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

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CONTENTS

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 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 all parties to the contract, including Subcontractors, 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 Contractor shall contact the Principal when behaviours that conflict with the Principal's known intent occur, including commercial gaming practices that result in suboptimal 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.

A Contract Board (CB) will be set up, composed of two representatives from both the Contractor and the Principal organisations. The CB will provide integrated governance leadership. It will also conduct a 6-monthly Relationship Survey that formally monitors the health of the relationship between all participating parties (including Subcontractors) within the context of this contract and the opportunities it offers for 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.
Cooperation	An environment of mutual cooperation.
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 road within the <<insert Name>> Network of the Principal's Region <<insert Region Number>> Area, see Appendix 1.3, Location of Works

c) Provides opportunities for financial and Contract Period reward 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.

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 an independent. Also refer to the Special Conditions.
Principal's Advisor	Advisor to the Principal.

TABLE 1.6: ROLES AND DESCRIPTIONS	
ROLE	**DESCRIPTION**
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.

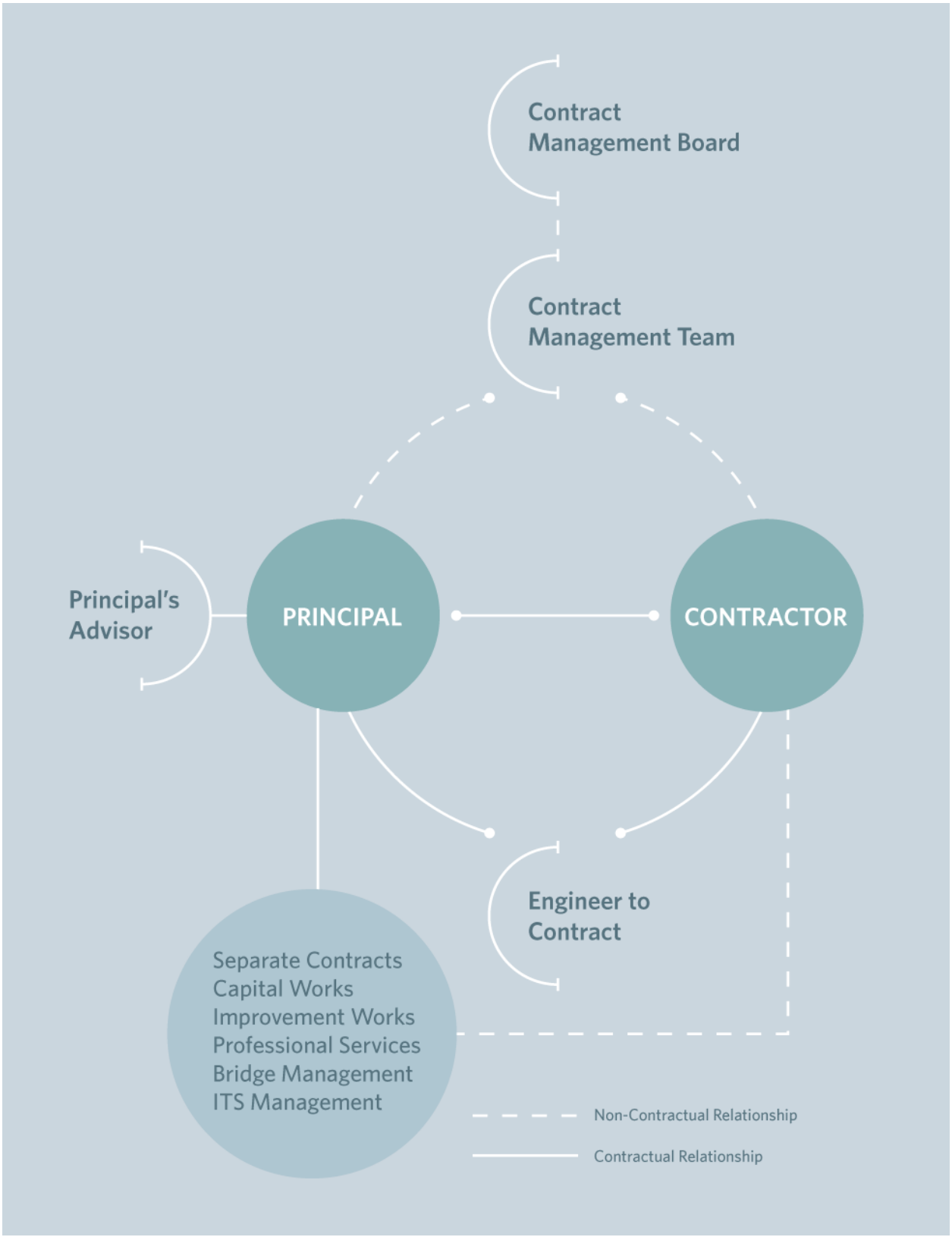

Figure 1.6: Roles and Responsibility Relationship Diagram

1.7 NETWORK DESCRIPTION

The extent of the Network is shown in Appendix 1.4, Network Extents. Table 1.7 summarises the breakdown of the Network to road classifications.

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**

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

The Network includes:

a) All roadways, cycle lanes, 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 1.5, 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 end of a physical splitter island if one is installed, whichever is greater.

For Urban Areas, the boundaries are the same as for Rural Areas, except the Contractor need only maintain the road assets and associated structures between and including the kerb lines or channels.

c) Cycle paths as per Appendix 1.4, Network Extents.

Local variations to the extent of the Network are included in Appendix 1.5, Specific Distances between the Centreline and the Road Reserve Boundary; Appendix 1.7, Maintenance Responsibility Maps; and Appendix 1.8, Current Local Authority Maintenance Agreements (MOUs).

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 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, 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.

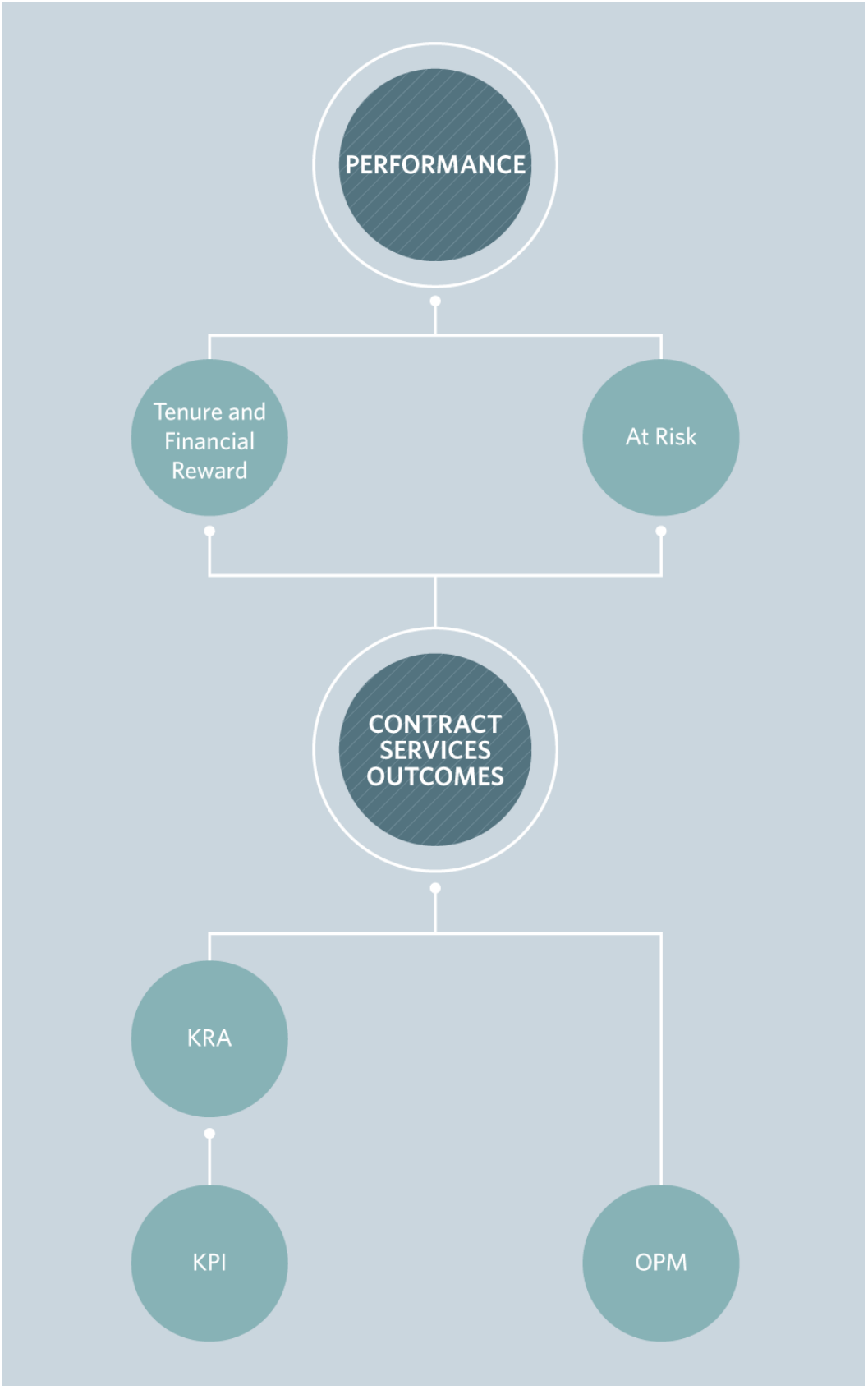

Figure 2.1: Performance Framework Diagram

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, 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.
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.
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 feedback, including greater involvement of Subcontractors and recognition of their value.
TOTAL	**6**	

The Contractor will be given <<(Guidance note: Refer CC, 10.2.2, 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 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 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 VAC will annually review the weightings of both the KRAs and KPIs, based on CB recommendations and the 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 Appendix 2.1, Guide to the KRA Performance Framework.

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 four discrete OPM types described as follows:

- Management OPMs – generally office-based or management and reporting activities, for which compliance is measured against 100% of the respective activities required to have been undertaken over the reporting interval period. The compliance audit and result is reported in accordance with Appendix 2.2 OPM Sample Sizes and Audit Frequencies. <<Guidance note Appendix needs to be updated to align with contract classifications>>
- Asset Condition OPMs – relate to the physical condition of an asset type, where compliance is measured by either a 10% audit section or 100% sample of road class or road class grouping. The condition measure is a snapshot in time, for which the compliance audit and result is reported in accordance with Appendix 2.2, OPM Sample Sizes and Audit Frequencies. <<Guidance note Appendix needs to be updated to align with contract classifications>>
- 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. <<Guidance note Appendix needs to be updated to align with contract classifications>>
- 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 1/12th 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 CB 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 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 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 all those road classes. The Contractor will then need to demonstrate compliance for that contract standard for those road classes.

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 6.1.6, Flushing

- OPM Group 6.1.7, Edge Break
- OPM Group 6.1.8, 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) 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.

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 "Monthly Contract Performance Report".

10% 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 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

ROAD CLASS	NUMBER OF AUDIT SECTIONS (APPROXIMATELY 10% OF TOTAL NETWORK LENGTH)
NSHVH	TBC
NSH	TBC
RSH	TBC
RCH	TBC
RDH	TBC
Local Road	TBC
Total	<<Total length of the 5km audit sections must be approximately 10% of the Network length.>>

The Contractor will follow these requirements:

a) Split the Network into discrete 5-kilometre sections, or close to, where possible. Each audit section must be of one road-class type only

b) 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 28 to 29 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;

- 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 road class (or road-class grouping). 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 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 at minimum, in accordance with best practice or the applicable Principal's specification.

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 2.6, 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 agreed to 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 that have been identified within the Appendices.

2.3.4 Monthly Performance Evaluation

The following components contribute to the Monthly Evaluation:

Operational Performance Measures

The number of occurrences of 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 Key Operational Performance Measures that they attract higher consequences in the Performance System if they are non-compliant. Where non-compliance is recorded against a Key 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.

Safety-related Operational Performance Measures

Such is the importance of the Safety-related 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

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

- For Management OPMs – the non-compliance score effect will repeat each subsequent month, incurring increased penalties monthly, until the Principal-approved corrective action is completed and signed off by the Principal.

- For Asset Condition OPMs – the non-compliance score effect will repeat each subsequent month, incurring increased penalties monthly, 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.

Monthly Evaluation Formula

The Monthly Evaluation is calculated using the following equation:

*MNCS = Σ (Number of occurrences * Weighting * 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
Key OPMs	#	4	Number of consecutive months with non-compliance relating to the same Key OPM contract standard.
Safety-related OPMs	#	2	Number of consecutive months with non-compliance relating to the same Safety OPM contract standard.
All other 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.

2.4 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.

2.5 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, 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 2.5.1, 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 2.5.2, 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 2.5.3, Principal Risk Non-routine Maintenance Treatments).

2.5.1 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 growth resulting from major capital improvements, revocations or declarations. Significant asset changes of this magnitude shall be valued and agreed 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.

2.5.2 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. The designed level of investment for each treatment shall be agreed between the Principal and Contractor, at both 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.

2.5.3 Principal Risk Non-routine Maintenance Treatments

If a Principal risk item occurs (refer Conditions of Contract, 18th 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 2.5.4, 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 guard rail 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 6.1.1, Routine Sealed Pavement Maintenance, 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.

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.

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^2, 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.

2.5.4 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 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 6.1.1	Pavement Rehabilitation Baseline Plan	Time of Tender
Resurfacing Base Preservation Cumulative Lane Lengths – As per Table 6.1.5	Resurfacing Baseline Plan	Time of Tender
Skid Resistance Renewal Quantities – As per Table 6.1.6	N/A	Annually – as per Transport Agency T/10 annual Skid Exception Report instructions
Base Preservation Drainage Lengths – As per Table 6.2	N/A	Annually – as per *Annual Plan Instructions Manual* (SM018)

Although the Pavement Rehabilitation and Resurfacing Baseline Plans have 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. 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 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 6 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 6.2, 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 6.2, 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) 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 Pavement Rehabilitation Baseline Plan.

Pavement maintenance risk will remain with the Contractor if the Pavement Rehabilitation Baseline Plan 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.

Refer to Appendix 2.4, Process Maps, Management of Annual Rehabilitation Quantity. 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 2.5.3, 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.

In the event that the annual pavement rehabilitation programme reconciliation has identified that a 1 year holding-cost credit 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 lowest-priority funded Sites, over a length equal to the reconciliation differential.

b) The Principal and Contractor shall jointly agree the required pavement and surfacing repairs that would have been required to be undertaken over the road length if the pavement rehabilitation was deferred for one year.

c) The Principal shall receive an invoice credit note from the Contractor, calculated from b) above and the Basis of Payment, Principal Risk Non-routine Maintenance Treatments.

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 resurfacings 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 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 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.

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 results in the Contractor being prevented from implementing the renewal investment levels to within 10% of the Contractor's Resurfacing Baseline Plan.

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 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 18th Schedule to the Conditions of Contract, 18th 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.

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.

b) The Contractor shall complete the agreed pre-reseal repairs to the conditions as outlined in Section 2.5.3, 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.

2.6 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) Contractor system compliance audits

h) Data quality audits

i) Model applicability assessments

j) Special purpose reviews

k) Level of compliance with performance measures

l) 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 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 Nationally 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.

3.3 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 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 appro[priate docs

a) Highway Information Sheets

b) Ten-Year Programme (including the Maintenance and Capital Works Programmes)

c) Emergency Procedures Manual

d) Geo hazard Register

e) Crash Reduction Studies

f) Strategy Studies

g) Falling Weight Deflectometer survey data

h) RAMM health check

i) KiwiRAP Assessment

j) Current SWIPP spreadsheet

k) 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).

l) <<add any others>>.

3.4.2 Network Update

The Contractor shall supply the following, in accordance with the *Location Reference Management System Manual* (SM051):

a) Obtain all information necessary to ensure that the Network Model is kept up to date

b) Supply the Principal with Network updates.

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:

a) Microsoft Access

b) Microsoft Project

c) Microsoft Excel

d) Microsoft Word

e) Microsoft PowerPoint

f) Outlook

g) RAMM for Windows

h) Adobe Professional

i) SAP and CRMS

j) CS-VUE

k) CAR Manager.

l) Zero Harm

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 application from which the data was supplied

b) The data form in which it was extracted from the Principal application

c) In the Contractor's own system, but supplied back to the Principal using an agreed 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, the Contractor shall supply to the Principal 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) Drawings as raw DXF files

b) MapInfo or ESRI format using NZTM projection.

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

The Principal expects web access to key Contractor Network management systems to improve communication:

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.

3.4.7 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

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 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 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 members each, as senior company representatives, to attend and participate in 4-monthly Contract board meetings. 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. A summary of the CB function includes 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 the commercial interests of their organisations. The Principal is responsible for addressing their statutory, policy and national operational requirements.

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, they will be submitted to the parties for detailed consideration. Following an agreement by the Principal and the Contractor, the Engineer will then implement the 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.

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.

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, and taking the minutes.

The CB shall monitor the health of the relationship between all participating parties (and Subcontractors) 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 Contract Board.

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

A key input into each CB meeting shall be a tri-annual 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.

3.5.3 Contract Management Team

The Contract Management Team (CMT) is responsible for the day-to-day management and leadership of the contract teams to ensure that the contract outcomes, including OPMs, KRAs and KPIs, are being considered, the relationships within the team (and externally) are effective, and contract risks are being appropriately managed. The Contract Management Team is also responsible for overseeing cost-effective, 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 Subcontractors is 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 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 subcontractor 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 Subcontractors

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

a) Effective channels of communications will be clearly defined and established.

b) Each Subcontractor will have its responsibilities and authorities clearly defined, including health and safety.

c) Each Subcontractor will have its deliverables identified and required content clearly specified, including health and safety.

d) The services each Subcontractor is responsible for providing will be clearly identified and described.

e) All constraints imposed on the Subcontractor will be clearly identified, including schedule and budget constraints.

f) Each Subcontractor 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 Subcontractor will be subject to the acceptance of the Contractor.

h) Each Subcontract will contain appropriate terms and conditions.

i) Adequate facilities will be provided to meet the needs of the Subcontractors.

j) The Contractor will support Subcontractors 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 Subcontractors 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 Subcontractor and their performance which shall be formerly reported to the Principal.

Systems of monitoring the work that the Subcontractors 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 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.

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

Inspections may be completed by the Principal at regular intervals during the Contract Period. The purpose of these inspections is to monitor the Contractor's progress and performance.

It is the Principal's expectation 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.

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

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 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 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. 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 period of those separate contracts.

If invited, 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 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 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.

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 Liability 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, 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.
        - 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.

- 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, 18th 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 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.

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 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 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 Programmes

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 Response Reports

h) Health and Safety, Environment and Consent Compliance summary

i) Cost Recovery Register

j) OPM compliance results in line with all designated reporting intervals

k) A Measure and Value Achievement status report

l) Risk information as defined in the Risk Management Plan

m) Asset Register update and maintenance activity summary

n) Achievement lengths for re-seals, pavement rehabilitation and drainage renewals per month and cumulative measured against target lengths

o) <<Provide other items deemed to be important for the Principal.>>

3.8.2 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 30th 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.

3.8.3 Work-site Accident Reports

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

- fatalities and other lost-time injuries to its staff or its subcontractors;
- non-employee injuries (public);
- damage to plant or equipment;
- all actual or potential damage to the environment (spills, dust, emissions, or discharges);
- fire.
- Immediate notification is to be followed by full written details within 24 hours.

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.

3.8.4 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

TABLE 3.8: KEY REPORTING DELIVERABLE SCHEDULE

DELIVERABLE	CONTRACT STANDARD	REPORTING INTERVAL
Contract Management		
Monthly Report	Refer to Section 3.8.1	By the 8th day of each month.
Work Site Accident Reports	Refer to Section 3.8.3	Various
Network Management		
Principal's Asset Registers Updating	Refer to Section 5.1.4	By the 20th 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	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
SCRIM Exception Compliance Report	Refer to Section 5.5.5	Annually
Surfacing Aggregate Performance Report	Refer to Section 5.5.5	Annually
Safety Reports	Refer to Section 5.5.7	Various
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

TABLE 3.8: KEY REPORTING DELIVERABLE SCHEDULE		
DELIVERABLE	**CONTRACT STANDARD**	**REPORTING INTERVAL**
Pavement Rehabilitation Post-Construction Design Assessment Report	Refer to Section 6.1.2	Annually
Resurfacing Design Report	Refer to Section 6.1.3	1st 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 6.4.1	Monthly, when applicable
Local Roads		
Xxxxxx	Refer to Section 8	xxxxxxx

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

3.8.5 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.

3.10 EXISTING SERVICES

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

All existing 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 inductance loops (Traffic Signal Maintenance Contractor / Traffic Counting Contractor), where physical work is likely to affect operation.

When 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 3.1, Local Authority Maintenance Activities and Locations.

These areas are defined in the maintenance agreements contained in Appendix 1.8, Current Local Authority Maintenance Agreements (MOUs).

Appendix 3.2, 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 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 to not do anything that is likely to damage the reputation of the Principal.

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.

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 3.3, Standard Specifications

b) Reference to a publication refers to the edition listed in Appendix 3.4, 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.

3.15 BENCHMARK AND CALIBRATIONS SECTIONS

Road benchmark and calibration section locations within the Network are 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 3.5, 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.

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 resource consent(s) required for these areas.

c) Must provide written evidence that the conditions have been fulfilled.

3.17 LAND ENTRY AGREEMENTS

Appendix 3.6, 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

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 NZAA archaeological database, historic heritage sites with the NZ Historic Places Trust Register and sites listed on District and Regional Plan schedules.

It is expected that the Contractor will utilise the Principals environmental expertise and the appropriate tools prior to carrying out earthworks or activities that 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.

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 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 Subcontractors and lessons learnt migration across work streams

f) Consortium and multi-supplier relationships, communication strategy and key accountabilities

g) Subcontractor 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 subsections 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 (CSCMP)
6. Risk Management Plan (RMP)
7. Emergency Procedures and Preparedness Plan (EPPP)
8. Maintenance Management Plan (MMP).

Figure 4.0 diagrammatically represents this framework.

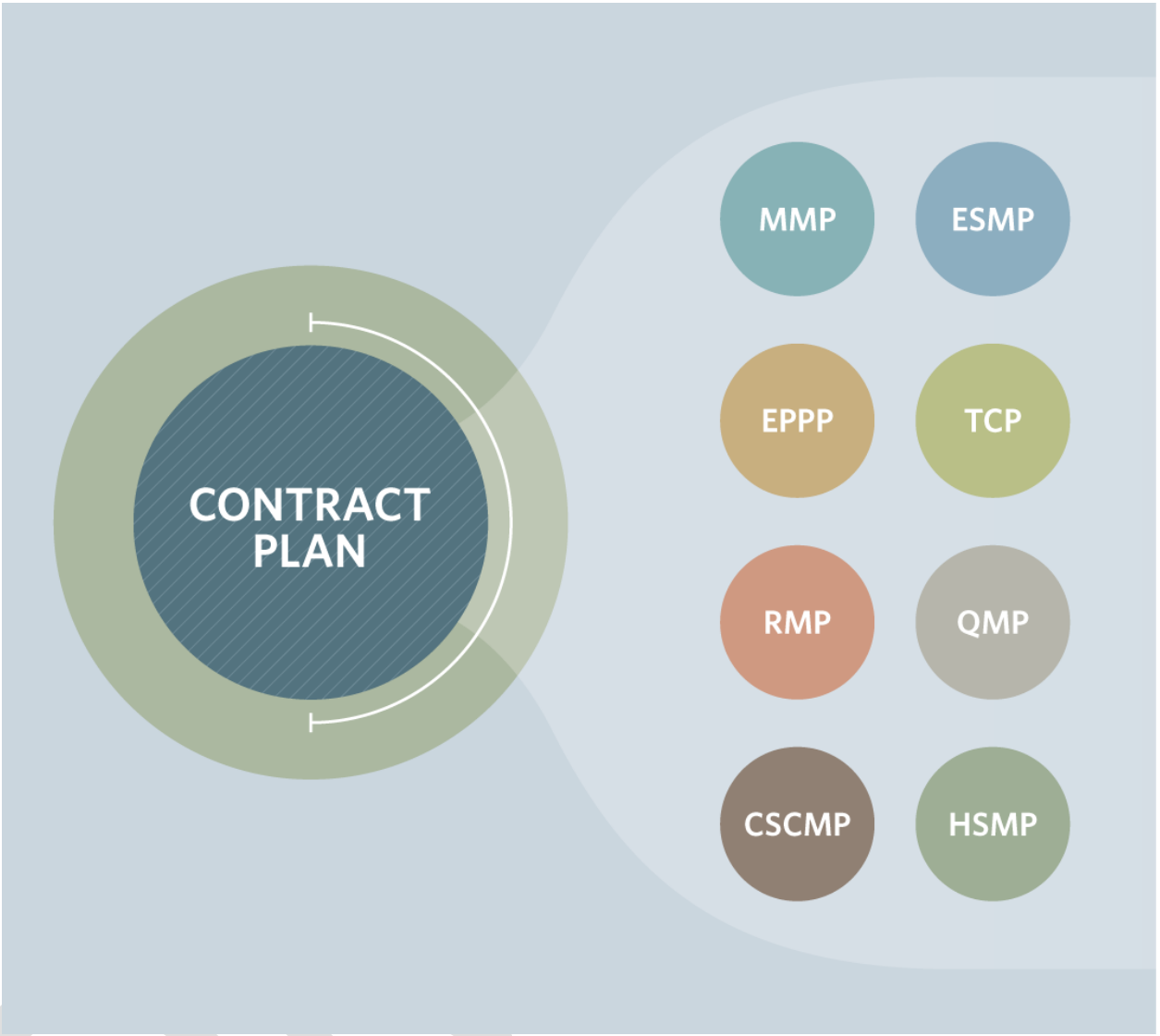

Figure 4.0: Contract Plan Framework

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 and keep them up to date as any changes occur. Any changes to the MMP must be agreed by the Principal.

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 personnel being frequently exposed to hazardous situations that pose 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 Subcontractors and suppliers at all times.

The purpose of the Contractor's HSMP is to foster a responsible attitude towards occupational health and safety, and to comply with the provisions of the *Health and Safety in Employment Act 1992,* the draft Health and Safety Reform Bill, its regulations, supporting codes of practice's and the NZ Transport Agency's Minimum Standard Z/5.

The Contractor must meet the requirements of the Transport Agency's Safety in Design minimum standard for roading projects.
http://hip.nzta.govt.nz/technicalinformation/health-and-safety

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 system or the Contractor's operations generally, including, but not limited to the following:

- training and other records
- methods of selection and induction of employees and Subcontractors
- hazard identification and management
- operational procedures
- management of Subcontractors
- staff participation in the Contract HSMP
- compliance with legal obligations and codes of practice or guidelines issued by regulatory authorities
- incident investigation and reporting by Contractor and Subcontractors
- cooperation with any inspection, audit or review of the Contractor's involvement in any aspect of the Contract Works by the Principal or a nominated representative.

Situations will arise when it is not practicable to eliminate or isolate significant hazards. In these situations, the hazards must be minimised by ensuring planned 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 recommends that all personnel regularly working within 5 metres of hot bitumen be appropriately trained, by a recognised training provider, in the safe handling of bitumen.

The Contractors Contract Management Team shall complete the IOSH Managing Safely course within six months of the commencement of the contract.

Throughout the Contract, the Contractor must provide monthly H&S reporting and incident reporting via the Transport Agency's Reporting Site which can be found at http://nztareporting.azurewebsites.net/. Reporting should be completed no later than the 9th of the following month.

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

The Principal recognises the requirements of Roading 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.roadingnz.org.nz/sites/roadingnz.org.nz/files/Reversing%20Guidelines_0.pdf.

The typical detail of the HSMP shall include:

1. Contractors Health and Safety Policy.
2. Contract Specific Roles and Responsibilities.
3. Health and Safety notifications and registrations.
4. Health and Safety risk assessment and proposed control measures.
5. Proposed method statements to demonstrate a safe system of work.
6. Provisions for emergency
7. Planning and response
8. Training and other records.
9. Methods of selection and induction of employees and Subcontractors.
10. Drug and alcohol testing requirements.
11. Sub-contractor management and labour hire.
12. Accident reporting, recoding investigation, analysis 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.

The QMP must be prepared in accordance with Principal's Minimum Standard Z/1.

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.

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

The objectives of the TCP:

a) Clearly define and document the responsibilities and chain of command for the development, implementation and management of traffic control measures and systems.

b) Carry out work with minimal impact on customers. This 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.

f) Provide appropriate transitions, and enable safe and efficient traffic flow into, through and out of work Sites.

g) Protect the Contractor's personnel at all times.

h) Protect the Assets and the Contractor's resources at all times.

The TCP must, as a minimum, comply with the *Code of Practice for Temporary Traffic Management* 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 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 assume the responsibilities and authorities of the Engineer's role described in the code.

Typical detail shall include:

1. A documented process for preparation, review and approval of TMPs.
2. A document-tracking and control system to ensure that only the latest operative copy of the TMP is in circulation.
3. Contact details for Contractor, Principal, emergency services and other stakeholders.
4. 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).
5. Input from the police, emergency services and other stakeholders to encourage compliance from these parties.
6. 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.
7. Processes and procedures to be used to fulfil the Traffic Management Coordinator (TMC) role.

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. This commitment is set out within the Principal's environmental and social responsibility policy. The *Highway and Network Operations Environmental and Social Responsibility Standard* makes the Principal's environmental and social responsibility 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 Framework*. This 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), Subcontractors and their employees under the control of the Contractor in the performance of the contract and check for compliance.

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 maintain the relevant information.

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

a) Air and water pollution (by screening, filtering, channelling and washing at approved sites)

b) Unlawful hazardous waste disposal, by containment, storage and dumping by approved methods at approved sites

c) Chemical spills (by appropriate maintenance of suitable equipment)

d) Contamination (by cleaning equipment at an approved site after each job).

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, pest control, control of application of herbicides, storage of hazardous substances and refuelling of plant.

A current schedule of sensitive areas is shown in Appendix 4.5, Sensitive Vegetation Areas.

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 system.
3. Systems, work practices and actions to manage environmental outcome expectations as stated in the *Environmental and Social Management Plan Framework*.
4. The hazards to which the environment may be exposed in the process of carrying out work.
5. Activities for which permission must be obtained before undertaking any work.
6. The appropriate protective measures 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.
9. Air-quality monitoring responsibilities of the Principal within the relevant Local Authorities.

10. Areas within the Network with specific environmental issues are to be addressed appropriately in any physical works, in terms of environmental management best practice.
11. An up-to-date schedule of no-spray zones.
12. Any emergency procedures for dealing with accidental pollution or imminent danger.

4.5 CUSTOMER AND STAKEHOLDER COMMUNICATIONS MANAGEMENT PLAN

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

The purpose of the CSCMP is to capture the essential protocols and procedures for customer and stakeholder communications and interaction. Of particular importance is establishing clear lines of responsibilities between the Principal and the Contractor regarding daily customer interaction.

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.

4.6 RISK MANAGEMENT PLAN

The Contractor shall produce a Risk Management Plan (RMP).

The purpose of the RMP is:

1. To describe how 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/index.html)
2. To describe the practices, procedures, controls and reporting processes for the management of risk
3. To demonstrate to the Principal that risk 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.

The Contractor shall confirm the relevant plans with each Local Authority affected. Plans and maps 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. This includes advisory signage for alternative routes, which may not be suitable for certain vehicle types.

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. 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.

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 results in the best value for money in line with the performance-outcome expectations of the contract for all asset types.

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 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 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 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 4.8, 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 Pavement Rehabilitation Baseline Plan, stating the Contractor's tender planned annual quantities for the Contract Period.
11. The Resurfacing Baseline Plan, stating the Contractor's tender planned annual quantities for the Contract Period.

5 Network Management

This Section sets out the requirements for all standard components of managing the Network for the Principal.

The Principal wishes to minimise disruption to the road users, and maximise its customers' experience of safe, efficient and enjoyable journeys within the Network. To this end the Contractor is to be fully conversant with all the Principal's activities within the Network (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 20th 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

The Principal has carried out a RAMM health check to indicate the status of the asset register at the time of tendering. The Contractor shall use this check and their own examination of RAMM to identify the shortfalls and improvement opportunities for the register. An improvement strategy to raise the integrity of RAMM shall be provided in the QMP for the Principal's consideration. 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 extent and timing of the data improvement plan will be agreed between the Principal and the Contractor.

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 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).

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 20th 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 the data will be accessible to the Contractor when undertaken.

5.2 ASSET MANAGEMENT PROGRAMMING

Planning is completed on a three-year cycle ahead of each NLTP. Every three years a 3+7 (10) year programme shall be developed. 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.

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 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 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 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 Contractor shall carry out a formal review of the pavements programme annually. Aside from preparation and follow-up this would generally be approximately one week's field work. 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.

5.2.4 Annual Renewals Programme Development

An Annual Renewals Programme (Annual Plan) shall be prepared 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.

Appendix 2.4, Process Maps, includes the Annual Renewals Programme Development process map.

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 maintenance projects using the Principal's priority ranking system shall be maintained, including innovative, proactive repair-types based on early intervention, with low cost and high value results.

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**

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

5.2.5 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)
- *Economic Evaluation Manual* (EEM1).

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.

5.2.6 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 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 5.3.1. Refer to the *State Highway Control Manual* (SM012) for guidance in implementing the required services.

TABLE 5.3.1: INDICATIVE NETWORK CONTROL ANNUAL NUMBERS

ACTIVITY	UNIT	INDICATIVE ANNUAL NUMBERS
Customer and stakeholder relations	No.	TBC
Obstructions, partial closures and full closures	No.	TBC
Congestion	No.	TBC
Temporary traffic management and safety of work Sites	No.	TBC
Corridor Access Management	No.	TBC
Unauthorised Works	No.	TBC
Network and Adjacent Landowner-related Issues	No.	TBC
Monitoring of Consent Activities (LUDs)	No.	TBC
Environmental Consent Compliance Management	No.	TBC
TOTAL		

5.3.1 Customer and Stakeholder Relations

The Contractor shall manage all matters of customer relations conscientiously, proactively and with a personal commitment to the 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 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:

- 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.
- 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.
- Respond expeditiously to queries from the public or other agency, with investigation, assessment, solution and a written response (copies to the Principal) as appropriate.

5.3.2 Customer Database

The Principal operates a 24 hour, 7 day a week information call centre, which provides general information to road users. 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. 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 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.

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.

5.3.3 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.

5.3.4 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. 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.

Local Authority liaison meeting minutes will be prepared by the Contractor, and forwarded to relevant parties within five working days of the meeting date.

5.3.5 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.

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 Traffic Operations Centre
- 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, and other potential hazards
- Cooperate with the Regional and Local Councils to see that hazardous materials are handled and removed 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 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 TREIS National Operating Policy and Procedures.

The Contractors team responsible for the management of TREIS shall complete the Principals TREIS training course within four months of contract commencement.

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.

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.

Existing Weather Stations, Monitoring and Forecasting Information

The Principal has established weather recording stations at the locations shown in Table 5.3.2.

TABLE 5.3.2: 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 to assist with ice 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 TOC/TREIS within physical response time requirement + 15 minutes.	N/A
5	RSH, RCH, RDH	<15% defects.	Initial update not provided to TOC/TREIS within physical response time requirement + 15 minutes.	N/A
6	All Roads	<5% defects.	Updates not provided to TOC/TREIS within 15 minutes of an event condition change.	N/A

5.3.6 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.

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
- 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
- RMA resource consents
- 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 works to restore single lane access following an incident.

5.3.7 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

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 is required to approve Traffic Management Plans (TMPs) for all works on the road, including third party applications, and require changes where necessary before their use.

The Contractor shall coordinate TMP approvals to eliminate conflicts between work-sites, particularly in respect to timing and journey-time reliability through fulfilling the TMC roles as required by CoPTTM.

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 in accordance with the CoPTTM on a random sample of all parties working within the road corridor. 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

5.3.8 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.

5.3.9 Planning Assessment Report

When requested by the Principal, the Contractor shall provide a suitably qualified person to produce an on-site engineering assessment report that assesses the effects of a land use development or activity on the safety, efficiency or sustainability of the

Network. From time to time the Principal may require further assistance or advice after the initial engineering assessment has been compiled, to further support the issues highlighted in the report.

As agreed between the Principal and the Contractor, the report 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 and efficiency of the Network. The report should 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 5.1, Standard Format for Planning Assessment Report. However, the final format of the report is to be determined in discussion between the Principal and Contractor. This assessment will primarily focus on engineering matters except where planning-related input is specifically requested by the Principal.

5.3.10 Corridor Access Management

Corridor Access Management includes, and is not limited to, the management of contractors, the public and utilities working within the road corridor. This requires the Contractor to assist the Principal to produce a Works Access Permit as part of the approval process.

Works Access Permit is defined as "a written permission from the Principal to enable works on a road 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. 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) and the RAMM CAR Manager module.

The Contractor shall complete the work in accordance with the following:

- Review all Corridor Access Requests (CARs) to ensure completeness. 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 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 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 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 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 Deed of Grant.
- Complete necessary requirements, such as defects liability, release of bond, and works completion certificates.
- 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 FWPs for the Network and details of the works programmed to commence within the next six months and three-year plans.

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

5.3.11 Monitoring of Consented Third Party Activities

Third party activities include, but are not limited to, approved CARs and LUDs. Once CAR and LUD approval is granted, the Principal will forward a copy of the final consent documentation to the Contractor. The Contractor shall:

- Monitor the work to see that it complies with the conditions of the consent or Notice of Consent issued by the Principal, as it affects the Network
- Monitor the completed work to check that defect liability issues are identified
- Monitor the Network to confirm that all necessary consents are being requested and that existing consent requirements are being complied with
- Notify the Principal of any non-compliance with the consent(s) and certify, on completion of the work, compliance with the consents
- Liaise with the Principal's Environmental Specialist and Planner as directed
- 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

5.3.12 Network and Adjacent Landowner-related Issues

The Contractor shall identify and report as necessary on any factors that may adversely affect the safety, efficiency or sustainability of the Network including issues such as:

- Drainage and land stability, including changes to water channels and flows, and the potential for slips and other debris which threaten the road.
- Structures and signs which are unsafe, unstable or cause obstruction.
- Free-standing signs, 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.

5.3.13 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, 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 State highways
- 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, in addition to the above, monitor all accesses against schedules, plans and notices provided by the Principal to ensure compliance with the LAR declaration.

5.3.14 Environmental Consent Compliance Management System

The Contractor shall check that compliance is met and reported to the Principal with respect to the resource consent, designation requirements and other statutory approvals such as HPA Authorities and DOC concessions, for Network maintenance, including 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 consent conditions, which is the responsibility of the Contractor, is included in Appendix 5.2, Resource Consents and Designations.

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.

Where Contract Works require consent(s) or approval in terms relevant to environmental legislation such as RMA, the Contractor will need to:

- Notify the Principal that approval is required, prepare the application and lodge it once it has been approved by the Principal
- Notify the Principal when approval is granted
- Notify the Principal when works have commenced 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 the Principal's Compliance Management System.

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

5.3.15 Geological Threats

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.

Refer to Appendix 5.3, Geological Hazard Site Inspection Register, for the applicable site inspection register, which includes inspection intervals and reporting scope.

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

5.4 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 3.4m², 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
    - 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 gantries and large lighting masts
    - Bridges over or adjacent to state highways
    - CCTV masts.

An inventory of bridges and an inventory of other structures are included in Appendix 5.4, Inventory of Bridges and Other Structures. Also refer to the Principal's 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).

5.4.1 Routine Surveillance Inspections

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 bridges, large sign gantries, other road structures and retaining structures annually, or as required by any statutory approvals granted for the asset, on those structures not programmed for a General or a Principal inspection 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 to be completed each year. The inspections shall be coordinated with the Regional Bridge Consultant 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 and road marking
- Erosion damage
- Deck drainage function
- Approach settlement and condition of road and deck surfacing
- Expansion joint function.

Outcomes from inspections shall be documented and reported to the Principal and intervention programmed and completed to comply with Section 6.3.

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.

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.

5.4.2 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.

5.4.3 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 programme for the bridge foundations, substructures and decking.

5.5 SAFETY MANAGEMENT

The Principal has provided significant investment to improve the safety for customers using 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 by delivering a Safe System approach to road safety, the Contractor will:

- Maintain the infrastructure in a serviceable condition so that it performs its role well
- Identify opportunities to improve the safety of the Network and incorporate Safe System measures 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.

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*.

5.5.1 Safety Improvements Database

The Contractor shall develop and maintain a register of potential safety improvements 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 proposed improvement
- The likely category of works (such as Minor Improvements, Block, Major)
- The agreed treatment philosophy for the corridor on which the improvement is located, together with the road classification and current KiwiRAP Star rating (to one decimal place)

- The improvement "pedigree", or where the idea for the improvement came from, the Contractor, the Principal, Crash Reduction Study, fatal crash investigation and so on)
- Status (e.g. investigation, design, construction, complete).

5.5.2 Safety Projects Programme

The Safety Projects Programme comprises a schedule of identified future works that can be separately classified as 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. The current format used by the Principal is Safety Works Investment Prioritisation Process (SWIPP) spreadsheets.

5.5.3 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 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 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.

5.5.4 Road Safety Theme Inspections and Reporting

When requested by the Principal, the Contractor shall provide a suitably qualified person 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.

5.5.5 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 will carry out the requirements outlined in *Skid Resistance Investigation and Treatment Selection* (Transport Agency T/10), and in consultation with the Principal.

The Principal will provide the Contractor with an annual SCRIM Exception Report 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, 18th Schedule, Risk Profile
    - the recommended programme to repair the defects that are the responsibility of the Principal in accordance with Conditions of Contract, 18th Schedule, Risk Profile including the cost based on tendered rates.

A final report shall be provided to the Principal which confirms completion of both programmes.

In August each year, the Contractor shall provide the Principal with a Surfacing Aggregate Performance Report compiled in accordance with Transport Agency T/10.

OPM GROUP 5.5.1: SKID RESISTANCE MANAGEMENT (100% SAMPLE SIZE, MEASURED ANNUALLY)				
OPM	**ROAD CLASS**	**CONTRACT STANDARD**	**DEFECT**	**PIP**

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

5.5.6 Fatal and Serious Crash Reports

The Contractor shall report on:

- All fatal crashes,
- Serious crashes when requested by the Principal, or
- Where road deficiencies appear to have been a major contributing factor and the Principal has requested a report.

The Contractor is required to provide a draft report within 48 hours of the date of the crash or when requested by the Principal. The final report is to be accepted by the Principal within 10 days of issuing of the draft report.

The final report will do the following:

- 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
- Recommend any remedial actions.

A guideline of the content of the report is included in Appendix 5.5, Fatal and Serious Crash Reports.

5.5.7 Safety Reports

When requested by the Principal, the Contractor shall provide a suitably qualified person to produce a safety report 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 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.

5.5.8 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 modifying the information provided in KAT by the agreed date.

5.5.9 Safety Meetings

The Principal and Contractor shall meet on a quarterly basis to discuss major safety issues identified from the Network monthly meetings, common issues, exchange information, share innovation and ideas, agree to actions, and review any work completed since the previous meeting.

5.5.10 Attendance at Road Safety Forums

When requested by the Principal, the Contractor shall provide a suitably qualified person to attend meetings of the wider road safety community and forums outside the Network.

5.5.11 Crash Reduction Studies

When requested by the Principal, the Contractor shall provide a suitably qualified person to participate in, and inform, any crash reduction study that is undertaken on the Network.

5.6 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.

5.6.1 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 shall be in a position, by 1st 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.

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

5.6.2 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, by no later than the 6th 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 forthcoming financial years, the Contractor shall advise the Principal within the Monthly Report, but not make any changes within SAP unless mutually agreed.

5.7 CAPITAL PROJECTS

5.7.1 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 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 5.7 outlines the Contractor's involvement during the various capital project stages.

TABLE 5.7: CAPITAL PROJECTS INVOLVEMENT

CAPITAL PROJECT STAGE	CONTRACTOR INPUT/ADVICE
Programme, Indicative and Detailed Business Case	Maintenance issues and relative costs. Conceptual design issues.
Tender Stage for Detailed Design	Striving 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	Gatekeeper of the data quality before transfer to maintenance and operations.
Site Hand back from Capital project	Refer to Section 3.7, Handovers and Hand Backs of this Maintenance Specification.

5.7.2 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.

The Contractor shall maintain this information within TREIS.

6 Physical Works

This Section sets out the requirements for completing maintenance and renewal activities within the Network for the Principal.

The Maintenance Management Plan (refer to Section 4.8 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.

6.1 SEALED PAVEMENTS

The Sealed Pavements section allows for the routine maintenance of pavements and road surfacing, pavement rehabilitation of the existing pavement and road resurfacing.

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 (except for ATP) not reinstated before site dis-establishment.	1 hour
19	NSH, RSH, RCH, RDH	No defects.	Delineation devices (except for ATP) not reinstated and or temporary traffic management is not removed within 48 hours of the surfacing being completed.	48 hours

6.1.1 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) Potholes, rut filling, depressions and edge break

c) Shoulder maintenance.

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.

All delineation (excluding ATP) removed as a consequence of any maintenance activities shall be reinstated before temporary traffic management is removed.

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

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.		

OPM GROUP 6.1.4: DEFORMATIONS, HEAVES AND SHOVES (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

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 length.	>20mm depth, or constitutes a safety hazard.	

OPM GROUP 6.1.6: FLUSHING (100% SAMPLE SIZE, MEASURED BI-ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
33a	All Roads	No defects.	Areas within a carriageway ≥ 10m long that are flushed and constitutes a safety hazard (i.e. macrotexture is ≤ the threshold level for macrotexture as specified in T10 "Specification for State Highway Skid Resistance Management") and either: a. In addition to low texture	Within

OPM GROUP 6.1.6: FLUSHING (100% SAMPLE SIZE, MEASURED BI-ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
			the SCRIM coefficient is ≤ 0.35 unless a joint inspection has determined that SCRIM improvement is not warranted, or	two months of receipt of the SCRIM exception report
			b. The texture will impact negatively on the life of a surfacing renewal treatment.	Prior to undertaking resurfacing renewal
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
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

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 at any point.	

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 section.	Low shoulder or edge rutting, >50mm on a bend.	2 weeks
39	All Roads	No defects.	Low shoulder or edge rutting, >100mm.	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.

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 only)	No defects.	Obvious occurrence of repair re-work or need for rework (excluding renewal sites), which has not previously been a repair quality defect.	2 weeks
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

Peak Roughness Programme

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 propose, for the Principal's approval, up to [[30]] sites annually where rutting is less than 20mm, 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 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.

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. Pre-reseal repairs are not to be completed during the winter period.

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 themselves to ensure the design life of the resurfacing is achieved.

6.1.2 Pavement Rehabilitation

Pavement Rehabilitation is defined as the treatment (including pavement recycling treatments) over a continuous lane length of at least 100 metres.

Pavement Rehabilitation Base Preservation Quantity

The Contractor shall complete pavement rehabilitation works equal to the lane lengths specified in Table 6.1.1, all of which must meet the requirements of this section unless otherwise agreed by the Principal.

TABLE 6.1.1: PAVEMENT REHABILITATION BASE PRESERVATION CUMULATIVE LANE LENGTHS

PERIOD	BASE NO.1 - BASECOURSE OVERLAY (LANE.KM)	BASE NO.2 - STABILISATION INLAY (LANE.KM)	BASE NO.3 – GRANULAR REPLACEMENT (LANE.KM)	TOTAL
dd/mm/yy to dd/mm/yy	TBC	TBC	TBC	TBC
dd/mm/yy to dd/mm/yy	TBC	TBC	TBC	TBC
dd/mm/yy to dd/mm/yy	TBC	TBC	TBC	TBC
dd/mm/yy to dd/mm/yy	TBC	TBC	TBC	TBC
TOTAL	**TBC**	**TBC**	**TBC**	**TBC**

As part of the Contractor's 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 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 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.

Pavement Rehabilitation Design

The Contractor shall compile a design report for each proposed rehabilitation treatment using the specified treatments in Tables 6.1.2, 6.1.3 and 6.1.4 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 *Austroads Guide to Pavement Technology: Parts 2 & 5* and the New Zealand supplements to the Austroads Guides.

For all designs, the Contractor shall demonstrate that the suite of annual Rehabilitation Post-Construction Design Assessment Reports have contributed towards evidenced-based design decisions.

All pavement designs and verifications shall be authorised by a Chartered Professional Engineer (CPEng) or person acceptable to the Principal.

A Pavement Rehabilitation Safety Assessment Form shall be completed by the Contractor (refer to Appendix 6.1, Pavement Rehabilitation Safety Assessment Form) to inform the Principal of potential safety 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 shall provide the geometric standards previously approved by the Principal. This may or may not be in line with the current *Austroads 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 *Austroads Guide to Pavement Technology: Parts 2 & 5* and *The New Zealand Supplements to the Austroads Guides*, 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 6.1.1 are in terms of the base treatments as specified in Tables 6.1.2, 6.1.3 and 6.1.4.

<<Three example base treatment types have been provided. The Description columns are to be modified to suit the specific Network requirements.>>

TABLE 6.1.2: BASE TREATMENT FOR PAVEMENT REHABILITATION NO.1 – BASECOURSE OVERLAY

ASPECT	SCOPE OF TREATMENT
Survey and geometric design	Included

TABLE 6.1.2: 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	Refer to Appendix 6.2, Typical Shoulder Slope Details for Pavement Rehabilitation, for the extent of shoulder treatment required
Pre-rehabilitation pavement repairs	Included and standard in accordance with Section 2.5.3, Principal Risk Non-routine Maintenance Treatments
Existing surface use	Rip
Existing pavement use	<<describe the existing pavement use such as removal or replacement>> N/A
Make up metal	N/A
Stabilisation depth	0mm depth
Stabilisation modification	None
Overlay	100mm using Transport Agency M/4 material
Top surface	Single coat seal
Delineation reinstatement	Included (excluding ATP markings)

TABLE 6.1.3: BASE TREATMENT FOR PAVEMENT REHABILITATION NO.2 – STABILISATION INLAY (RIP AND REMAKE)

ASPECT	SCOPE OF TREATMENT
Survey and geometric design	Included
Site establishment, consultation, site preparation	Included
Traffic management	Level 1

TABLE 6.1.3: BASE TREATMENT FOR PAVEMENT REHABILITATION NO.2 – STABILISATION INLAY (RIP AND REMAKE)	
ASPECT	**SCOPE OF TREATMENT**
Seal width	Same as existing
Shoulder slope	Refer to Appendix 6.2, Typical Shoulder Slope Details for Pavement Rehabilitation, for the extent of shoulder treatment required
Pre-rehabilitation pavement repairs	Included and standard in accordance with Section 2.5.3, 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
Top surface	Single coat seal
Delineation reinstatement	Included (excluding ATP markings)

TABLE 6.1.4: 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	Refer to Appendix 6.2, Typical Shoulder Slope Details for Pavement Rehabilitation, for the extent of shoulder treatment required

TABLE 6.1.4: BASE TREATMENT FOR PAVEMENT REHABILITATION NO.3 – GRANULAR REPLACEMENT

ASPECT	SCOPE OF TREATMENT
Pre-rehabilitation pavement repairs	Included and standard in accordance with Section 2.5.3, Principal Risk Non-routine Maintenance Treatments
Existing surface use	Remove and dispose offsite
Existing pavement use	250mm depth and dispose offsite
Make up metal	160mm AP65 90mm Transport Agency M4 AP40 material
Stabilisation depth	0mm depth
Stabilisation modification	None
Overlay	None
Top surface	Single Coat Seal
Delineation reinstatement	Included (excluding ATP markings)

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.

For each pavement rehabilitation Site the Contractor shall deliver a 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 6.3, 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.

Pavement Rehabilitation Construction

The pavement rehabilitation 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.

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.

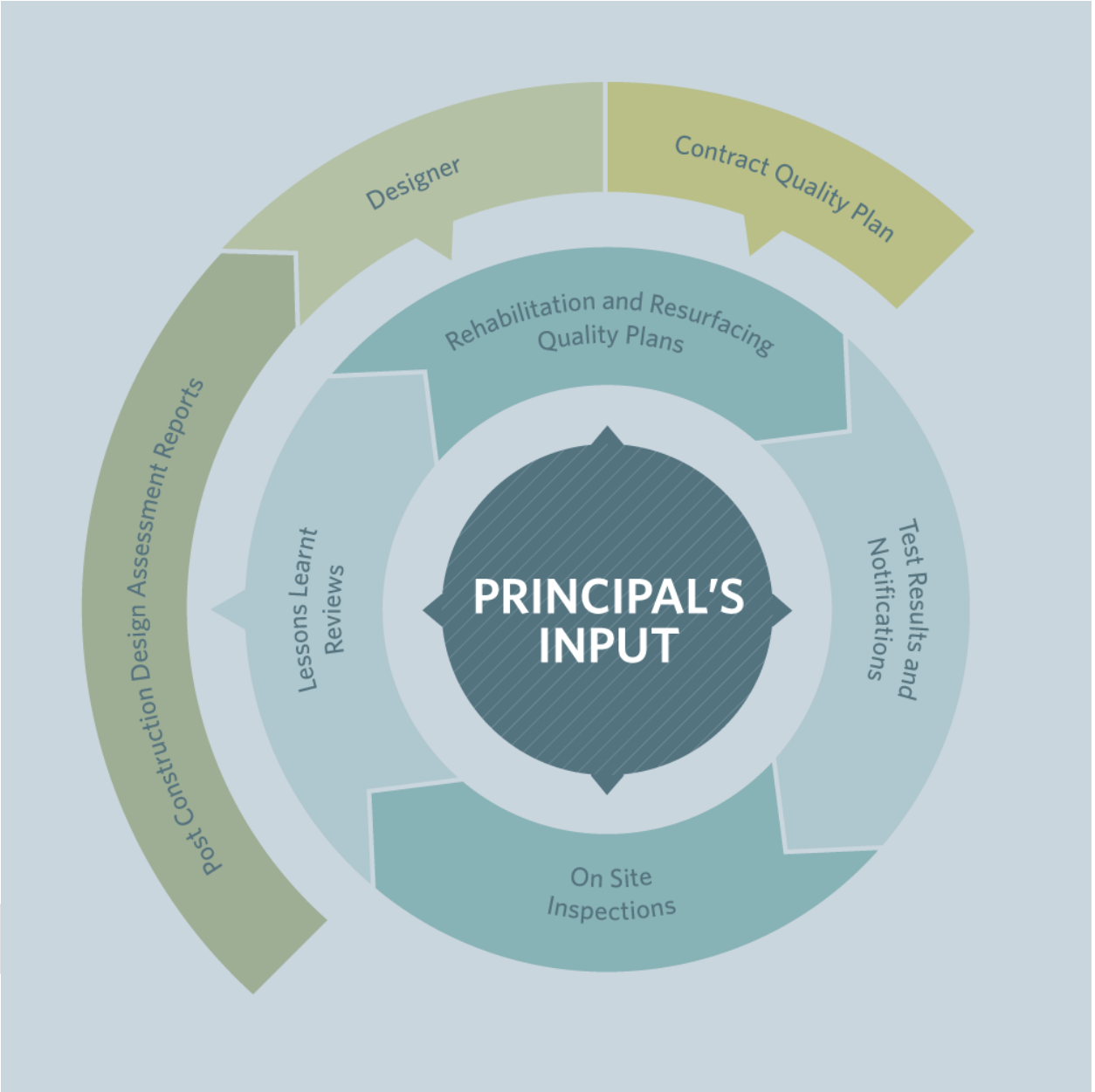

Figure 6.1: Collaborative QA on Renewal Sites

Pavement Rehabilitation Construction Completion Report

Within 2 months of the construction of the 1st 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) <<state others>>.

Pavement Rehabilitation Post Construction Design Assessment

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 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.

Annually thereafter, by 30st 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, 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 Section 6.1.1) within a pavement rehabilitation site.	As per Section 6.1.1

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 Principals 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 Principals construction specifications.

In the event of any dispute concerning the accuracy of the HSD survey data, a calibrated ARRB Walking Profiler (refer *Austroads 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 the roughness fails to comply in the final year 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.

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.

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:

$Rx = \mu x + K\sigma x$

Where:

Rx =	characteristic rut value for wheel path (e.g. RLWP or RRWP) x (mm)
μx =	Mean of the 20m wheel path means for wheel path x
K =	1.28
σx =	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 ≤10.0mm
- For asphalt-concrete-surfaced pavements RLWP and RRWP shall both be ≤8.0mm.

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 assessment, a payment deduction for rutting may be applied as calculated within the Basis of Payment, Preamble.

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, 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

6.1.3 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 6.1.2, Pavement Rehabilitation.

Resurfacing Base Preservation Quantity

The Contractor shall complete resurfacing works equal to the lane lengths specified in Table 6.1.5, all of which must meet the requirements of this section, unless otherwise agreed by the Principal.

TABLE 6.1.5: RESURFACING BASE PRESERVATION CUMULATIVE LANE LENGTHS

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
TOTAL	**TBC**	**TBC**

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.

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 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.

Skid Resistance Renewal Quantity

The Contractor shall complete annual skid-resistance resurfacing works equal to the lane lengths specified in Table 6.1.6, all of which must meet the requirements of this section, unless otherwise agreed by the Principal.

TABLE 6.1.6: SKID RESISTANCE RENEWAL QUANTITIES

PERIOD	RESURFACING LENGTH (LANE.KM)
Annually	TBC

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

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

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. 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.
- 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.

  $TDy = 0.07\ ALD \log (Yd/y) + 0.9$

  Where: TDy = 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 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 6.4, 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.
- 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 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 1st August and agreed with the Principal by 1st 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.

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 6.3, 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.

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. 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.

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.

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 the skid resistance of the constructed surface to the required ESC Investigatory Level (IL).

Placement of new OGPA surfacing will require a membrane seal as agreed with the Principal.

All delineation (excluding ATP) shall be reinstated before temporary traffic management is removed.

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>>.

Chip Seal Post 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 mechanism contained in Basis of Payment, Preamble, iv.

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.

AC Post-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 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.

Annually thereafter by 30st 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 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

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.

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.

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 Principals 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 Principals construction specifications.

In the event of any dispute concerning the accuracy of the HSD survey data, a calibrated ARRB Walking Profiler (refer *Austroads 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 assessment, a payment deduction for roughness may be applied as calculated within the Basis of Payment, Preamble.

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:

$Rx = \mu x + K\sigma x$

Where:

	$Rx =$	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 ≤8.0mm.

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 assessment, a payment deduction for rutting may be applied as calculated within the Basis of Payment, Preamble.

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, 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
45	All Roads	Not more than 1 defect per site.	Does not comply with the Surface Shape specification described above.	2 months

6.2 DRAINAGE

The drainage section allows for the routine drainage maintenance of drainage assets and drainage renewals.

6.2.1 Routine Drainage Maintenance

Drainage Maintenance is the normal care and attention of drainage infrastructure to maintain its structural integrity. Work includes:

a) Maintenance and repair of surface water channel and subsoil drainage

b) Stream clearing and debris removal to maintain water courses through culverts.

Non-vulnerable drainage assets are those listed within the Principal's asset register, but not included within Appendix 6.5, Vulnerable Flooding Areas and Drainage Assets.

Between the months of [[March]] and [[June]], the Contractor shall commence and complete the compliance reporting scope for OPMs 46 and 47. 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 (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

OPM GROUP 6.2.2: NON-VULNERABLE CULVERTS, SUBSOIL AND HORIZONTAL DRAINS (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
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 Maintenance Schedule.	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

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 integrity.	1 week
53	Not assigned			
54	Not assigned			

Vulnerable drainage assets are those listed within Appendix 6.5, Vulnerable Flooding Areas and Drainage Assets.

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

6.2.2 Drainage Renewals

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 6.2, 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 drainage renewals activity under this contract is to restore the pavement formation and drainage systems to achieve the objectives listed above.

Drainage renewals should be programmed 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 6.2. 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:

a) Network need as identified through the Contractor's Network inspections and overall Maintenance Management Plan (MMP) processes

b) Resurfacing and rehabilitation and other programmes

c) The accepted MMP.

TABLE 6.2: BASE PRESERVATION DRAINAGE LENGTHS

PERIOD	HIGH LIP REMOVAL	REFORM UNLINED SURFACE WATER CHANNELS (SWC)	CLEARING AND REGRADING OF SIDE DRAINS	INSTALL SUBSOIL DRAINAGE
Annually	[[15,000]]m representing 3% of the total Network length.	[[10,000]]m representing 2% of the total Network length.	[[10,000]]m representing 5% of the total side-drain length.	[[1,000]]m.

The Contractor shall complete drainage renewal works equal to the lengths specified in Table 6.2, Base Preservation Drainage lengths. The programme is required to be approved by the Principal prior to commencement of the drainage renewal works.

Intervention

Drainage 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 drainage from the carriageway surface.

High Lip Removal is 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 6.2, 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 1.6, 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 6.2, Base Preservation Drainage lengths.

Reforming of the SWC is not required where the side slope and SWC comprises 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 6.2, Base Preservation Drainage lengths.

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 6.2, Base Preservation Drainage lengths.

All construction and materials shall comply with Transport Agency F/5.

6.3 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.

6.3.1 Structures Routine Maintenance

Structures include bridges, other structures and barriers.

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. Activities include:

- Removing detritus from decks, drainage systems, deck joints, etc.
- Repairing damaged barriers and handrails
- Maintaining drainage systems and deck surfacing
- Keeping deck joints, bearings, linkages clear of detritus and obstructions
- Removing graffiti
- Maintaining signs, markers and lighting
- Completing annual torque testing of gantry foundation bolts and flange joints.

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**

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			

Barriers and 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, 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.

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

OPM GROUP 6.3.3: BARRIER AND HAND RAIL 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 assets
67	All Roads	No defects.	Structurally damaged (and not programmed for repair) resulting in an inoperative rail system as designed.	2 weeks

6.4 ENVIRONMENTAL MAINTENANCE

The Environmental Maintenance section allows for routine environmental maintenance during winter, vegetation control, litter and detritus removal, rest area and heavy commercial vehicle facility maintenance and graffiti removal from Assets in urban areas.

6.4.1 Routine Environmental Maintenance

Winter Maintenance

This section sets out the requirements for maintenance of a 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. 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 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.

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

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

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

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

Vegetation Control

The control types referred to in Appendix 6.9, Type of Vegetation Control:

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 areas not included in Types 1, 2, 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.

d) Type 4 Control – this standard applies to large vegetated areas. The maximum height of grass shall be [[75]]mm immediately after mowing operation.

e) Type 4A Control – this standard applies to sight benches on rural roads.

f) Type 5 Control – this standard applies to the control of vegetation around culvert markers, headwalls, retaining structures, barriers, sight rails, surface water channels, kerb and channel, weigh stations, side drains, culvert waterways, bridges, rest area 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 pests 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. 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.

   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

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 sub-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 3 and 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. 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 - ≤ 20% of area per audit section.	Vegetation < 20mm or > 75mm in height.	1 weeks
76	All Roads	Type 2 (Rest Areas) Control - ≤ 25% of area per audit section.	Vegetation < 20mm or > 150mm in height.	1 week
77	NSHVH, NSH	Type 3 Control – no defects.	Vegetation < 25mm or > 300mm in height or <160m forward sight visibility to all signs and delineation devices or Vegetation within the clear Vegetation-free Zone.	2 weeks
78	RSH	Type 3 Control - ≤ 5% of area per audit section.		
79	RCH	Type 3 Control - ≤ 10% of area per audit section.		
80	RDH	Type 3 Control - ≤ 15% of area per audit section.		
81	All Roads	Type 5 Control - ≤ 20% per audit section.	Area not vegetation-free or near vegetation-free.	2 weeks
82	NSHVH, NSH, RSH	Type 7 Control - ≤ 15% per audit section.	Non-compliance with requirements of Type 7 control or Designation Conditions and Plans.	1 month
83	RCH, RDH	Type 7 Control - ≤ 20% per audit section.		
84	All Roads	Self-sown trees - ≤ 20 defects within an audit	Self-sown tree greater than 1m high and less than 3m.	1 month

OPM GROUP 6.4.6: VEGETATION CONTROL – GENERAL (10% SAMPLE SIZE, MEASURED EVERY 2 MONTHS)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
		section.		
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 treated as an Incident Response).	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
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 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.

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 – Weed control shall be frequent enough to prevent weed species flowering and seeding. Weed coverage shall not exceed 2.5% of any $10m^2$. Weed growth shall not exceed 100mm in height or spread. 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 have the potential to grow a trunk diameter exceeding 100mm and become a traffic hazard.

Consultation with the relevant landowner is required before appropriate trimming of vegetation encroaching from neighbouring properties is undertaken.

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.

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 rest areas is excluded, 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.		

Detritus

Detritus is defined as:

a) Sealing chip, pavement and unsealed shoulder aggregates

b) Detached vegetation

c) Dead animals and animal remains.

In addition, detritus includes:

a) Fretting from cuttings and deposits of windblown sand or grit, loose aggregates, fallen leaves

b) The results of build-up of minor droppings or spillages from passing traffic or climatic conditions.

Detritus excludes:

a) Material in lined and unlined channels and areas adjoining the assets. Refer to OPMs 50 to 51, Lined Surface Water Channels

b) Litter.

A sealed surface is any sealed or paved surface including, but not limited to, the road pavement including shoulders, weigh stations, 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.		

For slips that constitute a safety hazard, refer to Section 6.6.1, Operational Activities, of this Maintenance Specification.

Rest Area and Heavy Commercial Vehicle Facility Maintenance

Rest areas are important features of the Network and contribute to the journey as well as the safety 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 Maintenance. The location and number of rubbish bins are also included in Appendix 6.11, Rest Area and Heavy Commercial Vehicle Facility 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.

Unless specified in Appendix 1.8, 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 MAINTENANCE (100% SAMPLE SIZE, MEASURED BI-ANNUALLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
97	NSHVH, NSH,RSH	≤ 2 defect 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

OPM GROUP 6.4.12: REST AREA AND HEAVY COMMERCIAL VEHICLE FACILITY 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 section.	There is litter overflowing in rubbish bin.	1 week
102	All Roads	≤ 20 defects per area or facility, within the audit section.	Visible litter item within the area or HCV facility.	1 week

Graffiti Removal

The Contractor has a duty of care in ensuring the Network retains a tidy appearance by removing graffiti from Assets within urban areas that are in direct view of road users or pedestrians.

Refer to Section 6.3, 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	NSHVH, 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

6.5 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.

6.5.1 Routine Traffic Services Maintenance

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, 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) Electronic signs as per Appendix 6.13, Electronic Sign Scope and Responsibility.

Signs not covered include:

1) Signs with flexible faces

2) Street-name blade signs

3) Regulatory parking signs.

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
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

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

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

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.

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.

Variable Message Signs

Variable Message Signs (VMSs) that can be used to display electronic messages have been installed at the sites shown in Appendix 6.14, 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, 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.

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*.

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% defects.	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

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.

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.

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% defects.	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

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

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.

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).

OPM GROUP 6.5.7: LRMS (100% SAMPLE SIZE, MEASURED ANNUALLY)				
OPM	**ROAD CLASS**	**CONTRACT STANDARD**	**DEFECT**	**PIP**
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

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 1ST 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. 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.

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

Carriageway Lighting

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:

i) Poles must comply with Transport Agency M/19

ii) 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

A third of all poles with a slip base shall be re-torqued annually, so that the entire lighting stock is inspected every three years (in accordance with the manufacturer's guidelines), the structural integrity assessed and a completion report submitted to the Principal.

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-torqueing of a third of the base-slip-asset not undertaken in accordance with manufacturer's recommendations.	N/A

6.6 OPERATIONAL TRAFFIC MANAGEMENT

The Operational Traffic Management section allows for incident response, site-specific warning system, removing live animals and abandoned vehicles from the road corridor.

6.6.1 Operational Activities

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. 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.

b) Responding to crashes and other events that may affect:

- Road user safety
- Network integrity
- Network connectivity.

Refer Appendix 6.15, Recurring Hazards, for a schedule of all known recurring natural hazards.

Receiving notification is defined as the time the Contractor is advised of the incident by the Principal, Contractor's personnel or a third party.

The work includes:

1. Assisting police and emergency services at crash sites with traffic management, detours and site clean-up.
2. Repairing and 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, 18th 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 Contractor must:

- Manage the incident in accordance with Section 5.3.5 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 of this Maintenance Specification).
- Provide appropriate signage and barriers 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

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.

Site-specific Warning System

The Principal utilises specific warning systems for high-risk Network-connectivity potential events. Appendix 6.16, 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.

Live Animals

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.

Where the Contractor is informed of a roaming animal incident, the time taken for removal shall be in accordance with the contract standard for the Incident Response OPM.

The Contractor shall communicate and manage roaming animal incidents in collaboration with the local authority stock-control officer and in accordance with the Impounding Act 1955.

Abandoned Vehicles

The Contractor shall 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.

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.

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 VAC.>>

7.1 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 5.3.8 has been removed as the activity will be undertaken by the Principal.

Section 6.6.1, 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.

7.2 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 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 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 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.

7.3 MOBILE VARIABLE MESSAGE SIGNS

Two mobile variable-message signs are owned by the Principal for deployment as and when required by the Contractor or, with the agreement of the Principal, other contractor's 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 Principal.

7.4 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.

7.4.1 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:

a) Corrugation, heave and shove removal

b) pavement repairs

c) Regular grading and spot metalling

d) 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 24th December each year:

- Xxxxxxx
- Xxxxxxx.

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^2.	1 week
134		No defects.	Bald spot >50m^2.	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

OPM GROUP 7.3.3: HEAVES, SHOVES AND LONGITUDINAL SCOUR (10% SAMPLE SIZE, MEASURED MONTHLY)				
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

OPM GROUP 7.3.4: SURFACE WATER CHANNEL MAINTENANCE (10% SAMPLE SIZE, MEASURED MONTHLY)				
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

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.

7.4.2 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 7.3.1.

TABLE 7.3.1: 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

TABLE 7.3.1: BASECOURSE AGGREGATE PARAMETERS		
PARAMETER	SPECIFICATION	
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 (100% SAMPLE SIZE, MEASURED MONTHLY)				
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

7.4.3 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:

a) Knit into a mosaic under the action of traffic or rolling

b) 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 7.3.2: WEARING COURSE AGGREGATE

PARAMETER	SPECIFICATION	
Shrinkage product (Sp)	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 75µm sieve	
	0.2 < % by mass passing 2.36mm sieve < 0.6	
Grading coefficient (G_c)	16 < G_c < 34, where ((% passing 26.5mm sieve - % passing 2.36mm sieve) x % passing 4.75mm sieve)/100	

7.5 INCIDENT RESPONSE

OPMs 127 and 128 in Section 6.6.1 is deleted and replaced with the following:

OPM GROUP 6.6.1: INCIDENT RESPONSE (100% SAMPLE SIZE, MEASURED MONTHLY)

OPM	ROAD CLASS	CONTRACT STANDARD	DEFECT	PIP
127	RSHVH, NSH, RSH	No defects.	Not on Site within 1.5 hours from receiving notification of an incident with sufficient and appropriate resources.	N/A
128	RCH, RDH		Not on Site within 2.5 hours from receiving notification of an incident with sufficient and appropriate resources.	N/A

7.6 TUNNELS

Refer to Appendix 7.1, Tunnels for applicable Tunnel Management Plan requirements.

7.7 NO^2 SAMPLE COLLECTION SERVICES

The Contractor is to ensure all air quality monitoring responsibilities of the Principal are completed on a regular basis.

Diffusion tubes (samplers) are mounted on street light poles approximately 3m above ground level at the following existing sites shown in Table 7.6.

TABLE 7.6: LOCATION OF NO2 SAMPLERS

ROAD NAME	DISPLACEMENT (M)	LOCATION	DESCRIPTION	# OF TUBES
<<to complete>>				

The samplers shall be collected and replaced with new samplers on a monthly basis and couriered to Kath McLeod, Watercare Services Limited, PO Box 107028, Airport Oaks, Auckland, 2154 for analysis. The exchange of the tubes is to occur within +/- 2 days of the first Wednesday of every calendar month. 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

7.8 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 fire fighting 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 fire fighting 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

7.9 STREETLIGHTING

<<include any streetlighting specific information or requirements additional to maintenance specification, 6.5>>

7.10 SLURRY RUT FILLING

Further to the requirements for Slurry Rut Filling in Maintenance Specification Section 2.5.3, 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 should include: Date, SH, RS, Start displacement, Length in meters, Width in meters, Dry kg of slurry, Area in m2, kg/m2, 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 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 m2 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. NZTA T/3)

d) All QA results

e) Photographs of the Site after treatment;

f) Lessons learnt

7.11 OFFICE ACCOMODATION

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 for the Principals use.

As part of the Principals 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.

7.12 OTHER

<<include any other Network specific information or requirements>>

8 Local Roads

<<This section to be completed on a network by network basis, pending inclusion of local roads or not>>