "Dangerous" on own work sites.	1 Day

#### TMP APPROVALS AND AUDITS (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
3	All Roads	No defects.	Third party TMP not approved within the days specified in CoPTTM.	2	5 days
4	All Roads	No defects.	10% of TMP audits of active sites completed in previous month to a maximum of 15.	2	N/A
5	All Roads	No defects.	An audit score classified as "Dangerous" on own work sites in previous month.	4	1 day

### ~~Temporary Speed Restrictions~~

~~In terms of the Traffic Control Devices Rule, the powers of the State Highway Manager to approve and record temporary speed restrictions at work sites are delegated to the Contractor.~~

#### 5.4.7 Unauthorised Works

The Contractor shall identify and report on, as necessary, any factors that may adversely affect, or have the potential to adversely affect, the safety, **access**, efficiency or sustainability of the Network. This includes the establishment, operation, installation, erection and construction of, or modification to, works or activities on or adjacent to the Network, including but not limited to:

- Unauthorised signs
- Roadside vendors
- Vehicular crossings
- Utility services
- Sale of Vehicles on road reserves
- Fences and encroachments
- Tree planting

The Contractor shall provide contact details of the offender, site information, details of the offence, any action taken, a copy of any relevant consents granted and provide a recommendation to the Principal.

Where unauthorised signs are identified within the road reserve and confirmed as such ~~by the Principal~~, the Contractor shall remove the signs within the time frame specified by the Principal.

Where the existing road is declared Limited Access Road (LAR), the Contractor shall annually, in addition to the above, monitor all accesses against schedules, plans and notices provided by the Principal to ensure compliance with the LAR declaration and provide an update to the Principal on non-compliance observed. As the Principal's information resides within MapHub (an online interactive mapping system), as at the date of the contract, access will be provided to the Contractor.

#### 5.4.8 Network and Adjacent Landowner-related Issues

The Contractor shall identify and report as necessary on any factors that may adversely affect the safety, access, efficiency or sustainability of the Network including issues such as:

- Structures and signs which are unsafe, unstable or cause obstruction.
- Free-standing signs within the legal road, that do not have the Principal's approval, if they do not comply with the relevant District Plan or Bylaw, which compromise road safety. In particular, if they are reflectorised, illuminated or imitate formal traffic signs.
- Vegetation and trees which are unsafe, unstable or cause obstruction.

### 5.5 PLANNING MANAGEMENT

#### 5.5.1 Attendance at Regional Planning Forums

When requested by the Principal, the Contractor shall provide a suitably qualified person to attend meetings of the wider planning community and forums outside the Network.

#### 5.5.2 Planning Assessment Reports for 3<sup>rd</sup> Party Developments

When requested by the Principal, the Contractor shall provide a suitably qualified person to produce an on-site planning engineering assessment report that assesses the effects of a land use development or activity on the safety, access, efficiency or sustainability of the Network. From time to time the Principal may require further assistance or advice after the initial planning engineering assessment has been compiled, to further support the issues highlighted in the report.

As agreed between the Principal and the Contractor, the report shall ~~should~~ include a general overview of the affected area, with the identification of safety and any other relevant factors that could have a bearing on the safety ~~or~~ and efficiency of the Network. The report ~~can should will~~ also highlight any other matters, suggest mitigation options, and offer a conclusion and a recommendation. An example of a typical report is attached in Appendix 5.5, Standard Format for Planning Assessment Report. However, the final format of the report is to be determined in discussion between the Principal and Contractor and can provide for assessments and responses at various levels of detail. This assessment will primarily focus on risks that directly relate to the engineering options considered ~~matters~~ except where wider planning-related input is specifically requested by the Principal.

The delivery of the standard Planning Assessment Report (as referred to in the Appendices) shall be within 10 working days from the request, unless otherwise agreed with the Principal.

### 5.5.3 Corridor Access Management

Corridor Access Management includes, and is not limited to, the management of contractors, the public and utility operators working within the road corridor. This requires the Contractor to assist the Principal provide access to the road corridor and the right to carry out works (as appropriate) to relevant parties, including (without limitation) by issuing produce a Works Access Permits (WAPs) to accredited utility operators, Approval To Work On the State Highway (ATWOSH) to private owners, and Deeds of Grant to private owners of utility assets, as part of the approval process.

~~Works Access Permit~~ WAPs and ATWOSHs are is defined as “a written permission from the Principal to enable works within the road reserve or motorway corridor to proceed”. This includes, and is not limited to, ~~Deed of Grants, Licence to Occupy~~, stock underpasses, event management, road closures, private and public utilities access, and access requirements.

The Contractor shall coordinate, review and manage all activities that require access to the road corridor. Utility access requests that are covered by legislation will be managed in accordance with the Principal’s requirements and the *National Code of Practice for Utility Operator’s Access to Transport Corridors*. The Principal uses two systems to manage and coordinate requests to access the road corridor. Before You Dig ([www.b4udig.co.nz](http://www.b4udig.co.nz)) and the RAMM CAR Manager/Submittica module.

The Contractor shall ~~complete the work in accordance with the following:~~

- Review all ~~Corridor Access Requests (CARs) and ATWOSHs~~ to ensure completeness (in terms of LUD approval and crossing place notices). These are received electronically, through the Before You Dig system, or manually.
- Liaise with applicants as required and assist them to provide an accurate scope of the work. The Contractor must inform the applicant immediately when the CAR is considered to be too inadequate to process. The Contractor will assist the applicant and provide guidance where necessary to maintain good customer relationships.
- Where necessary, inspect the location associated with the installation of new, and the maintenance of existing, utility structures within the road reserve. This could include a joint inspection with the applicant to check that the location of any new services is optimally located or that the maintenance of existing services is completed in the most appropriate manner.
- Liaise with the Regional Bridge Consultant to corroborate that consideration and conditions for all structures are included in the WAP or ATWOSH conditions.
- Liaise with the applicant and Principal to verify that all consent and RMA requirements of interest to the Principal are included in the WAP or ATWOSH conditions as well as any potential service cost recovery requirements.



- Reference and review all registers and forward works programmes to ensure an integrated fence-to-fence approach is achieved, including work coordination to minimise customer disruption.
- Prepare the WAP or ATWOSH on behalf of the Principal including the full schedule of conditions and Deeds of Grant for the Principal's approval using RAMM CAR Manager. Liaison with the Principal will be required to see that customer responses are accurate and timely.
- Monitor the activities of the applicant. This includes:
  - Checking the compliance with the formal requirements of the WAP or ATWOSH or Deed of Grant, and the environmental and technical adequacy of the work as it affects the Network
  - ~~Assessing the adequacy of traffic management measures as in the *Code of Practice for Temporary Traffic Management*~~
  - Loading inspection notes and reporting requirements into RAMM CAR Manager
  - Making sure that all emergency works undertaken by other parties are retrospectively included into RAMM CAR Manager
  - Assisting with job costing and invoicing requirements for the Principal
  - Providing a detailed written report to the Principal when the work is not completed in accordance with the WAP or ATWOSH Deed of Grant
  - Issuing a Deed of Grant after installing private utility assets for an ATWOSH.
- Complete necessary requirements, such as defects liability notification, release of bond, and works completion certificates.
- Obtain as built records for the completed activity and add the asset data into RAMM, if required by the Principal.
- On behalf of the Principal, coordinate and facilitate the location or relocation of utility structures, including Land Information New Zealand (LINZ) survey marks, affected by the applicant's work.
- Attend and participate in all local utility service liaison meetings. On behalf of the Principal, the Contractor may be required to organise utility operator liaison meetings to comply with the frequency and principles of the General Requirements section of the *National Code of Practice for Utility Operator's Access to Transport Corridors*. Such meetings are to be treated as commercial in confidence and any information received from the Utility Operators is to be protected. The Principal will advise the Contractor if these meetings are to be combined with other networks or with Local Authorities. The Contractor will attend general utility operator liaison meetings with the various utility operators within the Network area. The Contractor shall provide copies of the Capital and Maintenance FWP's for the Network and details of the works programmed to commence within the next six months and three-year plans.

The issuing of a WAP or ATWOSH is 15 working days from submission. The Contractor is expected to allow sufficient time within this timeframe for any Principal involvement and approvals.

The Principal requires as a minimum, that temporary works lasting for longer than six hours and which are likely to affect safety or travel times are also logged in RAMM CAR Manager and the Principal's Incident Management System, including but not limited to the following activities:

- altered geometric alignment of live traffic lanes (safe radii, adverse camber etc)
- lane closures
- lateral lane shifts
- movement(s) ban
- footpath / cycle path closures.

Refer to the *State Highway Control Manual* (SM012) for further details of the processes.

#### OPM GROUP 5.3.4: CORRIDOR ACCESS MANAGEMENT (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
10	All Roads	Not more than 2 defects.	CAR not processed in accordance the Principal's procedures and the National Code of Practice for Utility Operator's Access to Transport Corridors.	5 hours

#### CORRIDOR ACCESS REQUEST MANAGEMENT (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
6	All Roads	≤ 2 defects per month.	CAR not processed in accordance with the Principal's procedures and the National Code of Practice for Utility Operator's Access to Transport Corridors.	2	5 hours

### 5.5.4 Monitoring of Consented Third-3<sup>rd</sup> Party Activities

Third party activities include, but are not limited to, approved WAPs, CARs and LUDs. Once CAR and 3<sup>rd</sup> party approval for Land Use Development (LUD) approval is granted, the Principal will forward a copy of the final consent documentation to the Contractor. The Contractor agrees to undertake the following as required on a case by case basis:

- Monitor the 3<sup>rd</sup> party work to ensure that it complies with the conditions of the affected party approval, or approved Crossing Place consent or Consent Notice of Consent issued by the Principal, as it pertains to effects on affects the Network. This shall include as a minimum, random on-site checks at key hold points. Monitor the completed work to check that defect liability issues are identified. This shall include as a minimum, random on-site checks at key hold points.
- Monitor the Network to confirm that all necessary statutory approvals consents are being requested, and that existing statutory approvals consent requirements are being complied with.
- Notify the Principal of any non-compliance with the statutory approvals consent(s) and certify, on completion of the work, compliance with the conditions consents.
- Liaise with the Principal’s Environmental Specialist and planner as directed pre-lodgement through to the compliance monitoring phase.
- Notify the Principal when works are completed.

Generally, the Contractor will raise any concerns initially with the third party, but in urgent situations the Contractor shall take immediate action to ensure public safety or protect the Principal’s interests.

**OPM GROUP 5.3.5: CONSENTED ACTIVITIES MONITORING (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
11	All Roads	No defects.	A defect liability issue not identified for the third party to address prior to the end of the liability period.	2 months

**5.6 ENVIRONMENTAL MANAGEMENT**

**5.6.1 Environmental Consent Compliance Management System**

The Contractor shall ensure check that compliance with statutory approvals for network maintenance is proactively managed, evidence of compliance is recorded in CS-VUE met and regularly reported to the Principal via the monthly reports. statutory approvals include, but are not limited to, with respect to the resource consents, designations, Historic Places Act (HPA) Authorities and Department of Conservation (DOC) concessions requirements and other statutory approvals such as HPA Authorities

and DOC concessions, for Network maintenance, including. The scope of relevant consents may include new construction activities, proposed future development works and works that are handed over from capital works, or other Network-managed projects that have been completed.

Compliance with existing statutory approvals consent conditions, which is the responsibility of the Contractor. Current statutory approvals, e.g. consents and designation information, is included in Appendix 5.6, statutory approvals – Resource Consents and Designations. The statutory approvals relevant to network maintenance is subject to change. Real time data on all statutory approvals is stored and maintained in CS-VUE.

The Contractor shall use the Principal's Consent Compliance Management System (CS-VUE, an online environmental management and compliance system) to manage consents and monitor consent compliance. The Principal will be responsible for the initial loading of consents into CS-VUE. Following that, the identified representative(s) for the Contractor will be assigned as condition managers for all consents relevant to the contract and will proactively manage compliance, including signing off conditions in CS-VUE with adequate evidence of compliance.

The Contractor shall proactively identify opportunities to optimise statutory approvals required for the contract in consultation with the delegated staff member of the Principal's organisation.

The Contractor shall obtain any consents required for the delivery of their lump sum activities and all material supplies for the Contract Works. This is included in the lump sum component of the Contract Price.

## 5.6.2 New Environmental Consents

Where the Contract Works, other than lump sum activities, require new consent(s) or approval(s) in terms relevant to environmental legislation such as the RMA, the Contractor shall notify the Principal will need to:

- Notify the Principal that approval is required, and work with the delegated staff member of the Principal's organisation to prepare the application and lodge it once it has been approved by the Principal
- Request draft conditions, and work with the delegated staff member of the Principal's organisation to agree on any required condition changes prior to the final decision being issued.
- Notify the Principal when approval is granted and work through the acceptability of the approvals obligations and object to if necessary
- Notify the Principal when works have commenced, as conditions are monitored and when they are completed
- Notify the Principal of any non-compliance with the approval(s) and, on completion of the work, certify compliance through CS-VUE the Principal's Compliance Management System.

The cost of obtaining any new consents will be borne by the Principal.

**OPM GROUP 5.3.6: CONSENT COMPLIANCE (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
12	All Roads	No defects:	Receipt of consent compliance infringement notice:	N/A

## 5.7 BRIDGE AND OTHER STRUCTURES MAINTENANCE MANAGEMENT

The Contractor remains responsible for the overall maintenance of the Network which includes routine structures maintenance.

Bridges are those structures that directly support road traffic, including all culverts and multiple culverts with a total waterway area greater than 3.4m<sup>2</sup>, and all stock and pedestrian underpasses.

Other structures include roadway structures within the road corridor meeting any of the following criteria:

- Structures where public safety or critical Network function is likely to be significantly affected in the event of failure, irrespective of ownership.
- Structures of high value.
- Structures requiring specialised engineering inspection. Examples include:
  - Retaining walls > 1.5m high
  - Rockfall and slope debris control structures ~~Slope protection works~~
  - Noise walls
  - Critical river protection works
  - Footbridges and cycle bridges
  - Major coastal protection works
  - Redundant bridges (accessible)
  - Critical small culverts
  - Large drainage structures
  - Large stabilised slopes and batters
  - Large cantilever and gantry signs and signals ~~gantries and large lighting masts~~
  - Bridges over or adjacent to roads ~~state highways~~
  - CCTV masts.

An inventory of bridges and an inventory of other structures are included in Appendix 5.7, Inventory of Bridges and Other Structures. Also refer to the Principal's Highway Structures Information Management System (HSIMS) ~~Bridge Data System (BDS)~~.

The Contractor shall be responsible for liaison with the Regional Bridge Consultant (RBC) to determine the elements of bridges and other structures that are subject to maintenance as well as the methodology that is required for the maintenance of each item, in the context of this contract. This shall be consistent with the ESMP (refer ~~Maintenance Specification~~, Section 4.4, Environmental and Social Management Plan).

Appendix 5.8, Bridge and Other Structures Maintenance Activities Flowchart includes a flowchart showing various activities and related interactions between the Contractor, the Regional Bridge Consultant and the Principal for defect identification (inspections), maintenance management and maintenance physical works.

### 5.7.1 Six-monthly Bridges and Other Structures Meeting

The Principal, Contractor and the Regional Bridge Consultant shall meet on a six-monthly basis to discuss issues in common, exchange information, agree to actions related to maintenance, and review any work completed since the previous meeting. The meetings are to be organised by the Contractor.

The following issues shall be addressed at the meeting:

- Roles and responsibilities
- Routine bridge maintenance
  - the Contractor shall provide a draft schedule of routine maintenance items they have identified. This shall include a prioritised work programme and identify whether the items are included in the lump or are outside the lump sum. The Contractor shall provide prices for proposed routine maintenance items not included under the lump sum
  - the Regional Bridge Consultant shall provide details of additional routine maintenance items identified during general and principal inspections
  - the Contractor, Regional Bridge Consultant and the Principal shall discuss routine maintenance requirements and agree on the schedule of work
  - the Contractor, Regional Bridge Consultant and the Principal shall discuss any routine maintenance work that is outside the scope of this contract that the Contractor will be asked to undertake as a variation to this contract
  - the Contractor, Regional Bridge Consultant and the Principal shall discuss unusual or significant work items and work progress
- Structural bridge maintenance
  - the Contractor and the Regional Bridge Consultant shall discuss any structural defects identified by the Contractor
  - the Regional Bridge Consultant shall outline their proposed work programme, noting any work that the Contractor will be asked to undertake as a variation to this contract

- the Contractor shall provide the Regional Bridge Consultant with an update of progress of works
- Other structures maintenance
- Changes to Network
  - the Contractor shall provide the Regional Bridge Consultant with maintenance boundary changes and agreements with local authorities affecting structures
- Proposed works on existing structures
  - the Contractor shall advise the Regional Bridge Consultant of any known and proposed works on existing structures, e.g. utility installation on bridges, resurfacing of bridge decks, barrier modifications
- Emergency response issues
  - both the Contractor and the Regional Bridge Consultant shall advise of any changes to emergency response plans
  - the Contractor shall advise the Regional Bridge Consultant of any response issues affecting structures
- New structures proposed on network
  - both the Contractor and the Regional Bridge Consultant shall outline any known or proposed new structures on the Network regardless of origin
- Communications/contacts
  - advise changes of contact details
- Routine surveillance inspections
- General, principal and special inspections
- Other matters
  - upcoming traffic management requirements and possible conflicts
  - the Contractor shall advise the Regional Bridge Consultant of any changes to the structural inventory held by the Contractor
  - resource consent issues and health and safety issues affecting structures
  - barrier/guardrail maintenance
  - funding matters including when relevant the annual funding request
  - minor improvement works that affect any structure and any peer review requirements
  - any Network safety issues relating to structures.

### 5.7.2 Bailey Bridges

The Principal has in place a Bailey Bridging Service contract, which includes the design, erection, inspection, maintenance and dismantling of bailey bridge superstructures

and bearings. When the Contractor considers a Bailey Bridge is necessary to expedite the re-opening of a road to traffic:

1. The Contractor will contact the Principal to request confirmation that a Bailey bridge will be made available
2. The Contractor will advise the Regional Bridge Consultant that a Bailey bridge is required
3. The Contractor remains responsible for the overall management of the event, excluding:
  - Determination of the bridge location, alignment and span arrangement, and advising the Bailey Bridging Service Contractor
  - Liaison with the Bailey Bridging Service Contractor to confirm the proposed bridge layout and obtain relevant Bailey bridge information
  - Responsibility for the design and construction supervision of the Bailey bridge foundations and substructures
  - Arrangement and implementation of an ongoing inspection and routine maintenance programme for the bridge foundations, substructures and decking.

## 5.8 ROAD SAFETY MANAGEMENT

The Principal has provided significant investment to improve the road safety for customers using the Network. The Principal requires the Contractor's road safety management to focus on eliminating death and serious injury (DSi) crashes on the Network.

To safeguard the investment and maintain continued progress towards regional and national objectives, which is to support the Government's Safer Journeys Strategy and associated action plans by delivering a Safe System approach to road safety, the Contractor will:

- Maintain the infrastructure in a safe condition so that it performs its role well
- Conduct all the activities required to deliver in accordance with the RSMP
- Identify opportunities to improve the road safety of the Network (such as, but not limited to, realignments, intersection improvements, seal widening, delineation, lighting, signage, surfacing and traffic calming) and apply incorporate Safe System measures within those opportunities where it is effective and efficient to do so
- Have available suitably trained personnel who could be included in Safe System and Crash Reduction Studies activities
- Undertake regular inspections in accordance with Section 3.6.4

Appendix 2.4, Process Maps, includes the Safety Management process map. All safety management activities support the Transport Agency's *Safe Network Management Activity Manual*.



This section focuses on road safety management, however, many of the maintenance activities completed by the Contractor will contribute to road safety on the Network, for example identifying:

- through routine activities, maintenance works that if not completed in a timely manner has the potential to adversely affect road safety
- through routine and targeted activities, features on the Network where road safety could be improved and documenting these features in the Road Safety Improvements Database for prioritised treatment
- based on customer feedback, maintenance and/or road safety works that have the potential to enhance road safety on the Network.

### 5.8.1 Regional Road Safety Strategy Updates

The Principal will maintain the Region's Road Safety Strategy however will require the assistance of the Contractor, when requested.

A Regional Road Safety Strategy reflects the information provided in the Principal's System and is a high-level document.

Refer to the State Highway Safe Network Management Activity Manual (SHSNMAM) for further details at <https://www.nzta.govt.nz/resources/state-highway-safe-network-management-activity-manual/>

### 5.8.2 Developing Crash Trend Analysis

The Principal requires the Contractor to proactively identify, prioritise, and treat (as appropriate) locations at which developing crash trends indicate there is the potential for more and/or more serious crashes to occur. Through the RSMP the Contractor will identify the proactive approach they will take to regularly monitor the incidence of crashes on the Network to determine whether there are any developing crash trends at specific locations (sites and/or discrete lengths of road). The Contractor is required to document their proposed approach in the RSMP and request approval from the Principal with regard to the manner in which the Contractor proposes to carry out analysis to identify developing crash trends. Specifically, the Principal anticipates that the developing crash trend analysis will:

- be conducted on a quarterly basis to align with being reported at the Network Road Safety Meetings
- consider crashes over the previous 24 months
- identify reported crashes within close proximity to other reported crashes
- identify crashes along corridors where there are crash commonalities
- incorporate a prioritisation system based on which the Contractor will carry out and/or request funding for maintenance and/or physical works to address the developing crash trend.

With regard to the crash commonalities, the Principal notes that the factors which could be analysed include, but are not limited to:

- Head-on crashes

- Run-off road crashes
- Intersection crashes
- Loss of control crashes
- Crashes on wet surface
- Crashes in the dark
- Crashes involving motorcyclists and other vulnerable road users
- Crashes involving heavy commercial vehicles.

### 5.8.3 Road Safety Improvements Database

The Contractor shall develop and maintain a live database (or similar) that is a register of potential road safety improvements, excluding routine maintenance issues, that will inform the Principal of future Network safety improvements. The register will include:

- The name and location of the potential improvement, including both the linear referencing and GPS location
- A description of the issue for which an improvement is proposed
- A description of the proposed improvement
- The likely category of works (such as low cost low risk, capital or similar ~~Minor Improvements, Block, Major~~)
- The agreed treatment philosophy for the corridor on which the improvement is located, together with the road ONRC type classification and current KiwiRAP Star rating (to one decimal place)
- The improvement “pedigree”, or where the idea for the improvement came from such as Activity Management Plan, Activity Management System, supported programme business case, improvement associated with other road related activities, Network inspections, public feedback/complaints, Road Safety Action Plan, Safety Audits/Inspections, safety strategy or other source, ~~the Contractor, the Principal, Crash Reduction Study, fatal crash investigation and so on~~)
- Status (e.g. investigation, design, construction, complete)

The Principal allows some cross funding between maintenance and capital; this means that some minor improvements to the Network can be carried out in conjunction with maintenance works where those improvement works have the potential to reduce the risk of crashes on the Network and result in road safety benefits. While maintenance related improvements to the Network are not necessarily safety projects, they can result in road safety improvements. The Contractor must have an understanding of the Principal’s cross funding approach and identify opportunities for improving road safety through minor improvements to the Network that can be constructed as part of maintenance works. This methodology is aligned with the safe system approach and improves efficiency in the delivery of minor maintenance improvements that also improve road safety.

### 5.8.4 Road Safety Projects Programme

The Road Safety Projects Programme comprises a schedule of identified future works that can be separately classified as 'low cost low risk', 'minor improvement', or 'safety improvement' projects. The Contractor is required to provide support to the Principal to develop this programme. The necessary data to define the identified safety issues and problems on the Network will be forwarded to the Principal when requested, in an agreed format (from time to time). The current web-based system format used by the Principal is called Hapai. Safety Works Investment Prioritisation Process (SWIPP) spreadsheets.

These projects will be analysed and prioritised by the Principal using risk profiles and will be approved nationally based on the projects potential to reduce Death and Serious injury (DSi).

The Contractor shall ensure that a programme of safety projects within Hapai is available for review annually by the Principal no later than the end of October each calendar year. The timing will enable the projects to be submitted by the Principal by the end of November each calendar year as part of the annual funding bid.

The October deadline will not preclude further projects being added to the proposed programme of safety projects.

### 5.8.5 Proactive Minor Road Safety Initiatives

Pro-active minor road safety works are considered to be in the best interests of both the Principal and the Contractor.

Road safety works are timely effective measures performed as part of the contract, focused on reducing DSi crashes. Such road safety works are strongly encouraged by the Principal.

The Principal has allocated provisional funds of \$100,000/annum for the Contractor to support implementing the RSMP by providing funding for minor road safety initiatives that the Contractor believes will positively contribute to reducing the level of DSIs on the Network. Through the Contractor's own investigations, trend monitoring and reporting (as identified within the RSMP) road safety initiatives shall be developed and presented to the Principal for consideration and acceptance. The following information is to be provided for each initiative:

- Initiative title
- Background
- Description of the initiative
- Likely impact to DSIs
- Cost to implement.

The Contractor may choose to select projects from the Road Safety Projects Programme that have not been otherwise approved/funded for implementation.

### 5.8.6 Reactive Customer Road Safety Improvements

In order to promote the outcomes of the customer value proposition the Principal has provided a provisional sum of \$50,000 per annum within this contract to resolve small road safety related customer issues quickly and efficiently.

If a customer raised road safety issue, which is outside of the Contractor's contractual requirements, can be resolved within two months from application acceptance and will cost less than \$5,000 then the following monthly process will be used:

- Provide background information, programme of rectification and costs to the Principal for each issue received. If more than one issue is received then the Contractor shall propose the prioritised manner in which the issues are to be addressed.
- The Principal will consider the information provided and respond to the Contractor with an outcome
- If the Principal approves the application(s) then the Contractor will implement the solution(s) within a reasonable timeframe after receipt of the Principal's approval.

All other safety requests must be entered into the Safety Improvements Database and will be managed within that process.

### Network Safety Trend Monitoring and Reporting

The Contractor shall provide quarterly safety reports that are based on factual data, the requirements of the safety management strategy and any assigned safety works. As a minimum, the report shall contain the following:

- Updated crash data trends for the Network, split by road and severity.
- The crash history on the Network over the past 5 years, reported as rolling 12 months ending in the previous quarter, together with the 3-year linear trend.
- For the past year and past 3 years the following ratios metrics will be required:
  - fatalities / 100 million vehicle kilometres of travel
  - fatalities + serious injuries / 100 million vehicle kilometres of travel
  - severity ratios (fatal and serious injury crashes) / all injury crashes
  - (number of deaths and serious injuries) / number of all injuries
  - the ratios for wet versus dry roads and light versus dark.

These ratios will be prepared for individual roads and Asset Management Plan corridor lengths. In addition to the above, the ratios will be prepared for the out-of-context curves set, as well as crash types A, C, H, J, BB to BD and BF, DA and DB as reported within CAS.

- Fatal and serious report information.
- Sites or routes that are showing an increase in the number of crashes.
- Any other safety concerns such as an increase in night-time or wet road crashes, intersection issues, specific user groups (such as but not limited to motorcyclists, refer *Guideline to making roads motorcycle friendly*) recently identified safety hazards and deficiencies that may have been identified by the Contractor, Principal, Coroner, the public or other parties.

- ~~Progress on items recorded in the Safety Improvement Database.~~
  - ~~The status of any minor improvement works that the Contractor has been tasked to complete.~~
  - ~~Any maintenance safety-related works completed within the last 3 months.~~
  - ~~Any safety-related works planned to be carried out over the following 3 months.~~
  - ~~Recommendations of further safety-related investigations to be carried out.~~
- ~~The Network safety trend report shall be delivered to the Principal for consideration.  
The Principal may request further work to be completed in the form of safety reports.~~

## 5.8.7 Reporting

### Safety Trend Reporting

The Principal will provide national safety trend reporting to the Contractor periodically. This information shall be considered along with the Contractor's own local safety trend analysis for informing the RSMP, Safety Projects Programme, and when developing potential projects for the Safety Improvements Database.

The Contractor's approach to local road safety trend analysis will be documented in the RSMP.

### Death Fatal and Serious Injury Crash Reports

The Contractor shall report on:

- All ~~crashes resulting in death~~ fatal crashes,
- Serious ~~injury~~ crashes, when requested by the Principal, or
- ~~Crashes~~ where road deficiencies appear to have been a major contributing factor and the Principal has requested a report.

For death and serious injury and other crashes, the Contractor's Road Safety Engineer or approved nominated representative, must attend the scene within the time frame agreed with the Principal. Scene visits are required to evaluate the scene and the mechanics of the crash so that a comprehensive final report can be produced.

The Contractor is required to provide:

- a verbal report to the Principal either while onsite or within one hour of leaving the site
- a draft report within ~~two working days~~ 48 hours of the date of the crash, or when requested by the Principal.
- a ~~draft~~ final report, which will be delivered to ~~is to be accepted by~~ the Principal within 10 working days of issuing of the draft report.
- a final report within five working days from receiving the Principal's feedback on the draft final report.

The final report ~~shall~~ will do the following:

- ~~Document~~ Address issues such as the location and possible factors contributing to the crash, weather conditions and road conditions
- ~~Be the most complete representation possible of the crash~~

- Document possible road/roadside factors contributing to the crash
- Recommend any remedial actions
- Document issues identified that are to be incorporated into the Safety Improvements Database.

A guideline of the content of the report is included in Appendix 5.9, Death Fatal and Serious Injury Crash Reports.

### Road Safety Reports

When requested by the Principal, the Contractor shall provide a suitably qualified person(s) to produce a road safety reports on specific Sites or issues. The requirement for these reports typically stems from third party enquiries, inputs required for road-safety action-plan meetings, coroner requests, Network inspections and crash trend analysis.

The Contractor and the Principal will agree on a report format for road safety reporting, which will include, but is not limited to, identifying the problem, offering sound solutions, developing estimates, including an appropriate level of economic analysis, and providing recommendations. The scope of works for each report required is expected to differ depending on the issue.

### Road Safety Theme Inspections and Reporting

When requested by the Principal, the Contractor shall provide a suitably qualified person(s) to undertake road safety theme inspections and reporting.

The Contractor and the Principal will agree on the inspection and reporting requirements. The scope of works for each theme inspection required is expected to differ depending on the issue and will clearly identify issues and actions.

### Updating KiwiRAP

The Principal has developed and will provide access to the KiwiRAP Analysis Tool (KAT), which identifies the existing infrastructure characteristics of the Network and provides Road Protection Scores and KiwiRAP star ratings. The Contractor shall have personnel available to make annual engineering updates for any safety project that will alter the existing infrastructure and safety rating of any road. All updates will be completed at the request of the Principal and must be completed by the agreed date by modifying the information contained in the provided in KAT by the agreed date.

## 5.8.8 Road Safety Meetings, Forums, Workshops and Studies

### Network Road Safety Meetings

The Principal and Contractor shall meet on a quarterly basis or as agreed with the Principal to:

- review any road safety related activities carried out in the Network since the previous meeting
- discuss major road safety issues identified from the Network monthly meetings and any common issues
- exchange information
- share innovation and ideas

- agree to actions, and review any work completed since the previous meeting.

These meetings shall be attended by, as a minimum, by the Principal's road safety engineer and the Contractor's nominated road safety engineer.

The Contractor is responsible for organising the meeting dates, locations, agenda and minutes. A draft copy of the minutes shall be provided to the Principal for review within five working days after the meeting. The final version of the minutes shall be delivered to the Principal within five working days from receiving the Principal's feedback on the draft minutes.

#### **Attendance at Road Safety Meetings and Forums**

When requested by the Principal, the Contractor shall provide a suitably qualified person(s) to attend meetings and forums of the wider road safety community and forums outside the Network.

#### **Crash Reduction Studies and Road Safety Audits**

When requested by the Principal, the Contractor shall provide a suitably qualified person(s) to participate in, and inform, any crash reduction studies, road safety audits, or similar that are undertaken on the Network.

## **5.9 GEOTECHNICAL MANAGEMENT**

### **5.9.1 Geological threats and site hazard inspection**

The Principal has identified a number of over slips, under slips, rock fall sites and other geological threats to the connectivity and reliability of the Network that require specifically programmed inspection and reporting regimes.

For sites listed in Appendix 5.10, Geological Hazard Site Inspection Register, inspections must be carried out by the Contractor's nominated Geotechnical Personnel as outlined. Any changes observed (including any new sites or features) shall be added to the current list of geotechnical threats, and if applicable update existing Slope Check Manuals and Rock Fall Hazard Rating scores and report on any recommended further actions.

Results from inspections will be used to prepare or update the maintenance programme for the current financial year and be included in the Annual Plan for the following years. This may include:

- Additional inspections and surveillance
- Installation of monitoring devices
- Detailed inspection and mapping using rope access
- Continued rock removal (limited face clean up) and stabilisation.
- Manage provision for dump sites
- Manage all Consents and all necessary land issues

When requested by the Principal, the Contractor will:

- Undertake any necessary physical works

- Prepare contract documents, carry out tender evaluation and contract management and supervision.

Note, any stabilisation work or emergency works must take into account the impact on traffic and ensure traffic delays are minimised as much as reasonably possible.

The Principal reserves the right to decide on whether or not larger scale rock stabilisation works should be tendered or not.

**OPM GROUP 5.3.7: GEOLOGICAL THREATS (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
13	All Roads	No defects.	Unstable site not actively monitored and reported on, as defined within the listed sites shown in Appendix 5.3.	N/A

**GEOLOGICAL THREATS (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
7	All Roads	No defects.	Unstable site not actively monitored and reported on, as defined within the Geological Hazard Site Inspection Register shown in Appendix 5.10.	1	5 days

**5.9.2 Geotechnical Assessment and Reporting**

Post significant event and as requested by the Principal, the Contractor shall undertake Geotechnical Assessments as follows:

**Preliminary Assessment – Geotechnical**

A Preliminary Assessment shall be undertaken upon request of the Principal and shall include a desktop study of the greater site area and a site walk-over by a suitably qualified engineer/geologist and include, but not be limited to:

- Photos and sketches of the site. Site sketches (which may be legible hand drawn) to include stormwater drainage features, culverts and other road furniture as well as swale drains
- Include any historical information in relation to the site or nearby adjacent failures, including exploratory hole records



- Consideration of the topography, geology, local features and inferred surface water drainage paths to provide an inferred mode of failure
- Provide options to remediate taking into account the mode of failure, including Rough Order Cost (ROC) and a risk assessment versus option. It is anticipated that options would range from fully compliant with the Transport Agency's Bridge Manual to higher risk lower cost options that require departures from the Transport Agency's Bridge Manual and 'practitioners' solutions. For each option
  1. recommend ground investigations to facilitate design
  2. recommend option with reasoning.

### **Detailed Assessment Report – Geotechnical**

The Detailed Assessment Report shall be undertaken upon request of the Principal and within timeframes set by the Principal. This shall include the results of conducted investigations and applicable calibration charts and satisfy Technical Advice Note TAN15/13.

The detailed assessment shall include:

- A developed ground model with associated soil parameters (commentary on the derivation of the adopted parameters is expected)
- Commentary on the factors of safety achieved for the option in relation to the Principal's Bridge Manual requirements
- A draft 'design philosophy statement' generally in accordance with the Principal's Structures Design Guide, which may be set out in 'table format' detailing the achieved factors of safety against the bridge manual requirements with indication whether a departure to standard is required
- Commentary on recommended departures and reasoning behind the departure
- An update of the risk for the design option from the preliminary assessment phase.

Following commentary from the Principal, the detailed assessment will be finalised.

A design philosophy statement shall be provided to the Principal for acceptance detailing the proposed design standards in relation to the Principal's Bridge Manual and detail recommended departures for approval by the Principal.

### **Detailed Design**

When requested by the Principal a detailed design shall be undertaken by the Contractor. Completion of any prior assessment or design stages does not guarantee that the detailed design stage will be completed by the Contractor.

The detailed design shall be provided to the Principal for comment, following which a design certificate is to be provided to the Principal.

Where required by the Principal, an independent 'design review certificate' shall be provided once the Principal has approved the design.

Following approval by the Principal of the design certificate (and design review where required) construction can commence.

### **Construction**

When requested by the Principal, construction shall be undertaken by the Contractor. Completion of any prior assessment or design stages does not guarantee that the construction stage will be completed by the Contractor.

At the end of construction, a construction certificate is to be provided by the Contractor to the Principal along with a construction review (where required by the Principal) from a reviewer agreed to by the Principal.

## 5.10 FINANCIAL MANAGEMENT

Financial Management sets out the requirements to manage the Principal's annual Network maintenance budget through the reporting of forecasts, accruals, and variations.

The Contractor shall manage the expenditure of the budget to ensure cost-effective Network solutions, through setting and maintaining cash flow forecasts, completing the monthly accrual reports and advising the Principal of the implications of any variations of the end-of-year budgeted expenditure.

Apart from emergency works, or where the direct safety of the travelling public may be at risk, the Contractor has no authority to commit the Principal to expenditure beyond the approved allocation. The Contractor shall notify the Principal immediately if any such occurrences are likely.

### 5.10.1 Annual Allocations and Cash Flows

At the commencement of the contract, the Contractor shall provide annual cash flow forecasts for each year of the Contract Period, which fully align with the Tender Price, for each work category under the Contractor's management or coordinated with the Principal. The Principal will provide the relevant forms to be completed to assist in this exercise. The Contractor with access to SAP for completing the accruals and forecasting information.

The Contractor shall be in a position, by 1<sup>st</sup> July of each year of the Contract Period (unless agreed otherwise), to provide monthly cash flow forecasts for each work activity under the Contractor's management for the new financial year, being cognisant of the Principal's available budget allocations. The Principal will provide the relevant forms to be completed to assist in this exercise.

The Contractor shall work with the Principal to set the initial annual forecasts. These forecasts will be based on known maintenance requirements, whether currently programmed or as a result of ongoing inspections, and an assessment of likely needs based on knowledge of the Network.

It is recognised that the proposed work programmes may change as a result of ongoing inspections, changing priorities and final funding allocations.

Cash flow forecasts shall include monthly amounts for the remaining period of the current financial year. This information shall be entered into SAP once SAP becomes available to the Principal for each new financial year.

**OPM GROUP 5.6.1: FINANCIAL MANAGEMENT (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
16	All Roads	<20%.	Misalignment between the end of year actual and original forecast that was established in August of the preceding year.	N/A
17	All Roads	<5%.	Misalignment between the end of year actual and forecast that was reviewed at February of the current year.	N/A

**5.10.2 Monthly Financial Accruals**

The Contractor shall enter and validate monthly accrual data into SAP for each SAP work element by the due date each month, as agreed with the Principal, but by no later than the 6<sup>th</sup> working calendar day. The Contractor and Principal are to review and resolve any issues prior to this end period.

Where any expenditure issue or variation occurs, or is forecast to occur, the Contractor shall advise the Principal, update SAP as appropriate and provide details within the Monthly Report.

Where any expenditure issue or variation occurs, or is forecast to occur, for the forthcoming financial years, the Contractor shall advise the Principal within the Monthly Report, but not make any changes within SAP unless mutually agreed.

**5.10.3 Monthly Financial Claims**

Monthly claims are to be submitted in accordance with the Conditions of Contract, Section 12, along with applicable supporting documentation, and by no later than the 6<sup>th</sup> working day of the month.

The claim value is to be reflected in the monthly financial accruals.

**5.11 CAPITAL PROJECTS****5.11.1 Capital Project Involvement**

Interfacing with capital projects is essential so that planning, design and construction produce the best outcomes possible for the Network. The Contractor will be required to assist the Principal by providing accurate inputs leading to sound asset management decisions that add optimal value to the Network asset. The Contractor will be required to actively participate in Safety in Design reviews ensuring better health and safety outcomes are achieved.

The Principal, with assistance from the Contractor, will develop processes and outcomes to address operations and maintenance considerations, for each stage of a capital project, whole-of-life issues and value-for-money inclusions.

The focus of the Contractor's involvement is to provide recommendations in the following areas:

- Consideration of maintenance and operating costs during planning and consenting stages of capital projects
- Whole-of-life cost-effectiveness in selecting asset class components
- Provision of maintenance and operations designs that lead to safe and efficient maintenance activities.

Table 5.11 outlines the Contractor's involvement during the various capital project stages.

TABLE 5.11: CAPITAL PROJECTS INVOLVEMENT	
CAPITAL PROJECT STAGE	CONTRACTOR INPUT/ADVICE
Programme, Indicative and Detailed Business Cases	<p>Health, safety and design elements relating to maintenance issues and relative costs.</p> <p>Conceptual design issues.</p> <p>Involvement in workshops.</p>
Tender Stage for Detailed Design	Strive for consistency in asset components, determine what is used elsewhere within the Network and the advantages and disadvantages of different component types.
Site Handover to Capital project	Agree on the phases, timing, standards and responsibilities which are to be developed into a schedule of "Maintenance Responsibilities during Construction". Refer to Section 3.7, Handover and Hand Backs.
Construction	Have oversight for safe and efficient travel.
Data Delivery	<p>Gatekeeper of the data quality before transfer to maintenance and operations.</p> <p>Ensure as built data information is received and loaded into RAMM.</p> <p>Obtain the Asset Owner's Manual and agree with the Principal the required maintenance activities within the remaining Contract Period.</p>
Site Hand back from Capital project	Refer to Section 3.7, Handovers and Hand Backs of this Maintenance Specification.

### 5.11.2 Capital Project Coordination

With assistance from the Principal, the Contractor shall initiate contact with other consultants or contractors working on projects within the Network. The Contractor shall assist these consultants or contractors with information and advice, when requested, relating to their specific project.

The Principal may require other consultants or contractors to advise and update the Contractor periodically on the following:

- The progress of the project
- Contact names and telephone numbers
- Dates of planned field investigations and surveys
- Programmed date for commencement and completion (including maintenance period) of the physical works
- Upcoming changes to temporary traffic management adjacent to the road corridor that will impact on the Contractor's activities.

The Contractor shall maintain this information within TREIS.

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## 6 Physical Works

This Section sets out the requirements for completing delivery of maintenance and renewal activities—physical works within the Network for the Principal. Further specific requirements for programming and design are included in Section 5. Additional inspection requirements for various assets are included in Section 3.6 Inspections.

The Maintenance Management Plan (refer to Section 4.8, Maintenance Management Plan of this Maintenance Specification) will demonstrate how the Contractor's maintenance activities and periodic treatments will be carried out in order to meet the performance requirements within this Section.

The customer value proposition must be considered prior to any work being carried out, in particular the customers affected by the:

- a) Choice of treatment, e.g. the appropriate level of service and serviceability
- b) Operational activities
- c) Quality of the work.

### 6.1 ROUTINE SEALED PAVEMENT MAINTENANCE

Pavement Maintenance is the care and attention of the roadway to maintain its structural integrity and serviceability, and the preventive works taken to mitigate the propagation or escalation of faults. Work typically includes:

- a) Crack sealing, pavement patching and repairs
- b) Pothole repairs, rut filling, depressions and edge break repairs
- c) Shoulder maintenance.

Routine sealed pavement maintenance is not required for accessways.

The Contractor shall rectify all defects identified. The standard of rectification shall be in accordance with the Contractor's MMP, Principal's specification, best practice, or as agreed to by the Principal (as determined by the Principal and notified to the Contractor on a case-by-case basis).

All permanent repairs shall have a second coat seal applied unless it is deemed to be a pre-seal repair or heavy maintenance as a holding repair.

Section 5.1.4, Principal's Asset Registers Updating, includes requirements to record in RAMM, data that can be captured as a result of excavating the pavement layers.

All surfacing repairs must be constructed so that aggregates comply with Transport Agency M/6 and Transport Agency T/10 or an alternative that provides value for money. This must be agreed with the Principal.

#### 6.1.1 Surface Bumps

The Contractor shall proactively manage the Network and programme repairs to surface bumps as defined below.

The Contractor must avoid creating surface bumps that will lead to customer complaints when undertaking pavement repairs. Particular attention shall be applied in urban environments.

### OPM GROUP 6.1.2: SURFACE BUMPS (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
20	NSHVH, NSH	≤10 defects per audit section.	Surface bump within a wheel path or cycle lane/path > ± 20mm lip as a result of the Contractor's completed work (or monitored work), which causes a noise, vibration or ride nuisance.	2 days
21	RSH, RCH	≤20 defects per audit section.		
22	RDH	≤30 defects per audit section.		
23	All Roads	No defects.	Service cover is not adjusted within +10mm, -0mm of the surrounding surface as a result of the Contractor's completed work (or monitored work).	1 week

### SURFACE BUMPS (SEALED ROADS) (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
8	NatHV(M&E)	No defects.	As a result of Contractor's completed work, surface bump or service cover in carriageway > ± 20mm lip, which causes a customer complaint (i.e. a noise, vibration or ride nuisance).	2	2 days
9	All Roads (except NatHV(M&E) or ACCLV)	≤ 3 defects.		2	1 week
10	AccLV	≤ 5 defects.		2	1 week

## 6.1.2 Potholes

The Contractor shall proactively manage the Network and apply treatments to prevent the occurrence of potholes. When rain weather events are forecasted by appropriate means the Contractor shall programme cyclic activities to monitor and promptly respond to potholes that develop, to minimise impact on the customer.

### OPM GROUP 6.1.3: POTHoles (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
24	NSHVH (Motorways and Expressways only)	≤ 1 defect per audit section.	Pothole > 150mm in diameter.	48 hours
25	NSHVH	≤ 3 defects per audit section.		
26	NSH, RSH	≤ 4 defects per audit section.		
27	RCH, RDH	≤ 6 defects per audit section.		

### POTHoles (SEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
11	NatHV(M&E)	No defects.	Pothole > 70mm in diameter.	2	2 days
12	NatHV, Nat	≤ 1 defect per 5km carriageway section.	Pothole > 150mm in diameter.	2	2 days
13	Reg, Art	≤ 2 defects per 5km carriageway section.		2	2 days



**POTHOLES (SEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
14	PCol, Scol, Acc, AcCLV	≤ 3 defects per 5km carriageway section.		2	2 days
15	All Roads	No defects.	Pothole > 250mm in diameter.	4	2 days

**6.1.3 Deformations, Heaves and Shoves**

The Contractor shall proactively manage the Network and programme suitable pavement repairs such that emerging deformations, heaves and shoves are identified and repaired before compromising safety or further asset deterioration.

**OPM GROUP 6.1.4: DEFORMATIONS, HEAVES AND SHOVS (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
28	All Roads	No defects.	Deformation, heave or shove with height or depth > 50mm within the sealed pavement area (when measured from peak to trough).	1 week
29	All Roads	No defects.	Ponding that constitutes a safety hazard.	2 days

**DEFORMATIONS, HEAVES AND SHOVS (SEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
16	NatHV(M&E)	No defects.	Deformation, heave or	2	1 week

**DEFORMATIONS, HEAVES AND SHOVS (SEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
17	NatHV, Nat	≤ 1 defects per 5km carriageway section.	shove with height or depth > 50mm when measured from peak to trough.	2	1 week
18	Reg, Art	≤ 2 defects per 5km carriageway section.		2	1 week
19	PCol, Scol, Acc, AccLV	≤ 3 defects per 5km carriageway section.	Deformation, heave or shove with height or depth > 50mm when measured from peak to trough.	2	1 week
20	All Roads	No defects.	Deformation, heave or shove with height or depth > 100mm when measured from peak to trough.	4	2 days

**6.1.4 Rutting**

The Contractor shall proactively monitor and report to the Principal any significant rutting that could compromise safety. The treatment of rutting within the contract is at the Principal's risk other than where rutting has developed within the Contractor's own work.

**OPM GROUP 6.1.5: RUTTING (100% SAMPLE SIZE, MEASURED BI-ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
30	NSHVH, NSH	<1% of wheel path length.	>20mm depth, or constitutes a safety hazard.	1 week
31	RSH	<1.5% of wheel path length.	>20mm depth, or constitutes a safety hazard.	
32	RCH, RDH	<2% of wheel path	>20mm depth, or	

**OPM GROUP 6.1.5: RUTTING (100% SAMPLE SIZE, MEASURED BI-ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
		length.	constitutes a safety hazard.	

**6.1.5 Flushing**

The Contractor shall be proactive with SCRIM management to ensure positive safety outcomes are achieved.

**OPM GROUP 6.1.6: FLUSHING (100% SAMPLE SIZE, MEASURED BI-ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
33a	All Roads	No defects.	<p>Areas within a carriageway <math>\geq</math> 10m long that are flushed and constitutes a safety hazard (i.e. macrotexture is <math>\leq</math> the threshold level for macrotexture as specified in Transport Agency T/10 "Specification for State Highway Skid Resistance Management") and either:</p> <p>- In addition to low texture the SCRIM coefficient is <math>\leq</math> 0.35 unless a joint inspection has determined that SCRIM improvement is not warranted, or</p> <p>- The texture will impact negatively on the life of a surfacing renewal treatment.</p>	<p>Within two months of receipt of the SCRIM exception report</p> <p>Prior to undertaking resurfacing renewal</p>
33b	All Roads	No defects.	Any area within a carriageway where bleeding of the binder may lead to the binder being tracked onto the adjacent surface.	1 week

**OPM GROUP 6.1.6: FLUSHING (100% SAMPLE SIZE, MEASURED BI-ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
33c	All Roads	No defects.	Surface texture and texture variation will not impact on long term performance of resurfacing works	Prior to undertaking resurfacing renewal

**FLUSHING (SEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
21	All Roads	No defects.	Any area within a carriageway where bleeding of the binder has occurred and is being tracked onto the adjacent surface.	2	1 week

**6.1.6 Edge Break**

The Contractor shall proactively manage the Network and programme suitable edge break repairs with particular focus on inside of curves and high wear areas.

**OPM GROUP 6.1.7: EDGE BREAK (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
34	All Roads	No defects.	Encroaching into edge line.	2 weeks
35	NSHVH, NSH, RSH	No defects.	>2m of continuous edge break where encroachment is more than 250mm into seal at any point.	2 weeks
36	RCH, RDH	No defects.	>5m of continuous edge break where encroachment is more than 250mm into seal	

**OPM GROUP 6.1.7: EDGE BREAK (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
			at any point.	

**EDGE BREAK (SEALED ROADS) (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
22	NatHV(M&E), NatHV, Nat, Reg	No defects.	>2m of continuous edge break where encroachment is more than 250mm into seal at any point.	1	2 weeks
23	Art, PCol, SCol	No defects.	>5m of continuous edge break where encroachment is more than 250mm into seal at any point.	1	2 weeks
24	Acc, AccLV	≤ 2 defects per 5km carriageway section.		1	2 weeks
25	All Roads	≤ 2 defects per 5km carriageway section.	Edgebreak encroaching into painted edgeline.	4	2 days

**6.1.7 Shoulder Maintenance**

The Contractor shall proactively manage the Network and programme shoulder maintenance repairs with particular focus on inside of curves and high wear areas.

**OPM GROUP 6.1.8: SHOULDER MAINTENANCE (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
37	All Roads	≤ 500m per audit section.	>10m of continuous low shoulder or edge rutting; >50mm on a straight.	2 weeks
38	All Roads	≤ 100m per audit	Low shoulder or edge rutting;	2 weeks

**OPM GROUP 6.1.8: SHOULDER MAINTENANCE (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
		section.	>50mm on a bend.	
39	All Roads	No defects.	Low shoulder or edge rutting, >100mm.	1 week

**SHOULDER MAINTENANCE (SEALED ROADS) (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
26	All Roads	No defects.	>10m of continuous low shoulder or edge rutting, >50mm on a straight.	1	2 weeks
27	All Roads	≤ 100m per 5km carriageway section.	Low shoulder or edge rutting, >50mm on a bend.	1	2 weeks
28	All Roads	No defects.	Low shoulder or edge rutting, >100mm.	1	1 week

Low shoulder and edge rutting is measured as the difference in level between the top surface of the shoulder aggregate or topsoil, and the edge of the adjacent seal.

**6.1.8 Repair Quality**

The Contractor shall implement lasting repair methodologies to avoid the need for rework and added customer disruption.

**OPM GROUP 6.1.9: REPAIR QUALITY (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
40	NSHVH (Motorways and Expressways)	No defects.	Obvious occurrence of repair re-work or need for rework (excluding renewal sites), which has not previously	2 weeks

**OPM GROUP 6.1.9: REPAIR QUALITY (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
	only)		been a repair quality defect.	
41	NSHVH, NSH, RSH, RCH, RDH	≤ 5 defects per audit section.	Obvious occurrence of repair re-work or need for rework (excluding renewal sites) that has not previously been a repair quality defect.	2 weeks

**REPAIR QUALITY (SEALED ROADS) (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
29	NatHV(M&E)	No defects.	Occurrence of permanent repair rework (excluding renewal sites), which has not previously been a Repair Quality defect and has been successfully rectified.	2	2 weeks
30	NatHV, Nat, Reg, Art, PCol, SCol, Acc, AccLV	≤ 5 defects per 5km carriageway section.		2	2 weeks

**6.1.9 Reinstatement of Delineation Devices**

The Contractor shall ensure delineation devices and safety devices are reinstated as soon as possible after pavement maintenance or renewal is completed with suitable mitigations remaining in place while safety is compromised because they are not available.

The requirements for renewals and maintenance activities do not include reinstatement of ATP in the base rates however there are specific performance requirements to reinstate these within a specified period.

**OPM GROUP 6.1.1: REINSTATEMENT OF DELINEATION DEVICES AND SERVICE COVERS AFTER ANY COMPLETED WORKS (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
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### OPM GROUP 6.1.1: REINSTATEMENT OF DELINEATION DEVICES AND SERVICE COVERS AFTER ANY COMPLETED WORKS (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
18	NSHVH	No defects:	Delineation devices (apart from except for ATP) not reinstated before site dis-establishment.	1 hour
19	NSH, RSH, RCH, RDH	No defects:	Delineation devices (apart from except for ATP) not reinstated and/or temporary traffic management is not removed within 48 hours of the surfacing being completed.	48 hours

### REINSTATEMENT OF SITES AFTER ANY COMPLETED WORKS (SEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
31	NatHV(M&E)	No defects.	Delineation devices (apart from ATP) not reinstated and temporary traffic management not removed within 24 hours of renewal re/surfacing being completed.	2	1 hour
32	All Roads (except NatHV(M&E))	No defects.	Delineation devices (apart from ATP) not reinstated and temporary traffic management not removed within 48 hours of renewal re/surfacing being completed.	2	1 day



## REINSTATEMENT OF SITES AFTER ANY COMPLETED WORKS (SEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
33	All Roads	≤ 3 TMP locations.	Delineation devices (apart from ATP) not reinstated and temporary traffic management not removed within 48 hours of routine maintenance works being completed.	2	1 day

## 6.2 PAVEMENT REHABILITATION

### 6.2.1 Pavement Rehabilitation Quality Plan

For each pavement rehabilitation site, the Contractor shall deliver a Rehabilitation Renewal Quality Plan, at least 2 months prior to the commencement of the works, inclusive of:

- Inspection points and test programme to verify that the design parameters are achieved
- Risk identification and mitigation
- Critical hold points within the testing programme and construction methodology
- Communication with customers, residents and stakeholders such as emergency services.

Appendix 6.1, Guide to Auditing Pavement and Surfacing Renewals, includes guidance for the Contractor to consider when developing critical hold points.

It is the Principal's desire to work with the Contractor to identify the critical components of the activity, and check that the required quality is obtained through an appropriate quality plan that is agreed to by the Principal. The Principal will then monitor the Contractor's use of the agreed Rehabilitation Quality Plan to gain confidence in the delivery of a quality outcome. Refer to Figure 6.1, Collaborative QA on Renewal Sites.

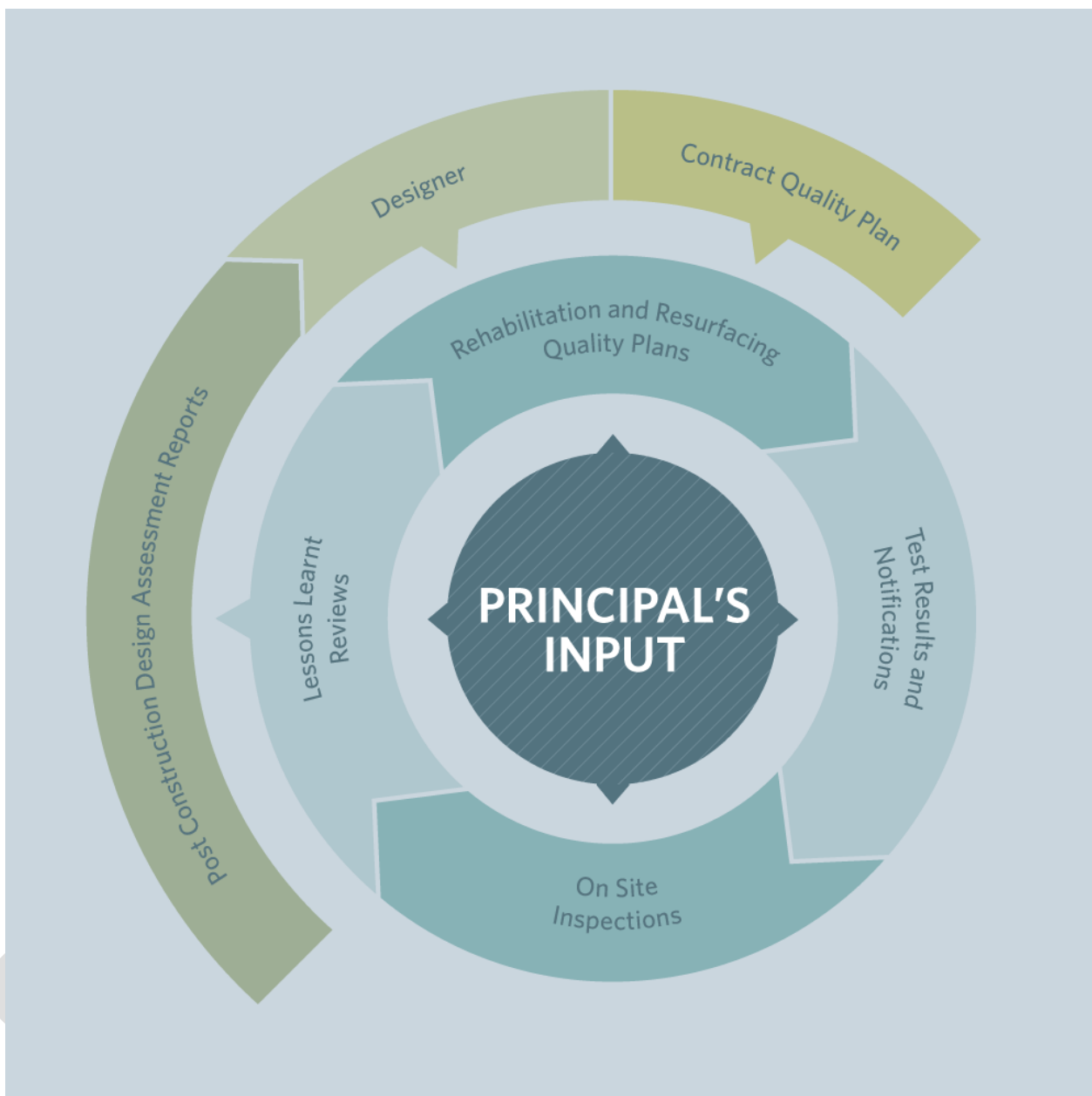


Figure 6.1: Collaborative QA on Renewal Sites

### 6.2.2 Pavement Rehabilitation Construction

The pavement rehabilitation construction season for this Network is between **[[1 October]]** and **[[31 March]]** and no construction including first coat chip seal surfaces, shall be completed outside this construction season, unless otherwise agreed by the Principal.

Solid fill, if required, shall be free of organic material and any other unsuitable matter. Fill materials shall be well graded and composed of sound, hard, durable particles that will not be affected by weathering or the elements. Fill material shall have a minimum soaked CBR value of 10 when compacted to 98% of standard optimum dry density.

All material sampling and testing shall be performed by an IANZ accredited laboratory.

All materials and construction test results shall be made available to the Principal, through the Rehabilitation Quality Plans, for review prior to or during construction.

The Contractor shall notify the Principal when they are approaching any critical hold points, as defined within the Rehabilitation Quality Plans, to enable the Principal sufficient time to be present on Site if so desired.

The surface shall meet the requirements of (or as agreed with the Principal):

- a) Transport Agency B/2 for unbound granular pavements with chip seal
- b) Transport Agency B/5 for modified pavements with chip seal

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Any existing service covers that will not comply with the Surface Bump OPM after the works are completed shall be adjusted by the Contractor within a reasonable time after the works are completed. The Contractor shall supply and install all materials necessary to adjust service cover frame(s) and lid(s). The services cover(s) shall be installed flush with the surfacing of the new works. The Contractor shall use standard manufactured fixtures.

All delineation (except for any excluding ATP) shall be reinstated before temporary traffic management is removed. If ATP existed within the site prior to the pavement rehabilitation then it must be replaced within six months after the construction of the second coat seal. The ATP shall be positioned in the same location as it existed prior to the pavement rehabilitation. The Contractor shall install any ATP edgeline alongside and on the outside of any flat marked edgeline, unless otherwise agreed with the Principal.

### 6.2.3 Pavement Rehabilitation Construction Completion Report

Within 2 months of the construction of the 1<sup>st</sup> coat seal, the Contractor shall supply to the Principal a Pavement Rehabilitation Construction Completion Report for each Site and shall include at minimum the following:

- a) Key original design assumptions
- b) Renewal Quality Plan
- c) Evidence of construction compliance to key original design assumptions as well as any deviation from the design
- d) All QA results
- e) All Compliance results (e.g. Transport Agency B/2 shape)
- f) Photographs of the Site during treatment and on completion;
- g) Lessons learnt
- h) Customer engagement, issues, challenges and ongoing commitments
- i) As-built extracts from RAMM
- j) A financial reconciliation against the Annual Plan allocation, the design NPV analysis and the final cost including any variations
- k) <<state others>>.

### 6.2.4 Pavement Rehabilitation Post Construction Design Assessment

A post-construction design assessment will be used as the tool for continuous improvement of the actual design process and verification of value assurance.

Between 10 and 15 months after construction, the Principal will have undertaken pavement deflection, curvature and other high-speed data surveys over the Network.

Within 2 months of receipt of this data, and in conjunction with other Contractor-sourced inputs, the Contractor shall assess the success of the renewal outcomes and supply to the Principal a Rehabilitation Post-Construction Design Assessment Report. The report shall include:

- Pavement Rehabilitation Construction Completion Report
- Pavement deflection and curvature analysis
- OPM 42 defect compliance results
- Photographs
- Roughness condition, see below
- Rutting condition, see below
- Shape condition, see below.

The Principal is seeking confirmation and assurance of the original treatment selection and design through the evaluation of the above inputs, including cross-verification of outputs and conclusions from these multiple data sources.

The Principal has invested in JUNO Viewer reports to assist with the automation of assessment of high-speed data for measuring compliance against the specification. These reports must be used by the Contractor to ensure consistent and correct application of the compliance requirements. Longer term it is the Principal's objective to further enhance these reports, and to prepare initial compliance reports nationally which will then be issued to the Contractor for verification and field assessment, and reporting back.

Annually thereafter, by 30<sup>st</sup> June, each Rehabilitation Post-Construction Design Assessment Report shall be updated by the Contractor using the latest source information. The outputs from the annual updates shall form a critical component for ongoing renewal design consideration in developing future optimal design solutions.

The post-construction design assessment period will be the lesser of:

- 5 years from the date of the first coat seal or
- Contract Period left to run at the time of the first coat seal plus any additional tenure reward.

For each completed pavement rehabilitation Site that has been treated with a second coat seal, or asphalt surfacing, the Contractor shall monitor and record all occurrences of OPM defects annually within the Contractor's maintenance management system, to report compliance with OPM 42 defects, for the remainder of the assessment period.

**OPM GROUP 6.1.10: PAVEMENT REHABILITATION REWORK (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
42	All Roads	≤ 3 defects per site.	An occurrence of an OPM defect (as defined within	As per Section

**OPM GROUP 6.1.10: PAVEMENT REHABILITATION REWORK (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
			Section 6.1.1) within a pavement rehabilitation site:	6.1.1

**PAVEMENT REHABILITATION REWORK (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
34	All Roads	≤ 3.	An occurrence of an OPM defect (as defined within Section 6.1) within a pavement rehabilitation site within its Post Construction Design Assessment period.	2	As per Section 6.1

**6.2.4.1 Roughness**

Roughness will be assessed annually throughout the assessment period based on the Principal's annual HSD survey. Assessment for compliance with the roughness criteria shall be in terms of the 100m moving average IRI. The 100m moving average shall be calculated from the HSD roughness measurements recorded at 20m intervals in each lane.

The extent of the survey shall not include 100m average roughness values where the 20m roughness measurement crosses the interface between the existing and new surface. For the interface between the existing and new surface, the shape shall comply with the target deviations from a straight edge as stated in the appropriate Principal's contract specifications.

The determination of the roughness must take into account the geometry of the site. In some cases, it is impossible due to changes in levels and constraints such as intersections and services to obtain the specified roughness levels. In these locations, the 20m roughness may be excluded from the 100m average calculations in discussion with the Principal and instead the work must comply with the straight edge requirements in the appropriate Principal's construction specifications.

In the event of any dispute concerning the accuracy of the HSD survey data, a calibrated ARRB Walking Profiler (refer *Austrroads Test Method AG:PT/T450:2007*) will be used as the reference device to resolve any dispute.

The annual roughness results shall comply with the following, or as agreed with the Principal:

- a) For chip seal or non-structural AC surfaces – No 100 metre moving average of lane roughness over the extent of works shall exceed a maximum of 2.9 lane IRI.qc m/km (75 NAASRA counts/km)
- b) For structural asphalt concrete or other bituminous mix (greater than 40mm thickness) – No 100 metre moving average of lane roughness over the extent of works shall exceed a maximum of 2.3 lane IRI.qc m/km (60 NAASRA counts/km).

If any annual assessment fails to achieve this criterion, the Contractor must agree with the Principal an appropriate repair methodology in order to rectify non-compliance, provided that not more than 50% of the calculated moving averages exceed the limits stated above in any assessment year.

Where more than 50% of the calculated moving averages exceed the limits stated above in any assessment year, a one-off payment deduction for roughness will be applied as calculated within the Basis of Payment, Preamble.

Where the roughness fails to comply in the final year of post construction design assessment of the calculated moving average limits stated above, a payment deduction for roughness may be applied as calculated within the Basis of Payment, Preamble.

#### 6.2.4.2 Rutting

Rutting will be assessed annually throughout the assessment period based on the Principal's annual HSD survey.

Assessment for compliance with the rutting criteria shall be in terms of the 20m mean rut depth by wheel path.

In the event of any dispute concerning the accuracy of the HSD survey data further surveying can be completed by the Contractor using a test method acceptable to the Principal as the reference device to resolve the dispute.

For each wheel path the characteristic rut value shall be determined as follows:

$$R_x = \mu_x + K\sigma_x$$

Where:  $R_x$  = characteristic rut value for wheel path (e.g. RLWP or RRWP) x (mm)

$\mu_x$  = Mean of the 20m wheel path means for wheel path x

$K$  = 1.28

$\sigma_x$  = Standard deviation of the 20m wheel path means for wheel path x

$x$  = either left wheel path (LWP) or the right wheel path (RWP)

Note that the above assessment is based on wheel paths by site not by lane.

The rutting shall be assessed annually and shall comply with these requirements:

- For chip-seal-surfaced pavements RLWP and RRWP shall both be  $\leq 10.0$ mm
- For asphalt-concrete-surfaced pavements RLWP and RRWP shall both be  $\leq 8.0$ mm.

If the annual assessments fail to achieve these criteria, the Contractor shall agree with the Principal an appropriate repair methodology in order to achieve compliance

provided that the repair can be completed before the second-to-last annual HSD survey in the assessment period.

Where the rutting fails to comply in the final year of post construction design assessment, a payment deduction for rutting will be applied as calculated within the Basis of Payment, Preamble.

### 6.2.4.3 Surface Shape and Condition

The surface shape requirements outlined in this clause shall be complied with throughout the pavement rehabilitation assessment period.

Surface shape shall be measured with a straight edge and wedge. The length of the straight edge is to be in accordance with the requirements of Transport Agency B/2, Transport Agency B/5, Transport Agency M/10 and Transport Agency P/11 depending on the pavement type and layer. Surface shape measurements will be performed at transverse construction joints and in any other area where the Principal considers the limits may have been exceeded.

The surface shall meet the requirements of (or as agreed with the Principal):

- a) Transport Agency B/2 for unbound granular pavements with chip seal
- b) Transport Agency B/5 for modified pavements with chip seal
- c) Transport Agency M/10 for Dense Graded Asphalt and SMA layers
- d) Transport Agency P/11 for OGPA layers.

In addition to the surface requirements stated in section 6.2, Pavement Rehabilitation, the surface shape shall be such that there is no visible cracking or ravelling (or fretting) within three years of the second coat seal or AC surface.

#### OPM GROUP 6.1.11: PAVEMENT REHABILITATION POST-CONSTRUCTION SURFACE SHAPE VERIFICATION (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
43	All Roads	Not more than 1 defect per site.	Does not comply with the Surface Shape specification described above.	2 months

#### PAVEMENT REHABILITATION POST-CONSTRUCTION SURFACE SHAPE VERIFICATION (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
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### PAVEMENT REHABILITATION POST-CONSTRUCTION SURFACE SHAPE VERIFICATION (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
35	All Roads (Chip)	≤ 1 defect per site.	<p>The surface does not comply with the requirements of (or as agreed with the Principal):</p> <ul style="list-style-type: none"> <li>a. NZTA B/2 for unbound granular pavements with chip seal</li> <li>b. NZTA B/5 for modified pavements with chip seal</li> </ul> <p>In addition, there shall be no visible cracking or ravelling (or fretting) within three years of the date of the second coat seal being applied.</p>	2	2 months
36	All Roads (AC)	≤ 1 defect per site.	<p>The surface does not comply with the requirements of (or as agreed with the Principal):</p> <ul style="list-style-type: none"> <li>a. Transport Agency M/10 for Dense Graded Asphalt and SMA layers</li> <li>b. Transport Agency P/11 for OGPA layers.</li> </ul> <p>In addition, there shall be no visible cracking or ravelling (or fretting) within three years of the date of the asphalt surface being applied.</p>	4	2 Months

## 6.3 SEALED ROAD RESURFACING

### 6.3.1 Resurfacing Quality Plan

For each resurfacing programme, the Contractor shall deliver a Resurfacing Quality Plan at least 2 months prior to commencement of the works, inclusive of inspection points and test programme to ensure the design parameters are achieved, risk identification and mitigation, communications with customers, residents, and stakeholders such as emergency services.

Appendix 6.1, Guide to Auditing Pavement and Surfacing Renewals, includes guidance for the Contractor to consider when developing critical hold points.

It is the Principal's desire to work with the Contractor to identify the critical components of the activity, and ensure the required quality is obtained through an appropriate quality plan that is agreed to by the Principal. The Principal will then monitor the Contractor's use of the Resurfacing Quality Plan to gain confidence in the delivery of a quality outcome. Refer to Figure 6.1, Collaborative QA on Renewal Sites.

### 6.3.2 Pre-reseal Repairs

Prior to any resurfacing it is the Contractor's responsibility to inspect, programme and complete the necessary pre-reseal repairs at least one construction season in advance of the programmed surfacing date. **As a minimum, the Contractor shall ensure adequate curing times are achieved prior to resealing.** Pre-reseal repairs are not to be completed during the winter period.

~~At minimum, the standard of defect repair intervention that the Contractor shall achieve on each resurfacing Site, prior to resurfacing, shall be nil defects as defined by this Section and any other defect repairs the Contractor deems necessary themselves, to ensure the design life of the resurfacing is achieved.~~

At minimum, the standard of defect repair intervention shall be zero defects as defined by this Section and any other defect repairs the Contractor deems necessary to ensure the design life of the resurfacing is achieved and to ensure adhesion of the new seal to the existing surface over the entire area. Prior to undertaking the sealing there shall be no defects present that would compromise the life expected from the seal, or that would deteriorate to exceed the OPM limits within the life of the seal being applied. *Chip Sealing in New Zealand* provides best practice guidance on what defects should be repaired prior to sealing. The Contractor will use this best practice guidance in determining the extent of pre-reseal repairs required.

The cost of all repairs to meet the minimum pre reseal requirement of zero OPM defects as defined by this section is included in the Contractor's lump sum. Any repairs beyond those required to address all OPM defects as defined by this section must be agreed with the Principal and will be paid in accordance with the Basis or Payment using the schedule rates for Principal Risk Non-Routine items.

Localised texturing, up to 6% of the area of the resurfacing site, required to achieve texture uniformity to satisfy economic seal design requirements will be regarded as Contractors lump sum pre-reseal repairs. Where the extent of texturing is greater than 6% and can be shown that texturing in conjunction with the seal will result in a more economic whole-of-life sealing solution, the Principal will agree to pay for the

texturising seal. Approval of Principal risk texturising will be based on demonstrating the positive economics using NPV principles and will be considered during the RAPT process.

#### PRE-RESEAL REPAIRS (SEALED ROADS) (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
37	All Roads	No defects.	No defect as per this OPM Framework.	1	N/A

### 6.3.3 Resurfacing Construction

The resurfacing construction season for this Network is between **[[1 October]]** and **[[31 March]]** and no construction shall be completed outside this construction season, unless otherwise agreed by the Principal, excluding first coat seals.

The surface shall meet the requirements of (or as agreed with the Principal):

- a) Transport Agency M/10 for Dense Graded Asphalt and SMA layers
- b) Transport Agency P/11 for OGPA layers.
- c) Transport Agency P/17 for chipseals

All material sampling and testing shall be performed by an IANZ accredited laboratory.

All materials and construction test results shall be made available to the Principal, in the Resurfacing Quality Plan, for review prior to or during construction.

The Contractor shall notify the Principal when they are approaching any critical hold points as defined within the Resurfacing Quality Plan. This is to allow the Principal sufficient time to be present on Site if they so desire, or to give advanced notification of imminent material acceptance documentation delivery.

The Contractor shall provide meet the level of the skid resistance of the constructed surface to the required ESC Investigatory Level (IL) and the performance requirements in this contract.

Placement of new OGPA surfacing will require a membrane seal as agreed with the Principal.

Any existing service covers that will not comply with the Surface Bump OPM after the works are completed shall be adjusted. The Contractor shall supply and install all materials necessary to adjust service cover frame(s) and lid(s). The services cover(s) shall be installed flush with the surfacing of the new works. The Contractor shall use standard manufactured fixtures.

All delineation (except for any excluding ATP) shall be reinstated before temporary traffic management is removed. If ATP existed within the site prior to resurfacing then it must be replaced within six months from resurfacing completion. The ATP shall be

located in the same position and within 10% of the longitudinal position prior to resurfacing. The Contractor shall install any ATP edgeline alongside and on the outside of any flat marked edgeline, unless agreed with the Principal.

#### 6.3.4 Resurfacing Construction Completion Report

Within 2 months of completing the annual resurfacing programme, the Contractor shall supply to the Principal a Surfacing Construction Completion Report, which shall include at minimum the following:

- a) Key original design assumptions for each Site
- b) Resurfacing Quality Plan
- c) Evidence of construction compliance to key original design assumptions, along with any deviation from the design for each Site
- d) All QA results for each Site
- e) Lessons learnt
- f) As-built extracts from RAMM
- g) Customer engagement, issues, challenges and ongoing commitments
- h) <<state others>>.

#### 6.3.5 Chip Seal Post-Construction Verification Testing

In the period 10 to 15 months after completion of the resurfacing programme, the sealed surfaces shall be assessed in accordance with Transport Agency P/17, and the results reported in an annual Resurfacing Post-Construction Design Assessment Report.

Transport Agency P/17, Section 11 will only apply to the last two construction seasons of the contract, and any deduction calculated shall be included in the Annual Renewal Reconciliation Resurfacing Design Achievement mechanism contained in Basis of Payment, Preamble, iii.

The Resurfacing Post-Construction Design Assessment report shall be used by the Contractor as a tool for continuous improvement of the actual design process and verification of value assurance.

The site skid resistance will be measured using the Principal's annual HSD survey machine at least two years after completion of the resurfacing. Skid Assessment Lengths (SALs) will be used to determine sites and the Principal's ESC IL requirements.

- a) If the measured ESC is equal to IL-0.02 when measured after two years, then the Contractor will be deemed to have met the requirements.
- b) If the measured ESC is less than IL-0.02 and greater than IL-0.05, then the site will be measured again the following year. The Principal expects all surfacing can continue to reduce in skid resistance by approximately 0.005 per year. This information will be used to assess the Year Three skid resistance results.
- c) For sites that have met the criteria in b) above and achieved a decrease of less than 0.01 in the Year Three measurement, the Contractor will be deemed to have met the skid resistance requirements.

If the above requirements are not met, then the site does not fully comply with the skid resistance requirements. For sites that do not comply, a reduction in payment will be made equivalent to the estimated reduction in life of the surface or a suitable remedy be agreed with the Principal at the Contractor's cost.

The Principal has invested in JUNO Viewer reports to assist with the automation of assessment of high-speed data for measuring compliance against the specification. These reports must be used by the Contractor to ensure consistent and correct application of the compliance requirements. Longer term it is the Principal's objective to further enhance these reports, and to prepare initial compliance reports nationally which will then be issued to the Contractor for verification and field assessment, and reporting back.

### 6.3.6 AC Post-Construction Verification Testing

Post-construction design assessment will be used as the tool for continuous improvement of the actual design process and verification of value assurance.

Between 10 and 15 months after construction, the Principal will have undertaken pavement deflection, curvature and other high-speed data surveys over the Network.

Within 2 months of receipt of this data and in conjunction with other Contractor-sourced inputs, the Contractor shall assess the success of the renewal outcomes and supply to the Principal an AC Post-Construction Design Assessment Report. The report shall include:

- AC Construction Completion Report
- Pavement deflection and curvature analysis
- OPM defect 44, AC Surfacing Rework, compliance results
- Photographs
- Skid resistance condition, see below
- Roughness condition, see below
- Rutting condition, see below
- Shape condition, see below.

The Principal is seeking confirmation and assurance of the original treatment selection and design through the evaluation of the above inputs, including cross-verification of outputs and conclusions from these multiple data sources.

The Principal has invested in JUNO Viewer reports to assist with the automation of assessment of high-speed data for measuring compliance against the specification. These reports must be used by the Contractor to ensure consistent and correct application of the compliance requirements. Longer term it is the Principal's objective to further enhance these reports, and to prepare initial compliance reports nationally which will then be issued to the Contractor for verification and field assessment, and reporting back.

Annually thereafter by 30<sup>th</sup> June, each AC Post-Construction Design Assessment Report shall be updated by the Contractor using updated, and the latest, source information.

The outputs from the annual updates shall form a critical component for ongoing renewal–design consideration in developing future optimal design solutions.

The duration of the post–construction design–assessment report period will be the lesser of:

- 5 years from the date of the surfacing or
- Contract Period left to run plus any additional tenure reward.

For each completed AC site, the Contractor shall monitor and record all occurrences of OPM defects annually within the Contractor’s maintenance management system, to report compliance with OPM compliance-44, for the remainder of the assessment period.

#### OPM GROUP 6.1.12: AC SURFACING REWORK (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
44	All Roads	≤ 3 defects per site.	An occurrence of an OPM defect (as defined within Section 6.1.1) within an AC site.	As per Section 6.1.1

#### AC SURFACING REWORK (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
38	All Roads	≤ 3 defects per site.	An occurrence of an OPM defect (as defined within Section 6.1) within a bituminous surface site.	2	As per Section 6.1

#### 6.3.6.1 Skid Resistance

The site skid resistance will be measured using the Principal’s annual HSD survey machine at least two years after completion of the resurfacing. Skid Assessment Lengths (SALs) will be used to determine sites and the Principal’s ESC IL requirements.

- If the measured ESC is equal to or greater than IL–0.02 when measured after two years, then the Contractor will be deemed to have met the requirements.
- If the measured ESC is less than IL–0.02 and greater than IL–0.05, then the site will be measured again the following year. The Principal expects all surfacing can continue to reduce in skid resistance by approximately 0.005 per year. This information will be used to assess the Year Three skid resistance results.

- c) For sites that have met the criteria in b) above and achieved a decrease of less than 0.01 in the Year Three measurement, the Contractor will be deemed to have met the skid resistance requirements.

If the above requirements are not met, then the site does not fully comply with the skid resistance requirements. For sites that do not comply, a reduction in payment will be made equivalent to the estimated reduction in life of the surface or a suitable remedy be agreed with the Principal at the Contractor's cost.

### 6.3.6.2 Roughness

Roughness will be assessed annually throughout the assessment period based on the Principal's annual HSD survey. Assessment for compliance with the roughness criteria shall be in terms of the 100m moving average IRI. The 100m moving average shall be calculated from the HSD roughness measurements recorded at 20m intervals in each lane.

The extent of the survey shall not include 100m average roughness values where the 20m roughness measurement crosses the interface between the existing and new surface. For the interface between the existing and new surface, the shape shall comply with the target deviations from a straight edge as stated in the appropriate Principal's contract specifications.

The determination of the roughness must take into account the geometry of the site. In some cases, it is impossible due to changes in levels and constraints such as intersections and services to obtain the specified roughness levels. In these locations, the 20m roughness may be excluded from the 100m average calculations in discussion with the Principal and instead the work must comply with the straight edge requirements in the appropriate Principal's construction specifications.

In the event of any dispute concerning the accuracy of the HSD survey data, a calibrated ARRB Walking Profiler (refer *Austrroads Test Method AG:PT/T450:2007*) will be used as the reference device to resolve any dispute.

The annual roughness results shall comply with the following:

- a) No 100 metre moving average of lane roughness over the extent of works shall exceed a maximum of 2.9 lane IRI.qc m/km (75 NAASRA counts/km), or
- b) As agreed with the Principal on a site-specific basis.

If any annual assessment fails to achieve this criterion, the Contractor shall agree with the Principal an appropriate repair methodology in order to rectify non-compliance, provided that not more than 50% of the calculated moving averages exceed the limits stated above in the assessment year.

Where the roughness fails to comply in the final year of post construction design assessment, a payment deduction for roughness may be applied as calculated within the Basis of Payment, Preamble [iii](#).

### 6.3.6.3 Rutting

Rutting will be assessed annually throughout the assessment period based on the Principal's annual HSD survey.

Assessment for compliance with the rutting criteria shall be in terms of the 20m mean rut depth by wheel path.

In the event of any dispute concerning the accuracy of the HSD survey data further surveying can be completed by the Contractor using a test method acceptable to the Principal as the reference device to resolve the dispute.

For each wheel path, the characteristic rut value shall be determined as follows:

$$R_x = \mu_x + K\sigma_x$$

- Where:  $R_x$  = characteristic rut value for wheel path x (mm)
- $\mu_x$  = Mean of the 20m wheel path means for wheel path x
- $K$  = 1.28
- $\sigma_x$  = Standard deviation of the 20m wheel path means for wheel path x
- $x$  = either left wheel path (LWP) or the right wheel path (RWP)

Note that the above assessment is based on wheel paths by site not by lane.

The rutting shall be assessed annually and for both RLWP and RRWP shall both be  $\leq 8.0$ mm.

If the annual assessments fail to achieve these criteria, the Contractor shall agree with the Principal an appropriate repair methodology in order to achieve compliance provided that the repair can be completed before the second-to-last annual HSD survey in the assessment period.

Where the rutting fails to comply in the final year of post construction design assessment, a payment deduction for rutting may be applied as calculated within the Basis of Payment, Preamble iii.

#### 6.3.6.4 Surface Shape and Condition

The surface shape requirements outlined in this clause shall be complied with throughout the AC assessment period.

Surface shape shall be measured with a straight edge and wedge. The length of the straight edge is to be in accordance with the requirements of Transport Agency M/10 and Transport Agency P/11. Surface shape measurements will be performed at transverse construction joints and in any other area where the Principal considers the limits may have been exceeded.

The surface shall meet the requirements of (or as agreed with the Principal):

- a) Transport Agency M/10 for Dense Graded Asphalt and SMA layers
- b) Transport Agency P/11 for OGPA layers.

In addition to the surface requirements stated in Section 6.3, Sealed Road Resurfacing, the surface shape shall be such that there is no visible cracking or ravelling (or fretting) within three years of the AC surface having been laid.

### OPM GROUP 6.1.13: AC POST-CONSTRUCTION SURFACE SHAPE VERIFICATION (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
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**OPM GROUP 6.1.13: AC POST-CONSTRUCTION SURFACE SHAPE VERIFICATION (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
45	All Roads	Not more than 1 defect per site.	Does not comply with the Surface Shape specification described above.	2 months

**AC POST-CONSTRUCTION SURFACE SHAPE VERIFICATION (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
39	All Roads	Not more than 1 defect per site.	<p>The surface does not comply with the requirements of (or as agreed with the Principal):</p> <p>a. Transport Agency M/10 for Dense Graded Asphalt and SMA layers</p> <p>b. Transport Agency P/11 for OGPA layers.</p> <p>In addition, there shall be no visible cracking or ravelling (or fretting) within three years of the date of the asphalt surface being applied.</p>	2	2 months

## 6.4 DRAINAGE

The drainage Section allows for the routine drainage maintenance of drainage assets and drainage renewals.

### 6.4.1 Routine Drainage Maintenance

Drainage Maintenance is the normal care and attention of drainage infrastructure to maintain its structural integrity. Work includes:

- Maintenance and repair of surface water channels, slot drains, siphon pumps, outflow control devices and subsoil drainage.

- b) Stream clearing and debris removal within 5m of inlet and outlet (or to road boundary, whichever is the lesser) to maintain water courses through culverts.

Outflow control devices are assets such as flumes and fabric socks. Work does not include completing CCTV surveys to ascertain reasons for blockage.

Vulnerable assets are those which are deemed to be at greater risk of failure if not maintained, these are included in Appendix 6.2, Vulnerable Flooding Areas and Drainage Assets. All other drainage assets listed within the Principal's asset register are classed as non-vulnerable drainage assets. ~~are those listed within the Principal's asset register, but not included within Appendix 6.1, Vulnerable Flooding Areas and Drainage Assets.~~

~~Between the months of [[March]] and [[June]], t~~ The Contractor shall commence and complete the compliance reporting scope annually for OPMs 5440, 41 and 5642. It is the Contractor's duty to sufficiently demonstrate to the Principal that compliance with the contract standard has been achieved.

**OPM GROUP 6.2.1: NON-VULNERABLE SUMPS, MANHOLES, AND CATCHPITS AND OUTFLOW CONTROL DEVICES (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
46	All Roads	No defects.	Debris < 200mm below the internal outlet pipe invert or > 20% of the cross-sectional area of outlet pipe covered with debris or, for manholes and like features, > 33% of the grate is blocked, not remedied within 2 months as identified from an annual drainage inspection.	1 month

**NON-VULNERABLE SUMPS, MANHOLES, CATCHPITS AND OUTFLOW CONTROL DEVICES (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
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**NON-VULNERABLE SUMPS, MANHOLES, CATCHPITS AND OUTFLOW CONTROL DEVICES (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
40	All Roads	No defects.	Debris < 200mm below the internal outlet pipe invert or > 20% of the cross-sectional area of outlet pipe covered with debris or, for manholes and like features, >33% of the grate is blocked, not remedied within 2 months as identified from an annual drainage inspection.	1	1 month

The existing culverts, subsoils, horizontal drains and outfall control devices within the Network and the specific maintenance requirements are included in Appendix 6.3, Culverts, Subsoil and Horizontal Drains Maintenance Schedule.

**OPM GROUP 6.2.2: NON-VULNERABLE CULVERTS, SUBSOIL, AND HORIZONTAL DRAINS AND OUTFLOW CONTROL DEVICES (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
47	All Roads	No defects.	> 20% of the cross-sectional area of the culvert inlet, outlet or barrel filled with debris, not remedied within 2 months as identified from an annual drainage inspection.	1 month
48	All Roads	No defects.	> 20% of the cross-sectional area of the culvert filled with water caused by poor maintenance of downstream hydraulic conditions, within the Limit of Works, not remedied within 2 months as identified from an annual drainage inspection.	1 month

### OPM GROUP 6.2.2: NON-VULNERABLE CULVERTS, SUBSOIL, AND HORIZONTAL DRAINS AND OUTFLOW CONTROL DEVICES (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
49	All Roads:	No defects:	Subsoil drain not flushed or horizontal drain not scraped clean in accordance with the time frames specified within Appendix 6.6, Culverts, Subsoil, and Horizontal Drains and Outfall Control Devices Maintenance Schedule.	1 month

### NON-VULNERABLE CULVERTS, SUBSOIL, HORIZONTAL DRAINS AND OUTFLOW CONTROL DEVICES (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
41	All Roads	No defects.	> 20% of the cross-sectional area of the culvert inlet, outlet or barrel filled with debris, not remedied within 2 months as identified from an annual drainage inspection.	1	1 month
42	All Roads	No defects.	> 20% of the cross-sectional area of the culvert filled with water caused by poor maintenance of downstream hydraulic conditions, within the Limit of Works, not remedied within 2 months as identified from an annual drainage inspection.	1	1 month

**NON-VULNERABLE CULVERTS, SUBSOIL, HORIZONTAL DRAINS AND OUTFLOW CONTROL DEVICES (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
43	All Roads	No defects.	Subsoil drain not flushed or horizontal drain not cleaned in accordance with the timeframes specified within Appendix 6.2, Culverts, Subsoil and Horizontal Drains Maintenance Schedule.	1	1 month

**OPM GROUP 6.2.3: LINED SURFACE WATER CHANNELS (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
50	All Roads	≤ 3 defects per 100m of asset length, per audit section.	Isolated blockage that could allow water to pond or flow onto the carriageway or undermine the asset integrity.	2 weeks
51	All Roads	No more than 5% of the asset length, in any audit section.	> 50% of the channel hydraulic cross-section inoperative.	2 weeks

**SURFACE WATER CHANNELS (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
44	NatHV(M&E)	No defects.	Isolated blockage that	1	2 weeks

**SURFACE WATER CHANNELS (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
45	NatHV, Nat, Reg, Art	≤ 1 defects per 5km carriageway section.	could allow water to pond or flow onto the carriageway or undermine the asset integrity.	1	2 weeks
46	PCol, SCol, Acc, AcclV	≤ 5 defects per 5km carriageway section.		1	2 weeks
47	NatHV(M&E)	No defects.	> 50% of the channel hydraulic cross-section inoperative.	1	2 weeks
48	NatHV, Nat, Reg, Art, PCol, SCol, Acc, AcclV	≤ 5% of surface water channel length.		1	2 weeks

**REPORTED LANE FLOODING (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
49	NatHV(M&E)	< 3 reported lane flooding incidents per month.	Reported lane flooding incident attributable to condition of any drainage asset within the Limit of Works.	2	N/A

**OPM GROUP 6.2.4: UNLINED SURFACE WATER CHANNELS (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
52	All Roads	≤ 1 defect per audit section.	Isolated blockage that would allow water to pond or flow onto the carriageway or undermine the asset	1 week

**OPM GROUP 6.2.4: UNLINED SURFACE WATER CHANNELS (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
			integrity:	
53	Not assigned			
54	Not assigned			

**OPM GROUP 6.2.5: VULNERABLE FLOODING AREAS (100% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
55	All Roads	No defects:	Water does not readily flow to the outlet point.	24 hours
56	All Roads	No defects:	Isolated blockage that would allow water to pond or flow onto the carriageway or undermine the asset integrity:	24 hours
57	All Roads	No defects:	>20% of the channel hydraulic cross-section inoperative:	24 hours

**VULNERABLE AND HIGH VALUE FLOODING AREAS (100% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
50	All Roads	No defects.	Isolated blockage that would allow water to pond or flow onto the carriageway or undermine the asset integrity.	4	1 day

### VULNERABLE AND HIGH VALUE FLOODING AREAS (100% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
51	All Roads	No defects.	> 20% of the channel hydraulic cross-section inoperative.	1	1 day

The existing water quality and retention assets used for water quality (treatment) and quantity (attenuation), such as swales, ponds, basins, sediment tanks infiltration trenches, bio detention and other proprietary devices shall be maintained by the Contractor to the specific requirements included in Appendix 6.4, Water Quality and Retention Assets.

#### 6.4.2 Planned Drainage Renewals

The Contractor shall construct the approved planned drainage maintenance in accordance with the annual programme developed, refer Section 5.3.6, Drainage.

All construction and materials shall comply with Transport Agency F/5.

#### 6.4.3 Other Drainage Asset Renewals

The Principal may elect to engage the Contractor to complete any other drainage renewals (such as culvert replacements, new culverts installations and new lined water channels).

All drainage renewals shall be designed by a competent drainage designer with at least five years' experience.

All stormwater design is to generally comply with Transport Agency P/46, Stormwater Specification. Departures to this specification may be sought through agreement with the Principal.

##### 6.4.3.1 Culvert Replacements

The Contractor shall excavate carefully around the existing culvert pipes where directed by the Principal. The existing pipes shall be removed without damage if they are salvageable and in a re-usable condition. The Contractor shall take care to protect the pipes and advise the Principal if there is a possibility of damage to the pipes. Any damage caused to the pipe due to improper removal method, neglect, default or willful or negligent act or omission shall be the responsibility of the Contractor. Any such damaged pipes shall be replaced promptly with new pipe of the same size and quality, at the Contractor's cost. The Contractor shall clean and store the re-usable pipes safely and securely prior to relaying. The pipes shall be installed in accordance with this Specification.



#### 6.4.3.2 RCRRJ Culvert Installations

All pipe culverts shall be constructed in accordance with Transport Agency F/3 in the locations directed by the Principal. Culvert pipes shall be new 'reinforced concrete rubber ring jointed' (RCRRJ) pipes unless approved otherwise by the Principal. All culverts shall be of the class, and installed on the bedding type, as agreed to by the Principal. The bedding shall be carefully shaped to fit and support the lower part of the pipe.

All backfill materials shall comply in all respects with Transport Agency F/3 to a CBR 10.

All surplus excavated and trimmed material shall be carted to waste.

All trenches are to be correctly backfilled and compacted in accordance with clauses 6.1, 6.2 and 6.3 respectively of Transport Agency F/3, with a temporary or permanent surface as appropriate. The temporary resurfacing of either the road or the path shall result in a secure, dust free, smooth surface suitable for either pedestrian or vehicle traffic as required.

The Contractor shall note that the levels of new or re-laid drainage works may require adjustment to suit site conditions. The Contractor shall notify the Principal prior to adjusting any levels and/or locations of the drainage works.

Where existing pipes are to be extended, the Contractor shall ensure the existing pipe end is sound and free of areas of damage large enough to affect the performance of the joint. Where the existing pipe has been damaged in service the Contractor shall remove and replace that section of pipe with a new section of pipe of equivalent quality and appropriate for the intended use or cut the damaged section away as directed by the Principal. Any existing pipe damaged during the Contractor's construction operations shall be replaced at the Contractor's expense.

#### 6.4.3.3 Traversable Culvert End Installations

The Contractor shall supply all material necessary and construct the 'culvert end protection' to the size shape and position agreed with the Principal.

Traversable culvert ends are precast pipes or boxes bevelled to provide an inlet or exit that is flush with the adjacent terrain, and modified to reduce wheel snagging.

Traversable culvert ends shall be installed when all the following criteria apply:

- The culvert is a new culvert, or requires modifying, and;
- The inlet/outlet is within the clear zone, and;
- The culvert is less than 1500mm diameter.

All Traversable culvert ends shall be constructed in accordance with the guidelines given in the Transport Agency's *State Highway Geometric Design Manual* (SHGDM).

Pipes smaller than 525mm diameter do not require a grate to be fitted.

#### 6.4.3.4 Remove Existing Kerb and Channel

The removal of existing kerb and channel is to be carried out in such a manner as to minimise the disturbance to the surrounding material. If the adjacent section of kerbing is to remain then the kerb and channel shall be saw cut prior to removal. The

kerb and channel removed shall be disposed of offsite to a suitable dumpsite organised by the Contractor. The disturbed area shall be reinstated to match the surrounding insitu material.

#### 6.4.3.5 Construct New Lined Water Channel

Lined water channel shall be constructed to the type, dimensions, shape, line and level as directed by the Principal. Concrete shall be ordinary grade, complying with NZS 3108 with a minimum compressive strength of 25MPa at 28 days when tested in accordance with the various provisions of NZS 3112. Included in this specification is the installation of sub pavement drainage.

Timber for formwork in contact with the poured concrete shall be dressed smooth on the face and edges and shall be free from knots, cracks and other deformities.

The line and level of the lined water channel shall be carefully set out by the Contractor at the location provided by the Principal. The line of the lined water channel shall be perfectly straight between tangent points and on horizontal and vertical curves shall be swept without kinks, flats or angles in smooth true arcs.

The aggregate on which the new lined water channel will be laid shall be brought to the required grade and dimension and properly compacted to provide a solid foundation. The foundation shall be the same granular materials and to the standards of the pavement basecourse.

Formwork shall be designed and constructed so that the lined water channel is poured in one operation and it can be removed without damage to the green concrete. It shall be securely braced and supported to prevent any sagging or bulging during the pouring of the concrete and when built shall be close jointed so as to prevent leakage of liquid from the concrete. Faces against concrete shall be cleaned and treated with oil or soft soap before use or reuse. All formwork must be true to line and level immediately before pouring concrete and it shall not be removed until at least three days have elapsed after pouring, or such other period as the Engineer may direct.

All concrete shall be mixed in an approved power-driven weigh batch mixer or an approved central batching plant. The concrete when placed in the formwork shall be worked with suitable tools to ensure maximum density with a smooth surface free from marks. The segregation of the larger stones shall be prevented by spading the concrete. The Contractor must ensure a complete bond between lined water channel and they shall be poured in one operation. Concrete shall not be placed in water or mud, nor shall dirt be allowed to enter the concrete.

Fresh concrete shall be protected from frost and from rain, should this begin to fall before the concrete has set. After the concrete is set, it shall be kept continuously damp for a period of not less than seven days.

As an alternative to the above method of casting lined water channel may be constructed by means of an extrusion machine. Concrete strengths, foundations and finishes shall conform to these specifications in all other respects.

The Contractor shall reshape and/or tie in the freshly constructed lined water channel to suit the site conditions or as directed by the Principal on site.

All lined water channel and backfilling behind the lined water channel shall be carried out prior to laying of the basecourse adjacent to the lined water channel. The backfilling behind the kerb shall be included in the lined water channel rate.

Compacting next to lined water channel shall be done in such a manner as to avoid damage to the concrete. If any damage is done, it shall be repaired by the Contractor at the Contractor's expense to the approval of the Principal.

All reinforcement shall comply with NZS 3402 and drawing specifications. All reinforcement shall be handled and placed in accordance with AS/NZS 4671 & NZS 3109.

## 6.5 STRUCTURES

The Structures Section allows for the routine maintenance of bridge and other structures assets.

The outputs from the Regional Bridge Consultant inspections will be provided to the Contractor and shall be treated in the context of this contract and the OPM standards of compliance and reporting.

It is the responsibility of the Contractor to maintain suitable inspection access—tracks free of vegetation for each bridge and other structures within the Network.

### 6.5.1 Routine Structures Routine Maintenance

Structures include bridges, other structures (such as retaining structures, rock face mesh protection, catch fences and noise walls), and barriers and handrails. Refer to Appendix 5.7, Inventory of Bridges and Other Structures.

The Contractor shall complete all routine work necessary to maintain the condition and appearance of structures. These works are "routine" in the sense that they do not require structural design input. Contractor's lump sum activities include:

- ~~Removing detritus from decks, drainage systems, deck joints, etc.~~
- ~~Repairing damaged barriers and handrails~~
- Maintaining drainage systems and deck surfacing (including timber decks) in serviceable condition (not all deck joints require maintenance, the Contractor shall liaise and confirm with the structure's management consultant as to which deck joints require cleaning)
- Keeping decks and deck joints, bearings, linkages clear of detritus and obstructions
- Removing graffiti
- Maintaining signs, markers and lighting
- Completing annual torque testing of large cantilever and gantry signs and signals foundation bolts and flange joints

In addition to the lump sum requirements the Contractor will be proactive in identifying and reporting to the Principal other maintenance requirements such as the following:

- Keeping all components clean

- Maintaining protective coated surfaces of components above deck level in good condition
- Repairing damaged barriers and handrails
- Bearings, abutment bearing shelves, linkages clear of detritus and obstructions
- For culverts classified as bridges, debris clearing/gravel removal
- Maintaining waterway and clearing debris from structures
- Minor repairs to other components

Work to rectify these additional maintenance items will need to be agreed with the Principal and is outside of the Contractor’s lump sum.

**Bridges and Other Structures**

**OPM GROUP 6.3.1: BRIDGE AND OTHER STRUCTURES MAINTENANCE (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
58	All Roads	No more than 10% of the total number of structures per audit.	Graffiti in view of road users or pedestrians.	48 hours
59	All Roads	No more than 3% of the total number of structures per audit.	No blocked drainage system.	2 weeks
			No undesirable drainage discharge point.	2 weeks
60	All Roads	No more than 3% of the total number of structures per audit.	Debris impeding joint movement or damaging the joint.	1 month
61	Not assigned			

**BRIDGE AND OTHER STRUCTURES MAINTENANCE (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
52	NatHV(M&E)	No defects.	Blocked drainage system or undesirable drainage discharge point.	1	2 weeks
53	NatHV, Nat, Reg, Art, PCol, SCol, Acc, AcclV	No more than 1 defect per audit section.		1	2 weeks

## BRIDGE AND OTHER STRUCTURES MAINTENANCE (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
54	All Roads	No more than 1 defect per audit section.	Debris impeding joint movement or damaging the joint.	1	2 weeks

### 6.5.1.1 Sign Fixings on Gantries and Overbridges

As part of the Contractor's Routine Contract Inspections, the Contractor must regularly inspect sign fixings for any defects that may cause signs to fall. Examples of defects include missing bolts, missing nuts, damage and deterioration to fixings.

### 6.5.1.2 Noise Walls

When requested by the Principal, noise walls shall be repainted by the Contractor. This is not included in the lump sum.

### 6.5.1.3 Catch Fences

The Principal has a number of debris catch fences and barriers located throughout the Network. Refer Appendix 6.5, Debris Catch Fence Schedule, for a schedule of all known debris catch fences.

As part of the Contractor's Routine Contract Inspections, the Contractor must, inspect these fences six-monthly (pre and post winter) for debris build-up and fence damage and additionally after a significant rainfall (60mm over 24 hours) or seismic event (>MM5 causing local ground shaking). The Contractor will report any exceptions with regard to the condition of the fences and any defects. The Contractor shall record (including photographs) the condition and defects within the Slip and Rockfall Register and provide an update with the monthly report following exception reporting and six-monthly inspections.

The Contractor will develop a six-monthly programme for removal of debris from behind the catch fences which is expected to be scheduled such that debris is removed prior to the onset of winter. The programme must be agreed by the Principal before any work is undertaken.

### 6.5.1.4 Rock Face Mesh Protection

The Contractor shall control/remove vegetation using a long acting herbicide with a low salt content, as salt can accelerate corrosion of metallic components.

Maintenance and repair of components are required to ensure its operational efficiency and effectiveness is maintained. Annually, or after a significant (e.g. severe weather or seismic events) event, the Contractor shall complete a detailed inspection, with photographic records) of all rock face mesh and report the following:

- Obvious unacceptable movement of rock bolt heads and obvious pull out

- Scratches that may compromise corrosion protection (all items).
- Damage or breakages on rope strand or wire.
- Obvious unacceptable movement of rock slope face.

When requested by the Principal, the Contractor may be engaged to repair rock mesh protection and/or catch fences.

When debris builds up along the bottom of a rock face mesh protection, making the use of the asset non-functioning, then the Contractor shall remove this material as per 6.5.1.3 Catch Fences.

### 6.5.1.5 Barriers and Rails Handrails

A barrier is any structure that protects road users from known hazards. Refer to the Principal’s assets database.

All barrier repairs shall be undertaken in accordance with Transport Agency M/23.

Whilst end treatments are risk-excluded repair or replacement of all barrier and end terminals is Principal risk, it is the Contractor’s responsibility to make safe the structure under incident response, report to the Principal, and agree appropriate remedial repair and response time.

Rails are sight rails, bridge rails (non-structural) or pedestrian handrails.

The barrier and railing inspector must have completed the Principal’s Barrier Installation and Maintenance Inspections Qualification (BIMIQ).

#### OPM GROUP 6.3.2: BARRIERS, END TREATMENTS AND HAND RAIL MAINTENANCE (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
62	All Roads	≤ 15 defects per system.	Integrity of individual barrier component is deficient, contributing towards an inoperative barrier system and end treatments, as designed.	48hrs wire rope, 2 weeks other assets
63	All Roads	≤ 5 defects per audit section.	Integrity of individual rail component is deficient contributing towards an inoperative rail system as designed.	1 month

#### BARRIER, END TREATMENT AND RAIL DAMAGE REPAIRS (100% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
55	NatHV(M&E), NatHV	No defects.	Barrier structurally damaged (and not programmed for repair) resulting in an inoperative barrier system as designed (excluding end treatments).	4	1 day wire rope, 3 days other assets
56	Nat, Reg	No defects.		4	2 days wire rope, 2 weeks other assets
57	Art, PCol, SCol, Acc, AccLV	No defects.		4	2 days wire rope, 2 weeks other assets
58	All Roads	≤ 1.	Structural damage identified in the previous audit not permanently repaired.	4	2 days

### OPM GROUP 6.3.3: BARRIER AND HANDRAIL DAMAGE REPAIRS (100% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
64	NSHVH	No defects.	Barrier structurally damaged (and not programmed for repair) resulting in an inoperative barrier system as designed (excluding end treatments).	24hrs wire rope, 3 days other assets
65	NSH, RSH	No defects.		48hrs wire rope, 2 weeks other assets
66	RCH, RDH	No defects.		48hrs wire rope, 1 month other

### OPM GROUP 6.3.3: BARRIER AND HANDRAIL DAMAGE REPAIRS (100% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
				assets
67	All Roads	No defects.	Structurally damaged (and not programmed for repair) resulting in an inoperative rail system as designed.	2 weeks

#### 6.5.1.6 Graffiti Removal From Structures

The Contractor shall be responsible for the removal of graffiti on the Principal's bridges and other structural assets that are visible by rail passengers and customers. Structures in the Network that historically have been susceptible to graffiti are shown in Appendix 6.6, Graffiti Visible from the Railway. Access to the railway is controlled by KiwiRail who shall be contacted before graffiti removal works are undertaken. KiwiRail has specific requirements for access to the rail corridor which the Contractor will be required to comply with.

### OPM GROUP 6.3.4: BRIDGE AND OTHER STRUCTURES GRAFFITI REMOVAL (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
160	All Roads	No more than 25% of the total number of structures per audit.	Graffiti in view of Rail passengers.	7 days

#### 6.5.2 Structures Renewals

The Principal may elect to engage the Contractor to complete any structures renewals (such as major reinstatement of guardrail and wire rope).

##### 6.5.2.1 Barriers and Terminal Entry/Ends

All guardrail shall be set out and installed from the fixed end if this exists (i.e. bridge or concrete barrier). There shall be no cutting or modifying any guardrail sections and no drilling of new or existing holes of any section of any section of guardrail, posts and other proprietary components.

W-section steel guardrail shall be supplied and installed in compliance with Transport Agency M/23 and AS/NZ 3835:1999 – Road Safety Barrier Systems and Transport Agency M/17P. It shall be an approved system complying with NCHRP Report – 350 Test Level 3.



W-section steel guardrail shall comprise 2.7mm highway guardrail. The layout of the highway guardrail and trailing terminal ends shall be in accordance with this Project Specification and the agreed layout.

All material supplied and installed shall be new and in compliance with the manufacturer's recommendations and fit for purpose. All temporary materials and supports necessary shall be provided and removed upon completion. The erected guardrail shall be true to the line level and curvature required. All timber or steel posts and backing blocks shall be ground treated and all bolts and washers and other fixings be galvanised steel as specified.

End treatment for W-section guardrail shall consist of terminals supplied and installed in compliance with Transport Agency M/23 and AS/NZ 3845: 1999 – Road Safety Barrier Systems and shall be an approved system complying with NCHRP Report – 350 Test Level 3 or Manual for Assessing Safety Hardware (MASH).

The Contractor shall ensure that the terminals are the correct type for the application and are erected in compliance with the manufacturer's recommendations and function correctly.

The terminal end treatment shall be placed in a location agreed to by the Principal and confirmed on site.

After assembly, any areas of the galvanised coating that have been damaged or show signs of deterioration shall be wire brushed and washed to thoroughly clean down to fresh zinc or parent metal. They shall then be spot painted with two brush coats of un-thinned approved zinc rich paint (e.g. conforming to PASS-C/29/16) the first coat being applied to a dry surface immediately after cleaning.

The minimum performance level for semi-rigid barriers shall be Test Level 3.

All barrier installation is required to be inspected by a person with the BIMIQ. The inspection report shall be forwarded to the Principal, this should include a certificate of installation compliance provided by the manufacturer for all barriers constructed.

## 6.6 ENVIRONMENTAL MAINTENANCE

The Environmental Maintenance Section allows for routine environmental maintenance during winter, vegetation control, litter and detritus removal, stopping places (such as rest areas and heavy commercial vehicle facilities) maintenance and graffiti removal from Assets in urban areas.

### 6.6.1 Routine Environmental Maintenance

#### 6.6.1.1 Winter Maintenance

This Section sets out the requirements for winter maintenance of the Network that is at risk of snow and ice events (including frost) to ensure the required road availability and service targets are achieved during the winter period, as defined in the Conditions of Contract. The scope includes winter services management, weather monitoring and all physical works including proactive patrolling and mitigation/treatment of hazards. It is

to be read in conjunction with the requirements for Incident Response Management in this Maintenance Specification.

The objective is to respond to predicted snow and ice events that may affect the Network, in order to keep roads open and maintained in a safe condition for motorists, as far as is reasonably possible during winter, in terms of the defined levels of service.

In the case of Extreme Snow and Ice Events where the required service targets cannot be maintained, then the road shall be either closed or temporarily sign-posted to restrict vehicle use until the required service target is returned. The work required by this Section must be completed according to the Winter Services Requirements in Appendix 6.7, Winter Services Requirements.

The Principal has assessed the service target levels and indicative quantities for snow clearance, ice gritting and chemical treatment for the Network, which is provided in Appendix 6.8, Winter Service Targets and Indicative Quantities.

The Principal is to be informed of the event, at the outset, and then continuously throughout as well as any issues or changes as they arise during the event.

The Contractor is to take all reasonable care of the road assets during any winter services event such that damage that could be prevented, is prevented by good planning and communications.

Any preventable damage caused by snow or ice clearance activities, to assets, by the Contractor shall be made good at the Contractor's expense unless discussed and agreed to previously by the Principal.

Chemical de-icer will be supplied by the Principal however the Contractor will store and handle this material.

The Contractor will be required to display the appropriate signage in accordance with CoPTTM, the approved TMP and for any restrictions relating to the service targets.

The Contractor shall provide data required by the Winter Services Requirements to the Principal in an agreed electronic format. This data is used by the Contractor and the Principal to assist with:

- plant coordination and to ensure that treatment is being applied in the right place and at the right time
- analysis and refinement of all winter maintenance operations
- surveillance and verification of monthly claimed activities.

Outside of the Winter Period, response to winter weather incidents shall be treated similarly to incident response in that the first 10 hours of the response is Contractor risk, except for physical treatment of snow and ice hazards.

**OPM GROUP 6.4.1: ICE GRITTING, SNOW CLEARANCE AND CMA RECORD MAINTENANCE (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
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### OPM GROUP 6.4.1: ICE GRITTING, SNOW CLEARANCE AND CMA RECORD MAINTENANCE (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
68	All Roads	No defects.	Records are not maintained or complete to demonstrate that the right decisions are being made.	N/A

### OPM GROUP 6.4.2: FROST, ICE GRITTING AND SNOW CLEARANCE – MOBILISE AND ESTABLISH ON SITE (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
69	All Roads	No defects.	Did not mobilise within 30 minutes of determining the need.	N/A
70	All Roads	No defects.	Inappropriate or insufficient plant and/or personnel established on site.	N/A

### FROST, ICE GRITTING AND SNOW CLEARANCE – MOBILISE AND ESTABLISH ON SITE (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
59	All Roads	No defects.	Records are not maintained or complete to demonstrate that the right decisions are being made.	4	N/A
60	All Roads	No defects.	Did not mobilise with sufficient resources within 30 minutes of determining the need.	4	N/A

### OPM GROUP 6.4.3: ICE GRITTING AND CMA – TREATMENT DECISIONS AND COMPLIANCE (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
71	All Roads	1 defect for every 10 decisions, or part thereof.	Inappropriate treatment decisions within the high Winter Period leading to additional risk to motorists and/or wasteful use of materials.	N/A
72	All Roads	No defects or consent compliance abatement notices.	Application and management not in accordance with the resource consent requirements for CMA use.	N/A

#### ICE GRITTING AND CMA - TREATMENT DECISIONS AND COMPLIANCE (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
61	All Roads	1 defect for every 10 decisions, or part thereof.	Inappropriate treatment decisions within the high Winter Period leading to additional risk to motorists and/or wasteful use of materials.	4	N/A

#### OPM GROUP 6.4.4: SNOW CLEARING – RESPONSE (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
73	All Roads	No defects.	Response to snow events not in accordance with Winter Services Requirements.	N/A

#### SNOW CLEARING - RESPONSE (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
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**SNOW CLEARING – RESPONSE (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
62	All Roads	No defects.	Response to winter events not in accordance with Winter Services Requirements.	2	N/A

**OPM GROUP 6.4.5: EVENT REPORTING – DELIVERY (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
74	All Roads	No defects.	Completion and delivery of reports as required by Winter Services requirements not met.	N/A

**6.6.1.2 Vegetation Control**

The control types referred to in Appendix 6.9, Type of Vegetation Control, are as follows:

- a) Type 1 Control – this standard applies to nominated areas, shoulders, medians, traffic islands and road verges within urban areas.
- b) Type 2 Control – this standard applies to rest areas.
- c) Type 3 Control – this standard applies to rural verges and other areas not included in Types 1, 2, 3A, 4, 4A, 5, 6 and 7. This standard also applies to heavy commercial facilities. The maximum height of grass shall be [[75]]mm immediately after mowing operation. On rural verges this mowing shall extend at least 0.5m behind edge marker posts on straights and 5m from edge of seal on inside of curves.
- d) Type 4 Control – this standard applies to large vegetated areas up to the road boundary fence line should one exist. If a fence line does not exist, then the clauses as detailed in Section 1.7, Network Description, apply. The maximum height of grass shall be [[100-75]]mm immediately after the mowing operation.
- e) Type 4A-3A Control – this standard applies to intersection sight distances and benches on rural roads. The maximum height of grass shall be [[100]]mm immediately after the mowing operation.
- f) Type 5 Control – this standard applies to the control of vegetation around bridge end markers, bridges, culvert markers, headwalls, MSE walls, retaining structures, road safety barriers, sight rails, surface water channels, kerb and

channel, weigh stations, side drains, culvert **headwalls**, culvert waterways; ~~bridges, rest areas furniture, and road-side furniture~~ (such as streetlight poles, CCTV/VMS cabinet, CCTV/VMS poles).

- g) Type 6 Control – this standard applies to the control of all ~~plant~~ pest **plants** within the Limit of Works, including stockpile Sites. Plant pests shall be controlled in accordance with the policy specified in **clause 1.6.5 H5** of the *State Highway Control Manual* (SM012) and the requirements of the relevant Regional Council.
- h) Type 7 Control – this standard applies to vegetation control within planted areas ~~and regeneration~~. Planted area maintenance includes:
- i) Weeding of planted areas
  - ii) Raking areas of bark and gravel chips
  - iii) Trimming and pruning of trees, shrubs and ground cover to maintain:
    - All plants in a healthy condition
    - Sight distances.
  - iv) Replacing dead plants with similar species
  - v) Control of pest plants as per Regional Pest Management Plans or strategies as agreed with Councils.
  - vi) Management of vegetation in line with local management plans agreed with stakeholders and agreed with the Principal.

All planted areas and adjacent pavement to a distance of 0.5m from the kerb-face must be maintained free of weeds and litter so they are neat and tidy at all times.

The term near “vegetation-free” means the vegetation does not exceed 100mm in height. The method of control shall:

- i) Not result in vegetation burn-off or the creation of potential burn off control within all planted areas
- ii) Maintain the free flow of water to discharge points **without it causing scour**
- iii) Prevent mechanical damage to roadside furniture such as signs, marker posts and guardrails
- iv) Enable missing or damaged roadside furniture such as signs and marker posts to be identified.

In cases where flying debris represents a safety hazard to road users, vegetation control must be performed using vertical flail type mowers.

Mowing carried out on any **part of the Network** shall complete mowing on both sides of the road within 48 hours, so that one side of the road is not left un-mown for longer than 48 hours, where the other side of the road has been mown.

For Type 4 Control, the Contractor and Principal shall jointly agree an annual forecast programme of intervention based on Network need and area knowledge. Generally, work will be triggered by Contractor general inspections or customer notification.

Intervention shall only be carried out when approved by the Principal. Should areas exist outside the mowing boundaries, mowing shall be the Principal's risk if mowed in accordance with the Principal's requirements otherwise it shall be at the Contractor's risk, and only mowed at the specific request of the Principal.

Type 3 and 4 intervention activities shall be completed at the same time.

#### OPM GROUP 6.4.6: VEGETATION CONTROL – GENERAL (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
75	All Roads	Type 1 (Urban) Control – $\leq 20\%$ of area per audit section.	Vegetation $< 20\text{mm}$ or $> 75\text{mm}$ in height.	1 weeks
76	All Roads	Type 2 (Rest Areas) Control – $\leq 25\%$ of area per audit section.	Vegetation $< 20\text{mm}$ or $> 150\text{mm}$ in height.	1 week
77	NSHVH, NSH	Type 3 Control – no defects.	Vegetation $< 25\text{mm}$ or $> 300\text{mm}$ in height	2 weeks
78	RSH	Type 3 Control – $\leq 5\%$ of area per audit section.	or $< 160\text{m}$ forward sight visibility to all signs and delineation devices	
79	RCH	Type 3 Control – $\leq 10\%$ of area per audit section.	or	
80	RDH	Type 3 Control – $\leq 15\%$ of area per audit section.	Vegetation within the clear Vegetation-free Zone.	
81	All Roads	Type 5 Control – $\leq 20\%$ per audit section.	Area not vegetation-free or near vegetation-free.	2 weeks
82	NSHVH, NSH, RSH	Type 7 Control – $\leq 15\%$ per audit section.	Non-compliance with requirements of Type 7 control or	1 month
83	RCH, RDH	Type 7 Control – $\leq 20\%$ per audit section.	Designation Conditions and Plans.	
84	All Roads	Self-sown trees – $\leq 20$ defects within an audit section.	Self-sown tree greater than 1m high and less than 3m.	1 month
85	All Roads	No defects.	Dead tree or limb within the Limit of Works that presents a risk of falling onto the road (a fallen tree or limb shall be	1 month

**OPM GROUP 6.4.6: VEGETATION CONTROL – GENERAL (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
			<del>treated as an Incident Response).</del>	

**VEGETATION CONTROL – GENERAL (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
63	All Roads	≤ 20% Type 1 (Urban): by length (side m), per 5km carriageway section.	Vegetation < 20mm or > 75mm in height.	2	1 week
64	All Roads	≤ 25% Type 2 (Rest Areas): per individual Rest Area.	Vegetation < 20mm or > 150mm in height.	2	1 week
65	NatHV(M&E), NatHV, Nat	No defects Type 3.	Vegetation < 25mm or > 300mm in height	2	2 weeks
66	Reg	≤ 5% Type 3: by length (side m), per 5km carriageway section.	or < 160m forward sight visibility to all signs and delineation devices or Vegetation within the clear Vegetation-free Zone.	2	2 weeks
67	Art, PCol, SCol, Acc, AcCLV	≤ 10% Type 3: by length (side m), per 5km carriageway section.		2	2 weeks



**VEGETATION CONTROL – GENERAL (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
68	NatHV(M&E)	≤ 10% Type 5: by length (side m) per 5km carriageway section.	Area not vegetation-free or near vegetation-free.	2	2 weeks
69	All Roads (except NatHV(M&E))	≤ 20% Type 5: by length (side m) per 5km carriageway section.		2	2 weeks
70	All Roads	≤ 15% Type 7: per 5km carriageway section.	Non-compliance with requirements of Type 7 control or Designation Conditions and Plans.	2	1 month
71	All Roads	No defects.	Dead tree or limb within the Limit of Works that presents a risk of falling onto the road or damaging another asset or property (a fallen tree or limb shall be treated as an Incident Response).	2	1 month
72	NatHV(M&E)	No defects.	Self-sown tree >1m and < 3m high.	1	1 month
73	All Roads (except NatHV(M&E))	≤ 20 defects per 5km carriageway section.		1	1 month

**OPM GROUP 6.4.7: SIGHT-LINE VEGETATION CONTROL (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
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**OPM GROUP 6.4.7: SIGHT-LINE VEGETATION CONTROL (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
86		Not Assigned		
87		Not Assigned		
88		Not Assigned		
89		Not Assigned		
90	All Roads	Type 4A Control – No defects.	Vegetation < 25mm or > 300mm in height.	2 weeks

**OPM GROUP 6.4.8: VEGETATION CONTROL – GENERAL (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
91	All Roads	Type 6 Control – No defects.	Receipt of an Abatement notice.	2 weeks

Vegetation and trees shall be maintained to the vegetation free zones shown in Appendix 6.10, Extent of Vegetation Control and Vegetation Management. Vegetation and trees on a central median will be maintained between lines extending vertically up from the front face of both the kerbs of the central median until such height that the crown can develop above the required 6.0 metre vegetation clear zone described in Appendix 6.10, Extent of Vegetation Control and Vegetation Management.

Environmental concerns, impact on planted areas and adverse visual effects dictate that over-use of chemical control must be avoided by the Contractor. This method of control must be applied appropriately, thereby reducing any impact to the environment.

A Registered Chemical Applicator is required for all chemical control of vegetation.

~~Weed control~~ – Pest plant control shall be frequent enough to prevent pest plant weed species flowering and seeding. Pest plant Weed coverage shall not exceed 2.5% of any 10m<sup>2</sup>. Pest plant Weed growth shall not exceed 100mm in height or spread. Pest plants Weeds shall be controlled without the use of residual herbicides.

Trees and other vegetation applies to the control of all trees within the road reserve that is maintained by the Principal, or on adjacent properties but encroaching on the road reserve, to maintain the vegetation-clear zone. Where additional clearing has established clear zones, they must be maintained.

Self-sown trees to be recorded as defects are those species that are pest plants or have the potential to grow a trunk diameter exceeding 100mm and become a traffic hazard within a clear zone.

Consultation with the relevant landowner is required before appropriate trimming of vegetation encroaching from neighbouring properties is undertaken.

Arboriculture and tree trimming is to be done using appropriate tree care methods, and appropriately trained staff. The methodology for specific tree pruning is to be approved by the Principal prior to commencement of work.

### 6.6.1.3 Litter

Litter is defined as any single item, regardless of visibility or size, located within the road reserve that is maintained by the Principal, including, but not limited to, paper, refuse, rubbish, glass, metal, garbage, drink bottles, cans and other consumer type objects, and any objects that are not required by the Principal for the functioning of the road.

Litter in stopping places, such as rest areas, is excluded from this section, refer to rest area maintenance.

#### OPM GROUP 6.4.9: LITTER COLLECTION (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
92	NSHVH (Motorways and Expressways only)	≤ 75 defects per audit section.	Litter item visible to anyone who is travelling at normal operating speed.	2 days
93	NSHVH, NSH, RSH, RCH, RDH	≤ 100 defects per audit section.		

#### LITTER COLLECTION (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
74	NatHV(M&E)	≤ 150 defects per 5km carriageway section.	Litter item visible to anyone who is travelling at normal operating speed.	2	2 days

**LITTER COLLECTION (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
75	All Roads (except NatHV(M&E))	≤ 200 defects per 5km carriageway section.		2	2 days
76	NatHV(M&E)	≤ 75 defects per 5km carriageway section.	Litter item visible to anyone who is travelling at normal operating speed in the high-profile litter area (e.g. on and off ramps) as defined in Appendix 1.5.	2	2 days
77	All Roads (except NatHV(M&E))	≤ 100 defects per 5km carriageway section.		2	2 days

**Fly Tipping**

Any fly tipping shall be removed by the Contractor and disposed of at an appropriate dump site.

**6.6.1.4 Detritus**

Detritus is defined as:

- Sealing chip, pavement and unsealed shoulder aggregates
- Detached vegetation
- Dead animals and animal remains.

In addition, detritus includes:

- Fretting from cuttings and deposits of windblown sand or grit, loose aggregates, fallen leaves
- The results of build-up of minor droppings or spillages from passing traffic or climatic conditions.

Detritus excludes:

- Material in lined and unlined channels and areas adjoining the assets. Refer to OPMs 4459 to 4865, Lined Surface Water Channels
- Litter.

A sealed surface is any sealed or paved surface including, but not limited to, the road pavement including shoulders, weigh stations, stopping places such as rest areas, and

bridge decks. It includes **footpaths**, deck drainage channels and open bridge deck joints.

#### OPM GROUP 6.4.10: DETRITUS (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
94	NSHVH (Motorways and Expressways only)	≤ 2 defects per audit section.	An area where there is > 500 grams of detritus (e.g. sealing chip, slip material) per two square metres of sealed surface and/or is considered a safety hazard.	2 days
95	NSHVH, NSH	≤ 5 defects per audit section		
96	RSH, RCH, RDH	≤ 10 defects per audit section.		

#### DETRITUS (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
78	NatHV(M&E)	No defects.	An area where there is > 500 grams of detritus (e.g. sealing chip, slip material) per two square metres of sealed surface and/or is considered a safety hazard.	1	2 days
79	NatHV, Nat	≤ 2 defects per 5km carriageway section.		1	2 days
80	Reg, Art, PCol, SCol	≤ 5 defects per 5km carriageway section.		1	2 days
81	Acc, AccLV	≤ 15 defects per 5km carriageway section.		1	2 days

For slips that constitute a safety hazard, refer to Section 6.8.1, **Incident Response Operational Activities**, of this Maintenance Specification.

### 6.6.1.5 Rest Area, and Heavy Commercial Vehicle Facility and Formed Stopping Area Maintenance

Rest areas are key important features of the Network and contribute to the journey as well as the safety and customer experience of the Network.

The existing rest areas and heavy commercial facilities within the Network and the specific requirements for control are included in Appendix 6.11, Rest Area, and Heavy Commercial Vehicle Facility and Formed Stopping Area Maintenance. The location and number of rubbish bins are also included in Appendix 6.11, Rest Area, and Heavy Commercial Vehicle Facility and Formed Stopping Area Maintenance.

Heavy Commercial Vehicle Facilities includes weigh stations and stock effluent disposal sites.

The requirements include all designated accesses, parking areas and roadways into and around the facilities, whether the surface is sealed or unsealed.

Unless specified in Appendix 1.9, Current Local Authority Maintenance Agreements (MOUs), effluent levels within the storage tanks will be monitored by the local authority and therefore will not be a requirement of this contract.

The integrity and condition of effluent storage tanks shall be monitored by the Contractor and reported to the Principal.

#### OPM GROUP 6.4.11: REST AREA, AND HEAVY COMMERCIAL VEHICLE FACILITY AND FORMED STOPPING AREA MAINTENANCE (100% SAMPLE SIZE, MEASURED BI-ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
97	NSHVH, NSH, RSH	≤ 2 defects per facility.	Pothole within trafficked area greater than 150mm in diameter.	2 weeks
98	RCH, RDH	≤ 3 defects per facility.		
99	All Roads	≤ 2 defects per facility.	HCV facility not maintained to the special requirements of Appendix 6.11, Rest Area and Heavy Commercial Vehicle Facility Maintenance.	1 week

#### REST AREA, HEAVY COMMERCIAL VEHICLE FACILITY AND FORMED STOPPING AREA MAINTENANCE (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
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**REST AREA, HEAVY COMMERCIAL VEHICLE FACILITY AND FORMED STOPPING AREA MAINTENANCE (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
82	NatHV(M&E), NatHV, Nat, Reg	≤ 2 defects per facility.	Pothole within trafficked area greater than 150mm in diameter.	2	2 weeks
83	Art, PCol, SCol, Acc, AccLV	≤ 3 defects per facility.		2	2 weeks
84	NatHV(M&E)	≤ 1 defects per facility.	HCV facility not maintained to the special requirements of Appendix 6.10, Rest Area and Heavy Commercial Vehicle Facility Maintenance.	2	1 week
85	All Roads (except NatHV(M&E))	≤ 2 defects per facility.		2	1 week
86	All Roads	≤ 1 defects per facility.	There is litter overflowing a rubbish bin.	2	1 week
87	NatHV(M&E)	No defects per facility.	There is non- functioning or damaged, but repairable, equipment or furniture.	2	2 weeks
88	All Roads (except NatHV(M&E))	≤ 1 defects per facility.		2	2 weeks
89	All Roads	≤ 20 defects per facility.	Visible litter item within the area or HCV facility.	2	1 week

**OPM GROUP 6.4.12: REST AREA, AND HEAVY COMMERCIAL VEHICLE FACILITY AND FORMED STOPPING AREA CUSTOMER MAINTENANCE (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
100	All Roads	≤ 1 defect per audit section.	There is non-functioning or damaged, but repairable, equipment or furniture.	2 weeks
101	All Roads	≤ 1 defect per audit	There is litter overflowing in	1 week

### OPM GROUP 6.4.12: REST AREA, AND HEAVY COMMERCIAL VEHICLE FACILITY AND FORMED STOPPING AREA CUSTOMER MAINTENANCE (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
		section:	rubbish bin:	
102	All Roads	≤ 20 defects per area or facility, within the audit section:	Visible litter item within the area or HCV facility:	1 week

#### 6.6.1.6 Graffiti Removal General

The Contractor has a duty of care in ensuring the Network retains a tidy appearance by removing graffiti from Assets within urban in areas that are in direct view of customers road users or pedestrians.

Additional to this requirement refer to Section 6.5, Structures, of this Maintenance Specification for the removal of graffiti from bridges and other structures.

### OPM GROUP 6.4.13: URBAN GRAFFITI REMOVAL (100% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
103	NSHVII, NSH	≤ 30 defects:	Graffiti, in isolation or a collection, in view of road users or pedestrians:	48 hours
104	RSH, RCH, RDH	≤ 40 defects:	Graffiti, in isolation or a collection, in view of road users or pedestrians:	72 hours

### GRAFFITI REMOVAL (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
90	NatHV(M&E)	No defects.	Graffiti (any, including signs, bridges and structures), in isolation	2	2 days



**GRAFFITI REMOVAL (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
91	NatHV, Nat, Reg, Art, PCol, SCol, Acc, AcLV	≤ 3 defects per 5km carriageway section.	or a collection, in view of road users or pedestrians and/or rail (customers).	2	3 days

**6.6.1.7 NO<sup>2</sup> Sample Collection Services**

The Contractor is to ensure all air quality monitoring responsibilities of the Principal are completed in accordance with the programmes provided by WaterCare Services Limited. Generally, an advanced annual programme will be provided around December.

Diffusion tubes (samplers) have been mounted on street light poles approximately 3m above ground level at the following existing sites shown in Table 6.4.

**TABLE 6.4: LOCATION OF NO<sup>2</sup> SAMPLERS**

ROAD NAME	DISPLACEMENT (M)	LOCATION	DESCRIPTION	# OF TUBES
<<to complete>>				

The samplers shall be collected by the Contractor and replaced with new samplers on a monthly basis (in accordance with the programme), then couriered to Kath McLeod, Watercare Services Limited, PO Box 107028, Airport Oaks, Auckland, 2154 or to another individual as notified by the Principal to the Contractor from time to time, for analysis. Watercare Services Limited will provide replacement samplers periodically that are to be refrigerated until such time they are installed.

The Principal has an operating manual that details all the Contractor's responsibilities relating to this work, refer <http://www.nzta.govt.nz/resources/air-quality-monitoring/docs/air-quality-monitoring-operating-manual.pdf>

**6.6.2 Environmental Renewals**

Construction of Environmental Renewals does not form part of this contract.

The Principal may however elect to engage the Contractor to complete any funding approved renewals either pursuant to a new contract or pursuant to this contract as a variation (as determined by the Principal).

## 6.7 TRAFFIC SERVICES

The Traffic Services Section allows for the routine traffic services maintenance of signs, variable message sign post and supports, raised pavement markers, marker posts, LRMS, pavement marking and carriageway lighting.

### 6.7.1 Routine Traffic Services Maintenance

#### 6.7.1.1 Signs

Signs include:

- a) Regulatory signs including Stop and Give Way and advance warning signs on roads intersecting the state highways, and No Stopping signs within urban areas
- b) Permanent warning signs, advisory speed signs and chevron markers
- c) Chevron boards, sight rails, bridge-end markers, and obstruction markers
- d) Bridge name signs, overbridge name signs, seasonal signs, guide signs, motorist-service signs, community-service signs, tourist and information signs
- e) Reference-station signs, ERP signs, route-position signs, culvert markers, kilometre markers, and bridge-end position markers
- f) Road condition information signs
- g) Electronic signs as per Appendix 6.11, Electronic Sign Scope and Responsibility.

Signs not covered include:

- 1) Signs with flexible faces
- 2) Street-name blade signs
- 3) Regulatory parking signs.

Sign maintenance includes keeping the signs, posts and any support structure clean, free of any moss, algae or vegetative growth, painted, legible, correct sign face shape (not bent, damaged, shot at or vandalised), fixings between sign plates and supporting structures are checked/tightened, alignment and height is checked. Signs are kept free of any vegetation that impedes 160m clear site distance and replaced at end of life or when retro-reflective properties are lost.

Transport Agency P/24 is the performance-based specification that describes the requirements for traffic sign installation and maintenance.

All hardware complies with *Manual of Traffic Signs and Markings* (MOTSAM) and complies with the *Road Safety Manufacturers Association (RSMA) Standards for the Manufacture and Maintenance of Traffic Signs, Posts and Fittings*.

Any identified damage to street-name blade signs, electronic signs and gantries shall be reported to the appropriate owner immediately for their action.

#### OPM GROUP 6.5.1: SIGNS (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
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**OPM GROUP 6.5.1: SIGNS (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
105	All Roads	No defects.	Physically missing or illegible Regulatory.	2 hours
106	NSHVH	≤ 2 defects per audit section.	Physically missing or illegible sign that is not Regulatory.	1 week
107	NSH, RSH	≤ 4 defects per audit section.		
108	RCH	≤ 5% with defects per audit section.		
109	RDH	≤ 10% with defects per audit section.		
110	All Roads	≤ 5% with defects per audit section.	Graffiti visible from 50 metres in rural areas.	48 hours

**SIGNS (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
92	All Roads	No defects.	Regulatory sign (except RD6L) missing, illegible or not compliant with Traffic Control Devices Manual (TCDM).	4	2 hours
93	All Roads	≤ 5 defects per 5km carriageway section.	Non-regulatory sign and RD6L missing, illegible or not compliant with Traffic Control Devices Manual (TCDM).	1	1 week

**OPM GROUP 6.5.2: SIGNS (100% SAMPLE SIZE, MEASURED BI-ANNUALLY AND AT NIGHT)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
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**OPM GROUP 6.5.2: SIGNS (100% SAMPLE SIZE, MEASURED BI-ANNUALLY AND AT NIGHT)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
111	All Roads	≤ 10% defects.	Sign not visible at night from a distance of 160m, with head-lights on dipped beam, and/or has a reflectivity of less than 50% of its original reflectivity.	1 week

**SIGNS (100% SAMPLE SIZE, MEASURED 6-MONTHLY AND AT NIGHT)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
94	All Roads	No defects.	Regulatory sign (except RD6L) not visible from 160m at night, when viewed from the centre of the lane with headlights on full beam or 80m on dipped beam OR not meeting the Traffic Control Devices Manual (TCDM) reflectivity standard.	4	2 hours
95	All Roads	≤ 5% defects.	Non-regulatory sign and RD6L not visible from 160m at night, when viewed from the centre of the lane with headlights on full beam or 80m on dipped beam OR not meeting the Traffic Control Devices Manual (TCDM) reflectivity standard.	1	1 week

Illegible signs are those that have graffiti, are faded, obscured, damaged or similar so that they are undecipherable.

A third of all signs with frangible bases shall be inspected annually so that the entire sign stock is inspected every three years and, where required, re-torqued in

accordance with the manufacturer's guidelines and a completion report submitted to the Principal.

### OPM GROUP 6.5.3: FRANGIBLE SIGNS (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
112	All Roads	No defects.	A third of all signs with frangible bases not inspected and re-torqued, if required, in accordance with the manufacturer's recommendations.	N/A

### FRANGIBLE SIGNS (100% SAMPLE SIZE, MEASURED ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
96	All Roads	No defects.	Re-torquing of the base-slip asset, once in each 3-year period, not undertaken in accordance with manufacturer's recommendations or industry best practice.	1	N/A

#### 6.7.1.2 Electronic Warning Signs

The Contractor shall undertake a basic maintenance inspection on those sign types listed in Appendix 6.13, *Electronic Sign Scope and Responsibility*, using the checklist included in Appendix 6.12, *Basic Electronic Warning Sign Maintenance Checklist*. This shall be completed on a six-monthly basis with results provided to the Principal. The Principal may or may not engage the Contractor to complete the necessary maintenance or repairs to the signs.

The Contractor shall undertake cleaning and obscurity maintenance on those sign types listed in Appendix 6.12, *Electronic Sign Scope and Responsibility*.

Cleaning and obscurity maintenance requirements are included within the scope of works.

The Contractor shall undertake an annual maintenance inspection on those sign types listed in Appendix 6.13, *Electronic Sign Scope and Responsibility*, covering the following:

- Completing the basic maintenance checklist.

- Confirm that the LED luminance intensity adjusts in response to changes in ambient light intensity (should dim as ambient light reduces).
- Check the security of cabinet door hinges and locking system. Oil both.
- Check for indications of water entry/corrosion.
- Check that glanded cable holes provide an adequate seal.
- Check the integrity of any insect-screen covering weep holes.
- Remove any insect infestation or spider webs, and if necessary apply insect spray.
- If solar powered, check the solar controller and confirm the system is delivering adequate charge.
- If mains powered, check mains input and earth leakage.
- If batteries present, confirm each battery's operation.
- Check all wiring, connections, and components are secure.
- Complete other checks as appropriate.
- <<Add any other check procedures specific to particular asset types, for example HMI's SID Operations and Maintenance Manual, HMI's Cycle Awareness Manual and the Signopsys EWS Operations and Maintenance Manual>>.

The results of the above annual inspection shall be reported to the Principal in sufficient detail that the extent of repairs required can be clearly understood. The Principal may or may not engage the Contractor to complete the necessary maintenance or repairs.

#### 6.7.1.3 Variable Message Signs

Variable Message Signs (VMSs) that can be used to display electronic messages have been installed at the sites shown in Appendix 6.13, Location of Variable Message Signs.

The messages displayed on the signs are operated remotely following notification to the Principal by the Contractor. Maintenance of the electronic systems is carried out under a separate contract. However, the Contractor is responsible for maintaining the structural supports and concrete base pads including any required re-torquing of support bolts, site drainage, vegetation clearance and all other non-technical aspects at each of the sites. Any damage to the signs is to be reported to the Principal, who will engage other contractors to inspect the Site and liaise with the Contractor in carrying out repairs. The Contractor is to be aware that VMS sites are electrically powered and care must be taken when responding to any impact or other damage to the sites.

#### 6.7.1.4 Raised Pavement Markers

Raised pavement markers provide close and distant delineation of the road alignment and an audible and tactile signal when traversed by vehicle wheels.

All hardware installed shall comply with the *Manual of Traffic Signs and Markings*.

Locations of areas within the Network that do not have raised pavement markers are listed in Appendix 6.14, Locations with No Raised Pavement Markers.

#### OPM GROUP 6.5.4: RAISED PAVEMENT MARKERS (100% SAMPLE SIZE, MEASURED BI-ANNUALLY AND AT NIGHT)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
113	All Roads	≤ 20% defects.	RPM not visible from 160m at night, when viewed from the centre of the lane with headlights on full beam or 80m on dipped beam, where the road geometry permits a line of sight.	2 months
114	All Roads	≤ 3% of curves have defect.	Three or more consecutive RPMs on curves not visible from 160m at night, when viewed from the centre of the lane with headlights on full beam or 80m on dipped beam, where the road geometry permits a line of sight.	2 weeks

#### RAISED PAVEMENT MARKERS (100% SAMPLE SIZE, MEASURED 6-MONTHLY AND AT NIGHT)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
97	All Roads	≤ 10%.	RRPM (Reflective Raised Pavement Marker) not visible from 160m at night, when viewed from the centre of the lane with headlights on full beam or 80m on dipped beam, where the road geometry permits a line of sight.	2	2 weeks

**RAISED PAVEMENT MARKERS (100% SAMPLE SIZE, MEASURED 6-MONTHLY AND AT NIGHT)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
98	All Roads	≤ 3%.	RRPMs (Reflective Raised Pavement Markers) on curves not visible from 160m at night, when viewed from the centre of the lane with headlights on full beam or 80m on dipped beam, where the road geometry permits a line of sight.	4	2 weeks

**RAISED PAVEMENT MARKERS (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
99	All Roads	≤ 25 defects per 5km carriageway section.	Raised pavement marker missing.	1	2 weeks

**6.7.1.5 Marker Posts**

Edge marker posts are post-mounted reflective delineators used to delineate the alignment of the road ahead, especially horizontal and vertical curves. Edge marker posts with retro-reflective devices are primarily aids for night-time driving.

Marker posts include centreline marker posts which may be used in some parts of the Network to highlight the road centreline and encourage appropriate separation between opposing traffic flows.

Other delineation and hazard markers are defined as all other delineating devices and hazard markers required by the *Manual of Traffic Signs and Markings*, except for raised pavement markers.

Marker posts shall be replaced when broken, damaged or missing. The Contractor shall keep marker posts clean and serviceable with compliant retro-reflective components, properly aligned and at the correct spacing.

The Contractor shall maintain posts in a clean condition and in a vertical position with reflectors of the correct type facing oncoming traffic.



Posts that are 10 degrees or greater off vertical shall be straightened.

All damaged posts or reflectors shall be replaced. Plastic posts shall be replaced with plastic posts; wooden posts must be replaced with plastic posts.

All marker-post hardware shall comply with Transport Agency M/14 and the *Manual of Traffic Signs and Markings*.

#### OPM GROUP 6.5.5: EDGE MARKER POSTS (100% SAMPLE SIZE, MEASURED BI-ANNUALLY AND AT NIGHT)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
115	All Roads	≤ 3% defects.	Reflector not visible.	2 weeks
116	All Roads	≤ 1% of curves have defect.	Two or more consecutive reflectors on the same side of the road, on the outside of curves, not visible from 160m at night, when viewed from the centre of the lane with headlights on full beam or 80m on dipped beam.	2 weeks

#### EDGE MARKER POSTS (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
100	All Roads	≤ 10 defects per 5km carriageway section.	EMPs or flexible delineators missing or not compliant with the Traffic Control Devices Manual (TCDM).	1	2 weeks

#### EDGE MARKER POSTS (100% SAMPLE SIZE, MEASURED 6-MONTHLY AND AT NIGHT)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
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**EDGE MARKER POSTS (100% SAMPLE SIZE, MEASURED 6-MONTHLY AND AT NIGHT)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
101	All Roads	≤ 10 defects per 5km carriageway section.	Reflector not visible from 160m at night, when viewed from the centre of the lane with headlights on full beam or 80m on dipped beam.	4	2 weeks

**OPM GROUP 6.5.6: CULVERT MARKER POSTS (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
117	All Roads	≤ 3 defects per audit section.	Missing culvert marker post.	1 month

**CULVERT MARKER POSTS (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
102	NatHV(M&E)	≤ 1 defect per 5km carriageway section.	Missing culvert marker post.	1	1 month
103	All Roads (except NatHV(M&E))	≤ 3 defects per 5km carriageway section.		1	1 month

**6.7.1.6 LRMS**

All sign hardware and pavement marking must comply with the *LRMS Manual* (SM051) and the Principal's requirements.

The ongoing maintenance of the LRMS signs and pavement marking is the responsibility of the Contractor. The Contractor is required to maintain the LRMS signage and pavement marking to meet the requirements of the *LRMS Manual* (SM051).

<b>OPM GROUP 6.5.7: LRMS (100% SAMPLE SIZE, MEASURED ANNUALLY)</b>				
<b>OPM</b>	<b>ROAD CLASS</b>	<b>CONTRACT STANDARD</b>	<b>DEFECT</b>	<b>PIP</b>
118	All Roads	≤ 3% of LRMS assets.	Missing, non-functional or incorrectly located sign or pavement marking.	2 weeks
119	All Roads	≤ 5% of LRMS assets.	Missing, damaged, non-functional or incorrectly located kilometre marker post.	2 weeks
120	All Roads	≤ 1% of LRMS assets.	Two or more consecutive missing or damaged kilometre marker posts.	2 weeks

#### 6.7.1.7 Pavement Marking

Pavement lines and markings can increase traffic capacity, improve safety and contribute to the orderly use of design paths by drivers, particularly at critical points in the road system. Pavement lines and markings are also used to supplement some traffic signs.

Pavement marking areas include, but are not limited to, right-turn bays, flush medians and pedestrian crossings.

Transport Agency P/22 and Transport Agency P/30 describes pavement marking and pavement marking maintenance requirements.

Pavement marking shall comply with *Manual of Traffic Signs and Markings*.

Pavement marking colour boundaries are described by using the scale of ISO 105 from colour Y35 of AS 2700 (white markings) and Y12-14 of AS 2700 (yellow markings).

Pavement marking programme development shall be completed in collaboration with the Principal and General condition inspection results. Two pavement marking programmes shall be prepared by the Contractor and presented to the Principal by the 1<sup>ST</sup> September each year:

- Transport Agency P/22 maintenance programme
- Transport Agency P/30 maintenance programme for high-performance road marking.

Each programme shall be based on a full Network visual condition-assessment and assessing the actual Network need and intervention condition and prioritisation

parameters as agreed with the Principal. The annual programmes are for maintenance of existing assets and shall not include improvements.

Pavement marking programmes shall not proceed without the Principal's approval.

The Principal has made allowance for **[[one]]** full remark of the Transport Agency P/22 Network annually, through a measure and value delivery mechanism. The Contractor is encouraged to promote alternative strategies which improve safety outcomes, as agreed in the safety delineation strategy. This includes an annual asset-replacement quantity for Audio Tactile Profiled (ATP) road markings. ~~All other high-performance road marking is at the discretion of the Principal. The Contractor may or may not be engaged to undertake the Transport Agency P/30 programmes.~~ If any ATP requires replacement then it must be replaced within six months from identification. Transport Agency M/24, Specification for Audio Tactile Profiled Roadmarkings shall be complied with. The Contractor shall install any ATP edgeline alongside and on the outside of any flat marked edgeline.

Due to additional wear on the Network the Principal may require additional remarking to be completed. The Contractor shall monitor the condition of all pavement marking on the Network either through Routine Contract Inspections or regular travel on the Network. Any high wear areas will be recorded in the Pavement Marking Condition Register, which will be used by the Principal to determine any additional marking that may be required outside of the annual remark.

#### OPM GROUP 6.5.8: TRANSPORT AGENCY P/22 PAVEMENT MARKING – LINES, TEXT, SYMBOLS, ETC. (100% SAMPLE SIZE, MEASURED BI-ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
121	All Roads	≤ 1% of the completed programme.	After installation, faults identified as per Transport Agency P/22.	1 month
122	All Roads	No defects.	Rework as identified in OPM 121 not corrected within the agreed time frame.	1 month

#### TRANSPORT AGENCY P/22 PAVEMENT MARKING – LINES, TEXT, SYMBOLS, ETC. (100% SAMPLE SIZE, MEASURED 6-MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
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## TRANSPORT AGENCY P/22 PAVEMENT MARKING – LINES, TEXT, SYMBOLS, ETC. (100% SAMPLE SIZE, MEASURED 6-MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
104	All Roads	No defects.	Following programme completion, faults identified that are inconsistent with relevant specification.	1	1 month

### 6.7.1.8 Carriageway Lighting

The Contractor is advised there will be responsibility for maintenance of some specific lighting assets in accordance with OPM Groups 6.5.9 and 6.5.10.

Appendix 1.9, Current Local Authority Maintenance Agreements (MOUS), identifies road lighting for which maintenance is delegated to local authorities.

Appendix 6.15, Locations of Streetlights to Maintain, details the streetlights that shall be maintained by the Contractor.

The Contractor shall carry out:

- a) Regular inspections and preventative maintenance of lighting installations
- b) Replacement of faulty lamps
- c) Inspection of lantern/fitting control gear and lighting columns
- d) Replacement of faulty lantern/fitting control gear
- e) Repair of all cable faults and associated protection
- f) Repair and/or replacement of vandalised equipment

Carriageway lighting includes maintaining the following items:

- a) Road lighting
- b) Weighpit and effluent facility lighting
- c) Belisha beacons
- d) Floodlighting
- e) Highmast lighting.

To maintain power to a lighting installation:

1. From a Montrose box: The Contractor must maintain all equipment from and including the Montrose box, to and including the lamp.
2. Direct from the electrical supply authority to the lamp: The Contractor must maintain all equipment from the base of the pole, to and including the lamp.

The Contractor must maintain all Montrose boxes so they are free of insect infestation, water-tight and in good condition. This work includes:

- Controlling all vegetation around the box to prevent it from obscuring the light sensor
- Repair or replacement of all locks
- Recoating of damaged protective coating systems.

All replacement:

- Poles must comply with Transport Agency M/19
- Lamps must be of an equivalent type to the lamp being replaced unless agreed with the Principal.

### OPM GROUP 6.5.9: CARRIAGEWAY LIGHTING (100% SAMPLE SIZE, MEASURED QUARTERLY AND AT NIGHT)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
123	NSHVH, NSH	≤ 5% defects.	Light or belisha beacon not functioning or missing.	1 week
124	RSH, RCH, RDH	≤ 10% defects.		
125	All Roads	≤ 2% of lighted intersections with defects.	More than 50% of the lights not functioning at intersection.	2 days

### CARRIAGEWAY LIGHTING (100% SAMPLE SIZE, MEASURED QUARTERLY AND AT NIGHT)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
105	All Roads	No defects.	Belisha Beacon light or pedestrian crossing light not functioning or missing.	4	2 days
106	NatHV(M&E)	≤ 2% defects.	Light not functioning or missing.	1	1 week
107	NatHV, Nat	≤ 5% defects.		1	1 week
108	Reg, Art, PCol, SCol, Acc, AcclV	≤ 10% defects.		1	1 week
109	NatHV(M&E)	No lighted intersection with defects.	Intersection, On or Off Ramp: ≥ 50% of the lights not functioning.	1	2 days

**CARRIAGEWAY LIGHTING (100% SAMPLE SIZE, MEASURED QUARTERLY AND AT NIGHT)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
110	All Roads (except NatHV(M&E))	≤ 2% of lighted intersection with defects.	Intersection, On or Off Ramp: ≥50% of the lights not functioning.	1	2 days
111	NatHV(M&E)	No defects.	Mid-block: ≥ 3 consecutive lights not functioning or missing.	1	1 week

A third of all poles with a slip base shall be inspected re-torqued annually, and where required, re-torqued so that the entire lighting stock is inspected every three years (in accordance with the manufacturer's guidelines), so that the entire lighting stock is inspected every three years and the structural integrity assessed. A and a completion report shall be submitted to the Principal by 1 July each year.

**OPM GROUP 6.5.10: CARRIAGEWAY LIGHTING SLIP BASES (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
126	All Roads	No defects.	Re-torquing of a third of the base slip asset not undertaken in accordance with manufacturer's recommendations.	N/A

**CARRIAGEWAY LIGHT SLIP BASES (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
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**CARRIAGEWAY LIGHT SLIP BASES (100% SAMPLE SIZE, MEASURED ANNUALLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
112	All Roads	No defects.	Re-torquing of the base-slip asset, once in each 3-year period, not undertaken in accordance with manufacturer's recommendations or industry best practice.	1	N/A

**6.7.2 Traffic Services Renewals**

Construction of traffic services renewals, does not form part of this contract.

The Principal may however elect to engage the Contractor to complete any funding approved renewals either pursuant to a new contract or as a variation to this contract (as determined by the Principal).

**6.8 OPERATIONAL TRAFFIC MANAGEMENT**

The Operational Traffic Management Section allows for incident response, site-specific warning systems, removing live animals and abandoned vehicles from the road corridor.

**Operational Activities****6.8.1 Incident Response****Incident Response**

Incident response is defined as, but is not limited to:

- a) Any event such as accidents, spillages, floods, fires, washouts, dropouts, slumps, slips and storm damage, excluding ice gritting and snow clearance.
- b) Providing patrols in advance of, and during, storms and wind events, and major public events to monitor the effect on the road's availability and the level of service, such that there are "no surprises" during these events.
- c) Responding to crashes and other events that may affect:
  - Road user safety
  - Network integrity
  - The Network connectivity

Refer Appendix 6.16, Recurring Hazards, for a schedule of all known recurring natural hazards.



The first 10 hours of any incident response shall be covered by the Contractor's lump sum as specified in Schedule 18 of the Conditions of Contract. Receiving notification is defined as the time the Contractor is advised of the incident by the Principal, the TOC, Contractor's personnel or a third party and the 10 hours starts at the time that the physical resource is deployed.

The work includes:

1. Assisting police and emergency services at crash sites with traffic management, detours and site clean-up.
2. ~~Repairing and m~~ Making safe damaged Assets such as surfacing, pavement, guardrail, wire rope and structures, and removing crash debris.
3. Attending any other incident, including activities such as removing live animals and abandoned vehicles.
4. Removing slips up to 50 cubic metres in volume as specified within the Conditions of Contract, 18<sup>th</sup> Schedule. The Principal will bear the risk of slips onto the road except that the Contractor bears the risk of the first 50 cubic metres, truck measure, of cut-to-waste material required to reshape and reinstate the road corridor profile to its pre-existing standard following any single slip event. A "single slip event" is defined as:
  - One or more slips that can be managed within a single implementation of traffic control.
  - One or more slips that occur at the same site within a 24-hour period.

The percentage of the cost of traffic control for which the Principal bears the risk shall be equal to the percentage of the volume of the slip for which the Principal bears the risk.

The Principal shall be notified of the circumstances immediately once the Contractor becomes aware of any emergency or any other incident that may affect the public and could result in any significant adverse media exposure or represents a liability risk to the Principal.

The Contractor must:

- Manage the incident in accordance with Section 5.4.5, Incident Response Management of this Maintenance Specification.
- Provide sufficient resources to attend to all incidents 24 hours a day, seven days a week (regardless of risk allocation).
- Respond according to the Contractor's Emergency Procedures and Preparedness Plan (see Section 4.7, Emergency Procedures and Preparedness Plan of this Maintenance Specification).
- Provide appropriate signage, and barriers and barricades at all road closures, including changing permanent road condition signs before and after the closure.
- ~~Manage road closure barricades at all times.~~

**OPM GROUP 6.6.1: INCIDENT RESPONSE (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
127	NSHVH, NSH, RSH	No defects.	Not on Site within 1 hour from receiving notification of an incident with sufficient and appropriate resources.	N/A
128	RCH, RDH		Not on Site within 2 hours from receiving notification of an incident with sufficient and appropriate resources.	N/A

**INCIDENT RESPONSE MANAGEMENT (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
113	NatHV(M&E)	No defects	Not on site within 30 min from receiving notification of an incident with sufficient and appropriate resources to manage the incident effectively (as defined within the Specification).	2	N/A
114	NatHV, Nat, Reg, Art	No defects	Not on site within 1 hour from receiving notification of an incident with sufficient and appropriate resources to manage the incident effectively (as defined within the Specification).	2	N/A

**INCIDENT RESPONSE MANAGEMENT (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
115	PCol, SCol, Acc, AccLV	No defects	Not on site within 2 hours from receiving notification of an incident with sufficient and appropriate resources to manage the incident effectively (as defined within the Specification).	2	N/A
116	NatHV(M&E)	No defects	Initial update not provided to TOC/TREIS within physical response time requirement +15 minutes.	2	N/A
117	All Roads (Not NatHV(M&E))	< 5%		2	N/A
118	All Roads	< 5%	Updates not provided to TOC/TREIS within 15 minutes of an event condition change, as defined in the Specification.	2	N/A

The Contractor shall immediately notify the regional bridge consultant of any structure damage from crashes, weather events or any other cause that may affect the integrity of a structure and pose a hazard to users of the Network.

The Principal may engage Supplementary Resources to supplement those provided by the Contractor if the Contractor is unable to provide adequate resources.

There will be occasions when incident response will require the placement of Temporary Warning Signage such as signs, cones and high visibility netting. The Contractor shall supply all signage for a period of up to 1 month, under the Lump Sum for Incident Response. Should temporary signage be required for longer than 1 month, the Principal shall arrange long-term signage, either with the Contractor or outside the contract.

In certain circumstances during an incident, the Contractor may be required to undertake work outside the Site Boundary, or a contractor from another district may be required to undertake work within the Site Boundary. In neither circumstance will the undertaking of the work be a breach of this contract. In such instances of working outside the Site Boundaries the Conditions of Contract will apply.

### 6.8.1.1 Slips and Rockfalls

Where a slip or rockfall incident occurs on the Network or slope debris is cleared, the Contractor shall provide evidence to justify any claims above 50m<sup>3</sup>.

All such incidents are to be summarised in the Incident Response Section of the monthly report and added to the Slip and Rockfall Register. This register will be used to update the Geological Hazard Site Inspection Register, where any area of higher risk is identified.

Where material for a slip is temporarily stockpiled, under no circumstances is material to be placed where it may add load to another slope including any slope below the road.

### 6.8.1.2 Site Specific Warning System

#### ~~Site-specific Warning System~~

The Principal utilises specific warning systems for high-risk Network-connectivity potential events. Appendix 6.18, Site-specific Warning System, provides the details for each Site-specific warning system and the requirements for the Contractor to maintain and operate the system. The Contractor's process and procedure requirements shall be incorporated into the Contractor's Emergency Procedures and Preparedness Plan.

### 6.8.1.3 Wandering Stock

#### ~~Live Animals~~

~~Wandering Stock~~ Live animals are those such as horses, sheep and cows that are roaming loose within the Network, and therefore pose a potential hazard to road users, particularly at night.

The Contractor is required to do whatever is necessary during the incident involving live animal(s) to make the road safe for the road users. Where possible the Contractor shall identify and notify the owner of the live animal(s). If the owner cannot be identified, live animal(s) removed must be treated, impounded and disposed of according to the requirements of the Impounding Act 1955.

If this function is delegated in a MOU to the local authority, the Contractor shall communicate and manage roaming animal incidents in collaboration with the stock-control officer and in accordance with the Impounding Act 1955.

### 6.8.1.4 Abandoned Vehicles

#### ~~Abandoned Vehicles~~

A vehicle (such as a car, truck or trailer) may be considered abandoned if:

- It is parked on a road reserve, and
- it has been stationary for an unusual length of time, and
- the owner cannot be located, and/or
- the vehicle is trashed, stripped, has no licence plates, or no current licence or warrant of fitness.

Notwithstanding any other provision in these Specifications, the Contractor shall fully comply with the Principal's abandoned vehicle procedures in the *State Highway Control Manual* (SM012).

Abandoned vehicles within the Limit of Works, and posing a safety threat to road users, shall be moved to an adjacent safe position in accordance with the contract standard for the Incident Response OPM.

Before a vehicle is declared to be legally abandoned, reasonable attempts must be made to contact the owner and identify their interest in the vehicle.

The Contractor is to contact the Police within 1 week of its coming to their attention, to inform the Police that they intend uplifting the vehicle. Details of the Police personnel contacted and time and date must be recorded. This applies to all abandoned vehicles. ~~Every reasonable attempt is to be made to identify the owner.~~ Where the owner cannot be identified, the vehicle shall be removed to a secured storage facility. Where the owner can be identified, the Contractor shall remove the vehicle not less than two weeks after the first attempt to inform the owner, and not more than three weeks.

The Contractor must photograph the vehicle prior to uplifting it, to clearly show the condition of the vehicle. This is to safeguard the Contractor should the owner of the vehicle claim the Contractor has damaged the vehicle during removal and storage. Details of the vehicle, as required by the Principal, are to be supplied verbally and in writing when requested.

## 6.9 PEDESTRIAN, CYCLE, MOTORCYCLE AND BRIDLE ROUTE MAINTENANCE

The Pedestrian, Cycle, Motorcycle and Bridle Route Maintenance Section allows for maintaining:

- specific cycle routes on existing shoulders
- motorcycle routes within lanes
- Pedestrian, cycle and bridle routes outside the roadway (i.e. separated from the carriageway).

Definitions for each of the cycling facilities are included in Appendix 1.1, Definitions.

Table 1.5.3, Pedestrian, Cycle, Motorcycle and Bridle Route Extents within Appendix 1.5, Network Extents includes the various routes for the Contractor to manage.

The Contractor shall be responsible for the operation and management of the routes, including by working collaboratively with others to undertake the primary role for the operation and maintenance of the identified routes.

### 6.9.1 Routine Route Maintenance

#### 6.9.1.1 Sealed Pavements

Sealed pavement maintenance is the care and attention of the paths to maintain its structural integrity and serviceability. Work typically includes:

- a) Crack sealing, pavement patching and repairs
- b) Potholes, rut filling, depressions and edge break repairs

## c) Shoulder maintenance.

There must be no surface bumps within a path with a +/- 20mm lip as a result of the Contractor's completed work, which causes a noise, vibration or ride nuisance.

All surfacing repairs must be constructed so that aggregates comply with Transport Agency M/6 and Transport Agency T/10 or an alternative that provides value for money. This must be agreed with the Principal.

### SEALED ROUTE SURFACE BUMPS (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
119	Favoured Motorcycle Routes (as per Appendix 1.5)	No defects	As a result of Contractor's completed work, surface bump in carriageway and on curves > ± 20mm lip, which causes a noise, vibration or is hazardous.	4	1 month
120	Shoulders on Designated Cycle Routes and all Cycle Lanes (as per Appendix 1.5)	≤ 10 defects per 5km carriageway section.	As a result of Contractor's completed work, surface bump > ± 20mm lip.	4	1 month
121	Cycle Paths (as per Appendix 1.5)	≤ 1 defects per 1km.	As a result of Contractor's completed work, surface bump > ± 20mm lip.	4	1 month

### SEALED ROUTE POTHoles (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
122	High Risk and Favoured Motorcycle Routes (as per Appendix 1.5)	No defects.	Pothole >70mm diameter on a curve.	4	2 days

**SEALED ROUTE POTHOLES (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
123	Shoulders on Designated Cycle Routes and all Cycle Lanes (as per Appendix 1.5)	≤ 1 defect per 5km carriageway section.	Pothole > 100mm in any one horizontal dimension or > 30 mm depth.	4	1 week
124	Footpaths (as per Appendix 1.5)	≤ 2 defects per 100m.	Pothole > 150mm in any one horizontal dimension or > 50mm depth.	4	1 week
125	Cycle Paths (as per Appendix 1.5)	≤ 1 defect per 1km.	Pothole > 150mm in any one dimension or > 50mm depth.	4	1 week

**SEALED ROUTE DEFORMATIONS, HEAVES AND SHOVS (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
126	High Risk and Favoured Motorcycle Routes (as per Appendix 1.5).	No defects.	Deformation, heave or shove on a curve with height or depth > 30mm when measured from peak to trough.	4	2 days
127	Shoulders on Designated Cycle Routes and all Cycle Lanes (as per Appendix 1.5).	No defects.		4	2 days

**SEALED ROUTE DEFORMATIONS, HEAVES AND SHOVES (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
128	Footpath (sealed)	≤ 1 defect per 100m.	Depression, heave or shove > 50mm depth under 2m straight edge, or holding water.	4	1 week
129	Cycle Path	≤ 1 defect per 1km.	Depression, heave or shove > 50mm depth under 2m straight edge, or holding water.	4	1 week

**SEALED ROUTE EDGE BREAKS (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
130	High Risk and Favoured Motorcycle Routes (as per Appendix 1.5)	No defects.	Edge break on curve and encroaching 5th painted edgeline.	4	2 weeks
131	Shoulders on Designated Cycle Routes and all Cycle Lanes (as per Appendix 1.5)	No defects.	>2m of continuous edgebreak where encroachment is more than 250 mm into the seal at any point.	4	2 weeks
132	Cycle Paths (as per Appendix 1.5)	No defects.	>2m of continuous edge break where encroachment is more than 100 mm into the cycle facility.	4	2 weeks

**SEALED ROUTE SHOULDER MAINTENANCE (100% SAMPLE SIZE, MEASURED MONTHLY)**



OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
133	Cycle Lanes (as per Appendix 1.5)	No defects.	Low shoulder or edge rutting >30mm depth and >10m continuous.	2	2 weeks
134	Shoulders on Designated Cycle Routes (as per Appendix 1.5)	Contract Standard as per relevant road class (OPM Group 6.1.8).		2	2 weeks
135	Cycle Paths (as per Appendix 1.5)	No defects.	Low shoulder or edge rutting >30mm depth and >10m continuous.	2	2 weeks

### 6.9.1.2 Unsealed Pavements

Unsealed pavement maintenance is the care and attention of the unsealed paths to maintain its structural integrity and serviceability. Work typically includes:

- Corrugation, heave and shove removal
- pavement repairs
- Regular grading and spot metalling.

#### UNSEALED ROUTE SURFACE BUMPS (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
136	Cycle Paths	≤ 5 defects per 5km audit section.	As a result of Contractor's completed work, surface bump > ± 30mm lip.	2	2 weeks

The repair of unsealed path potholes will involve the use of specifically blended metals appropriate for the situation. Potholes shall be trimmed and shaped. The pothole mix is to be compacted at optimum moisture content.

**UNSEALED ROUTE POTHOLES (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
137	Footpaths	≤ 50 defects per 5km audit section.	Pothole > 150mm diameter or > 50mm depth.	2	1 week
138	Cycle Paths	≤ 50 defects per 5km audit section.	Pothole > 150mm diameter or > 50mm depth.	2	2 months

The repair of unsealed path heaves, shoves and corrugations shall be addressed as a pavement repair. Appropriate metals, compaction and methodology shall be employed to preserve and reinstate the unsealed pavement.

Corrugations are a prime reason for complaints regarding the ride quality of unsealed paths, and as such are required to be proactively repaired.

**UNSEALED ROUTE DEFORMATIONS, HEAVES AND SHOVES (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
139	Footpaths (unsealed)	≤ 100 defects per 5km audit section.	Lip is greater than > 20mm.	2	1 week

**6.9.1.3 Structures Maintenance**

Structure maintenance shall be maintained in accordance with Section 6.5.1, Routine Structures Maintenance.

**6.9.1.4 Environmental Maintenance**

Vegetation control will not form a part of this contract for routes in local reserves or parks.

Vegetation control shall be limited to Type 3 control and maintained in accordance with Section 6.6.1, Routine Environmental Maintenance.

Appendix 6.10, Extent of vegetation Control and Vegetation Management, includes the vegetation free zone for on road cycle routes, separated cycleways and shared paths.

The vegetation free zone for cycle facilities that are outside the carriageway, the minimum height can be reduced to 3.0 metres.

#### ROUTE VEGETATION CONTROL (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
140	All Routes	No defects.	Vegetation within the vegetation free zone.	2	1 week

Litter and detritus is defined in accordance with Section 6.6.1, Routine Environmental Maintenance. The Contractor shall remove any litter, detritus and organic matter every month. This work shall be programmed and completed in such a way to have minimum impact on the public using the asset.

#### ROUTE LITTER AND DETRITUS REMOVAL (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
141	High Risk and Favoured Motorcycle Routes (as per Appendix 1.5)	No defects.	An area on a curve where there is > 500 grams of litter/detritus (e.g. sealing chip, slip material, rubbish) per two square metres of sealed surface OR is considered a safety hazard.	4	2 days
142	Shoulders on Designated Cycle Routes and all Cycle Lanes (as per Appendix 1.5)	≤ 2 defects per 5km carriageway section.		4	2 days
143	Footpath (sealed) (as per Appendix 1.5)	≤ 50 defects per 5km carriageway section.	Litter item within the footpath corridor visible to anyone using the footpath.	2	1 week

**ROUTE LITTER AND DETRITUS REMOVAL (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
144	Footpath (unsealed) (as per Appendix 1.5)	≤ 100 defects per 5km carriageway section.		2	1 week
145	Cycle Paths (sealed) (as per Appendix 1.5)	≤ 50 defects per 5km carriageway section.	Litter item within the cycle path corridor visible to anyone using the cycle path.	2	1 week
146	Cycle Paths (unsealed) (as per Appendix 1.5)	≤ 100 defects per 5km carriageway section.		2	1 week

Additional to the detritus removal OPM there are sections of the Routes which warrant a specified frequency of detritus removal. The following locations shall have a specific sweeping programme:

- <<specify lengths>>

For slips that constitute a safety hazard, refer to Section 6.8.1, Incident Response.

Graffiti shall be removed in accordance with Section 6.6.1, Routine Environmental Maintenance.

**6.9.1.5 Traffic Services**

Management of signs related to routes in local reserves or parks will not form a part of this contract.

All other traffic services shall be maintained in accordance with Section 6.7.1, Routine Traffic Services Maintenance.

**6.9.2 Route Renewals**

Route renewals, apart from cycle routes within the existing shoulders and motorcycle routes within the existing lanes, do not form part of this contract.

The Principal may however elect to engage the Contractor to complete any funding approved renewals either pursuant to this contract through a variation or pursuant to a new contract (as determined by the Principal).

**6.9.3 Accessway Sealing**

Where instructed by the Principal, the Contractor shall implement the accessway sealing programme approved by the Principal either independently or in conjunction with other renewal type work such as pavement rehabilitations or resurfacing.

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## 7 Network Specific Information and Requirements

This Section provides the following requirements specific to this Network.

<<These are provided examples and any Network-specific requirements to be included within this Section require approval through the Senior Managers VAC.>>

### ~~AUTHORISED SCOPE CHANGES~~

Throughout the document, there is content that is struck out to indicate authorised scope changes from the nationally consistent document. The following validates these changes along with Network-specific replacements where applicable.

<<Every struckout Section must be Section number itemised below, confirming the deletion and or replacement text. For example:>>

~~Section 5.3.6 has been removed as the activity will be undertaken by the Principal.~~

~~Section 6.5.1, Marker Posts, last paragraph has been removed and replaced with the following:~~

~~All damaged posts or reflectors shall be replaced. Plastic posts shall be replaced with plastic, wooden posts shall be replaced with wooden or plastic posts.>>~~

### ~~AGGREGATE QUALITY SPECIFICATION: REPEATED LOAD TRI-AXIAL TEST~~

~~All source aggregate (natural unmodified aggregate) will comply with the Transport Agency M/4 specification. In addition to the Transport Agency M/4 specification all renewal projects with a design traffic loading greater or equal to 5 million ESA over a 25-year design period will meet the Repeated Load Tri-axial (RLT) Test criteria (Transport Agency T/15) as specified in this document. The main test criteria will comply with the following (for details refer to Transport Agency T/15 specification and accompanying notes):~~

- ~~• The M4 source aggregate to be tested under RLT will be in a natural unmodified state (virgin aggregate);~~
- ~~• Samples will be compacted at 100% of Optimum Moisture Content (OMC) to achieve 95% of Maximum Dry Density (MDD);~~
- ~~• All testing will be completed by an independent laboratory;~~
- ~~• All testing will comply to the Transport Agency T/15 specification/notes;~~
- ~~• A minimum of three (3) RLT tests will be completed annually for a stock pile prepared specific to a contract season and this will be repeated for each construction season. In addition, a minimum of one RLT test per project (renewal project) will be completed prior to laying any aggregate;~~

- ~~The client may take samples at any time at the quarry, on site behind the trucks, mat sample and after placing for independent testing; and~~
- ~~For the dry/drained test the average slope for all six 6 stages will be calculated to determine a pass or fail as defined in Transport Agency T/15 and reproduced below.~~

#### **Compliance Criteria for the Dry/Drained Test Condition:**

~~The average permanent strain slope for all six 6 stages will be less than 0.55% per million load cycles to be classed as a Pass. Any materials that do not achieve the minimum criteria will be non-compliant. The calculation of the slope per stage is detailed in the Transport Agency T/15 specification and accompanying notes.~~

## **7.1 MOBILE VARIABLE MESSAGE SIGNS**

~~[[Two]] mobile Variable-Message Signs (VMSs) are owned by the Principal for deployment as and when required by the Contractor or, with the agreement of the Principal, other Contractors undertaking work within the Network. Secure storage of these signs, when not in use, and maintaining a current Warrant of Fitness will be the responsibility of the Contractor. The Principal must be informed of any damage or operational issues with these VMS signs.~~

~~Operation of the signs is to be undertaken in accordance with a local guidance document available from the Principal.~~

## **7.2 UNSEALED PAVEMENTS**

~~The Unsealed Pavements Section allows for the routine unsealed maintenance of pavements and unsealed surface, unsealed basecourse of the existing pavement and wearing course renewals of the unsealed surface.~~

### **7.2.1 Routine Unsealed Pavement Maintenance**

~~Unsealed Pavement Maintenance is the care and attention of the unsealed roadway to maintain its structural integrity and serviceability, and preventive works taken to mitigate the propagation or escalation of faults. Work typically includes:~~

- ~~d) Corrugation, heave and shove removal~~
- ~~e) pavement repairs~~
- ~~f) Regular grading and spot metalling~~
- ~~g) Surface water channel maintenance.~~

~~The Contractor must develop and implement a monthly programme to ensure that OPMs ~~129 to 134~~ are complied with.~~

~~Unsealed road maintenance includes regular grading and spot metalling to:~~

- ~~a) Maintain cross-falls, pavement width, surface water channels and transitions between curves. Particular care must be taken to ensure:~~
  - ~~• There is adequate super-elevation transition through curves with no flat spots.~~
  - ~~• Surface water channels remain clear and fully operational. Care must be taken to ensure there are adequate cut-outs.~~

b) Remove potholes, corrugations, ruts, clay spots, exposed sub-grade etc.

During grading operations, the following maximum windrow restrictions apply:

a) Length must be less than 2km

b) Height must not prevent an average car from driving across it without bottoming.

The Contractor shall ensure that the maintenance grading programme is adjusted so that the following tourist routes are fully graded a maximum of 20 working days prior to 24<sup>th</sup> December each year:

- <<define lengths>>
- <<define lengths>>.

The repair of unsealed road potholes will involve the use of specifically blended metals appropriate for the situation. Potholes shall be trimmed and shaped. The pothole mix is to be compacted at optimum moisture content.

The filling of potholes by grader spread, unbound metal, is not permitted.

The repair of unsealed road heaves, shoves and corrugations shall be addressed as a pavement repair. Appropriate metals, compaction and methodology shall be employed to preserve and reinstate the unsealed pavement.

Corrugations are a prime reason for complaints regarding the ride quality of unsealed roads, and as such are required to be proactively repaired.

#### OPM GROUP 7.3.1: SURFACING INTEGRITY AND REPAIRS (10% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
129	RDH	Total length < 10% of defects in any audit section.	Corrugations or transverse scour > 25mm deep.	1 week
130		No defects.	Corrugations or transverse scour > 50mm deep.	1 week
131		No defects.	Loose aggregate > 50mm deep.	1 week
132		No defects.	Loose aggregate > 100mm deep.	1 week
133		≤ 5 defects.	Bald spot > 10m <sup>2</sup> .	1 week
134		No defects.	Bald spot > 50m <sup>2</sup> .	1 week

#### OPM GROUP 7.3.2: POTHoles (10% SAMPLE SIZE, MEASURED



**MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
135	RDH	<50 defects in any audit section.	Potholes > 250mm in diameter and > 50mm deep.	1 week
136		No defects.	Pothole >400mm diameter.	1 week

**POTHOLES (UNSEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
147	PCol, SCol	≤ 10 defects per 5km carriageway section.	Pothole > 250mm and >50mm depth.	2	1 week
148	Acc	≤ 10 defects per 5km carriageway section.		2	1 week
149	AccLV	≤ 50 defects per 5km carriageway section.		2	1 week

**CORRUGATIONS (UNSEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
150	PCol, SCol, Acc	≤ 10 % of 5km carriageway section or 20m continuous.	Corrugations and transverse scour >25mm depth.	2	1 week

**CORRUGATIONS (UNSEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
151	AccLV	≤ 20 % of 1km carriageway section or 30m continuous.		2	1 week

**LOOSE METAL (UNSEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
152	PCol, SCol, Acc, AccLV	No defects	Loose aggregate >75mm depth.	4	1 week

**OPM GROUP 7.3.3: HEAVES, SHOES AND LONGITUDINAL SCOUR**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
137	RDH	≤ 50 defects per audit section.	Heave or shove with height or depth > 50mm within the unsealed pavement area (when measured from peak to trough).	2 weeks
138		No defects.	Heave or shove with height or depth > 100mm within the unsealed pavement area (when measured from peak to trough).	1 week

**DEFORMATIONS, HEAVES AND SHOES (UNSEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
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**DEFORMATIONS, HEAVES AND SHOVES (UNSEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
153	All Roads	≤ 25 defects per 5km carriageway section.	Deformation, heave or shove with height or depth >50mm depth.	4	1 week

**OPM GROUP 7.3.4: SURFACE WATER CHANNEL MAINTENANCE**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
139	RDH	≤ 1,000m per audit section.	> 10m of continuous shallow channels <300mm deep.	2 months
140	RDH	No defects.	Very shallow channels <100mm deep.	1 month
141	RDH	No more than 0.1% per audit section.	Water ponds or potential to pond in shoulder.	1 week

**DRAINAGE (UNSEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
154	PCol, SCol	≤ 5 defects per 5km carriageway section.	Ponding > 50mm in depth and >5m in length.	1	2 months
155	Acc	≤ 10 defects per 5km carriageway section.		1	1 month

**DRAINAGE (UNSEALED ROADS) (10% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
156	AccLV	≤ 15 defects per 5km carriageway section.		1	1 month

Shallow channels are measured as the difference in level between the invert of the surface water channel, and the top of the unsealed shoulder.

As part of these operations, it is expected that the Contractor will recommend unsealed basecourse or wearing renewals on sections of road where it is justified.

### 7.2.2 Unsealed Basecourse Renewals

If requested by the Principal, and subject to weather conditions, any basecourse renewals must be completed during:

- 1 September and 31 October annually
- 1 April and 31 May annually.

Basecourse renewals comprise:

a) Preparing the existing surface by:

- Removing all corrugations, potholes and rutting.
- Restoring pavement width and cross falls.
- Cleaning and re-grading surface water channels and constructing cut-outs. Cut-outs must be located and constructed so scour and/erosion problems are not created.

b) Manufacturing, placing, shaping and compacting:

- Basecourse aggregate complying with the following requirements. The minimum layer thickness must be 100mm or 2.5 times the aggregate's maximum stone size.
- Wearing course aggregate complying with the following requirements. The minimum layer thickness must be 50mm or 2.5 times the aggregate's maximum stone size.

c) Working and, if required, wetting the material to achieve optimum water content. Care must be taken not to over-wet or saturate the material as this may create potential safety hazards.

Basecourse aggregate must comply with the following specification contained in Table 7.2.1.

**TABLE 7.2.1: BASECOURSE AGGREGATE PARAMETERS**

PARAMETER	SPECIFICATION	
Broken faces	All aggregate greater than 4.75mm must have at least two broken faces.	
Crushing resistance	When measured under an 80kN load the percentage fines must be less than that specified in Transport Agency M/4.	
Grading Sieve size	Minimum percentage passing	Maximum percentage passing
37.5mm	100	100
19.0mm	65	80
9.5mm	40	60
4.75mm	25	45
2.36mm	15	35
1.18mm	10	25
300µm	3	15
75µm	0	10

Basecourse renewals must be:

- a) Programmed according to the unsealed roads forward work programme
- b) Completed within 5 days of the existing surface having been prepared.

Renewal can be completed outside the stated period with agreement by the Principal.

#### OPM GROUP 7.3.5: UNSEALED PAVEMENT RENEWAL

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
142	RDH	Not more than 10 defects per site.	An occurrence of an OPM defect (as defined within Section 7.3.1) in a treatment length, for the first year of treatment life.	24 hours

### 7.2.3 Wearing Course Renewals

If accepted by the Principal, the Contractor shall complete a renewal of the wearing course for sections that are mutually justified.

Wearing course renewals comprise:

- a) Preparing the basecourse surface by:

- Removing all corrugations, potholes and rutting
- Restoring pavement width and cross falls.

Wearing course aggregate must:

- Knit into a mosaic under the action of traffic or rolling
- Generally, comply with the following specification. Site blended aggregates are acceptable provided:
  - The constructed wearing course provides a knitted mosaic surface
  - Sampling and testing demonstrates general compliance.

**TABLE 7.2.2: WEARING COURSE AGGREGATE**

PARAMETER	SPECIFICATION	
Shrinkage product ( $S_p$ )	100 < $S_p$ < 250, where $S_p$ = Linear shrinkage x percentage passing 4.75mm sieve	
Crushing resistance	When measured under an 80kN load the percentage fines must be less than that specified in Transport Agency M/4.	
Plasticity index (PI)	6 < PI < 12	
Soaked CBR	Soaked CBR > 16 at 95% MOD AASHTO after 4 days soaking	
Grading Sieve size	Minimum percentage passing	Maximum percentage passing
26.5mm	100	100
2.36mm	20	60
Fines/Sand ratio	% by mass passing 75 $\mu$ m sieve	
	0.2 < % by mass passing 2.36mm sieve < 0.6	
Grading coefficient ( $G_c$ )	16 < $G_c$ < 34, where $G_c$ = ((% passing 26.5mm sieve – % passing 2.36mm sieve) x % passing 4.75mm sieve)/100	

### 7.3 FIRE RISK CONTROLS

No mechanical mowing shall take place without prior consultation with the Principal and the local rural fire officer where the Fire Build-up Index is >50 and/or the Drought Code is >500. The Contractor shall consult the Fire Weather Site at <http://www.nrfa.org.nz>

The Principal may order the cessation of all or portions of the vegetation control mowing or that the Contractor take specific firefighting steps and have on site such tools as a water tanker, fire extinguishers, special communications and the like. The

Principal shall not adjust the lump sum to account for lost days due to fire risk stand-down nor for the Contractor's costs to meet any special firefighting requirements.

The Contractor is expected to acknowledge this relationship of costs and to make every effort to keep the vegetation under control. The Principal shall not enforce the contract standards in areas where mowing has been disallowed and may adjust the standards where mowing has been limited subject to suitable and reasonable attempts by the Contractor to comply however where the Contractor fails to acknowledge this arrangement the Principal may require an equivalent amount of make-up control. This adjustment will be set by the Contract Board.

## 7.4 SLURRY RUT FILLING

Further to the requirements for Slurry Rut Filling in Maintenance Specification, Section 2.4.3, **Principal Risk Non-Routine Maintenance**, the following modifications will apply.

### Slurry Design

Prior to starting work the Contractor will be required to submit a mix design for approval and conforming tests will be required. The design shall ~~should~~ include: Date, SH, RS, Start displacement, Length in meters, Width in metres, Dry kg of slurry, Area in m<sup>2</sup>, kg/m<sup>2</sup>, kg/lin m, lin m/Tonne.

### Mineral Aggregates and Filler

When tested in accordance with the requirements of BS 812: Part 114:1990, the parent aggregate or material, shall have a Polished Stone Value exceeding 50.

### Slurry Equipment and Plan

The slurry machine shall be capable of storing and continuously mixing a minimum of five tonnes of mix and able to lay slurry seal at a minimum potential rate of 50 tonnes per day.

### Deformation and Depressions

The Contractor shall not be liable for deformations and depressions exceeding the nominal thickness of the slurry laid unless it can be shown these were attributable to the work performed.

### Surface Texture

When measured in accordance with the requirements of **Transport Agency TNZ T/3**, the slurry shall have a uniform surface texture. The frequency and location of testing shall be stated in the Quality Plan.

### Remedial Work

Within one week of construction remedial work shall be required if the;

- Final surface is not within +6mm, -0mm of the adjacent surface when measured transversely to the highway centreline,
- Slurry has been picked-up by traffic or the final surface has ravelled or shoved,
- Transverse joints not perpendicular to Centre line and/or not overlapped.

Six months after construction remedial work shall be required if the finished surface has;

- a minimum profile depth (MPD) less than 0.70mm,
- deformations or depressions exceeding 10mm, measured by a 2m straight-edge,
- abrasion or loss of the slurry surface to reveal more than 0.5 m<sup>2</sup> of the underlying surface.

### Slurry Rut Fill Construction Completion Report

At 6 months after construction of the premix reshaping, the Contractor shall supply to the Principal a Premix reshaping Construction Completion Report for each Site and shall include at minimum the following:

- a) Key original design assumptions
- b) Slurry Rut Fill Quality Plan
- c) Evidence of construction compliance (e.g. Transport Agency NZTA T/3)
- d) All QA results
- e) Photographs of the Site after treatment
- f) Lessons learnt.

## 7.5 OFFICE ACCOMMODATION

For the purpose of enhancing planning and implementation of the contract and developing a close working relationship with the Principal the Contractor shall make available office space co-located with the Contractors main network office/depot. This office space shall be sound proof, be secure and lockable, have natural light and be for the exclusive use of the Principal. The office shall include a suitably sized desk, side table, office chair, three visitor chairs, power supply and landline connection for phone and internet. Access shall be provided to washroom, toilet and tea room facilities. A vehicle park shall also be provided on-site for the exclusive use of the Principal.

A hot desk should also be provided in the Westport depot office for the Principal's use.

As part of the Principal's desire to enhance customer relations the Contractor shall provide during normal operating hours a front desk service operation for interfacing with customers at those permanent depots listed in Maintenance Specification Section 3.3, Contractor's Establishment.

## 7.6 POST WINTER PAVEMENT MARKING

Section 6.5, Traffic Services, Pavement Marking refers to one full annual remarking, however due to additional wear from winter maintenance activities various sections on the Network (refer Appendix 7.1, Winter Remark Locations) will require an additional post winter remark to be completed no later than 31 October each calendar year.

## 7.7 STREETLIGHTING ENERGY CONCILIATIONS

<<include any streetlighting specific information or requirements additional to maintenance specification, section 6.7>>

The Principal requires the energy costs for streetlighting to be paid for by the Contractor.



At the commencement of the Contract Period the Principal will provide approval to the respective energy supplier to redirect monthly energy invoices from the Principal to the Contractor.

At the commencement of the Contract Period, then at six monthly intervals the Contractor shall arrange a liaison meeting with the appropriate energy supply companies to reconsolidate the asset data.

At the end of each month the Contractor shall analyse the RAMM streetlighting inventory and report to the respective energy supplier:

- The number of lights on the Network grouped by type of light and wattage
- The estimated energy drops for each of these lights.

When invoices from the relevant energy supplier are received by the Contractor the Contractor will validate them for accuracy and pass those invoices onto the Principal for payment as energy costs are not included in this contract. In order for the Principal to take advantage of any discounts for early payment the Contractor must complete this invoice processing within two working days from receiving the payment.

Due to the reliance on the RAMM streetlighting inventory the Contractor shall complete an annual validation of the RAMM streetlight data and ensure all lights within the database has an assigned ICP.

The energy supplier may periodically complete an audit on the Contractor's system to manage conciliation and ensure it remains accurate and robust.

## 7.8 TRAFFIC SIGNAL MAINTENANCE DELEGATION

All traffic signal maintenance activities are delegated to [[xxxxxxx City Council]] to manage.

The Contractor however will still provide incident response duties and make the site safe until the appropriate traffic signal repair supplier can be onsite. This may include the erection of caution signage.

## 7.9 TRAFFIC SIGNAL MAINTENANCE

The Contractor shall undertake a basic maintenance inspection on those traffic signals listed in Table 7.10, Traffic Signal Installations, using a preventative maintenance check sheet. The check sheet shall outline the items to be checked, adjusted, cleaned, replaced and measured.

All work required shall be completed in accordance with NZTA C25:2013 where applicable, or in accordance with best practice for LED traffic signals.

Any emergency maintenance shall be responded to in accordance with the requirements of OPMs XX to XX for any road class. A temporary repair is acceptable provided permanent repairs are programmed and completed within one week of identification.

The signals are connected to SCATS through the TOC and the Contractor is required to obtain access and coordinate the ongoing operations and communication with the TOC.

**TABLE 7.10: TRAFFIC SIGNAL LOCATIONS**

ROAD NAME	DISPL. (M)	LOCATION	DESCRIPTION	COMMENTS
<<to complete>>				

**7.9.1 Preventive Maintenance**

Preventative maintenance shall be completed by the Contractor on a six-monthly basis and the results provided to the Principal in a report format as agreed to by the Principal. Preventative maintenance shall comprise of the following:

- Completing the basic maintenance checklist
- Check for indications of water entry/corrosion
- Check function operation of all pedestrian detectors, buzzers and tactile facilities including lamps and light-emitting diodes
- Check pedestrian call boxes for damage and ensure that lenses and covers are watertight
- Check the operational functions of the controller to ensure that the phase sequence is correct, all time settings are correct, and all facilities are operating correctly. Wiring shall be examined and the earths and output load voltages checked
- Check the security of cabinet door hinges and locking system. Oil both
- Check the integrity of any insect-screen covering weep holes
- Remove any insect infestation or spider webs, and if necessary apply insect spray

Once a year and in coordination with a six-monthly inspection the Contractor shall undertake the following additional maintenance requirements:

- Clean all lanterns and cowls of dust and dirt etc.
- Check the lantern light output meets the specifications
- Check condition and operation of vehicle detectors, adjusting where appropriate. Checking includes the following items:

- i) Detectors are not pulsing, hanging on or giving false detection
- ii) The mode of operation (either presence or dynamic) is correct
- iii) Loops are not exposed to traffic or weather
- iv) Loops are not earthed (in accordance with current acceptable practices)

- v) Loop terminals are sealed and that the toby boxes are clean and dry
- vi) Pole top mounted detector boxes are water tight and in good condition.
- vii) The tuning voltage is correct and that the sensitivity settings are correct.

- Check all signal hardware and wiring with particular attention to gaskets, lens legends, fluorescent tube starters, lantern alignment and wiring terminals (including pole tops), visors, louvres, target boards and all associated equipment. Also examine all load switching relays for contact burning. Adjust, repair and clean as necessary.

The results of any inspection shall be reported to the Principal in sufficient detail that the extent of repairs required can be clearly understood.

### 7.9.2 Repairs and Emergency Maintenance

The Contractor is encouraged to undertake minor repairs at the same time as completing traffic signals inspections provided the cost of repairs does not exceed \$500.

For maintenance works exceeding \$500 the Contractor must first seek approval of the Principal before any work is undertaken.

Maintenance arising from accident damage or vandalism and major equipment replacement and modification work must first be approved by the Principal prior to the Contractor undertaking the work.

When applicable, the Contractor shall submit a weekly report to the Principal on the status of any emergency or major repairs undertaken or to be undertaken.

## 7.10 ENHANCED INCIDENT MANAGEMENT

### 7.10.1 Incident Response

Further to Maintenance Specification Sections 5.4.5, 5.4.6 and 6.8.1 the Principal requires an enhanced level of service for the Enhanced Response Area (ERA) of:

- <<define lengths>>

This area represents approximately [[xx]] % of the network centreline length. Three additional OPMs for the Enhanced Response Area (ERA) are listed below. Overnight between 18:30 and 06:30, OPM Group 7.11.1 applies to this part of the Network.

#### OPM GROUP 7.11.1: INCIDENT RESPONSE

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	MAX. EXTENT	EIP	PERM. REPAIR PERIOD
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**OPM GROUP 7.11.1: INCIDENT RESPONSE**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	MAX. EXTENT	EIP	PERM. REPAIR PERIOD
214	All Roads (within defined enhanced response area)	No defects.	On working weekdays between 06:00 and 09:00 and between 15:30 and 18:00 the Contractor is not within the defined Enhanced Response Area and responding to the request for incident response within 5 minutes after the event is notified 95% of the time.	N/A	N/A	N/A
215			On working weekdays between 06:00 and 09:00 and between 15:30 and 18:00, the Contractor is not within the defined Enhanced Response Area and established on-site at the incident within 30 minutes after the event is notified, 80% of the time.	N/A	N/A	N/A

**OPM GROUP 7.11.1: INCIDENT RESPONSE**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	MAX. EXTENT	EIP	PERM. REPAIR PERIOD
216			On working weekdays between 09:00 and 15:30, the Contractor is not within the defined Enhanced Response Area and responding to the request for incident response within 30 minutes after the event is notified, 95% of the time.	N/A	N/A	N/A

**INCIDENT RESPONSE (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
157	All Roads (within defined enhanced response area)	No defects.	On working weekdays between 06:00 and 09:00 and between 15:30 and 18:00 the Contractor is not within the Enhanced Response Area and responding to the request for incident response within 5 minutes after the event is notified 95% of the time.	2	N/A

**INCIDENT RESPONSE (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
158			On working weekdays between 06:00 and 09:00 and between 15:30 and 18:00, the Contractor is not within the Enhanced Response Area and established on site at the incident within 30 minutes after the event is notified, 80% of the time.	2	N/A
159			On working weekdays between 09:00 and 15:30, the Contractor is not within the Enhanced Response Area and responding to the request for incident response within 30minutes after the event is notified, 95% of the time.	2	N/A

The Principal and the Contractor shall annually review the incident response performance, to identify and realise opportunities to reduce the time to establish at unplanned events on working weekdays within the defined Enhanced Response Area.

The Contractor's resource shall include appropriate traffic management and an incident response vehicle suitably equipped to meet the Principal's responsibilities defined in the Highway Incident Management Protocol – Memorandum of Understanding (see Appendix 4.7, Highway Incident Management Protocol – MOU) and be fitted with a Hiab or similar capable lifting equipment.

The response shall be in two phases, with the Contractor's incident response vehicle being the first responder meeting the OPMs above, who shall make all reasonable, effort to improve the traffic flow around the site. The second phase may include additional traffic management support and supplementary resources as required to fully secure and remedy the incident.

### 7.10.2 Automatic Vehicle Location System

To assist with coordination of plant movements during winter and incident response operations, all winter maintenance plant and light vehicles used for frost and ice gritting

Inspections, grit application, CMA application and incident response shall be equipped with a 'global positioning system' (GPS) or 'automatic vehicle location' (AVL) system.

Real time tracking information from such a system shall be made available to the Principal so that as an event progresses real time information on plant positioning is able to be accessed. This is made available to be viewed in a 'live' real time electronic map format which displays all the highways likely to be covered (bearing in mind that activities may cross over contract site boundaries).

The system shall be able to:

- Display the real-time location of all plant as specified at all times while they are mobilised and engaged in winter maintenance activities including inspections
- Be queried such that plant operating hours and locations and time data can be reported over a given time period.
- Ideally display a real time graphical representation on the map of the application of treatment such as CMA, grit, ploughing and brooming (for example a 'vapour trail')
- Display a graphical symbol representing and clearly defining the different plant types

All these functions shall be available to the Principal.

Further to these requirements the AVL system shall have the ability to report the accurate location of the start and end position (in SH/RS/RP format) of the above treatments, the time and date at which these occurred and the application rate of CMA treatment. The Contractor is also required to report on the volume of grit or CMA applied and provide running totals to the Principal as required.

The Contractor shall provide data to the Principal in an electronic format agreed to by the Principal.

This data is used by the Contractor, and the Principal to help with plant coordination and to ensure that treatment is being applied in the right place and at the right time. It is also used to assist with analysis and refinement of all winter maintenance operations. It may also be used to assist with surveillance and verification of monthly claimed activities.

### 7.10.3 Transport Operations Centre

The Contractor is required to fully cooperate with the TOC, teaming up to deliver best for customer outcomes in a collaborative manner where constructive communication between teams is critical.

The TOC Real Time Operations team is also responsible for operations and maintenance of all of the urban (Type DS) VMS signs in Christchurch. WTOC operates (controls messages) on all of the regional (Type A) VMS outside the regional area.

### 7.10.4 Incident Response Co-ordination

The Contractor shall develop close relationships and integration with both the TOCs. The Contractor will also support and attend any incident management group meetings.

## 7.11 UNMANNED AERIAL VEHICLE

When requested by the Principal, the Contractor will be responsible for supplying a suitably equipped ‘unmanned aerial vehicle’ (UAV), to undertake surveillance and survey work on the Network.

UAV operations must abide by the appropriate NZ Civil Aviation Authority (NZ CAA) regulations and the SHCM requirements, Part 3.

The purpose of the UAV will be to gain a better understanding of land forms and to investigate an area’s geophysical structure(s) in order to;

- predict where major rock falls could occur,
- study potential rock fall trajectories and what impact they could have on the roading network, and
- survey the extent and quantity of slip material that may have affected the networks accessibility.

The UAV shall capture RGB photography with a resolution (GSD or ground sample distance) better than 30mm on flat terrain or 50mm – 60mm on steep terrain.

## 7.12 ROAD CONDITION INFORMATION SIGNAGE

In addition to the requirements of Section 6.7.1, Routine Traffic Services, the Contractor shall be responsible for the management of the manually operated road signs providing road closed/open information during winter events and for other incidents, which exist at strategic locations, refer Appendix 7.2, Manual Operated Road Sign Locations.

## 7.13 TRAFFIC MANAGEMENT: REGIONAL SPECIFIC ACTIVITIES

### 7.13.1 Traffic Congestion

The Principal requires a responsible Network stewardship from the Contractor’s team along with respect for the value the road transport system provides to the community.

The Contractor is advised that areas of the Network are prone to traffic congestion during holiday periods. Table 7.14 lists those prone sites.

TABLE 7.14: TRAFFIC CONGESTION AREAS

LOCATION	APPLICABLE DATE PERIOD	LOCATION	NORMAL TRAVEL TIME	MAX ALLOWABLE UNCONTROLLED TRAVEL TIME
<<to complete>>				



**TABLE 7.14: TRAFFIC CONGESTION AREAS**

LOCATION	APPLICABLE DATE PERIOD	LOCATION	NORMAL TRAVEL TIME	MAX ALLOWABLE UNCONTROLLED TRAVEL TIME

The Contractor shall proactively monitor congestion at these areas during the specified periods, and implement temporary traffic management measures that will have a positive effect for customer journeys before the maximum allowable uncontrolled travel times are reached.

Annually, in October, the Contractor and the Principal shall jointly review the effectiveness of traffic management measures implemented in previous periods.

**OPM GROUP 7.14.1: TRAFFIC CONGESTION MANAGEMENT**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	MAX. EXTENT	EIP	PERM. REPAIR PERIOD
217	All Roads	No defects.	Temporary Traffic Management not implemented where travel time exceeds the maximum allowable uncontrolled travel time in Table 7.14.	N/A	N/A	N/A

**TRAFFIC CONGESTION MANAGEMENT (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
160	All Roads	No defects.	Temporary Traffic Management not implemented where travel time exceeds the maximum allowable uncontrolled travel time in Table 7.14.	2	N/A

### 7.13.2 Passing Lane Closures

During long weekends and other holiday periods, the Principal requires that specific passing lanes are closed to improve safety and traffic flows. The current requirements are to:

- <<include any passing lane closure locations>>

The duration, date and timing of the closure shall be agreed with the Principal, to manage the peak periods that the roads are under heavy traffic demand.

The following practices are provided as a guideline for further development and agreement with the Principal:

- <<include practices for each passing lane closure>>

In all cases, a pre-planning meeting with the Principal shall be held before each closure to determine the particular requirements.

### 7.13.3 Police Checkpoint Assistance

The Principal requires that the Contractor provides traffic management assistance to the Police for random traffic checkpoints. This will require co-ordination, planning and implementation of traffic control with NZ Police to manage traffic flow, into and around, the checkpoint. The Contractor shall prepare a unique Traffic Management Plan for each checkpoint activity.

It is expected that [[two]] checkpoints per annum will require Contractor assistance.

## 7.14 TYPE 5 VEGETATION CONTROL – MOSS AND LICHEN REMOVAL FROM SEALED SURFACES

Further to the requirements of Section 6.6.1, Routine Environmental Maintenance, the Contractor shall ensure that moss or lichen is treated as to not become established on the following sealed surface lengths of road:

- <<state road sections>>

## 7.15 SEALING CHIP BROKEN FACES

Further to the requirements of Maintenance Specification 6.3.3 Sealed Road Resurfacing, sealing chip supplied under this contract shall meet the following criteria in addition to Transport Agency M/6.

The percentage of sealing chips that shall have greater than 70% of the surface area comprising freshly broken face shall be greater than the values given in Table 7.16.

**TABLE 7.16 SEALING CHIP – BROKEN FACES**

DESCRIPTION	GRADE 2	GRADE 3	GRADE 4	GRADE 5
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**TABLE 7.16 SEALING CHIP – BROKEN FACES**

DESCRIPTION	GRADE 2	GRADE 3	GRADE 4	GRADE 5
Percentage with more than 70% of freshly broken face (Minimum Value).	80	86	90	92

Each of the sealing chips in the required percentage with at least two broken faces shall have a total area of broken face of not less than 70% of the chips surface area.

To be considered a broken face the chip shall have:

- a) A distinct edge,
- b) A surface texture similar to a freshly broken piece of parent aggregate,
- c) A surface greater than 15% of the sealing chip surface area.

Where the area of a broken face is less than 15% of the sealing chip surface area, two or more faces may be combined and considered a single face for surface area measurement.

A broken face which is convex shall be considered to be a single face irrespective of area.

Grade 6 sealing chip shall be crushed from the same parent rock as grades 3 and 4 sealing chip complying with the above broken faces requirement.

The contractor shall ensure that the plant used for the production of sealing chips and the controls on the feed stock, are established such that these requirements can be consistently met.

## 7.16 HIGHLIP SPRAY PROGRAMME

At the commencement of the contract the Contractor shall develop a spray programme for the Network for the management of high lip. The programme shall separate areas to be sprayed six monthly, annually and bi-ennially and shall be approved by the Principal before the spray programme is commenced. At the end of each calendar year the Contractor and Principal shall review and agree any changes to the next annual spray programme and the programme for the removal of high lip as specified in Table 5.3.8: Base Preservation Drainage Lengths.

When undertaking the high lip spray activity, the Contractor shall spray a minimum of 300mm of unsealed area and overlap the seal by 100mm.

The Contractor is required to obtain the appropriate consents (including from local authorities) to undertake spraying on the Network and shall use a registered chemical applicator.

## 7.17 VEGETATION TYPE 8 MANAGEMENT

Type 8 Management – this standard applies to areas of existing indigenous vegetation and significant ecological areas. Area management includes:

- i) Identification and recording of the indigenous species composition and habitat value (including those recognised as being locally important).

- ii) Development of a management regime to protect the species and values (e.g. buffering)
- iii) Compiling a data set including mapping of areas (in GIS).

## 7.18 Incident Recovery Plan

The Contractor shall prepare a Recovery Plan after incidents where there is a follow up requirement for ongoing works for the Site to recover from the effects of the incident. For example, where access has been restored and traffic is safely using the Network, but there are slips and debris to be removed, an asset has been damaged and needs to be repaired, or the event has resulted in a threat to the asset that needs to be managed.

The Principal and Contractor will agree on whether a Recovery Plan is required, when its preparation should be initiated, and when the incident will be closed and outstanding issues treated as recovery operations. If the incident is confirmed to be funded under Emergency Works then the preparation of this Plan will also be funded from Emergency Works.

The Recovery Plan is incident specific and will detail requirements such as:

- A summary of works and costs carried out during the incident management phase, including the work completed over the first 10 hours from notification
- The extent and nature of any outstanding clearance works required and the preliminary estimates for achieving this
- The plan for restoring access and the timing and staging of this
- Resource requirements
- Commentary on risk and effects on customer service
- Statutory approval RMA resource consent requirements (e.g. RMA consents, DOC concessions)
- Identification of any communication strategies required to moderate or mitigate effects on customers
- Preliminary assessment of the cost and scope of any major works that may be required where a temporary measure will be put in place to restore access, but a more thorough assessment is required to achieve permanent reinstatement
- Any threats that have been created by the incident that may require preventive maintenance activity to mitigate any risk
- Effects on other utilities and the potential risks associated with this.

The report should where possible contain photographic records of any significant works, issues imposing a risk to road users, or threat to the integrity of the asset.

The Principal and Contractor shall agree on works that will be carried out by the Contractor following an incident. The Contractor will typically be responsible for executing the works to restore single lane access following an incident.

## 7.19 OTHER

<<include any other Network specific information or requirements>>

DRAFT

## 8 Local Roads

<<This section to be completed on a network by network basis, pending inclusion of local roads or not>>

DRAFT

## 9 Tunnels

<<This Section to be completed on a network by network basis.>>

This Section sets out the requirements for the management and maintenance of tunnels, and the interaction with the other parties undertaking the maintenance and inspection of the structural elements in the tunnels.

### 9.1 TUNNEL SPECIFIC MANAGEMENT

#### 9.1.1 Tunnel Contract Description

##### Mt Victoria Tunnel

Mt Victoria Tunnel is part of the Wellington State Highway Network. It is approximately 620m long with two traffic lanes and an elevated pedestrian walkway. Lighting is located on the tunnel walls and is accessed from within the tunnel. A building at the Hataitai end of the tunnel houses one fresh-air supply fan and the power supply for half the tunnel lighting. A building at the Basin Reserve end of the tunnel houses a second fresh-air supply fan and the power supply for the other half of the lighting. Two buildings, each housing an exhaust fan, are located above the tunnel. Remote controls for all 4 fans are located in the building at the Hataitai end. These buildings date from 1930–1931. The Fire Alarm Panel (FAP) is in the Hataitai Control room with the FAIP at the Basin Reserve portal.

A duct under the walkway functions as the fresh air plenum and general cable access route. It also contains high voltage transmission cables belonging to Wellington Electricity Lines Limited (WEL) and maintained by Northpower. Access to this duct is to be restricted and controlled. This duct is accessible from a locked door at walkway level, midway through the tunnel.

There is a fire deluge system with 21 deluge zones with the 11 deluge valve cabinets elevated above the roadway, as well as a linear heat detection system and cameras.

The Control equipment is located at the Hataitai end fan house and connects to detectors and deluge cabinets fixed to the underside of the tunnel lining.

##### Terrace Tunnel

The Terrace Tunnel is part of the Wellington Urban Motorway. It is approximately 460 metres long with three traffic lanes. Smoke control and ventilation is provided by 8 jet fans controlled by air velocity and quality monitoring equipment. Lighting and fire detection services are located in the roof area. There is a fire deluge system with 18 deluge zones, a fire hydrant system as well as cameras, smart studs, emergency exit lights, radio rebroadcast (RRB) and a PA system. There are 9 emergency equipment cabinets (EEC) (which include the fire hydrants) in the tunnel with the Fire Alarm Indicator Panel (FAIP) outside the south portal. There are two control buildings – the South Control Building at the south portal which is accessed from the Ghuznee stub and the North Control Building in Kumutoto Park which is accessed from a driveway off The Terrace. All the power supply and control equipment are housed in the control

buildings. The control buildings are contained within a secure fenced enclosure. Only personnel, approved by the Principal, are allowed access to the enclosures and control buildings.

**Memorial Park Underpass**

The Memorial Park Underpass is located on Buckle Street and is approximately 148m long, (plus the approach trenches) with 3 traffic lanes. The Underpass and approach trenches are completely buried structures with surfaces that are generally not accessible for inspection. Interior surfaces can be inspected by regular means. The concrete structure has been designed for 100 years design life.

The precast panels used in the trench walls will have a grit blast finish and graffiti guard coating. The tunnel walls are painted with a reflective paint finish. There are architectural aluminium disks in the tunnel that require cleaning.

There are also planter boxes at the steps in the trench walls in some locations that may accumulate debris and require regular cleaning.

**9.1.2 Tunnel Contract Works**

The Tunnels included within this specification are described in Table 9.1.1.

TABLE 9.1.1: TUNNELS	
TUNNEL NAME	DESCRIPTION
Mt Victoria Tunnel	The Mount Victoria tunnel is part of the Wellington Urban Motorway extension. It is approximately 620 metres long with two traffic lanes. The Tunnel is within a CoPTTM Level 2 Zone.
Terrace Tunnel	The Terrace tunnel is part of the Wellington Urban Motorway. It is approximately 450 metres long with three traffic lanes. The Tunnel is within a CoPTTM Level 3 Zone.
Memorial Park Underpass	The Memorial Park Underpass is located on Buckle Street and is approximately 148m long, with 3 traffic lanes. The Underpass is within a CoPTTM Level 2 Zone.

The Contractor shall be responsible for the primary role for the operation and management of the tunnels including the following services, roles and activities:

- Work collaboratively with others to undertake the primary role for the operation and maintenance of the tunnels
- provide a Tunnels Coordinator, who shall be the primary person responsible for working with the Principal and other contractors to co-ordinate tunnel maintenance activities and access for the tunnels
- Provide traffic management for tunnel closures, including those to enable others to undertake maintenance and operations activities



- undertake all maintenance of the Mechanical and Electrical (M&E) systems, many of which are safety related which may include tunnel operation and plant control systems, Roadway Lighting, power supply and distribution, drainage and pumping Tunnel Ventilation systems, Fire Protection (such as Deluge Systems, Fire Extinguishers, Fire Hydrants, Fire Alarm System, Heat Detectors), monitoring systems (e.g. air quality, wind speed, noise).
- undertake all other civil maintenance and cleaning activities, except as exempted elsewhere within this specification.

### 9.1.3 Tunnel Specific Roles

#### Tunnels Coordinator

The Tunnels Coordinator shall be entirely responsible for the direction and or execution of the tunnel work and shall have the authority to instruct maintenance practises in order to minimise impacts on customers and maximise value.

#### Tunnel Inspection Engineer (M&E)

A Mechanical and Electrical Engineer shall be designated the Tunnel Inspection Engineer (M&E). This Engineer shall have experience of supervision of M&E equipment installation, operation, inspection and maintenance in tunnels or other structures, and shall be able to evaluate the physical condition as well as the operational condition and performance of equipment. They will also be aware of applicable codes and guidelines for tunnel construction and operation pertaining to M&E features. As a minimum, the Tunnel Inspection Engineer (M&E) shall be a Chartered Professional Engineer with at least 10 years of relevant experience.

The Tunnel Inspection Engineer (M&E) shall:

- maintain overall management and technical supervision of the tunnel M&E equipment inspection and maintenance programme
- take responsibility for the technical competence of all personnel involved in M&E equipment inspections
- take responsibility for consulting with specialist staff when necessary.

#### Other Staff

Work shall only be carried out by suitably qualified or experienced persons:

- Who have demonstrated experience in maintenance management procedures in their field of expertise and position held.
- Who hold the appropriate qualifications, certificates and licences.

Person(s) carrying out the servicing will be experienced persons and have demonstrated experience in repairs and maintenance procedures and be certified to carry out that portion of the work as specified including maintenance, testing and repairs.

#### Safety Manager

The Principal will designate a Safety Manager who shall be independent in respect of road tunnel safety issues and shall not be under instructions from his employer in respect of those issues. The role objective for the Safety Manager is to ensure that a

consistent approach towards the application of safety principles and processes is achieved and that the levels of residual safety risks are well defined and acceptable to the Principal.

**Tunnel Inspection Engineer (Structures)**

An individual shall be designated the Tunnel Inspection Engineer (Structures); this shall be provided by the Regional Bridges Consultant.

**Security Clearances**

All Contractor M&E personnel and sub-contractors are required to have documented security clearance from NZ Police to "Contractor Check" level. The Contractor shall have procedures in place to ensure all personnel working on site have the required security clearances including renewals.

Any visitors to the site or Contractors personnel without the required security clearance are to be escorted by a staff member holding the appropriate security clearance.

**9.1.4 Contract Management**

**Information Management**

Maintenance manuals for mechanical and electrical items and tunnel as-built drawings are contained electronically and are available to the Contractor as an appendix to this specification.

The files that will be made available include:

- The Asset Owner’s Manual
- Terrace Tunnel As-Built Drawings
- Mt Victoria As-Built Drawings.
- Memorial Park Underpass construction drawings

**Inspections**

Further to Section 3.6.2, Coordinated Inspections, Tunnel Specific joint inspections with the Principal will be completed at 6 monthly intervals during the contract.

**Separate Contractors**

The Contractor shall undertake all activities in accordance with the Maintenance Specification with exception of specific activities undertaken by others. Further to Section 3.11, Separate Contractors, several organisations provide services that enable support the Principal’s work to manage and operate the Tunnel. Table 9.1.2 summarises the components of the Tunnel Systems that are managed and maintained by others.

**TABLE 9.1.2: TUNNEL SYSTEMS COMPONENTS**

TUNNE SYSTEMS COMPONENTS	RESPONSIBLE
Structural components inspection	Structural Inspection Consultant

**TABLE 9.1.2: TUNNEL SYSTEMS COMPONENTS**

TUNNE SYSTEMS COMPONENTS	RESPONSIBLE
Traffic Queue Detection Equipment	ITS Contractor
Variable Message Signs	ITS Contractor
“Tunnel Closed” Stop-lights	ITS Contractor

The maintenance activities by others include monthly, quarterly, biannual and annual testing, inspection and maintenance works. The Contractor shall liaise and co-operate with all other parties involved in the operation and maintenance of the site during the contract. The presence of other contractors does not relieve the Contractor of their obligations to maintain the site according to the Contract Documents, unless the presence of other contractors directly affects the Contract Works. In this case the Contractor must advise the Principal within 1 hour.

#### **Publications and Standards**

In addition to the Maintenance Specification, the following standard specifications form part of the contract but are not reproduced in the Contract Documents.

Unless otherwise stated it is the Contractor's responsibility to make reference to their own set of these publications.

AS 1603	Automatic Fire Detection and Alarm Systems
AS 1670	Fire Detection, Warning, Control and Intercom Systems
AS 1851.4 and AS 1851.7	Routine Service of Fire Protection Systems and Equipment
NZS 4510	Fire Hydrant Systems for Buildings
NZS 4512	Fire Detection and Alarm Systems in Buildings
NZS 4541	Automatic Fire Sprinkler Systems

### **9.1.5 Contract Plan**

#### **Health and Safety Management Plan**

Further to Section 4.1, Health and Safety Management Plan, the Contractor is responsible for ensuring that an up to date Tunnel Specific Health and Safety Plan is available to the Contractor, other Contractors and any visitors to the non- public areas of the tunnel. The Principal will work with the Contractor to review the Health and Safety Management Plan as required and at least annually.

The Contractor is responsible for ensuring all tunnel visitors, including contract staff and sub-contractors, are made aware of the Tunnel Specific Health and Safety requirements. The Contractor is not responsible for providing safety equipment to tunnel visitors other than Contractor staff or Subcontractor staff.

The Principal has identified additional potential Health and Safety risks that may exist, over and above typical highway environments. The Contractor shall identify and

address these within the Health and Safety Management Plan. This include, but are not limited to the following:

- Lethal gas accumulation
- Gas suppression release systems
- Increased airborne particulates;
- Contaminated surfaces;
- Working at heights;
- Deluge water release;
- Electrical cables and systems
- Working mobile plant
- Contractor and Sub-contractor motor vehicles
- Rogue vehicles.

### **Traffic Control Plan**

Further to the requirements of Section 4.3, Traffic Control Plan, the Contractor shall include within the Traffic Control Plan processes for undertaking Tunnel Closures. Traffic Management for Tunnel closures shall only be undertaken by the Contractor, unless an emergency event has occurred. The Contractor shall implement the Traffic Management for all closures and detour routes required to undertake contract works and/or for the purpose of others to work in the tunnel. Other Contractors will be responsible for any other traffic management required for their works that do not require a tunnel closure.

The Traffic Control Plan shall recognise and manage the following tunnel specific constraints as follows:

- a) Maintenance activities within the tunnel and its immediate vicinity (i.e. works affecting the traffic lanes) shall be carried out on Sunday to Thursday nights between 10.00pm and 5.30am, unless otherwise agreed with the Principal.
- b) Other maintenance not affecting the flow of traffic can be carried out at any time to suit the Contractor while not disturbing the neighbours.
- c) There shall be one tunnel road closure allocated per month for each tunnel from February to December. These will normally be on consecutive days. The Principal will work with the TMC to issue the closure schedule three months in advance. Additional nights will only be allocated for exceptional circumstances.
- d) The Tunnel VMS boards shall be used by WTOC to advise the public of closures.
- e) The Specific Requirements for each tunnel, are defined within Section 9.2, Specific Traffic Management.

### **Emergency Procedures and Preparedness Plan**

In addition to the requirements of Sections 4.7, 5.4.5 and 6.8.1 the Contractor shall provide a 24-hour emergency call-out service. This shall include the co-ordination and liaison with other Contractors as required. Call-outs will only be requested by authorised and designated personnel.

Further to Section 4.7, Emergency Procedures and Preparedness Plan, the EPPP shall specifically the detail roles, practices and procedures in preparation for, and during an incident response event in one of the Mount Victoria or Terrace Tunnels and the Memorial Park Underpass.

The Contractor shall detail within the Emergency Procedures and Preparedness Plan processes to report and action any faults that create a hazard, require emergency repair or otherwise impact on the safety of the public or contract personnel to the Principal as soon as they are identified.

#### **Maintenance Management Plan**

Further to Maintenance Specification 4.8 the Maintenance Management shall demonstrate how the Contractor's tunnel specific maintenance activities and periodic treatments will be carried out in order to meet the tunnel specific requirements within this Section including intervention strategies for Mechanical and Electrical Assets.

### **9.1.6 Network Management**

#### **Asset Information Management**

Further to Section 5.1, Asset Information Management, the Contractor shall provide detailed asset records suitable for inclusion in the Tunnels Asset Management Plan for all items replaced, renewed or installed under this contract.

The records shall include:

- The service being reported on.
- The defect or problem as reported and/or found.
- The action or repair being taken.
- The materials or parts installed.
- Estimated life or replacement or new items.
- New maintenance requirements for new or replacement parts.
- As-built drawings in PDF and Autocad electronic format (where relevant).
- Operating manuals and maintenance schedules in ring binder format for complete system upgrades or installations.

## **9.2 SPECIFIC TRAFFIC MANAGEMENT**

The following processes have been arrived at after much trialling and progressive involvement, and are provided as a guideline for current best practice for implementation, utilising existing signage and facilities. The Contractor shall be responsible for implementation of any Tunnel Closures and shall prepare a Traffic Management Plan that defines the process that may, but not necessarily, reflect these guidelines.

### **9.2.1 Mount Victoria Specific Temporary Traffic Management Closure Process**

The Mount Victoria Tunnel is within a CoPTTM Level 2 Traffic Management Zone.

### **Guidelines for Closure of Mount Victoria Tunnel.**

- a) Starting at approximately 9:30pm, the eight folding 'detour route' signs on the route around Adelaide Road, Riddiford Street, Constable Street and Wellington Road shall be unfolded and secured.
- b) At about 9:55pm, the barricades and signs can be placed across the road at the Wellington road/Ruahine Street intersection and foldable 'Tunnel Closed' sign unfolded, as indicated in the attached aerial photo. The signs at the intersection of Ruahine and Goa Streets can then be placed.
- c) Install Level 3 signage to reduce Kent Terrace to one lane in advance of the Basin Reserve. One lane is to operate in Dufferin Street.
- d) Next, the cones, signs and barricades shall be laid across the Basin Reserve entrance to Paterson Street and the foldable 'Tunnel Closed' sign unfolded.
- e) The barricades and signs shall then be placed across locations in Taurima Street.
- f) Only when the above steps have been completed may the gates across Paterson and Taurima Streets be closed and, if necessary, locked. It is a safety requirement that the Contractor close and secure the gates at any time that people are standing unprotected on the carriageway in the tunnel.

Notes:

Steps b, c and d may be performed simultaneously if people are in radio contact.

### **Opening Process**

The tunnel opening process is the reverse of the closure.

- a) By 5:55am the Contractor must have completed his cleaning operations and clear of the tunnel carriageway. This allows the gates at either end to be opened and securely locked.
- b) The barricades and signs shall then be removed from the two locations in Taurima Street.
- c) Next, the barricades, cones and signs shall be removed from the Basin Reserve entrance to Paterson Street and the foldable sign folded up and secured.
- d) Remove the signage reducing Kent Terrace and Dufferin Streets to one lane.
- e) The signs should then be removed from the Ruahine Street/Goa Street intersection, flowed by the barricades and signs at Wellington Road/Ruahine Street, the foldable 'Tunnel Closed' sign must then be folded and secured.
- f) Finally, the signs on the detour route around Adelaide Road, Riddiford Street, Constable Street and Wellington Road shall be folded and secured.

## **9.2.2 Terrace Tunnel Specific Temporary Traffic Management**

The Terrace Tunnel is within a CoPTTM Level 3 Traffic Management Zone

For southbound diversions, motorists may be directed to leave the SH1 urban motorway at the Terrace off-ramp and to follow The Terrace and Ghuznee Street before re-joining SH1 at the Victoria Street / Vivian Street intersection.

For northbound diversions, traffic may be directed to leave SH1 Karo Drive at Willis Street and to travel up Boulcott Street before re-joining the SH1 urban motorway at The Terrace on-ramp.

### 9.2.3 Memorial Park Underpass Specific Temporary Traffic Management

The Memorial Park Underpass is within a CoPTTM Level 2 Traffic Management Zone.

The Principal has not defined specific Temporary Traffic Management requirements for this structure.

## 9.3 TUNNEL MAINTENANCE

### Compliance Certification

The contractor shall obtain, manage and update all on site certification in the Principal's name.

Throughout the contract period, the Contractor shall at all times comply with National, Local and Regional Authority Legislation and Acts.

The Contractor is required to obtain compliance certificates for all equipment as required by any Act, regulation or Bylaw. This certificate must be displayed by the plant inspected with a duplicate in the appropriate manual or file kept in the site library.

### Building Warrant of Fitness

#### Annual Building Warrant of Fitness

The Contractor is required to carry out an annual Building Warrant of Fitness inspection for all fire, lighting and security systems on behalf of the Principal as building owner.

The buildings requiring an annual inspection include: The Terrace Tunnel, North and South Control Buildings, Mount Victoria Tunnel and Memorial Park Underpass which are designated as a "Building" under the Building Act.

The Contractor shall carry out all Building Owners checks as required by the compliance schedule provide written certification by a Registered Independent Qualified third inspector that the features listed on the Warrant of Fitness have been maintained and are operating as intended.

The Contractor is required to inform the Principal of the due date and ensure that the Building Warrant of Fitness is received and displayed.

The Contractor is to allow for any additional record keeping or administrative activities required in complying with the Building Warrant of Fitness.

#### Monthly Inspection

The Contractor is required to carry out on behalf of the "owner", monthly inspections and maintenance activities for all fire, lighting and security systems to comply with the Building Warrant of Fitness aspects of the Building Act.

Monthly checks for compliance with the building Warrant of Fitness are to be carried out by an Independent Qualified third party (IQP) inspector. The Contractor will be

responsible for engaging the inspector and ensuring that these checks are completed each month.

#### Maintenance Checks

The Contractor shall develop and carry out detailed routine checks of all plant and systems as required by the Building Code. The Contractor shall prepare check sheets that will form part of the on-site records with a monthly exception report and to meet the maintenance requirements as listed in the appendices. Inspection frequencies are the minimum required.

#### **Maintenance Schedule**

A Maintenance Schedule has been prepared for each of the service items identified (refer Maintenance Appendix 9.1, Tunnel Specific Management, Operations and Maintenance. The routine maintenance items are detailed with the required frequency. The Contractor is to develop check sheets from the schedules completed to provide a record of the work done.

The Contractor shall note that a more complete description of the works to be carried out is contained in this specification.

The Schedules are provided for record purposes and is not intended as a complete and full specification of the works. The Contractor will be required to develop check sheets for service items not included in the Schedules.

Where the Contractor assesses, that non-urgent repairs are necessary or determines that modification to any mechanical and electrical system or equipment is advantageous, these matters shall be referred to the Principal for consideration.

Where repairs are of a minor nature and can be carried out immediately, the Contractor shall contact the Principal for discussion and authorisation.

#### **Jet Fans (Terrace Tunnel)**

Carry out tests in accordance with requirements of section 8 (Pgs 42-53) of Zitron Operation and Maintenance Manual for JZ-JZR Fans – (see Appendices)

#### **Deluge Maintenance and Testing**

The Deluge System maintenance shall include undertaking deluge testing on a two-monthly cycle. It is desirable where possible that these occur in the months between the wall cleaning operations, although this may not always possible. As part of this each deluge zone is required to be tested **6-monthly**. The implication is that each month several units of each tunnel are required to be tested by release of the deluge system; which impacts on the timing and duration of other tunnel works.

#### **Graffiti**

Any graffiti on the panels within the tunnels which is determined by the Principal to be offensive or undesirable is to be removed within 48 hours of the Contractor being notified. (Refer OPMs). An emergency tunnel closure is to be implemented to carry out the remedial works.

Graffiti within the Mount Victoria walkway is to be removed in accordance with the normal graffiti requirements

#### **Coordination with Wellington Transport Operations Centre Staff**



The Contractor shall advise the Wellington Transport Operations Centre (WTOC) staff of any programmed or emergency work (and the status of that work) that might affect road traffic, roadway lighting, Fire deluge and Alarm systems, the LCS signs, the Fan operation, Traffic barriers, removal of mains or UPS power from the Control Rooms, may activate WTOC alarms or might affect the WTOC control of activities and any work that might affect the operation of the cameras on or approaching the state highway. The WTOC Operators are to be contacted to confirm the results of some safety system checks as detailed

The Contractor will advise WTOC staff of programmed activities one week prior to the start and again between 12 and 8 hours before temporary traffic management is implemented.

### 9.3.1 Mount Victoria Tunnel Specific Requirements

- a) Clean the control buildings' interior and equipment.
- b) Maintain tunnel systems including all, mechanical and electrical servicing but excluding the PLCs and the ITS systems. This work includes:
  - Maintenance of the tunnels ventilation system including extract & inlet fans, fan motors and VSDs.
  - Maintenance and testing of the deluge system and linear heat detection systems.
  - Maintenance of the tunnel lighting including 170 fluorescent luminaires and 404 high pressure sodium luminaires (HPS), lighting switchboard which includes relays, contactors and master switches.
  - Maintenance and testing of the alarm control systems in the tunnel, Hataitai Control Building and FAIP cabinet at Basin Reserve portal.
  - Development and carrying out of detailed routine checks of all plant and systems.
- c) Provide all consumables required for the operation of the tunnel and associated buildings.
- d) Maintain all buildings:
  - Make regular visual inspections and notify the Principal of any building or grounds feature which is defective or has the potential to be defective.
  - Carry out on behalf of the 'owner' inspection and maintenance activities for the fire, lighting and security systems to comply with the Building Warrant of Fitness aspects of the Building Act.
- e) Comply with the requirements of all Local Councils and Government departments. (The Contractor is not required by this clause to make any additions alterations or improvements to the property of a structural or capital nature.)
- f) Undertake scheduled and unscheduled maintenance of mechanical plant including annual specialist maintenance and fault repair.
- g) Carry out fault repair when required under Defects Management Plan.

### Available Water Supply

A fire hydrant is available in the carriageway in Paterson Street adjacent to the control room. Water will be available free of charge from this hydrant for works covered by this contract.

The Contractor is required to hold the appropriate licenses to use a fire hydrant and follow the procedures contained therein. A licence may be obtained by approaching 'The Manager', Wellington City Water, PO Box 11-646, Wellington.

### 9.3.2 Terrace Tunnel Specific Requirements

- a) Clean the control buildings' interior, exterior within the fenced enclosure and equipment.
- b) Maintain tunnel systems including all, mechanical, electrical and fire safety systems servicing but excluding the PLCs and the ITS systems. This work includes:
  - Maintenance and testing of the tunnels ventilation system including fans, jet fans, fan motors, VSDs, air quality and velocity monitors.
  - Maintenance and testing of the deluge system, fire hydrant system, linear heat detection and fire alarm system, including the emergency exit lights and smart studs way finding.
  - Maintenance and testing of the public address and radio rebroadcast systems.
  - Inspection and testing of the tunnel lighting including 307 fluorescent luminaries and 814 high pressure sodium luminaires (HPS) and switchboards, and cleaning of photometers.
  - Maintenance and testing of the tunnel and control building's emergency and control equipment housed in the north and south control buildings including the electrical supply equipment, automatic fire alarms and detection systems, gaseous fire suppression system, air conditioning system, security systems, automatic fire alarms, fire extinguishers, and public-address equipment, including annual specialist maintenance and testing.
  - Development and carrying out of detailed routine checks of all plant and systems.
- c) Provide all consumables required for the operation of the tunnel and associated buildings.
- d) Maintain all buildings and internal grounds (within fenced enclosures):
  - Carry out on behalf of the 'owner' inspection and maintenance activities for the fire, lighting and security systems to comply with the Building Warrant of Fitness aspects of the Building Act.
- e) Comply with the requirements of all Local Councils and Government departments. (The Contractor is not required by this clause to make any additions alterations or improvements to the property of a structural or capital nature.)

- f) Undertake scheduled and unscheduled maintenance of mechanical plant including annual specialist maintenance and fault repair.
- g) Carry out fault repair when required under Defects Management Plan.

### **Manholes**

There are 9 manholes in the RH NB lane. These are to be lifted annually to ensure that the frames are not frozen. Check the cleanliness of the SW spine main and clean out any rubbish or detrious.

### **Safe Hit Posts**

There are Safe Hit Posts which separate the NB and SB lanes. The reflectors on these posts are to be checked during the monthly closures and cleaned and replaced as required to maintain the required standard of reflectivity.

The Contractor is required to maintain a sufficient stock of Safe Hit Posts including bases, pins and reflectors to enable any emergency repairs necessary. The bases are fixed into tunnel base by screw anchors.

### **Weepholes and plumbing system**

There is a system of weepholes along the tunnel which are connected to a polyethylene plumbing system. Behind the east wall these drain into the concrete channel behind the wall panels. On the western side, these drain into a polyethylene pipe which runs behind wall panels and exits into the sump at the south end.

The Principal's objective is to ensure that the weepole system operates effectively and to keep the plumbing system unblocked so that no overflow drips down into the traffic lanes. Provide a self-propelling water jet system to flush plumbing from above and wash out any calcite deposits in weepole covers and polyethylene droppers.

Prepare a plan for the flushing out of the plumbing. A record is to be kept of all plumbing lines and weepole covers flushed out. The Contractor shall programme for a minimum removal of 8 wall panels per year to flush out and to inspect weepholes.

Allow for equipment and manpower for the flushing works to be available for the full time of the closure.

Flush out the polythene main behind the western wall as required and check joints between main and droppers to ensure that there are no leaks. Access can be gained behind the panels on the western side.

### **Vortechs Stormwater treatment device**

The Terrace tunnel has a Vortechs System located within the Ghuznee stub, that is required to be inspected and maintained within this contract to ensure optimum performance. The Vortechs System is a separator device that collects all debris that is washed down from the tunnel. Inspection and Maintenance of the Vortechs System shall be undertaken in accordance with the manufacturer's recommendations.

## **9.3.3 Memorial Park Underpass Specific Requirements**

- a) Clean the control buildings' interior, exterior within the fenced enclosure and equipment.

- b) Maintain tunnel systems including all, mechanical, electrical and fire safety systems servicing but excluding the PLCs and the ITS systems.
- Maintenance and testing of the fire hydrant system, linear heat detection and fire alarm system, including the emergency exit lights.
  - Maintenance and testing of the public address and radio rebroadcast systems.
  - Maintenance and testing of the tunnel lighting including fluorescent luminaires and high pressure sodium luminaires (HPS) and switchboards, and cleaning of photometers.
  - Maintenance and testing of the tunnel and control building's emergency and control equipment including the electrical supply equipment, automatic fire alarms and detection systems, gaseous fire suppression system, air conditioning system, security systems, automatic fire alarms, fire extinguishers, and public-address equipment, including annual specialist maintenance and testing.
- c) Development and carrying out of detailed routine checks of all plant and systems.
- d) Maintain all buildings and internal grounds (within fenced enclosures):
- Carry out on behalf of the 'owner' inspection and maintenance activities for the fire, lighting and security systems to comply with the Building Warrant of Fitness aspects of the Building Act.
- e) Comply with the requirements of all Local Councils and Government departments. (The Contractor is not required by this clause to make any additions alterations or improvements to the property of a structural or capital nature.)
- f) Undertake scheduled and unscheduled maintenance of mechanical plant including annual specialist maintenance and fault repair.

## 9.4 TUNNEL MAINTENANCE

The intent of the contract works is to keep the tunnel surfaces at a satisfactory level of cleanliness, to prevent a gradual build-up of residual dirt, to cause minimum inconvenience to the travelling public and to have the minimum impact on the environment.

Every two months, commencing from February, the Contractor shall scrub the wall panels with a soft brush and using an approved detergent before rinsing off. The scrubbing is to ensure that any dirt or grime on the surface is lifted and suspended within the solution. The wall panels are to be rinsed off within 1 minute of the completion of the scrubbing operation for each panel. Care shall be taken to avoid damaging the tunnel signage.

At the same time, the Contractor shall clean and check the static signage on the tunnel walls. These items shall be hand washed. Arrange replacement for any static sign that is damaged to the extent such that lettering or pictogram is affected and arrange repair or replacement for any sign that has come loose.

Thoroughly clean the wall panels (full height but not ceiling), carriageway, sumps, leads, channels and signs. This work shall include a cold-water wash with detergent. Approved detergents to be used in accordance with the resource consent; 'Terga Enviroclean' unless otherwise approved by the Principal.

Hand scrubbing using brushes for the emergency services signage.

A cold water rinse.

Manual clearing of blocked drains, channels and sumps.

Removal of all rubbish and loose materials on roadway, pathways, drains and channels,

Following cleaning of the panels a sample area at least 1sq.m in area is to be thoroughly cleaned with a suitable proprietary cleaning product. If the sample area is seen to be cleaner than the adjacent panels, then the cleaning shall be deemed to be non-complying.

**OPM GROUP 9.4.1: TUNNEL CLEANING**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	MAX. EXTENT	EIP	PERM. REPAIR PERIOD
218	NSHVH	No Defects	On completion of the rinse, the lower half of any sheet is not as clean as the upper half	N/A	1 Week	N/A
219	NSHVH	No Defects	The panels are not completely clean after each clean (i.e. there is residual dirt, film or staining)	N/A	1 Week	N/A

**TUNNEL CLEANING (100% SAMPLE SIZE, MEASURED MONTHLY)**

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
161	All Roads	No Defects	On completion of the rinse, the lower half of any sheet is not as clean as the upper half	1	1 week

### TUNNEL CLEANING (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	WEIGHTING	PIP
162	All Roads	No Defects	The panels are not completely clean after each clean (i.e. there is residual dirt, film or staining)	1	1 week

#### Event Response

In addition to Maintenance Specification 6.4.1 clean out stormwater and subsoil catchpits and manholes after any major stormwater, fire or spill event.

#### Waste Disposal

The Contractor shall safely dispose of all waste materials responsibly and in accordance with local and national regulations. The Contractor shall maintain records of any disposals for inspection by the Principal.

#### 9.4.1 Mount Victoria Tunnel Specific Cleaning Requirements

The Principal has no specific cleaning requirements for the Mount Victoria Tunnel.

#### 9.4.2 Terrace Tunnel Specific Cleaning Requirements

The western concrete barrier in the Terrace Tunnel is to be cleaned annually. It is to be scrubbed with a stiff brush and an approved detergent before being rinsed off. This operation is to be carried out isolated from the wall panel cleaning to ensure that the correct brushes are used on the correct surfaces and that no grit can scratch the panel coating.

Illuminated 'smart studs' are placed as lane markers in the carriageway. A control cabinet at the south end contains the high frequency generator used to power the studs. Power supply is from LCP1 West (base power).

The Contractor is required to clean the studs (wipe with wet rag in conjunction with the wall washing operation), and report non-functioning or faulty studs to the Principal.

#### 9.4.3 Memorial Park Underpass Specific Cleaning Requirements

Stormwater catchpits, manholes and stormwater pipes run within the structural depth of the floor slab. Access to these elements for cleaning shall be by regular means. Manholes are located in the centre of lane 1. These shall be lifted annually to ensure that the frames are not frozen. Check the cleanliness of the stormwater main and clean out any rubbish or detritus. Traffic control will be needed to access the manholes.

The subsoil drainage system collects water outside the tunnel and trench walls and maintains the ground water level around the structure. It is important to ensure this

system remains free flowing. A second (higher) layer of subsoil drainage is installed behind the tunnel walls as a backup system in case ground levels increase above the normal level controlled by the primary subsoil system.

The groundwater level adjacent to the Underpass is controlled by subsoil drains within the wall backfill. Drains will require regular inspection and maintenance to ensure that they are free-flowing. Inspection can be undertaken by observing flow from the subsoil drains in the appropriate manholes. Manhole access is located within the Park. Drain blockages may result from root invasion or silt build-up, if this eventuates it will need to be rectified for safe operation of the Underpass.

Excessive load on the roof of the Underpass or adjacent to the walls of the Underpass or trenches has the potential to overload the structures. Monitoring of abnormal loads shall form part of a Corridor Access Management.

Service trenches running alongside (and to) the Underpass require similar protection regimes to ensure the integrity of the services.

## 9.5 ANCILLARY MINOR TUNNEL MAINTENANCE

From time to time, when requested by the Principal, the Contractor shall undertake additional works that are outside the scope of Section 9, Tunnels. The scope of the works shall be agreed between the Principal and the Contractor before the works are undertaken.

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