

**Whanganui District
Council**



**Road Transport
Activity Management Plan
2018 to 2048**





Asset Management Team

Plan Production

This Road Transport Activity Management Plan was prepared by:

Rui Leitaο	Senior Rοading Engineer	Whanganui District Council
Kevin Hartley	Planning Manager	Whanganui Alliance
Eric Sim	Senior Asset Management Technician	Whanganui District Council

Approved for Issue:

Signed

Date:

Mark Hughes

Approved for Issue:

Signed

Date:

Rui Leitaο

Adopted by Whanganui District Council

Date:



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Distribution List

The following person(s) shall receive a copy of this document on release:

Name	Title	Organisation
Mark Hughes	Group Manager - Infrastructure	Whanganui District Council
Rui Leitao	Senior Roothing Engineer	Whanganui District Council
Kevin Hartley	Planning Manager	Whanganui Alliance
Paul Murphy	Senior Investment Advisor	New Zealand Transport Agency
Robin Mackie	Asset Management Team Leader	Whanganui District Council



Glossary of Terms

Annual Plan	The Annual Plan provides a statement of the direction of Council and ensures consistency and coordination in both making policies and decisions concerning the use of Council resources. It is a reference document for monitoring and measuring performance for the community as well as the Council itself.
Asset Management (AM)	The combination of management, financial, economic, engineering and other practices applies to physical assets with the objective of providing the required level of service in the most cost effective manner.
Asset Management System (AMS)	A system (usually computerised) for collecting, analysing and reporting data on the utilisation, performance, lifecycle management and funding of existing assets.
Activity Management Planning	A plan prepared in accordance with the International Infrastructure Management Manual that details how a particular Council Activity will be provided to the Whanganui District Community.
Asset Register	A record or asset information considered worthy of separate identification including inventory, historical, financial, condition, construction, technical and financial information about each.
Asset Renewal	Major work, which restores an existing asset to its original capacity or the required condition (re-roofing, re-painting, replace heating)
Auditor General	The Auditor General of the New Zealand Audit Office.
Benefit Cost Ratio (BCR)	A ratio which compares the benefits accruing to customers and the wider community from constructing a project with at projects costs.
Road Assessment and Maintenance Management (RAMM)	The computerised utilities asset management software system used to record and report on transport assets with the network
Capital Expenditure (CAPEX)	Expenditure used to create new assets or to increase the capacity of existing assets beyond their original design capacity or service potential. CAPEX increases the value of an asset.
Community Outcomes	Outcomes developed with the community, which outline the communities vision.
Components	Specific parts of an asset having independent physical or functional identity and having specific attributes such as different life expectancy, maintenance regimes, risk or criticality.
Condition Monitoring	Continuous or periodic inspection, assessment, measurement and interpretation of resulting data, to indicate the condition of a specific component so as to determine the need for some preventative or remedial action
Condition Rating Survey	Survey carried out to assess the condition of assets.
Critical Assets	Assets for which the financial, business or service level consequences of failure are sufficiently severe to justify proactive inspection and rehabilitation. Critical assets have a lower threshold for action than non-critical assets.
Current Replacement Cost	The cost of replacing the service potential of an existing asset, by reference to some measure of capacity, with an appropriate modern equivalent asset.
Deferred Maintenance	The shortfall in rehabilitation work required to maintain the service potential of an asset.
Depreciated Replacement Cost	The replacement cost of an asset spread over the expected lifetime of the asset.
Depreciation	The wearing out, consumption or other loss of value of an asset whether arising from use, passing of time or obsolescence through technological and market changes. It is accounted for the by historical cost (or re-valued amount) of the asset less its residual value over its useful life.



Disposal	Activities necessary to dispose of decommissioned assets.
Emergency Work	The restoration work required to restore a transport asset damaged by a sudden and unexpected event (eg storm event).
Geographic Information System (GIS)	Software which provides a means of spatially viewing, searching, manipulating, and analysing an electronic database.
Life Cycle Management	A process of managing an asset from initial construction through to disposal
Net Present Value (NPV)	The value of an asset to the organisation, derived from the continued use and subsequent disposal in present monetary values. It is the new amount of discounted total cash inflows arising from the continued use and subsequent disposal of the asset after deducting the value of the discounted total cash outflows.
Optimised Renewal Decision Making	An optimisation process for considering and prioritising all options to rectify performance failures of assets. The process encompasses NPV analysis and risk assessment.
Stakeholder	A person or organisation who has a legitimate interest in an activity e.g. community, Iwi, etc
Sustainability	The process of meeting the needs of the present community without compromising the ability of future generations to meet their own needs



Acronyms

AD	Annual Depreciation
AEE	Assessment of Environmental Effects
AM	Asset Management
AMIP	Asset Management Improvement Programme
AMIS	Asset Management Information System
AMP	Activity Management Plan
AS/NZS	Australia and New Zealand Standards
CCTV	Closed Circuit Television
CDEM	Civil Defence Emergency Management
CPP	Competitive Pricing Procedure
DRC	Depreciated Replacement Cost
GIS	Geographic Information System
GRC	Gross Replacement Cost
H&S	Health and Safety
IT	Information Technology
KPI	Key Performance Indicator
LCM	Life Cycle Management
LGA	Local Government Act
LoS	Levels of Service
LTP	Long Term Plan
MCA	Multiple Criteria Analysis
MfE	Ministry for the Environment
MMI	Maintenance Management Item
NAMS	National Asset Management Steering (Group)
NZTA	New Zealand Transport Agency
OAG	Office of the Auditor General
ODM	Optimised Decision Making
ORC	Optimised Replacement Cost
ODRC	Optimised Depreciation Replacement Cost
ONRC	One Network Road Classification
ORDM	Optimised Renewal Decision Making
O&M	Operations and Maintenance
OSH	Occupational Safety and Health
QA	Quality Assurance
RAMM	Road Assessment and Maintenance Management
REG	Road Efficiency Group
RFS	Request For Service
RMA	Resource Management Act 1991
RUL	Remaining Useful Life
SNZ HB	Standards New Zealand Handbook (Risk)
TLA	Territorial Local Authority



References & Acknowledgements

Material from the following Whanganui District Council documents has been used in the preparation of this Activity Management Plan:

Whanganui District Council 10-Year Plan 2015-2025

Whanganui District Council Annual Plan 2016/2017

Draft Whanganui Growth Strategy 2008

Whanganui District Council Bylaws

Material from the following documents has been used in the preparation of the assessments:

1. NAMS International Infrastructure Management Manual (IIMM) 2011.
2. NAMS Creating Customer Value from Community Assets, October 2002
3. NAMS New Zealand Valuation and Depreciation Guidelines, 2001
4. Local Government Act 2002
5. Local Government Act 2002 Amendment Act 2010
6. Resource Management Act 1991 and amendments
7. SNZ HB 4360:2000 Risk Management For Local Government, Standards New Zealand
8. AS/NZS 4360:2004 Risk Management, Standards New Zealand
9. REG One Network Road Classification Performance Measures



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1. Executive Summary



Executive Summary

Strategic Context

This Transport Activity Management Plan (AMP) 2018–21 defines the transportation activity in Whanganui and sets out the rationale for investment in Council's transportation assets. It describes how the investment programme will be planned and implemented to meet the expected outcomes, and provides an assessment of the associated investment risks.

Significant improvement has been made in the way we manage and maintain the Whanganui District Council transportation assets during the past three years.

We have strengthened our strategic approach to asset management in response to short comings identified in a review of the AMP 2012-15. We also recognised the necessity to clearly convey to Council's stakeholders our requirement for future investment, and to give confidence that our strategic direction addresses key issues and provides compelling evidence in support of our investment request.

The road network is a significant part of the core infrastructure in the District, contributing to the social and economic well-being of residents, visitors and businesses. The road network is essential to the continued growth and economic success of the Whanganui District and must be managed, safely, efficiently and effectively, now and in the future.

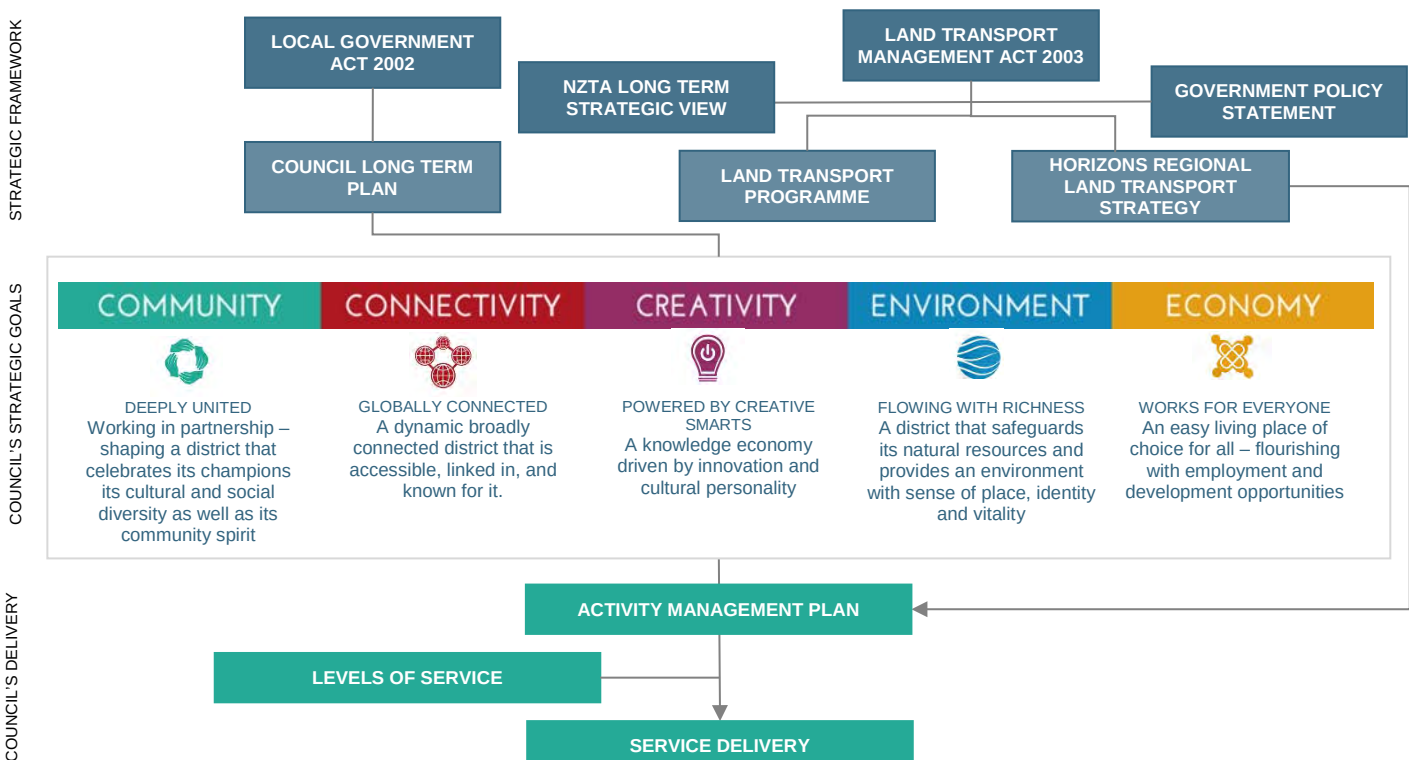
The AMP details the strategy and programme of works to deliver the District's planned investment in the transportation activity. This has been developed through

building a strategic business case with key stakeholders and a programme business case that articulates how transportation problems will be addressed.

The transportation activity provides the transport planning, policy and physical infrastructure networks including roads, footpaths, cycleways, parking facilities and bridges; public transport infrastructure (such as bus shelters); and traffic control mechanisms (such as signage, lighting and road markings). Investment in the transportation activity ensures a safe, efficient and affordable transport network that facilitates the movement of people, goods and services around and through the Whanganui District Council has to think about the well-being of our communities now as well as in the future. Many of the expenditures in a local authority are for infrastructure that have long service lives such as transportation networks. Current ratepayers should not be expected to fund benefits that future users will enjoy, so there is a need to equalise costs for current and future users.

Providing intergenerational equity requires Council to address these identified problems facing the transportation network by assessing how much of the current expenditure should be funded by today's ratepayers (through rates or other funding sources) or by future ratepayers (by borrowing now, collecting development contributions as new ratepayers arrive and other funding sources).

The Strategic Business Case process identified the following benefits that will accrue from investment in the transportation activity and the associated problems that provide a challenge to the delivery of the transportation activity.





Executive Summary

Problem Statements	
1	The form and function of the road network are not meeting the changing demands and needs resulting in decreasing Levels of Service and increasing reactive interventions.
2	The network is impacted by challenging geology, topography and weather resulting in increased resilience issues and high repair costs when unplanned events
3	The changing needs (mobility) and expectations (active modes) of the community require investment to meet level of service for all modes.
4	A range of factors such as urban intersection layout, age capability and experience of drivers are resulting in death and serious injuries.

Benefit Statements	
1	An efficient and resilient network
2	An affordable network which is economically sustainable
3	A safe and well connected network for all modes

Activity Management

The Whanganui District applies an asset management approach to maintaining the transportation assets, ensuring the latest practices and techniques are in place to deliver the agreed level of service for the least life cycle cost. These include; advanced data management, optimised decision making, efficient maintenance operations, efficacious asset renewal strategies, risk management through the identification of critical assets, and adoption of the business case approach to investment in transportation assets.

Council have adopted the ONRC customer levels of service outcomes, developed by industry through the Road Efficiency Group (REG).

These have been established for each road classification and Council have set targets for travel time reliability, resilience, safety, amenity, and accessibility outcomes.

Central, regional and local government strategic objectives are considered through all phases of the asset lifecycle (creation, operation, maintenance, renewal, and disposal) with specific Lifecycle Management Plans developed for the following assets; Sealed Pavements, Unsealed Pavements, Structures, Drainage, Street Lights, Traffic Services, Footpaths and Cycleways, and Other Features and Activities. A brief summary of these asset groups is included in the table below.

Table 1: Current Assets at a Glance

Asset Type	Quantum	Valuation (\$000)	Average Annual Investment (M,O & R) (2015/18)	Asset Condition	Data Confidence
Sealed Pavements	573.9km	\$294,281.8	\$4,482.2	😊	😊
Unsealed Pavements	269.5km		\$669.1	😊	😊
Structures	73 Bridges.	\$134,524.9	\$411.8	😊	😊
Drainage	3178 Culverts 446.1km Kerbs	\$106,525.5	\$1,453.5	😊	😊
Street Lights	5694 Lights	\$20,686.1	\$677.0	😊	😞
Traffic Services	5755 Signs	\$6,876.5	\$410.0	😊	😊
Footpaths and Cycleways	334.9km	\$30,363.5	\$793.5	😊	😊
Other Features and Activities		\$39,684.3	\$1,769.0	😊	😊
		\$632,942.6	\$10,666.10		



Executive Summary

Financial Forecasts

Investment in the transportation activity for the 2018 to 2028 Long Term Plan period is higher than previous years, as shown in figure 1

Maintenance and Operations

Investment in Maintenance and Operations increases approximately \$400,000pa for the 2018-21 period predominantly in response to funding slip clearing and detritus removal (Work Categories "Minor Events" and "Environmental Maintenance") that have previously been underfunded. Traffic Services operations benefits from the reduced power and maintenance costs generated from the proposed LED upgrade of the streetlight assets.

Renewals

A reduction in Drainage Renewal investment is offset by increases in Sealed Road Resurfacing and Pavement Rehabilitation with a total increase of approximately \$300,000pa.

This increase addresses a resurfacing shortfall for second coat seals and covers the cost of the repair of chip seals damaged from June 2015 flood event. Pavement rehabilitations at Kauangaroa Road and Rangitatau East Road are required due to increased traffic loadings.

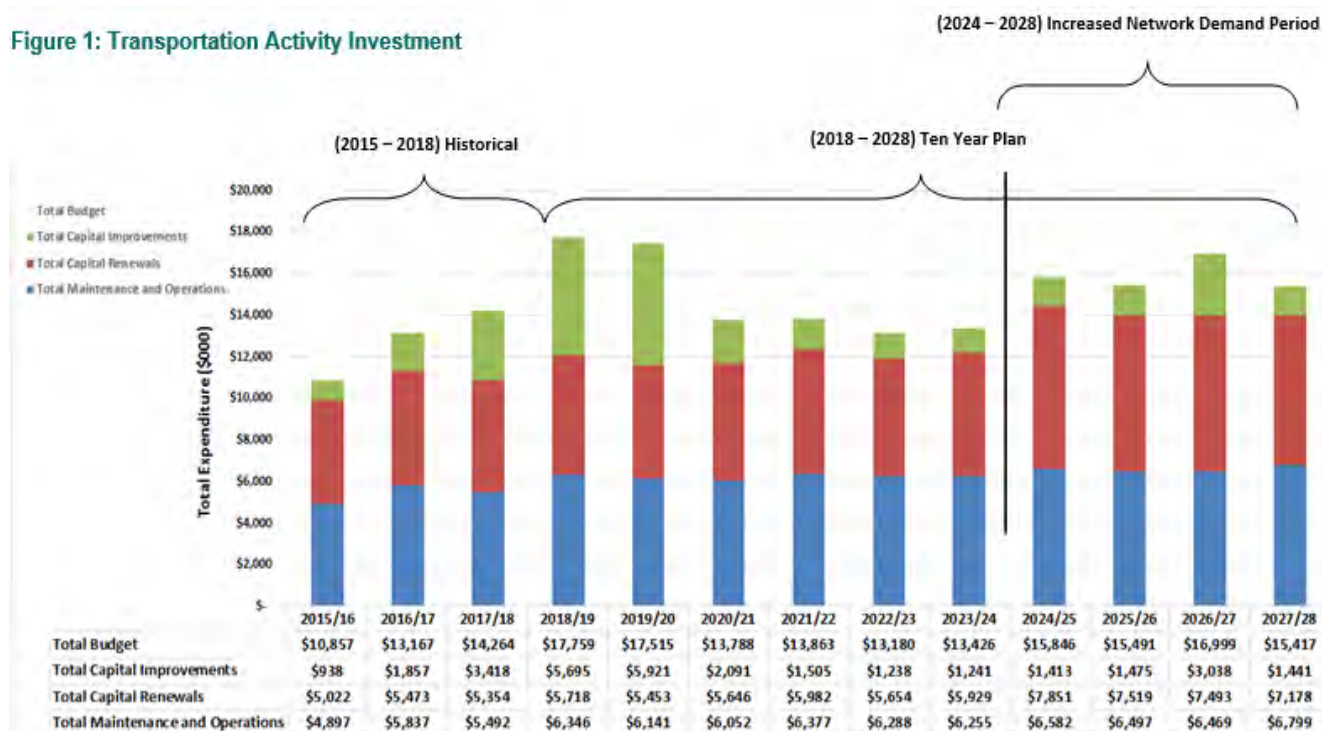
Improvements

Significant proposed improvement works during the 2018-21 funding period include:

- Wakefield Street Bridge Replacement, \$1,780,000
- Kauarapaoa Road (Ernies) Bridge Replacement, \$750,000
- Heads Rd / Beach Road roundabout, \$1,397,550
- Urban Cycleway Project (UCP) on Aramoho Rail bridge cycleway, \$1,550,000
- Low Cost / Low Risk Improvements formally Minor Improvements
 - Urban Cycleway projects \$3,440,000 (over 3 years)
 - Fitzherbert Avenue extension \$975,000
 - Wikitoria Road Culvert Renewal \$700,000
 - Traffic Signal Upgrades \$650,000 (3 installations)
 - Mill Road Extension \$203,000
 - Safety projects valued at less than \$1,000,000 per project

It is anticipated that investment in maintenance and operations will remain relatively constant for the foreseeable future. The investment in renewals will increase from 2021/22 due to the increased activity in the forestry sector applying additional demand loading on pavements that have not been designed to withstand it.

Figure 1: Transportation Activity Investment





Executive Summary

Financial Strategy

The management and maintenance of the transportation network is funded from the specific roading rate collected by Council and from financial assistance from the New Zealand Transport Agency from dedicated transport funding.

Funding Assistance Rate (FAR) for the period 2018/2021 has been set at 61% for subsidised work activities meeting the funding criteria. The remainder being met by Council from Uniform and Targeted Rates on the capital value of each rating unit.

Council will undertake capital improvements only if the projects meet the threshold for funding assistance.

Council will mitigate the effects of increased demand on the road network by investigating:

- User pays (licences, rates, fees etc.)
- Designations (route, speed, season, etc.)
- Reduction in levels of service (temporary, permanent etc.).

Council will fund with long term objectives thus funding will be intergenerational.

The first priority is to maintain, operate and protect the existing network at current levels of service.

Consequences

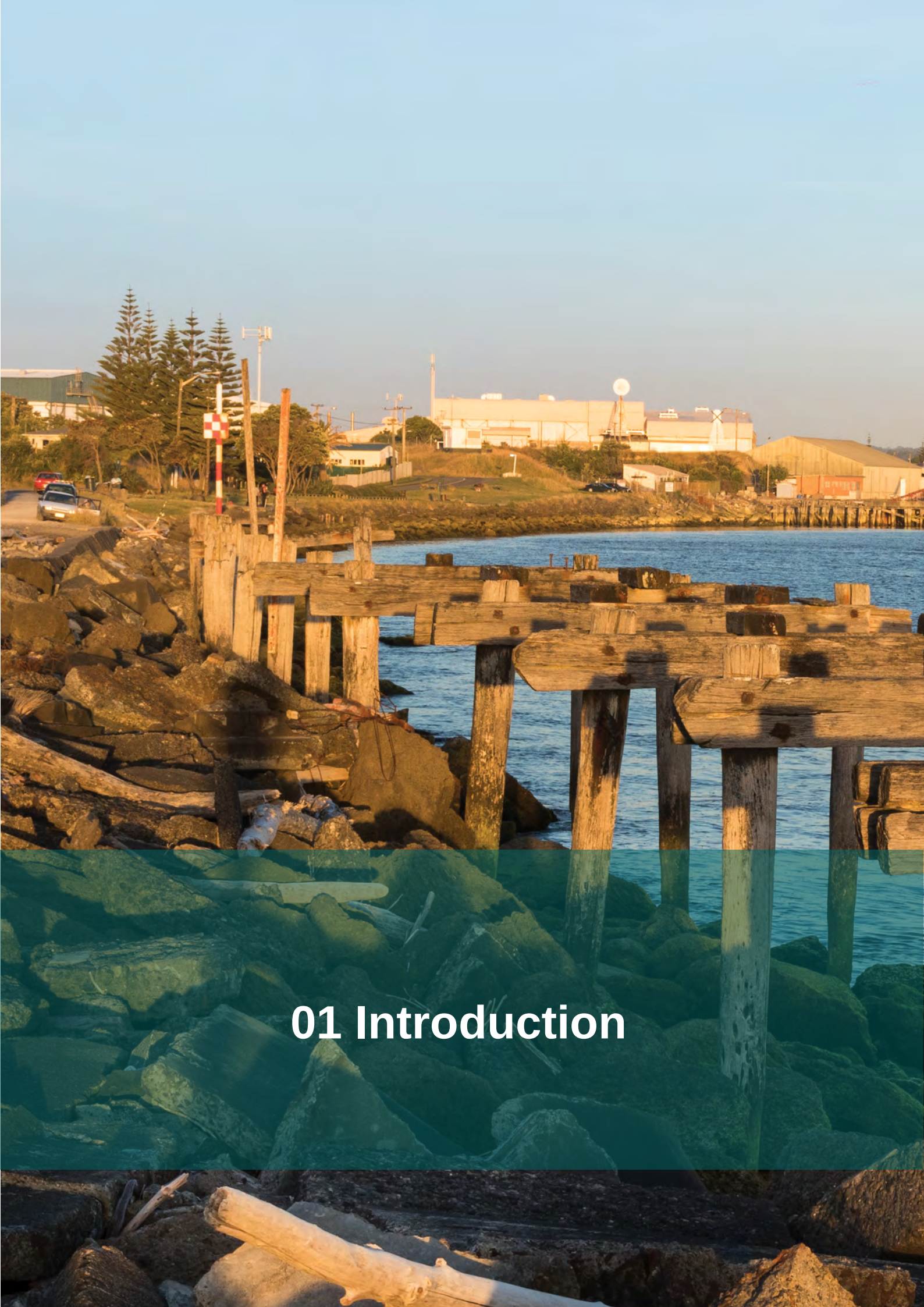
The risks and implications of the funding request proposal not being realised for transportation activity have been summarised in the table below; aligned to GPS priorities, Council and ONRC customer level of service outcomes.

Improvement Plan

Continual improvement is a corner stone of a robust asset management approach. A comprehensive improvement plan has been developed and improvement items outlined. Key improvement activities are; the integration of the ONRC into network management practices, asset data improvement, and development of key strategic documents. The improvement plan will be reviewed annually as part of the development of the Annual Plan.

Table 2: Risks and Implications associated with outcomes

GPS	Community Outcomes	ONRC	Risks	Implications
Economic Growth & Productivity	    		Damage to property	• Council/NZTA Liability
			Reduction in network availability due to unplanned disruption	• Increased frequency results road user dissatisfaction • Disruption to business and freight movement and increased road user costs • Loss of productivity with assets not contributing to NZ Inc.
			Asset Condition/Performance deterioration	• Agreed levels of service not being realised ONRC
			Increase in complaints received by Council from affected parties	• Organisational Embarrassment
Safety			More frequent breaches of safety thresholds	• Potential for extreme consequences (Death and Serious Injuries) • Potential safety hazards for pedestrians if footpath maintenance is not carried out (Vulnerable Users) • Improvements
Value for Money			Consumption of transportation assets from under investment	• Increase in cost to return asset condition to customer levels of service
			Increase in unplanned interventions	• Increase in total maintenance cost due to inefficiencies (Planned vs Reactive)



01 Introduction



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The Whanganui District

The Whanganui District is on the south-west coast of the North Island facing the Tasman Sea, south of Taranaki and Ruapehu regions, and north of Manawatu.

This area is known for Maori culture, heritage, and Whanganui National Park and river activities.

Wanganui District Council resulted from the 1989 amalgamation of Wanganui County Council, most of Waitotara County Council, a small part of Stratford County Council and Wanganui City Council. The district has an area of 2,337 km². Much of the land in Whanganui district is rough hill country surrounding the valley of the Whanganui River. A large proportion of this is within the Whanganui National Park.

There are few prominent outlying settlements with only 4,554 people in the Whanganui district living outside the city itself.

Whanganui Communities

Apart from the main urban area, there are small rural settlements at Kai Iwi, Mowhanau, Fordell, Upokongaro, Maxwell and Mangamahu. Marae based settlements are at Kaiwhaiki, Pungarehu, Parikino, Atene, Koriniti, Matahiwi, Ranana and Jerusalem.

The 2013 Census of Population & Dwellings recorded a resident population of 42,153. Statistics NZ 2016 revised medium population estimates are in line with current trends forecasting a population of 44,200 in 2018, an increase of 4.9%. Based on projected assumptions the Whanganui's population will peak in 2028-2033 at 45,000.

Whanganui Environment

The landscape consists of coastal dune-lands, lowland marine terraces and young steeply dissected inland hill country with deeply incised rivers and narrow valleys.

The Whanganui River is at the heart of the Whanganui district. It is the second largest river in the North Island, the longest navigable waterway in the country and covers 290 kilometres from the heights of Mt Tongariro to Whanganui's coast with the Tasman Sea with 239 listed rapids. The River is a taonga to local iwi.

The coastal lowland areas are marine terraces separated by old sea cliffs, resulting from a series of uplifts. Rivers and streams have cut deep valleys into these surfaces. The Whanganui and Whangaehu Rivers and their main tributaries flow in a general southerly direction.

A belt of sand dunes lies along the coast. In places, fossil dunes extend up to 7km inland, overlying parts of the marine terraces and blocking streams to form a chain of small shallow lakes. Northwest of the city a 45 metre high cliff extends along the coast fronted by a wide sandy beach.

Coastal, terrace and river valley landscapes are largely rural in character, dominated by mainly pastoral farming. Further inland, especially to the northwest, there is a much greater proportion of scrub and forest cover. This indigenous vegetation cover has been retained due to the steepness and erodibility of the slopes in these areas.

Overview of Activity Management Planning

Previous road transport asset management planning approaches have been generally focused on asset maintenance and asset improvement solutions. The disadvantage of this approach was the lack of a clear link to organisational priorities and issues through the maintenance, renewal or improvement programme lifecycle. An activity management plan (AMP) is a tactical business case approach that clearly defines the problems and contextual state of the district and understanding of the cause, scale of benefits of addressing the problems. The AMP approach filters whether a problem is worth investing more time and resources going forward.





The business case approach is based on the better business case guidance prepared by the New Zealand Treasury as illustrated in the figure below.

The business case also seeks to make sure during the lifecycle of a programme that the reasons for doing it are still sound, and that it clearly links back to organisation's infrastructure and other organisational priorities, issues and delivers an agreed levels of service. Typically, an asset management plan will cover more than a single asset, taking a system approach - especially where a number of assets are co-dependent and are required to work together to deliver an agreed standard of service.

Asset Management follows the International Infrastructure Management Manual and defines it as; "a plan developed for the management of one or more infrastructure assets that combines multi-disciplinary management techniques (including technical & financial) over the life cycle of the asset in the most cost effective manner to provide a specific level of service."

Expertise in the discipline of Activity Management is increasingly important for many organisations. Such expertise draws from all functions within Council: from finance and management of human resources as well as technical, engineering, operations and maintenance management. It is particularly challenging, therefore, to gain a good understanding across the whole breadth of the knowledge base; this breadth is, of course part of its appeal.

Given the relative youth and breadth of Activity Management, it is inevitable that people will come to the discipline having already demonstrated competence in a profession, such as engineering or finance, and may have specialist expertise in a field such as maintenance or auditing.

Activity management planning is the means of planning and understanding the assets:

- What they are
- Where they are
- What condition they are in
- How much they are worth
- What level of service is expected and at what cost
- How they are performing
- What are the risks of failure
- What extra capacity (if any) they have
- What capacity is required in the future
- When they need to be replaced/upgraded
- What the cost will be to replace/upgrade them
- What the non-asset solutions are
- What options are available
- What further works are required to meet future demand
- What improvements are programmed?

What is Activity Management?

As the discipline matures, more and more people understand that **Activity Management is not so much about 'doing things to assets' but about using assets to deliver value and achieve the organisation's explicit purposes.** It converts the fundamental aims of the organisation into the practical implications for choosing, acquiring (or creating), utilising (operating) and looking after (maintaining) appropriate assets to deliver those aims. And it does so while seeking the best total

Figure 1.1: Ensuring strategy alignment: the business case approach is aligned with New Zealand Treasury's Better Business Case guidance





value approach (the optimal combination of costs, risks, performance and sustainability).

Activity management helps determine the need for infrastructure investments, taking into consideration customers service levels, community impacts, utility risks, and resources.

Asset data are used to predict future failures, assess risks, set budgets, calculate financing requirements, and prioritize pipelines for detailed assessment or renewal.

Activity management encompasses many things, involves many systems, and includes many responsibilities:

- Systems that record the location, condition, and value of assets, including the assembly, storage, and retrieval of information about these assets.
- Methods to analyse asset data so that intelligent decisions can be made regarding maintenance, rehabilitation, and replacement.
- Reflects the policies and procedures of the organization, in terms of customer service levels, investment priorities, and risk management strategies.

For the transportation activity, asset management is business management. The primary business of the transport activity is to manage the district's roads, bridges, traffic management and control systems and streetlights, along with our network of urban and rural footpaths and pathways that facilitate pedestrian safety as they move around our district. The planning, financing, design, construction, maintenance and operation of assets is a large part of what the activity does.

Activity Management Plan Development

Activity management plans form the cornerstone of an effective asset management system. The recently released ISO 55000 series of standards for activity management clearly defines the importance of asset management plans: they provide the roadmap for achieving value from physical assets by optimising cost, risk and performance across the asset lifecycle.

Activity management plans define the implementation activities necessary to realise an organisation's activity management objectives which translate the strategic intent of the organisation. The relationship and interdependencies of asset management policy, strategy, objectives, and planning to achieve those objectives

clearly demonstrates how important organisational alignment is to the creation of AMPs.

Activity Management Objectives

The key objective of activity management is to provide a desired level of service in the most cost effective manner while demonstrating responsible stewardship for present and future customers. AMPs are a key component of the strategic planning and management of Council, with links to the 10-Year Plan (LTP) and service contracts. The AMP underpins the LTP and consultative processes that have been put in place to engage the community.

Figure 1.2: The relationship between key terms



The AMP delivers a range of benefits to the community as well as to the provider of the services, the main ones being:

- Maintain, replace and develop assets over the long term to meet required delivery standards and foreseeable future needs at minimal cost
- Continually improve asset management practices and service delivery to the customers
- Comply with Statutory Requirements

Benefits of Activity Management Planning

The Whanganui District Council recognises the following benefits are gained through the effective implementation of activity management principles:

- Good governance and asset stewardship
- Good knowledge of customer and stakeholder requirements now and going forward
- Legislative compliance
- Good asset knowledge including the condition and performance required to deliver services
- Good knowledge of the risks associated with assets
- Good management of asset knowledge
- Good knowledge of what is required to provide services sustainably.

The application of activity management principles encourages a holistic, integrated approach to guide where and how finances and resources are allocated.

Plan Timeframe

This AMP covers a 30-year timeframe. Financial details are shown for the 2018-2048 period. The plan assumes that transportation assets as a whole will have an indefinite life and the main focus of the plan is on determining the strategies required for maintaining, rehabilitating and renewing components over the next 30 years. It is intended that this plan be reviewed every year with a major update every three years prior to the LTP review process.



Role of the Road Transport Network

The road transport network is a key facilitator of journeys. It enables the movement of people and goods (via freight) to make national, regional and local road journeys effectively, efficiently and safely, which in turn helps support a thriving New Zealand. Locally, it connects businesses, communities, families and friends with customers, services, work, play and each other. At a national level it connects Whanganui to other cities, producers and markets, air and sea ports and supports New Zealand to global competitiveness.

The forming, surfacing, sealing, grading of roads and road shoulders, along with traffic management and control devices, allows for safe, efficient and sustainable travel by motor vehicles, cyclists and pedestrians. Street lights are provided for the safety of all road users during night-time hours.

Through the review of our vision the community signalled that it wants a district that is safe and well connected.

While there is a legal requirement, there is also a community expectation - demonstrated by consultation, complaints and requests - that we will ensure regulatory

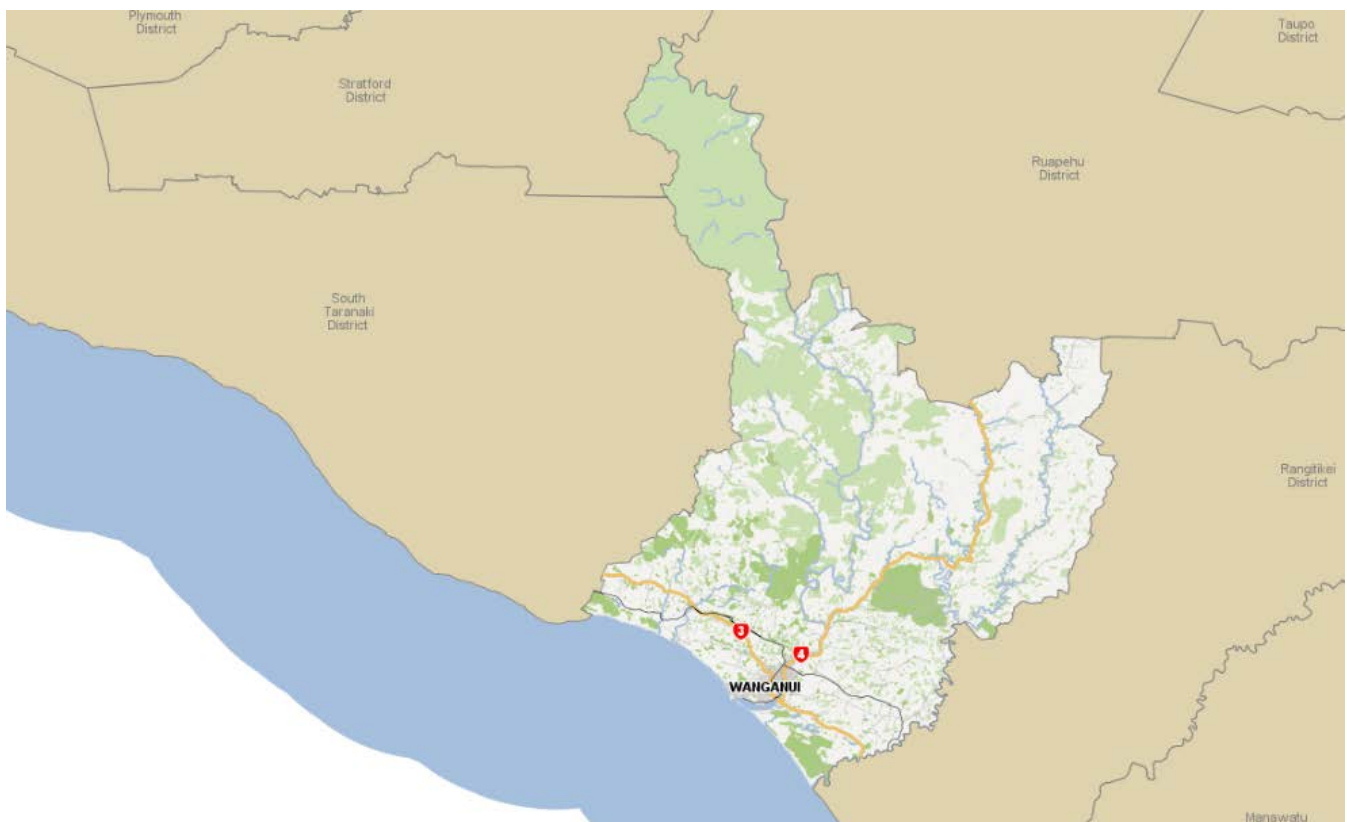
compliance to maintain a safe and healthy community and to ensure environmental standards are met.

This rationale aligns with our overarching vision, mission and strategy to position our district as Leading Edge.

This Road Transportation Activity Management Plan (AMP) covers Council's road transport assets, including the following:

- ONRC
- Pavements (Sealed and Unsealed, Arterial, Collector and Local Roads, ONRC)
- Structures (includes bridges, large culverts and retaining walls)
- Drainage (includes Kerb and channels, road culverts, surface water channels and berms)
- Footpaths and Cycleways
- Street Lights
- Traffic Services (includes signs, signals, control devices, road markings, safety barriers)
- Other Features and Activities (includes street furniture, car parks and riverbank protection)

Figure 1.3: Map of Roding Network





Purpose of this Activity Management Plan

This Road Transport Activity Management Plan 2018–21 sets out the rationale for our investment in and activities on Councils transport assets.

It is a proposal for how the investment programme will be planned and implemented, and provides an assessment of the expected outcomes and investment requirements and risks. In developing this plan we have drawn on the experience and inputs of WDC staff, consultants and contractors. The majority of the sections were developed through workshops, which provided the opportunity for wide input.

The Local Government Act 2002 requires all Territorial Local Authorities to prepare a Long Term Plan (LTP) with a minimum of a 10 years focus to ensure effective and transparent management of their businesses.

The Local Government Act 2002 Amendment Act 2014 also requires the development of an Infrastructure Strategy that is to identify significant infrastructure issues for the council over the 30 year period, the principal options for managing those issues, and the implications of those options. Activity Management Plans (AMPs) provide key inputs into the LTP, supporting LTP functions and forecasts as well as providing certain information for the Infrastructure Strategy. Infrastructure assets not only provide an essential platform for economic advancement, but also increasingly deal with recreational, artistic and cultural pursuits to support the wellbeing of communities.

This document should be read in conjunction with the other council transportation and planning documents

which provide comprehensive guidance on how the network will be maintained and renewed.

A Changing Landscape

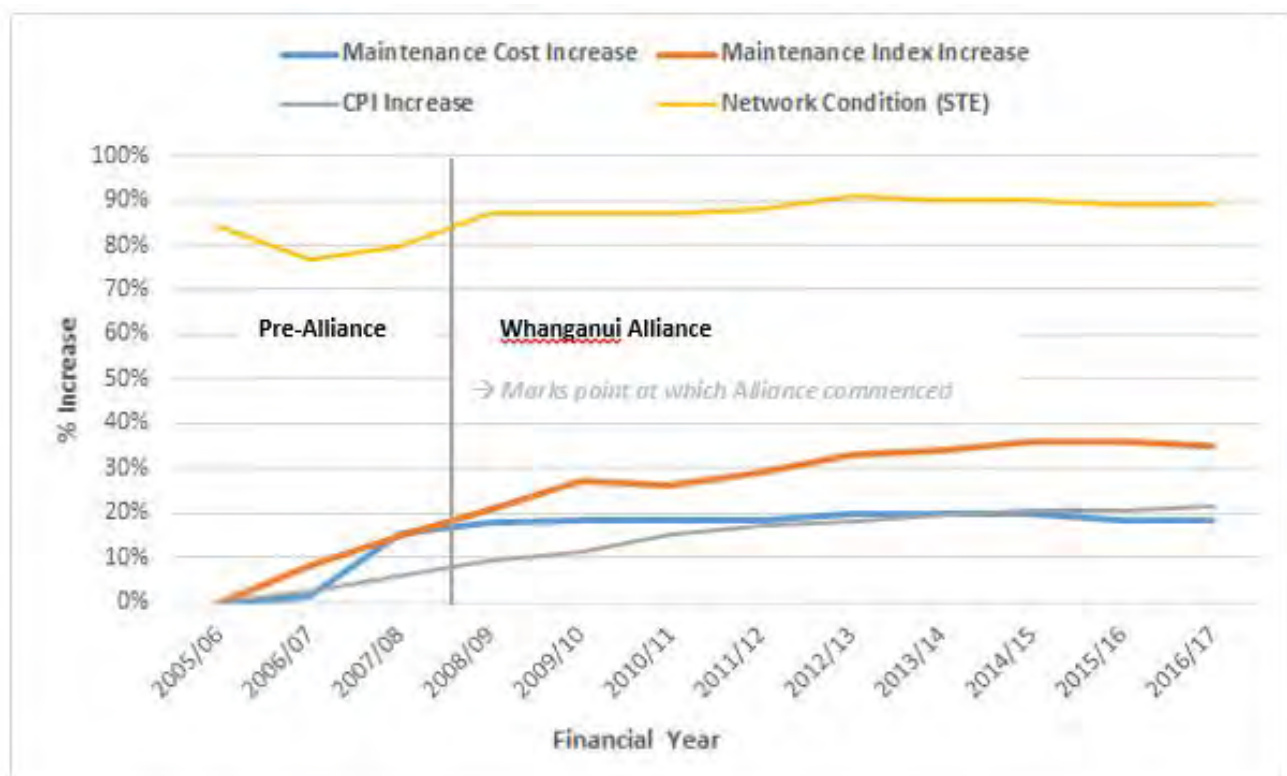
Substantial advancement has been made since the publication of the AMP 2012–15 in the way we manage and maintain Council's transport assets.

The Whanganui District Council has taken a stronger strategic approach to asset management in response to short comings identified in a review of the AMP 2012-15 and in recognition of the necessity to clearly convey to Council's stakeholders our requirement for future investment. To give confidence that the strategic direction addresses key influences and issues identified in the Strategic Case section of this AMP and provides compelling evidence in support of our investment story.

We have through the "LEAN" philosophy of maximising customer value while minimising waste, maintained the transportation assets in what can be described as a holding pattern despite diminishing investment in recent years as highlighted in the following graph.

Simply, the core principle of lean of creating more value for customers with fewer resources, has been a key strategy to achieving this result. This has been achieved despite increases in input price, statutory and regulatory requirements demand growth and unforeseen natural events.

Figure 1.4: Maintenance Costs and Indices 2005/06 – 2015/16





Freight Movement Efficiency

A priority for the New Zealand Transport Agency has been to allow the movement of more freight on fewer trucks to improve productivity and road safety. High productivity motor vehicles (HPMVs and 50MAX) are intended to provide productivity benefits to help improve the competitiveness of New Zealand's exports, reduce the costs of the goods we buy, and grow our local economy.

In addition to targeting the national HPMV network, a 50MAX permit was introduced in 2013. The 50MAX permitting process was a joint Transport Agency/local government initiative and allows HPMVs to travel on most of the road network.

Vulnerable infrastructure currently limits the extent to which HPMV and 50MAX can access the Whanganui road network.

One Network Approach

Putting the customer at the heart of our business has informed the adoption of a one network approach to the way the Whanganui District Council works with its partners to plan, maintain, operate and develop the transport system. The 'one network' approach recognises that customers desire efficient journeys across the transport system, irrespective of which agency is responsible for that aspect of the journey.

One Network Road Classification

The Road Efficiency Group developed the One Network Road Classification (ONRC), comprising categorising roads into six functional categories based on the role they perform as part of an integrated national network, contributing to national, regional and local economies and social wellbeing. The classification helps the Transport Agency and local government to plan, invest in, maintain and operate the road network in a more strategic, consistent and affordable way throughout the country. The ONRC is assisting with:

- delivering efficient, safe and responsible transport solutions for customers – by helping to set consistent and differentiated customer levels of service for the transportation network
- maximising effective, efficient and strategic returns for New Zealand – by helping align investment with agreed outcomes to drive value for money
- integrating one effective and resilient network for customers – by supporting one network approaches across the sector with a common framework and language, and supporting clustering and collaboration for efficient delivery.

Key Planning Assumptions and Limitations of this Plan

This Intermediate-Advanced AMP has been prepared based on the following assumptions:

- Currently available information and data
- Population of the district will remain static over the period
- An increase in 60 dwellings per year is expected due to increasing sub divisional activity caused by a reduction in average occupancy per household from 2.4 to 2.1 people by 2026
- Rates are expected to rise approximately 3 – 5 % per year over the next ten years
- Climate change impacts on weather events and sea level will exacerbate existing hazards.

Assumptions made at a more detailed level are outlined in the relevant sections of this Plan.

Relationship with Other Plans and Documents

Activity Management Plans are a key component of the strategic planning and management of Council, with links into the areas illustrated in Figure 5.

Figure 1.5: Integrated Planning Framework/Linkages





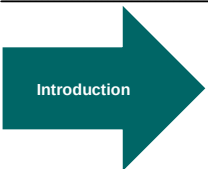
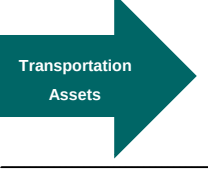
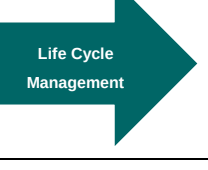
Table 1.1: Cyclic Planning Relationships with Other Plans, Reports and Documents

Plans/Documents	Description	Frequency
Government Policy Statement (GPS)	The Government Policy Statement on Land Transport (GPS) sets out the government's priorities for expenditure from the National Land Transport Fund over the next 10 years.	The GPS is updated every three years
Long-Term Plan (LTP)	The LTP sets out an agreed vision and Council outcomes for Whanganui District. The framework of this plan is in line with the requirements of the Local Government Act 2002 (LGA 2002). This plan will assist the Council in promoting sustainable practices as well as assisting the community to determine over time what 'outcomes' could and should be and links to Council's vision.	The LTP is updated every three years and is due for review in 2018.
Annual Plan	The works identified in the AMP should automatically become the basis on which future Annual plans are prepared.	Must be produced in the intervening years between LTPs as a reflection of the corresponding year of the 10 Year Plan. Every third year the annual plan is embedded in the LTP
District Plan	The District Plan is the primary document that manages land use and development within the Whanganui District Council's territorial boundaries. It contains rules that relate to development or land use proposals.	As required under the Resource Management Act 1991.
Contracts	The service levels, strategies and information requirements contained in the AMP become the basis for performance orientated contracts for service delivery	As required
Development Contribution Policy	As Whanganui grows, additional demands are placed on the District's infrastructure. This requires Council to provide new infrastructure or infrastructure of increased capacity to help meet these demands. If these costs are funded out of general rates, it places the burden of these costs on existing ratepayers. Development contributions provide the Council with a method to fund planned infrastructure required as a result of growth, such as subdivision or workplace building developments. The Local Government Amendment Act 2014 incorporates changes to the provisions for development contributions.	Must be review at least once every 3 years using a consultative process that gives effect to the requirements of Section 82 of the Local Government Act 2002.
Annual Report	The Annual Report is the mechanism to report back to the community, showing Council's achievement against Annual Plan and LTP targets.	Must be produced every year to report progress against LTP outcomes and work programme.
Asset Management Plans	Levels of service, growth, risk, maintenance, renewal and development works and strategies are identified and budgeted for within this plan. This information automatically feeds into the LTP.	Should be reviewed and aligned every year prior to the LTP and Annual Plan process – Reviewed every 3 years (minimum)
Activity Management Plans	Activity based asset management focused on Levels of Service outcomes. An advanced form of Asset Management Plan.	



Scope of this Activity Management Plan

The plan format shown below outlines the sections contained within this Road Transport Activity Management Plan.

 Executive Summary	Summary of core components of all the sections below, which is separate for publication and distribution to elected representatives, the community and council staff.
 Introduction	Overview of the area/region, brief statistics such as population, climate, employment and the economy. A snapshot of the transport activity is also summarised to provide the reader with a quick understanding of the extent of services provided.
 Strategic Case	Outlines the vision, goals and objectives of the asset group. Corporate strategic initiatives and community outcomes are linked to demonstrate how the transport activity contributes, and the rationale for Council's involvement. Key business drivers, linkages to strategic documents, key partnership and stakeholders are also covered in this section.
 Customer Levels of Service	Levels of Service (LOS) define the quality of the delivery of the transport activity against which service performance can be measured. Infrastructure planning enables the relationship between levels of service and the cost of the service (the price/quality relationship) to be determined. The relationship can then be evaluated in consultation with the community to determine the required levels of service minimum requirement that the customer is prepared to pay for. Service standards provide the basis for the life cycle management strategies and work programmes.
 Growth and Demand	This section sets out the strategy that the asset owner will adopt in relation to its infrastructure assets. The 'key demand drivers' that influence growth and demand are assessed in detail, as well as the impacts and management thereof, with a view to forward planning so that the needs of the individuals, communities and the contribution to the wider region can be sustained.
 Programme Business Case	This section describes the core business and key service providers and their roles and responsibilities in delivering services. The organisational structure that supports these services externally and internally is also detailed. An overview of expenditure and funding needs is also included to provide a snapshot of current and future needs.
 Transportation Assets	This section provides an overview of asset information regarding the individual asset groups within the Transportation activity. The transport network comprises a broad range of assets that underpin the delivery of transport services. This section identifies the range, extent, valuation and current condition state of those assets.
 Life Cycle Management	The Life Cycle Management (LCM) section provides the broad strategies and work programmes required to achieve the goals and standards outlined in the AMP. This section presents the LCM plan for each asset group, including the following: a detailed description of the assets in physical and financial terms, key issues, LOS and risks, operations, maintenance, renewal and development strategies, financial forecasts.



 Financials	The Projects and Financial Forecasts section outlines the short term (3 year), medium term (5 year) and long term (10 year) financial requirements for the operation, maintenance, renewal and capital needs for transport, based on long-term strategies and LOS outlined earlier in the plan. Funding sources and potential issues are identified and key assumptions in preparing financial forecasts are noted. A summary of asset valuation by asset group is also outlined.
 Risk Management	This section covers the strategic risk management implemented by the asset owner and how this applies to the transport activity. Risk Management identifies the specific business risk associated with the ownership and management of the infrastructure assets. This is used to determine the direct and indirect impacts associated with these risks and to form a priority based action plan to address these
 Business Processes	This section covers the key business processes in place that supports Asset Management. This includes an assessment of IT and business systems, an overview of business continuity planning and emergency management. The AMP is also assessed against the Office of the Auditor General's Criteria for advanced asset management (NZ) plus any relevant legislation or industry standards. The key to ongoing success is to plan, review and monitor the ongoing update of the plan including key milestones and responsibilities, how the organisation intends to do this is documented in this section.
 Community Consultation	As a leader in the Community, local government and asset owners act on behalf of their diverse 'communities of interest' and works with all stakeholders so that they can confidently participate in the decision-making process where appropriate. The Community Consultation section provides details of the consultation that has been carried out for the transportation activity in order to establish how the community perceives the infrastructure network and then linked to the stated stakeholder outcomes.
 Environmental Stewardship	In today's business there is greater emphasis on the effects on the environment. This section describes the environmental compliance responsibilities relating to consents/permits or similar and outline issues and mitigation strategies for potential hazards whether those are natural or manmade
 Improvement Plan	The Improvement Plan is integral to continually improving processes and practices, to ensure the ongoing development of Asset Management practices towards an appropriately advanced level. It qualifies current business practice, identifies indicative timescales, priorities, and human and financial resources required, and measures progress toward an identified future position. A full gap analysis across the transport activity has been undertaken, which targets and drives business improvement and therefore delivers goals and outcomes.



02 Strategic Case



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Introduction

Purpose

Whanganui District Council's Transportation Activity Management Plan (AMP) outlines how we will deliver the services that ratepayers and road users need, to go about everyday business and life.

The AMP shows how it fits with Whanganui's Community Outcomes, regional transport strategies and the Government Policy Statement on transportation. This is done by clearly defining the key problems affecting the District's transport and transportation activities and the benefits of maintaining this vital economic and community infrastructure.

The AMP contains the strategy and a programme of works setting out the District's planned transportation investment. This has been developed through building a strategic case with key stakeholders and a programme case that articulates what will be done to address the defined problems. The agreed way forward by the stakeholders will demonstrate to politicians, customers and other stakeholders why we are going in a particular direction.

This approach helps Council and its co-investor, the New Zealand Transport Agency, to determine that we are doing the right work, at the right time, for the right reasons.

Background

The transport network is a significant core infrastructure in the District contributing to the social and economic well-being of residents, visitors and businesses. The transport network is essential to the continued growth and economic success of the Whanganui District and must be managed, safely, efficiently and effectively, now and in the future.

Transport planning, policy and networks are all provided through the transportation activity. This includes transport infrastructure including roads, footpaths, cycleways, parking facilities and bridges; public transport infrastructure (such as bus shelters); and traffic control mechanisms (such as signage, lighting and road markings). This activity ensures a safe, efficient and affordable transport network that helps with the movement of people, goods and services.

Partners and Key Stakeholders

The transportation services provided depend on the Levels of Service (LOS) determined by the community. How the services are provided is determined by Council in response to the requirements of both the key stakeholders and legislation.

Key stakeholders are broadly defined as:

- Customers
- Elected members
- Other stakeholders (Internal & External)

Elected Members

- Elected members have a vital interest in transportation assets, and represent the needs and views of the community.
- Mayor
- Councillors
- Community Boards and Committees

Stakeholders – Internal

These are internal parties with an interest in the management of WDC transportation assets:

- Staff from WDC Transportation Infrastructure and other asset teams
- Regulatory and Customer Services
- Policy and Planning Officers
- Financial and Business Services staff
- Internal Auditors

Stakeholders – External

These are parties with an interest in the management of WDC transportation assets, and include but not necessarily limited to:

- The community – citizens and ratepayers
- Road Network Alliance Partner (Downer)
- Utility companies
- Business community
- Emergency Service Providers (Police, Ambulance, Fire, Civil Defence)
- Territorial Local Authorities
- Automobile Association
- Road Transport and Heavy Haulage Associations
- Iwi consultation groups
- Schools, Ministry of Education
- New Zealand Transport Agency (NZTA)
- Horizons Regional Council
- Police
- Ministry of Transport
- Contractors and Consultants



Strategic Context

Introduction

This section provides the strategic context for transportation. It outlines the relevant legislative and strategic objectives for the transportation activity. A summary of how these strategic documents align is provided in Figure 1. This illustrates how the Local Government Act 2002 and Land Transport Management Act 2003 align with the relevant strategic documents at the national, regional and local level that influence the development of the AMP, Levels of Service (LOS) and the delivery of the transport activity. These key driving documents are described below.

Government Policy Statement (GPS)

The Land Transport Management Act 2003 requires the Minister of Transport to issue a Government Policy Statement. The Government Policy Statement (GPS) on Land Transport 2018/19 – 2027/28 sets out what the Government expects to be achieved from its investment in land transport through the National Land Transport Fund. It guides investment over the next ten years and provides guidance to decision-makers about where Government will focus resources, consistent with the purpose of the Act. The GPS is issued by the Minister of Transport every three years. The GPS 2018 sets out the overall proposal for the national strategic direction for land transport: Since 2009, the Government has focused investment on the following three priorities and these remain largely unchanged.

- Economic growth and productivity
- Value for money
- Road safety

For GPS 2018 the focus will be on:

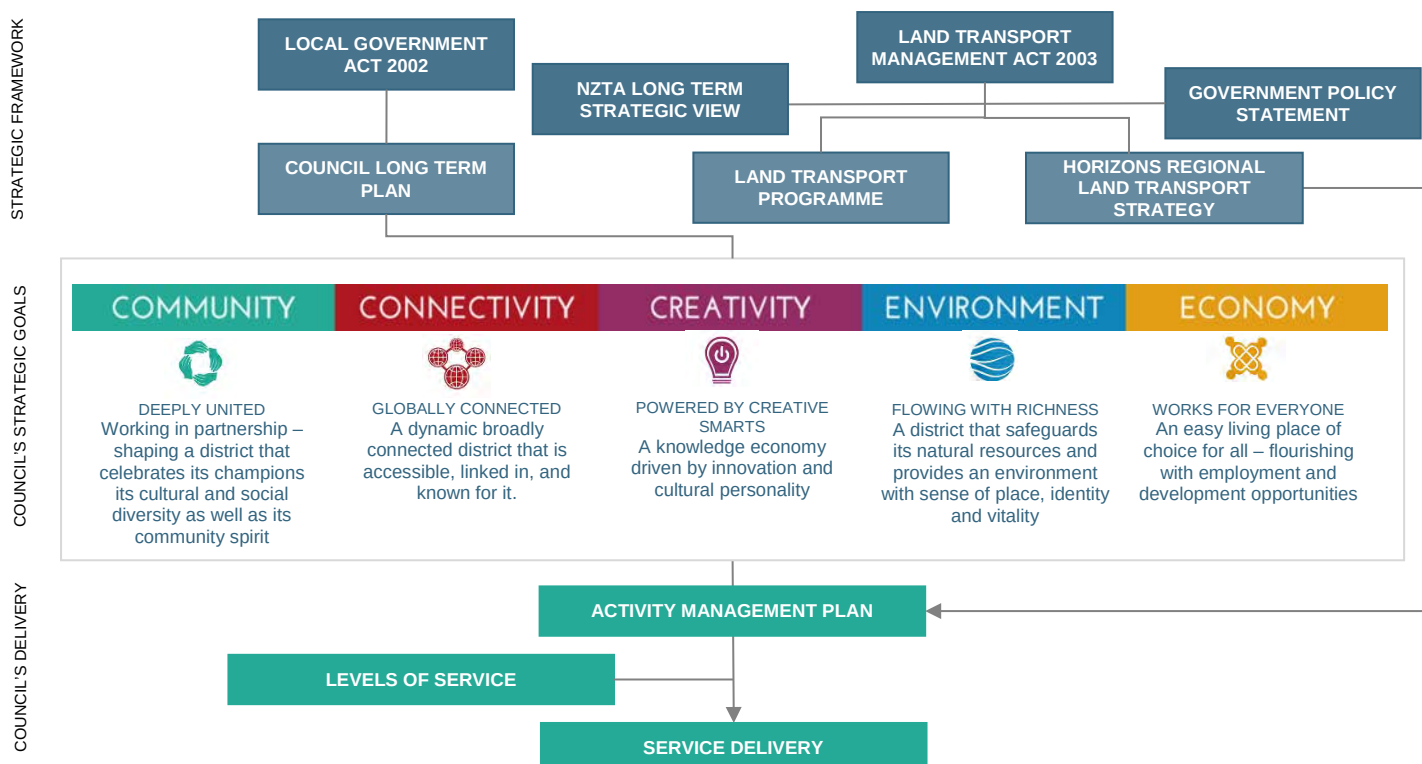
- putting the right infrastructure in place to support high growth urban areas
- supporting the regions – for New Zealand to thrive we need our local economies to thrive and we want to support regional freight and tourism movements while increasing the resilience of critical regional routes
- improving how freight moves on our network by focussing on high quality and resilient connections

NZ Transport Agency Long Term Strategic View, March 2017

The Long Term Strategic View (LTSV) sets out how the NZ Transport Agency perspective on the future demands and pressures that are likely to shape the issues and opportunities facing the land transport system. It identifies the material impacts they will create, and sets out how these will be responded to over the near and longer term.

To deliver the value statement of 'Great journeys to keep New Zealand moving', the Transport Agency, working with partners, is required to take a wider view of the transport system as a whole and the different interventions available to shape it.

Figure 2.1: Strategic alignment between national, regional and local objectives





The government's work on regional economic potential has highlighted a number of key contributions that transport can make to New Zealand's economic and social wellbeing.

- A safer system
- An effective urban system
- Better connectivity
- A resilient system
- Key inter-regional journeys

Three strategic responses describe the new approach of NZTA to addressing New Zealand's transport challenges and delivering great value to New Zealand, in partnership with others and in a rapidly changing environment.

- **One connected transport system:** Transform the performance of the transport system by integrating digital technology with physical infrastructure to create a safe, connected system that works for everyone.
- **People-centred services:** Simplify our customers' lives and our partners' work with innovative services and experiences that make it easy for them to do what they need to.
- **Partnerships for prosperity:** Unlock social and economic opportunities for customers, business and communities through targeted partnerships.

The LTMA (amended in 2013) requires RLTP to be issued every six years and reviewed every three years. The RLTP is prepared by the Regional Transport Committee (RTC), which is comprised of representatives from Horizons Regional Council, mayors from each of the local councils in the region, and New Zealand Transport Agency.

The RLTP was developed two years ago and is currently being reviewed. Particular focus has been given to being consistent with the GPS, and the key themes of the Accelerate 25 Growth agenda is economic growth, while transport is a key enabler.

RLTP strategic priorities that will be the focus of the future work programme to achieve the objectives and resolve regional issues include:

- **Priority 1:** Effective road maintenance and delivery
- **Priority 2:** Improve connectivity and resilience of the strategic routes to and from key destinations linking North-South and East-West that consider demographic changes and impacts on land use
- **Priority 3:** An appropriate network of tourism routes
- **Priority 4:** Effective, accessible and affordable multi-modal transport networks.

Manawatu-Whanganui Transport System

The Manawatu-Whanganui Regional Growth Study identifies transport and distribution as a key enabler of regional development because they go to the heart of the present and long term future of the region as an exporting area. The study notes that the draft Manawatu-Whanganui Regional Land Transport Plan clearly anticipates the future transport needs of the region, particularly those which will support growth in the region's economy.

Regional Land Transport Programme

The Regional Land Transport Programme provides the strategic direction and policy framework for developing and investing in the region's land transport network and sets out how the region proposes to invest to achieve its objectives. The RLTP must contribute to the purpose of the Land Transport Management Act (LTMA) which seeks 'an effective, efficient, and safe land transport system in the public interest'. The RLTP is also required to be consistent with the GPS.

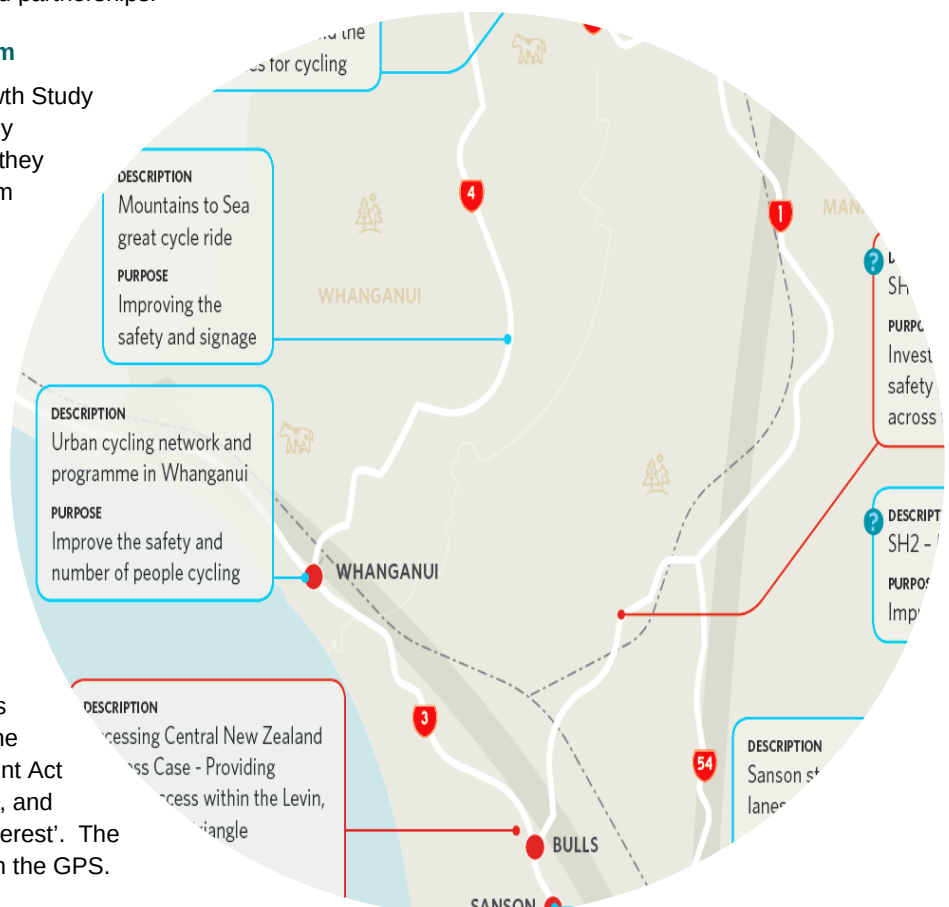


Figure 2.2: NZ Transport Agency's Long Term Strategic View – Regional Economic Development Area.



Financial Strategy

Whanganui District Council's financial strategy explains how the Council will manage its finances over the next ten years. It sets out the general approach and principles to be followed, and it provides a guide against which proposals for funding and expenditure can be assessed.

Council's financial strategy applies the following principles:

- to be fair to our ratepayers and customers
- to maintain service delivery and if required meet increasing demand
- to balance the budget
- to be good stewards of our assets and infrastructure, and of our funds
- to spread the cost of assets across their useful lives.

Being fair to ratepayers and customers means that road transport activities are cost-effective and necessary for the community's current and future needs. It means that we allocate rates and charges to those who benefit and to those who have a negative impact on (or exacerbate) our community well-being; that we spread costs across today's and tomorrow's users (inter-generational equity) to match when benefits arise; and being aware of not excessively burdening today's users with the impact of yesterday's users not having contributed enough.

Our Activity Management Plans are renewed regularly, and inform a 30-year infrastructure strategy. Every three years Council prepare a ten-year plan. Every year Council prepare a detailed annual plan. Council consult the community on what is proposed, and at the end of every year Council reports back to the community on how well it has done against the plans.

Procurement Strategy

Council maintains ownership and responsibility for managing the land transport activity and the associated infrastructure. In order to maximise efficiencies and long term value for money, the WDC transportation network is managed with a holistic asset management focus. This means that all procurement is linked operationally, tactically and strategically, where the maintenance management system, the maintenance intervention strategy and the 10-year programme are linked.

The road maintenance and capital works contracts form the largest component of the WDC procurement of transportation services. For maximum effectiveness and efficiency WDC's whole road corridor maintenance contract is carried out by a single entity, the Whanganui Alliance. This entity model is a "pure alliance / shared risk (advanced) Public/Private Partnership delivery model, where the supplier selection method is quality based.



Figure 2.3: The Alliance structure

The **key philosophy of the Alliance** is to combine the right people, make the right decisions, for the right reason and undertake the right work at the right time. The Alliance is able to exploit the local knowledge from the team, determining what works and what doesn't.

Decisions are made by people who actively plan and manage the network with full knowledge of the strategic outcomes.

The foundation features of the Alliance model are the **Lean Principles** of reducing duplication/waste and continuously seeking workflow efficiencies.

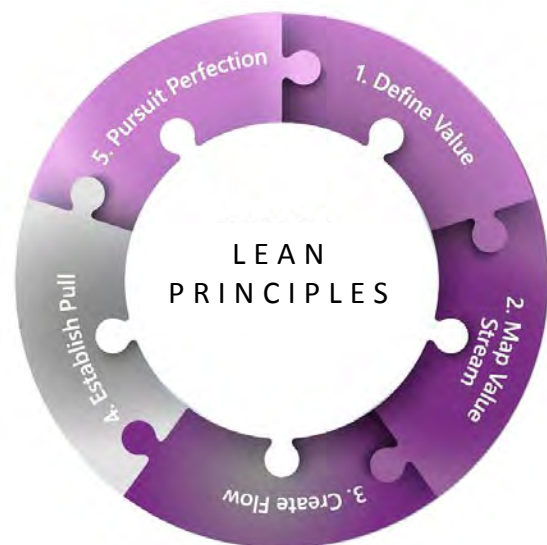


Figure 2.4: Lean Principles form the basis of the Alliance model



The **key for the success** of the Alliance is all about the relationships. One of the biggest hurdles to overcome is to eliminate that traditional thinking. Changing the traditional master-servant type thinking is the biggest challenge that can be faced when establishing a collaborative working arrangement. When a group of really experienced and capable individuals, from each organisation, are brought together there are many different views and opinions to deal with. All of the decisions from deciding on budget, to methodology and treatment selection to how much plant and labour is required on site, is all made collectively by the entire group and can be fraught with difficulties should there be relationship behaviour issues.

It is important to have:

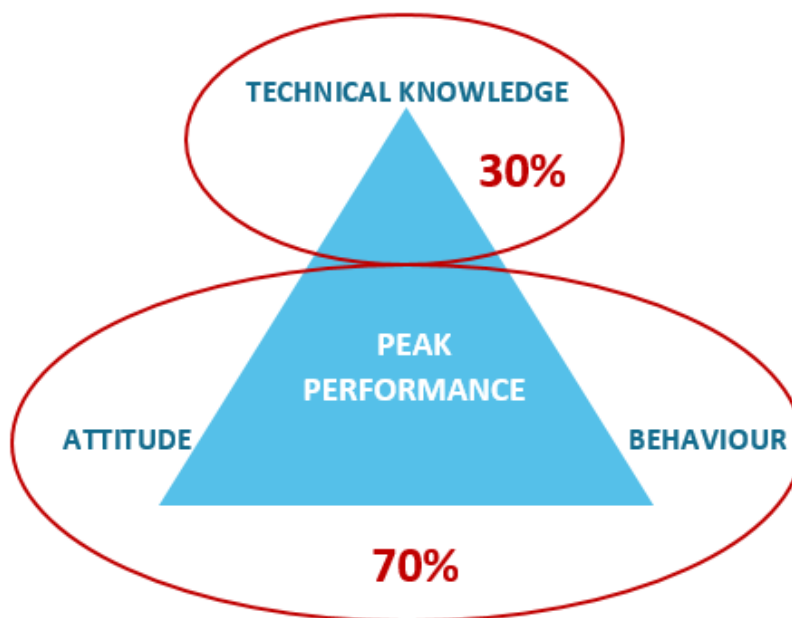
- **Trust and Honesty** – no hidden agendas!
- **Trade Off** from traditional contract rights in return for good faith
- Focus on '**Best for Network**' rather than 'Profit' driven decisions
- Nurturing and **developing talent**

- Creating a **culture** of learning and innovation
- Decisions based on **collective vision**
- Participants **not acting** to support their own interests
- Able to be **adaptable** to changing requirements and political pressures
- Calculated **risk-based decision-making**
- Increased **productivity and efficiencies** through better buy In
- Added value through **continuous improvement**

Working together – focussing on the learning and development of all Alliance team members and working in an open and trusting environment that stimulates innovation and development.

The Alliance recognises that the desired outcomes cannot be achieved unless the right people and processes are in place. It really is about having the right people in the right positions making the right decisions!

A successful Alliance is 30% based on technical knowledge and 70% based on attitude and behaviour.



An organisation's competence is the sum of individual competencies + their ability to work together.

Figure 2.5: Peak Performance: getting the optimal balance between hard and soft skills.



Whanganui District – “Smart Buyer”

In 2011 the government established the Road Maintenance Task Force to identify opportunities to increase the effectiveness of road maintenance. In particular, they reviewed the areas of asset management, risk management and procurement methods. In the 2012 review report, the Task Force listed the characteristics that would be exhibited by a Road Controlling Authority that has the capability and the capacity to be a “smart buyer”.

The Road Efficiency Group (REG), a collaborative project between local government and the Transport Agency, has subsequently developed a Self-Assessment form for road controlling authorities to assess their own performance in this area.

Figure 2.2 indicates WDC’s assessment. The score of 64 is interpreted as “Our organisation has embraced Smart Buyer principles but can still improve”.

The main focus for improvement moving ahead will be to explore opportunities for collaboration by either sharing in-house resources with neighbours, or by procuring together or tendering together. That exploration could be through an LGA s17A evaluation of transport function delivery options.

At its LGA s17A review of service delivery, Council overwhelmingly endorsed continuing with the Alliance model, but recommended exploring opportunities for collaboration by either sharing in-house resources or by working with neighbouring RCA’s that wish to work under an Alliance model. This approach has proved successful both strategically and operationally with the sharing of resources with the Tararua District Council (within the region), and in the sharing of operational intelligence with the Hamilton City Council’s Infrastructure Alliance and the Waikato District Council’s Roading Alliance.

Figure 2.6: Smart Buyer Self-Assessment

Smart Buyer Self Assessment

This assessment is based on the Smart Buyer Principles identified in the Road Maintenance Task Force Report. Score the following by ticking the appropriate box - (1) Disagree to (5) Strongly Agree.

Whenever you score yourself “4 or 5” think of an example you can use to justify your score to an independent auditor or the other attendees at this workshop.

Assessment statement Our Organisation	Score				
1. Fully understands the different contracting models available.					✓
2. Holds meetings that update the contracting industry on the forward works programme and any changes in approach, and proactively engages with the contracting industry to ensure it gains optimal value from any changes being implemented.					✓
3. Has sufficient robust data (or is in the process of gathering robust data) on our networks to enable optimal integrated decision-making.				✓	
4. Has access to expertise that fully enables best use of the data available.					✓
5. Is open to alternative solutions to those proposed in the contract documents.					✓
6. Understands risk and how to allocate and manage it.				✓	
7. Has a Council that is prepared to pay more now to achieve a lower whole of life cost.				✓	
8. Actively pursues value for money & does not always award contracts to the lowest price.					✓
9. Is able to manage supplier relationships/contracts to ensure optimal expenditure, which sustains infrastructural assets at appropriate levels of service.					✓
10. Supports ongoing skill and competency training and development for staff.				✓	
11. Actively shares and gains knowledge within the sector.					✓
12. Is effective in keeping up with best practice in procurement, including best practice RFP/contract documentation.					✓
13. Regularly seeks and receives candid feedback from suppliers on its own performance as a client and consistently looks to improve its performance.					✓
14. Explores opportunities for collaboration by either sharing in-house resources with neighbours, or by procuring together or tendering together. That exploration could be through an LGA s17A evaluation of transport function delivery options.			✓		
Number of ticks in each column		1	4	9	
Multiplying factor	x1	x2	x3	x4	x5
Total Score in Column		3	16	45	
Total Score	64				

Score: Interpretation

65 to 70: Our organisation is a Smart Buyer - people love working for us and with us!

55 to 64: Our organisation has embraced Smart Buyer principles but can still improve.

45 to 54: Our organisation gets by but has opportunities for improvement.

30 to 44: Our organisation is not rocking the boat when it comes to pursuing value for money.

0 to 29: Our organisation is a bit of a basket case!



One Network Road Classification

In 2014 the One Network Road Classification (ONRC) was introduced in New Zealand to standardise a classification system that identifies the level of service, function and use of road networks and state highways. New Zealand is the first country in the world to adopt a standard classification system.

The ONRC involves categorising six road categories based on the functions they perform as part of an integrated national network. This reflects a more customer focused

approach to service delivery. The ONRC also defines the nationally expected fit for purpose levels of service for each road classification to better enable delivery of value for money. These customer outcomes relate to:

- **mobility** (resilience, travel time reliability)
- **accessibility** (land access and road network connectivity)
- **amenity** (travel quality and aesthetics), and
- **safety**.

Figure 2.7 & 2.8: Network Length by Categories

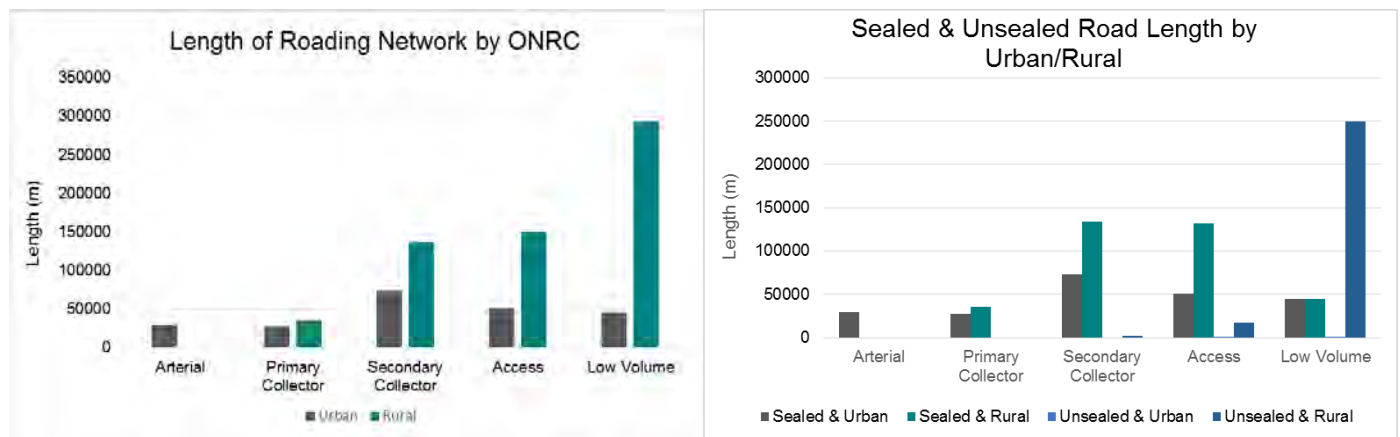


Table 2.1: ONRC Road Categories and Descriptions relevant to Whanganui District

ONRC Road Categories	Description
Arterial	These roads make a significant contribution to social and economic wellbeing, link regionally significant places, industries, ports or airports and may be the only route available to some places within the region (i.e. they may perform a significant lifeline function). In urban areas they may have significant passenger transport movements and numbers of cyclists and pedestrians using the road.
Primary Collector	These are locally important roads that provide a primary distributor/collector function, linking significant local economic areas or areas of population. They may be the only route available to some places within the region and in urban areas they may have moderate passenger transport movements and numbers of cyclists and pedestrians using the road.
Secondary Collector	These are roads that provide a secondary distributor/collector function, linking local areas of population and economic sites and may be the only route available to some places within this local area.
Access and Low Volume	These are all other roads. Low volume roads within this category will fall into the low volume subset.



Whanganui's Leading Edge Strategy

On 28 October 2014 the Council adopted its new vision. The vision was developed following a series of workshops with a wide range of people and organisations. This strategy, its Purpose Statement and the corresponding Council objectives, are outlined below.

LEADING EDGE – WHO WE ARE (extracted from Council's Leading Edge Strategy)

We are confident leaders and influential trailblazers - operating comfortably on the cutting edge.
We are a 'bit different', don't follow the pack and are energised and dynamic.
This sets the scene for the strategy and the types of innovative approaches that we will front-foot.
It's about Whanganui being seen as progressive and exciting - a magnetic place of abundance and diverse appeal.

PURPOSE STATEMENT

SUSTAINING – the safety and welfare of our community

SUPPORTING – richness and opportunity through education, lifestyle and commerce

PRESERVING – our exceptional heritage and infrastructure

PROTECTING – our environment and awa

The purpose statement communicates the Council's role as kaitiaki (guardian) and trumpets the awa as our seed for settlement and the shaper of our existence. It also reflects the Council's interests in sustaining wellbeing through the performance of regulatory functions, highlights the 'big three' drawcards that will attract people to Whanganui (education, lifestyle, commerce) and encourages retention of our key points of difference.

It applies a dual focus to the things we are good at and the things we can be good at. It is also concerned with what we are currently doing rather than where we want to be (which is the role of the vision statement).

VISION

COMMUNITY

+

CONNECTIVITY

+

CREATIVITY

+

ENVIRONMENT

+

ECONOMY



Deeply United



Globally Connected



Powered by Creative Smarts



Flowing with Richness



Works for Everyone



COUNCIL OUTCOMES, GOALS AND STRATEGIC OBJECTIVES

COUNCIL OUTCOME: COMMUNITY – DEEPLY UNITED



We are a place resounding with community spirit, there is an intangible essence that underpins what it means to be from or in Whanganui. We support each other, work in partnership, are resilient and can handle challenges. We keep talking to each other and are pulling in the same direction. We know where we are heading but celebrate and champion diversity. Our roots run deep.

GOAL:

Working in partnership – shaping a district that celebrates and champions its cultural and social diversity as well as its community spirit.

STRATEGIC OBJECTIVES:

- Strengthen partnerships and ways of working collaboratively to weave our aspirations together – while respectfully acknowledging differences
- Meet our obligations arising from the Whanganui River settlement, support a Maori worldview and increase visibility of our Maori culture
- Pursue initiatives that secure our health, our safety and instil a sense of belonging and wellbeing for all
- Celebrate and champion the diversity in our district by educating, sharing and storytelling
- Demonstrate strong, positive and empowering leadership to support unity and drive our district forward

COUNCIL OUTCOME: CONNECTIVITY – GLOBALLY CONNECTED



We are outward-looking, blast through parochialism and constantly look to expand and enhance our world view – positioning ourselves to best advantage regionally, nationally and internationally. We are connected in the widest sense – through our network infrastructure, digital capacity, expansive ideas and external relationships. We are accessible, linked in and known for it (no longer a 'hidden gem').

GOAL:

A dynamic broadly connected district that is accessible, linked in and known for it.

STRATEGIC OBJECTIVES:

- Continue to build on the connectivity opportunities provided by UFB
- Achieve greater accessibility to and within the district for all modes of transport including through making our district more walk and cycle friendly
- Improve our image and enhance our reputation as a great place to come, stay and invest
- Work together as a region to leverage more opportunities and bolster our pulling power
- Test ourselves on the global stage through the attainment of international benchmarks
- Commit to lifelong learning and continuous improvement
- Support existing and seek out new international relationships – culturally and in the business world
- Become positive ambassadors and self-promoters of our district and encourage those with a connection or interest in Whanganui to do the same



COUNCIL OUTCOME: CREATIVITY – POWERED BY CREATIVE SMARTS



We are innovative, entrepreneurial, go-getters – we actively attract industry, support start-ups and are a lightning rod for ideas and creativity. There is a savviness and edge to our approach and this propels us forward. Our arts community sets us apart – giving us soul and heart. We are sharp economic operators and hum with cultural personality.

GOAL:

A knowledge economy driven by innovation and humming with cultural personality.

STRATEGIC OBJECTIVES:

- Retain our historic and cultural heritage as a key point of difference
- Facilitate the use of digital technologies and smart approaches to drive innovation and productivity
- Sustain and nurture our arts reputation
- Use our compactness, agility and pioneering attitude to our advantage by attracting niche manufacturing opportunities, microbusinesses, start-ups, creative industries and points of difference
- Develop a dynamic knowledge economy and workforce
- Become a district renowned for talent and creativity

COUNCIL OUTCOME: ENVIRONMENT – FLOWING WITH RICHNESS



We draw strength from the river and this sustains and shapes us. This theme is about the look and feel of the place – a district with beautiful, integrated design, bountiful and valued natural resources and a sense of life and vitality. It feels positive here and there is a lot going on. Our wealth is abundant and we take a broad view of what this means. We play on our strengths and make our own opportunities – trumpeting our unique identity through place making that flows from the mountain to the river to the coast. We are eco-rich, showcase and safeguard our heritage and always keep an eye on the future.

GOAL:

A district that safeguards its natural resources and provides an environment with a sense of place, identity and vitality.

STRATEGIC OBJECTIVES:

- Capitalise and build on the value of our coastal location
- Ensure our built environment reflects 21st century needs while protecting our distinctive heritage
- Pursue integrated and rejuvenated urban design, place-making and landscape approaches
- Safeguard the health of the Awa and let its richness shape us as a place
- Connect our identity to authenticity, abundance and community pride
- Maximise our rural assets
- Act as a kaitiaki for the environment – preserving and conserving our natural resources by seeking sustainable and innovative green solutions
- Generate a buzz through events and downtown vibrancy
- Look after our infrastructural network and assets with a view to the future – making sure that we couple this to the sustainable use of technology and other materials
- Continue to deliver a proactive, flexible and continually evolving District Plan – with the provision of appropriate zones and precincts



COUNCIL OUTCOME: ECONOMY – WORKS FOR EVERYONE



We have boundless opportunities and are truly a place of choice for all. There is a diversity to what we offer and people are able to make a conscious decision to come here or stay here. We are thriving and driving ourselves forward – loaded with jobs, development and lifestyle appeal meaning that anyone can and will want to call us home. We are welcoming, empowering and enabling – supporting everyone to flourish. There is no doubt that we are open for business.

GOAL:

An easy-living place of choice of all – flourishing with employment and development opportunities.

STRATEGIC OBJECTIVES:

- Ensure our services and facilities reflect the diverse and changing needs of our community
- Facilitate economic development initiatives in partnership with Iwi, the business community and the education sector
- Invest in our young people and look to boost skills, training, employment opportunities and our knowledge workforce
- Focus on efforts that will support population attraction and retention
- Act as a facilitator and enabler for development
- Support retention of key health and social infrastructure
- Play on our lifestyle advantages
- Ensure the quality and diversity of our education options and promote these widely

Financial Strategy

Whanganui District Council's financial strategy explains how the Council will manage its finances over the next ten years. It sets out the general approach and principles to be followed, and it provides a guide against which proposals for funding and expenditure can be assessed.

Council's financial strategy applies the following principles:

- To be fair to our ratepayers and customers
- To maintain service delivery and of required meet increasing demand
- To balance the budget to be good stewards of our assets and infrastructure, and of our funds
- To spread the cost of assets across their useful lives.

Being fair to ratepayers and customers means that the road transport activities are cost-effective and necessary for the community's current and future needs. It means that we allocate rates and charges to those who benefit and to those who have a negative impact on (or exacerbate) our community well-being; that we spread costs across today's and tomorrow's users (inter-generational equity) to match when benefits arise; and being aware of not excessively burdening today's users

with the impact of yesterday's users not having contributed enough.

Strategic Linkage

Figure 2.4, below, illustrates the links between the Council Outcomes, groups of activities, Council transportation assets, the Activity Management Plan (AMP) and the service delivery objectives.

Refer to the Council's 10-Year Plan (LTP) for further information on other activities.



Figure 2.9: Linkages to Council Outcomes and the Transportation Activity

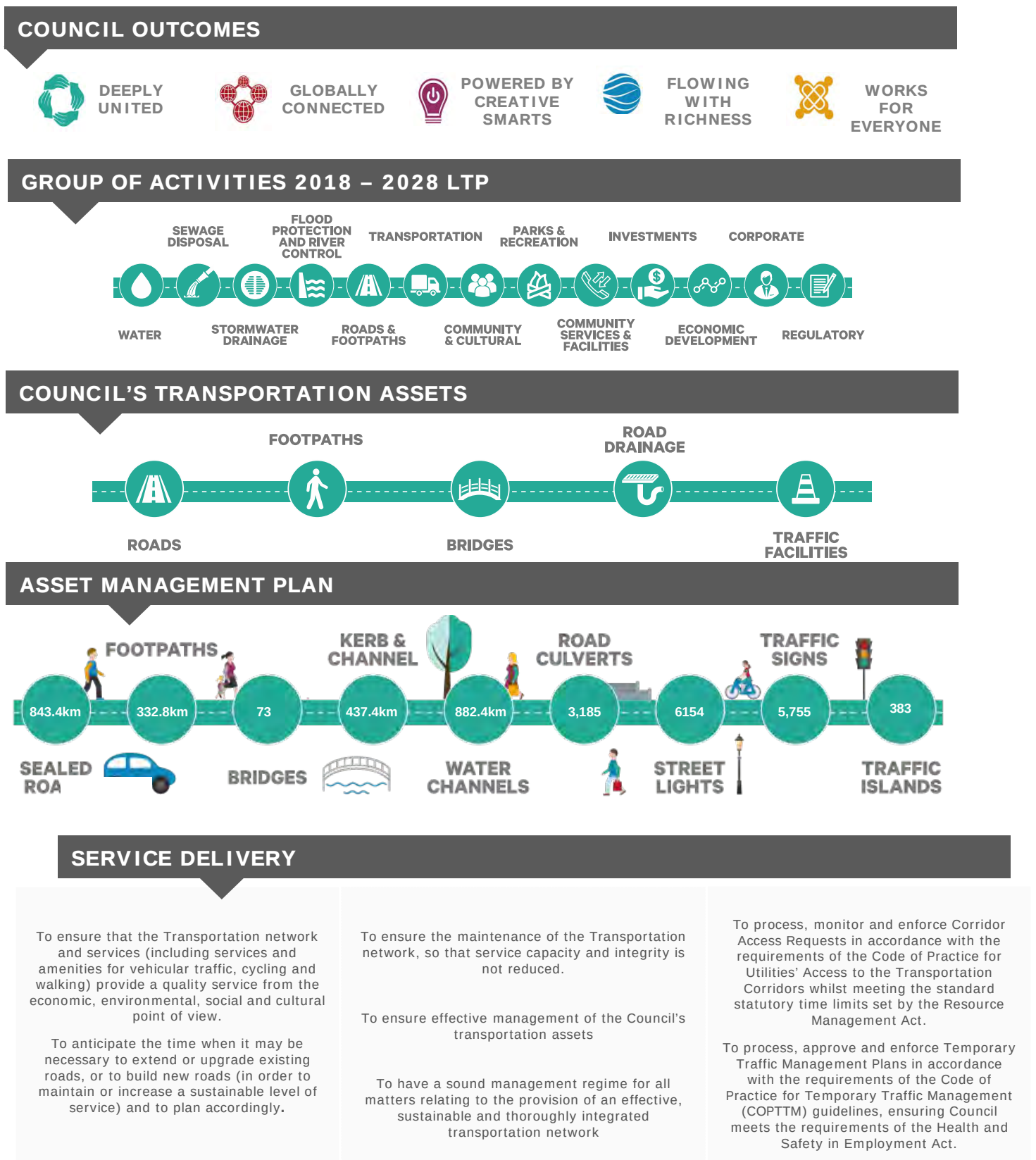




Table 2.2: Strategic Links. The Road Transport Activity Management Plan links the Government Policy Statement, LTSV, the Regional Land Transport Plan, and the ONRC Customer Levels of Service, with Whanganui District desired outcomes

Government Policy Statement	NZ Transport Agency Long Term Strategic View	Regional Land Transport Plan	Whanganui District Desired Outcomes “Leading Edge”	National ONRC Levels of Service	Council and ONRC Customer Levels of Service
Economic growth and productivity	A Resilient System	Improve connectivity and resilience of the strategic routes to and from key destinations linking North-South and East-West that consider demographic changes and impacts on land use.	 Deeply united  Globally connected  Powered by creative smarts  Flowing with richness  Works for everyone  - Supporting communities along the Whanganui River. - Provide the core infrastructure that will allow access to all healthcare services.  - Well-connected pathways throughout the district. - Provide the core infrastructure that will allow access to the port in order to develop it to its full potential.  - Facilitate the use of digital technologies and smart approaches to drive innovation and productivity  - Use best practice to provide sustainable and efficient use of the district’s resources. Provide the core access infrastructure that will allow Whanganui to become business friendly.  - Provide the core access infrastructure that will continue to allow a strong rural economy.	Mobility - The consistency of travel times that road users can expect. - The availability and restoration of each road when there is a weather or emergency event, whether there is an alternative route available and the road user information provided. Accessibility - The ease with which people are able to reach key destinations and the transport networks available to them Amenity - The level of travel comfort experienced by the road user and the aesthetic aspects of the road environment.	Department of Internal Affairs measure (Council measure) Quality: Smooth travel exposure (all roads) Quality: Roughness % km below 180 NAASRA (all roads) Quality: Average Roughness (all roads) Quality: Smooth travel exposure % roads smooth (all roads) One Network Road Classification (ONRC) Resilience Customer Outcome 1: The number of journeys impacted by unplanned events Resilience Customer Outcome 2: The number of instances where road access is lost Amenity Customer Outcome 1: Smooth travel exposure Amenity Customer Outcome 2: Peak Roughness Accessibility Customer Outcome 1: Proportion of network not available to Class 1 heavy vehicles and 50 Max vehicles Travel Time Reliability Customer Outcome 1: throughput at indicator sites
	Better Connectivity	An appropriate network of tourism routes			
Road safety	A Safer System	Effective, accessible and affordable multi-modal transport networks	 - Use best practice to provide and operate a safe local transportation network.  - A safe interconnected transportation network.  - Facilitate the use of digital technologies and smart approaches to drive innovation and productivity  - Provide the core access infrastructure that will promote the sustainable development of cultural, sports and recreational activities and facilities for young people.  - Provide the core infrastructure that will allow access to active recreational and sporting opportunities.	Safety How road users experience the safety of the road.	Department of Internal Affairs measure (Council measure) Safety: Number of reported injury crashes (all roads combined) One Network Road Classification (ONRC) Safety Customer Outcome 1: The number of fatal and serious injuries on the network Safety Customer Outcome 2: Collective risk (fatal and serious injury rate per kilometre) Safety Customer Outcome 3: Personal risk (fatal and serious injuries by traffic volume)
Value for money		Effective road maintenance and delivery	 - Use best practice to provide and operate a safe local transportation network.  - Improved access to port, rail, air and transportation networks.  - Facilitate the use of digital technologies and smart approaches to drive innovation and productivity  - Use best practice to provide sustainable and efficient use of the district’s resources. Provide the core access infrastructure that will allow Whanganui to become business friendly.  - Provide the core access infrastructure that will promote the sustainable development of cultural, sports and recreational activities and facilities for young people. - Provide the core infrastructure that will allow access to active recreational and sporting opportunities.	Efficiency Value for money and whole of life cost will be optimised in the delivery of affordable customer levels of service.	Department of Internal Affairs measure (Council measure) Quality: Percentage roads resurfaced Quality: Footpath (No. faults) Quality: Footpath % defect score <50 Responsiveness: % satisfaction with transportation network Responsiveness: % satisfaction with footpath surfaces Responsiveness: Customer service request response One Network Road Classification (ONRC) Cost Efficiency 1: Pavement rehabilitation Cost Efficiency 2: Chipseal resurfacing Cost Efficiency 3: Asphalt resurfacing Cost Efficiency 4: Unsealed road metalling Cost Efficiency 5: Overall network cost, cost by work category



Whanganui's Challenges and Opportunities (Strategic Assessment)

This section presents the investment story. It defines the problem and benefits of investment that were identified through the Investment Logic Mapping process (ILM) and Point of Entry discussion.

Defining the Problem

Whanganui District Council chose to use an Investment Logic Mapping (ILM) workshop with invited stakeholders as the process to form consensus on the strategic direction for the AMP. Investment logic mapping (ILM) is a structured

workshop that bring together key stakeholders to ensure that there is early agreement on problems, outcomes and benefits before any investment decisions are made or a specific solution is identified. ILM workshops put the emphasis on gaining a clear understanding of the problem (or opportunity), the consequence of the problem and the desired benefits – before looking at possible solutions.

To assist in the development of the WDC's Road Transport Activity Management Plan a two stage workshop was held on 9 March 2017 to identify the problems, benefits of investment and the KPIs and measures required to assess the effectiveness of the investments in the future. The stakeholder panel identified four key problem areas affecting the Whanganui District transportation network and agreed the following key problem statements.

Problem Statements

1

The form and function of the road network are not meeting the changing demands and needs resulting in decreasing Levels of Service and increasing reactive interventions.

2

The network is impacted by challenging geology, topography and weather resulting in increased resilience issues and high repair costs when unplanned events occur.

3

The changing needs (mobility) and expectations (active modes) of the community require investment to meet level of service for all modes.

4

A range of factors such as urban intersection layout, age capability and experience of drivers are resulting in death and serious injuries.



Problem Statement One

The form and function of the road network are not meeting the changing demands and needs resulting in decreasing levels of service and increasing reactive interventions

Current Situation

The increased volume of trucks on Whanganui's road network is putting pressure on the District's road network infrastructure and causing concerns for Council. Government legislation is promoting heavier, longer, wider and higher vehicles to increase freight efficiencies within the constraints imposed by the local transportation network.

Forestry

The last two decades has seen intense phases of afforestation in the Whanganui region. Due to these periods of large scale forest establishment forest harvest schedules will coincide, changing road usage patterns and placing additional pressure on the transportation network predominantly from truck haulage.

30,000 ha of forestry in the Whanganui region is due for harvest by 2040 with the decade 2020-30 expected to be the period of the most intense harvesting.

The timber industry has been exploring lower cost transportation alternatives to maximise their returns. It is apparent that in recent years that transportation of logs via rail is gaining favour with local forestry companies. Two log rail transfer yards have been established on both sides of the Whanganui River within the city boundaries.

Whanganui West Rail Yard, via Somme Parade to George Street

Whanganui East Rail Yard, via Eastown Road to Holyoake Street

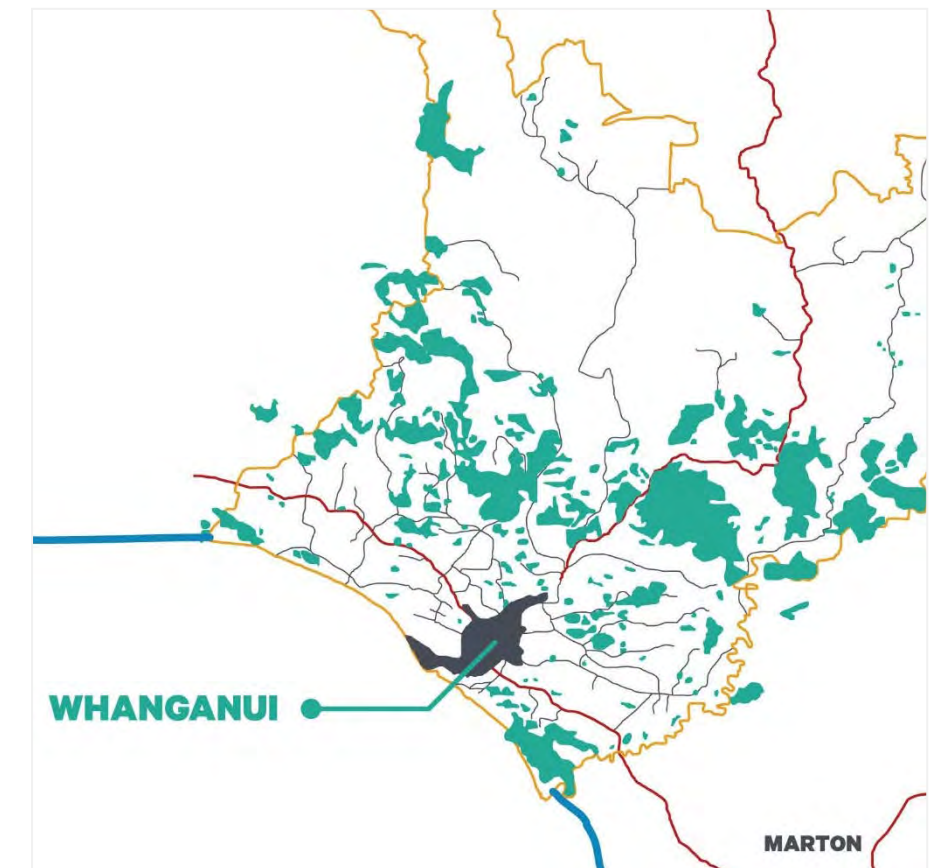
The direction of forestry related traffic flows is influenced by a number of factors. Locally, route choice is influenced by road standards, site access, bridges (e.g. loading limits, entry and exit angles), overhead obstructions (i.e. height limits), passing width, site access, paved/unpaved surface, traffic volume and road gradient. Local roads to these newly established rail log transfer yards generally meet all the requirements for effective safe travel and as a consequence have been chosen as preferred routes.

Other Contributing Factors

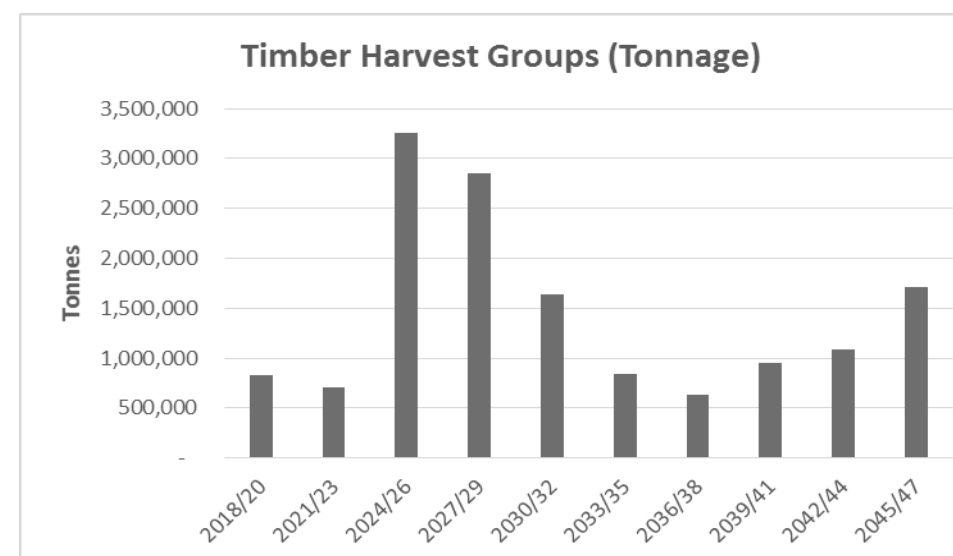
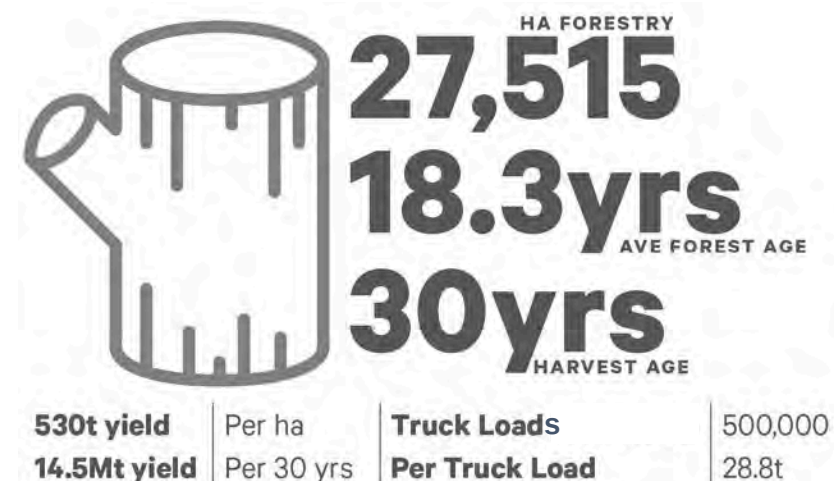
The establishment of a road to rail container terminal in the Heads Road industrial precinct to service local industry has had the consequence of increasing demand on local roads in the vicinity of the facility. The bulk of the more than 30 containers from the depot each day are full of bagged milk powder from the Open Country Dairy, but now the factory has added a second milk dryer that volume has doubled. The terminal has also attracted business from Taranaki.

Unplanned high cost resurfacing treatments and maintenance were required to ensure the roads remain serviceable. Demand to the freight terminal is forecasted to increase.

A recent development in the Whanganui region has been the growth of the manuka honey industry. Predominantly located on marginal hill country land increasing numbers of trucks and support vehicles travel the rural low volume and access roads. It is currently unclear how much this emerging industry will contribute to road demand in the future.



Key Statistics





Problem Statement Consequences

Reactive maintenance affecting planned works, continuity resulting in reprioritisation of Forward Works programmes.

The number of instances of local roads failing prematurely from egress points to product destination is on the increase. The recent noticeable effect has been for a number of road sections to deteriorate rapidly resulting in reactive unplanned interventions. Reactive works to reinstate safe trafficable surfaces has placed a burden on budgets and resulted in programmed works being deferred.

Reduced Level of Service

Rough and damaged roads are a consequence of increased demand on the transportation network. It is anticipated that road users will increasingly experience more frequent occurrences of non-conforming road network.

Increased road users costs from deteriorating road network

Poor network condition contributes to increased road users costs in terms of additional vehicle maintenance and fuel costs.

Unreliable network resulting in increased access issues

A number of the rural roads are unable to accommodate larger vehicle due to road configuration (alignment, formation). Weight restricted bridges also contribute to restricting access to all points of the network affecting ability of road users to carry out their activities.

Dangerous roads increasing risk exposure (Crash rate)

A significant number of the Access and Low Volume roads have narrow formations and tortuous alignment. Road users are concerned about the increased risk of conflict with large vehicles and the consequences this presents.

Effect on financial returns for individuals and Whanganui Region as result of inefficient / inaccessible network

Getting product to market is a key function of the transportation network but increasingly the ability of the transportation network to facilitate this is a consequence of road accessibility and condition.

Health and safety issues resulting from dust generated by the transportation activity

Increasing usage to the unsealed roads to access particularly forest plantations in marginal hill country is generating dust and increasing complaints from residents on these roads. Expectations from these residents is driving the need for Council to consider high cost mitigating treatments to address these health and safety concerns.

Increase in complaints received by Council from affected parties

A wide range of complaints are received by Council concerning predominantly road surface conditions. A large proportion of these can be linked to road damage caused by large vehicles.

Benefit Statement

Investing to address the problem of meeting the changing demands and needs on the transportation network will contribute to the following agreed benefits:

An efficient and resilient network	What are the benefits from investing in the problem?	- Increased funding of road maintenance and renewals works will ensure ONRC target levels of service are achieved - Reduce the amount of reactive response maintenance through proactive investment. (Spend \$1 well today so that we don't spend \$6 tomorrow). - Opportunity for Asset Upgrades/Strengthening of weight restricted bridges (Class 1 / 50 Max), improving accessibility to the transportation network - Reduced customer complaints and Reduced safety risks - Designated local routes for cartage of goods and services from egress points to destination
	How will we do this?	- Targeted funding of road maintenance and renewals works to address a deteriorating road network - Consideration of third party contributions to subsidise maintenance and upgrade works - All-Faults defect identification and monitoring - Predictive Modelling (dTMS) to identify early weak sections of the network. (Right treatment applied at the right time and location) - Initiate Quarterly meetings with key industry stakeholders to discuss programmes and issues impacting on the transportation network - Council to work with industry to develop areas suitable for log rail transfer storage and freight hubs in Whanganui District
	How will we measure success	- ONRC Performance Measures - The number of journeys impacted by unplanned events and The number of instances where road access is lost - Smooth travel Exposure, Peak Roughness and Roughness of the road (Median and 95th Percentile Roughness) - Accessibility and Proportion of network not available to Class 1 heavy vehicles and 50MAX vehicles - Active management of Safety Risks - Customer Complaints – CRM Response
An affordable network which is economically sustainable	What are the benefits from investing in the problem?	- Provides economic benefits to Whanganui, Region and NZ Inc. - Provides standardised Regional benefits with interconnected networks. Ensures the philosophy and intent of the ONRC is realised - Decreased vehicle travel cost for cartage contractors by maintaining roads to agreed Levels of Service
	How will we do this?	- Value for money is achieved and Smart buyer – Procurement - Develop a suite of KPIs and Enablers that drive efficiencies in physical works delivery - Decreased vehicle travel cost for cartage contractors by maintaining road
	How will we measure success	- ONRC Performance Measures and Cost Efficiency Performance Measures - Peer group comparison - Physical Works KPIs and Enablers - Target Cost Estimates vs Actual Cost - Programmed works vs Reactive and Rework
A safe and well connected network for all modes	What are the benefits from investing in the problem?	- Ensuring a safe and reliable access for all - Adequate funding required to implement safety initiatives
	How will we do this?	- Identify at risk areas on the transportation network and undertake safety related improvement works (Sight benching and formation widening) - Responding to safety related concerns - Targeted seal extensions where the return of investment is high (more cost-effective to surface than maintain as unsealed pavements) - Innovation (Dust Suppressants) - Work with industry to identify areas that pose a safety risk. (Good policy to get third party contribution as part of consenting requirements).
	How will we measure success	- ONRC Performance Measures - Safety - Customer Performance Measures and Technical Performance Measures - Peer group comparison



Problem Statement Two

The network is impacted by challenging geology, topography and weather resulting in increased resilience issues and high repair costs when unplanned events occur.

Current Situation

Steep terrain and erodible soils make the Whanganui District highly susceptible to the effects of heavy and prolonged rain events affecting predominantly the rural transportation network. The district can expect to receive flooding to various degrees of intensity during any particular year.

Reinstatement works to restore road access and repair damaged infrastructure adds considerable pressure to available resources, both physically and financially. An amendment to the definition of Emergency Works has had the effect of making funding for emergency events harder to obtain. The higher threshold or significance of an event is now required to obtain funding outside core bulk allocations.

Flood Events

The Whanganui District has experienced significant storm damage to transportation assets in 2004, 2006 and more recently in 2015. Not including these significant events the average annual cost incurred by Whanganui District to reinstate transportation affected by emergency works events is approximately \$2,000,000 per annum

A severe storm moved over New Zealand from 18-20 June 2015, bringing heavy rainfall on 19-20 June in the Whanganui region. Average rainfall totals over those two days were around 100-150 millimetres with localised areas receiving up to 300 millimetres. Indicative rainfall return periods generally ranged from 20-50 years with higher return periods of 50-100 years in localised parts of the Whanganui Districts

The heavy rainfall combined with already saturated ground conditions from a wet autumn caused flooding in some low lying areas and erosion in the hill country. The Whanganui and Whangaehu Rivers topped their banks with river level return periods of 70-100 years.

Whanganui District is currently grappling with the aftermath of the June 2015 event with the flow on consequences to transportation asset condition yet to be fully quantified.

General Maintenance Activities

Maintenance of the road drainage assets are viewed as critical to reduce the risk associated with water and peak events that impact on the road assets. Pro-active maintenance and management of drainage assets is undertaken through regular inspections, cleaning and renewal programmes

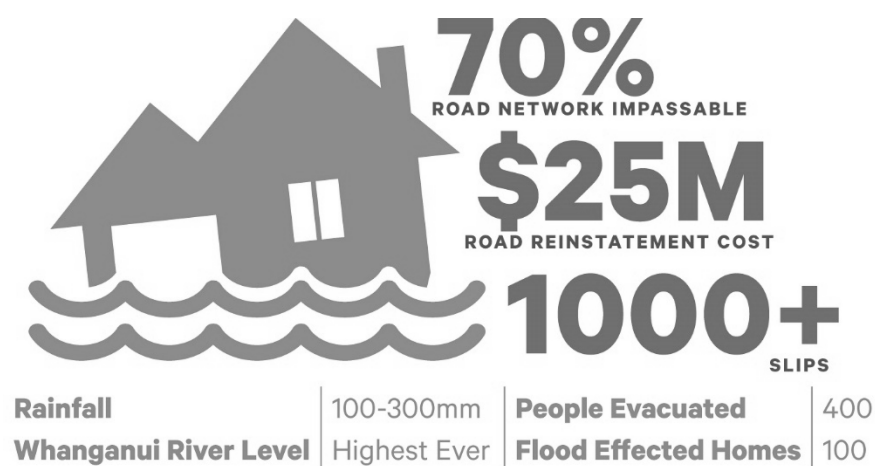
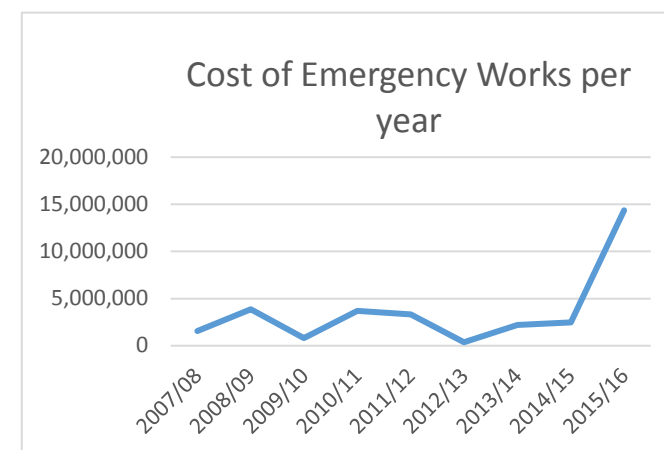
Removal of minor slips and other loose debris accumulating on roads is a key maintenance activity required to ensure a safe trafficable roadway for road users. Undertaking regular removal of slip material accumulating in water table drains and drainage structures contributes to the resilience of the network preventing unnecessary damage from surface water being diverted into unwanted areas which can result in high cost repairs as a consequence.

The erodible nature of the topography unique to the Whanganui District increases the frequency of reactive interventions required by maintenance crews to clear obstructions and maintain acceptable levels of service. The random nature of this occurrence means that expenditure levels can vary significantly from one year to the next.

Costs incurred fall into the "Minor Event" and "Environment Maintenance" work funding categories.

The Minor Events work category was introduced for any activities that would have previously qualified as emergency works. Currently this equates to between \$350,000 and \$750,000 per annum and as the expenditure comes from fixed maintenance and renewals budget allocations a shortfall is experienced affecting programmed work activities and influencing strategies.

Key Statistics





Problem Statement Consequences

Road network availability for road users

The availability of the transportation network is important for road users to enable access to and from their intended destinations. Maintaining road access is important for Council where this can be achieved safely and efficiently. The consequence of floods, slips and underslips is to increase the probability of instances when the road link is not available.

Funding for emergency events response is a burden on Council finances

The costs associated with emergency works events can be high depending on the level of response required. Subsidy from NZTA usually applies in these situations to varying degrees, depending on the work category to which the costs can be allocated.

Reactive maintenance required to remove debris

The necessity to maintain a safe environment for road users requires a prompt response to remove obstructions from road surfaces. In some instances temporary traffic management is required to advise road users of hazardous driving conditions and signal a required response. The costs required to undertake these remedial works takes available funding from other work activities resulting in the deferring of planned works.

Transportation assets are deteriorating prematurely

Transportation assets are at risk of premature failure as a result of the repetitive rainfall. Sudden pavements are less likely to cope with the applied loadings of traffic when saturated resulting in reactive unplanned maintenance and renewal interventions.

Network performance is in decline (Rural)

The number of pavement faults on the road network since the June 2015 is on the rise. Council routinely inspect roads and log faults on the network. Network health analysis indicates a declining trend on the rural network in particular where the effect of natural events and subsequent remedial works cause damage to transportation assets.

Planned Response

The repair of damaged assets can have an unfavourable effect on Council's stakeholders. Repairs can be costly and time consuming to complete resulting in frustrations for affected parties with time delays to travel and substandard driving conditions during this period.

Benefit Statement

Addressing the problem of challenging geology, topography and weather resulting in increased resilience issues and high repair costs when unplanned events occur will contribute to the following agreed benefits:

An efficient and resilient network	What are the benefits from investing in the problem?	- Network resilience will be improved increasing network availability - Increased stakeholder confidence and satisfaction - Reduction in network damage when events occur and corresponding cost savings - Reduction in the frequency of unplanned interventions affecting works programmes Network resilience will be improved increasing network availability
	How will we do this?	- Prepare works programmes that target at risk areas on the network and undertake physical work that correct deficiencies - Pro-active management of road drainage assets - All-Faults defect identification and monitoring of problem areas requiring intervention - Consideration is given to addressing identified resilience issues when undertaking programmed maintenance and renewal works - Repair treatments are fit for purpose and target root cause Inspection regimes that provide early identification of defects and intervention
	How will we measure success	- Department of Internal Affairs measure (Council measure) - Customer Complaints – CRM Response - Customer Satisfaction Survey - One Network Road Classification (ONRC) - The number of journeys impacted by unplanned events - The number of instances where road access is lost - Accessibility - Travel Time Reliability
An affordable network which is economically sustainable	What are the benefits from investing in the problem?	- Addressing identified issues will decrease probability and frequency of intervention and associated costs - Increase availability of transportation network contributing to the flow of goods and services locally and regionally - Enable allocated funding to be spent on programmed works instead of remedial works to reinstate access
	How will we do this?	- Value for money is achieved through forward planning and interventions to improve resilience - Smart buyer – Procurement (Alliancing) were the payment mechanism contributes to lower overall costs - Develop a suite of KPIs and Enablers that drive efficiencies in physical works delivery - Increased funding for environmental maintenance and minor events work categories reducing the need to transfer costs from other maintenance activities
	How will we measure success	- One Network Road Classification (ONRC) - Overall network cost, costs by work category - Cost Efficiency Performance Measures - Peer group comparison - Physical Works KPIs and Enablers - Target Cost Estimates vs Actual Cost - Programmed works vs Reactive - Network condition score



Problem Statement Three

The changing needs (e.g. mobility) and expectations (e.g. active modes) of the community require investment to meet Levels of Service for all modes

Current Situation

Whanganui is a great place to live and visit, and has all the perfect ingredients to become a great hub of active transport. Its temperate climate, location, and compact urban landscape make it an ideal place for cycling and walking. Whanganui is easy to get around - households are within short distance to the city centre and schools; areas of attraction, such as parks, sport and recreational facilities are all in close proximity. This includes Nga Ara Tuhono – Mountains to the Sea, Great Rides which are right on our doorstep.

Whanganui has a supportive active transport culture with a local bicycle users group, cycling traditional clubs, walking and tramping and multisport clubs.

With a shift in National Government policy prioritising active transport models, more infrastructure funding has been made available to local governments to support their communities travel in more healthy and sustainable ways.

Whanganui District Council's strategic direction for active transportation over the next 10 years is detailed in the Active Transport Strategy 2017. It addresses the need to improve connectivity and mobility in the district through an interconnected transportation network that prioritises active transport modes. This strategy covers Whanganui District Council's approach in providing infrastructure and collaborative partnerships that will deliver sustainable and safe active transport provision, applicable to the district's transportation network and public transport.

Infrastructure and Condition

The lack of active travel infrastructure has been a barrier for people to increase engagement with travel options such as cycling and walking, as in the five years prior

to the two Urban Cycleway Projects "Te Tuaiwi" and "City Bridge to North Mole" there were no significant projects undertaken due to a lack of funding availability.

Unforgiving infrastructure and poor road user behaviour is resulting in significantly higher than average rates of harm to people on bikes. Increased use of the road corridor by all modes and the lack of dedicated space for cyclists, means there is ongoing conflict between vulnerable road users and vehicles, which have greater speed and mass.

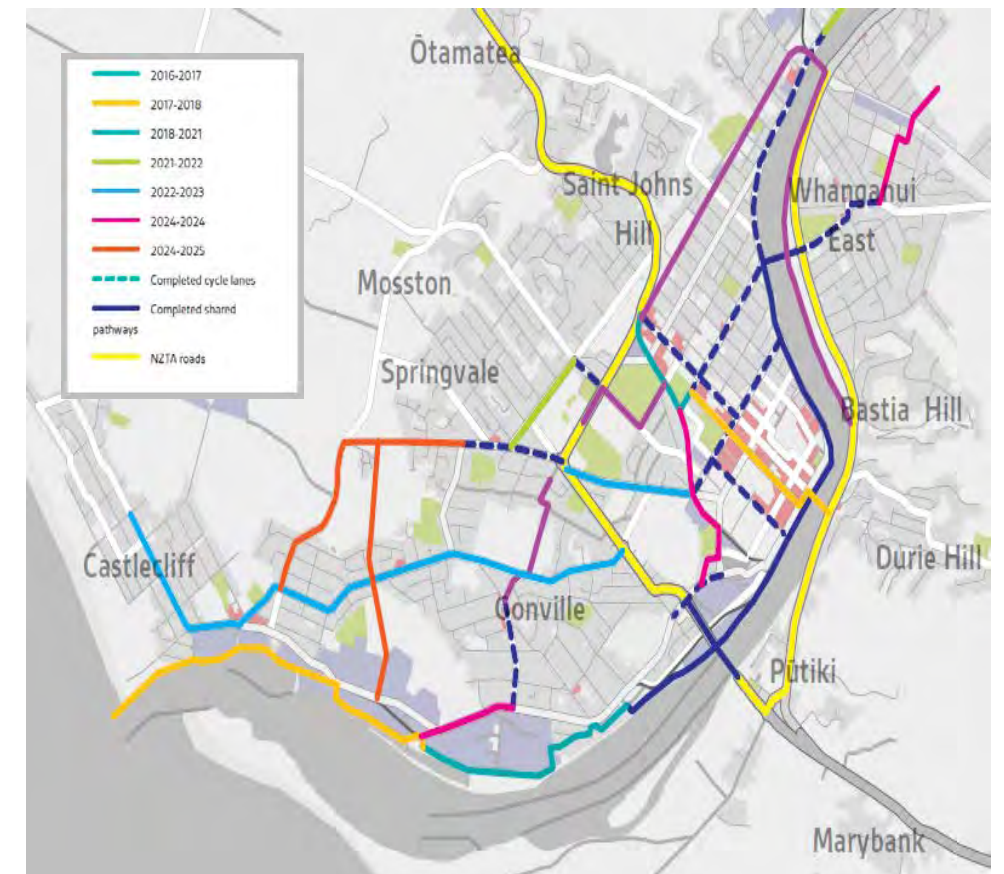
Poor footpath condition contributes to increased occurrence to trips and falls and provide unstable surface for mobility scooters.

Perception

Relative to other transport modes, and the potential for cycling as a transport choice, cycling has a very low level of use so is not effectively contributing to the transport system.

National and local statistics tell us that fewer people are cycling and they are cycling less often. This may be due to the perception that cycling is unsafe, unattractive or inconvenient. These perceptions are a barrier to cycling being chosen more often as a transport choice.

There also a strong correlation between the public perception of safety and uptake of cycling. People's perception of safety is noted as a more important determinant of uptake than the actual risk of injury. In addition, cyclists perceived that some level of separation from other traffic improved safety.



Key Statistics

HEALTH STATS

How many mins on average we spend walking 30min

The population who visit their GP are overweight or obese 63.9%

Residents want to increase their physical activity levels 73%

TRANSPORTATION

Residents who bike to work 3.1%

Residents have used a cycle way or cycle lane 34%

Residents who live <5 minutes to work tend to drive 40%

Residents who live 5-10 minutes to work tend to drive 64%

Most common means of travel to work was, private car, truck or van 68%

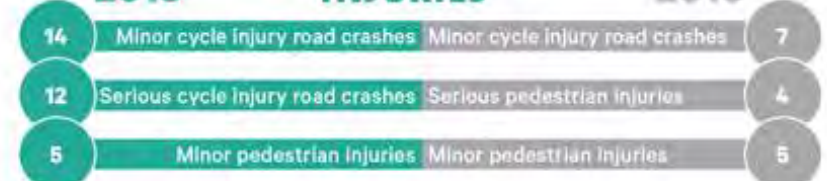
Residents said they have used other walkways around the City 72%



2015

INJURIES

2016





Problem Statement Consequences

Higher safety risk for Cyclists

Cycling has a greater safety risk leading to a higher rate of deaths and serious injuries compared to other transport modes. The network has been designed primarily for motorised vehicles. Narrow seal/shoulder widths, speed of vehicles, mass of vehicles, vulnerability of cyclists, volume of cyclists, low number of cyclists, car driver and bike user behaviour.

Levels of participation

The uptake of people using active modes of transport for leisure, work and other reasons is below anticipated levels. Council undertake physical survey counts and Community views surveys to measure levels of participation.

Asset Condition

Infrastructure provided by Council for walking and cycling requires regular routine maintenance to ensure they meet appropriate levels of service. Sufficient budget is required to undertake works to correct faults that if not attended to can cause safety related issues. A key driver for maintenance intervention is usually trip hazards. These faults also contribute to high percentage of complaints from stakeholders.

Connectivity

The current network of shared pathways is structured so that a maximum benefit is gained from the investment. A planned network of additional pathways is required to connect existing infrastructure to areas of the city currently without adequate walking and cycling facilities.

Constraints

Existing road corridor space is sometimes limited meaning shared cycleway construction means reallocating limited road space. Cost required to achieve standard design configuration can lead to expensive relocation of utility services and other transportation assets.

Customer Satisfaction

Walking and cycling can be travel modes that are safe, attractive and convenient means of travel. Improved Hauora for Whanganui residents by increasing physical activity and reducing obesity and cardio-vascular diseases. Encouraging walking and cycling will lead to a sustainable and integrated transport network. Reduce our impact on the environment and help reach emission reduction targets. Active modes of transport are affordable, inclusive, and augment social cohesion. Health costs can be reduced if people are more active. Our local businesses will thrive— people who use non-motorised transport tend to spend more time and money at local businesses. Walking to and taking walking breaks at work can lead to improved productivity.

Benefit Statement

Reinvestment required to address changing needs (e.g. mobility) and expectations (e.g. active modes) of the community will contribute to the following agreed benefits:

An efficient and resilient network	What are the benefits from investing in the problem?	- Better facilities and infrastructure - Increased contribution to network efficiency - Active modes of transport are affordable, inclusive, and augment social cohesion.
	How will we do this?	- Enhance urban cycleway and pathway connections through new projects to encourage active transport - Integrating our pre-existing walkways and cycle paths to make it easier for people to choose active transport. - Taking a whole of journey approach and ensuring public transport is linked to active transport modes. - Develop cycling corridors for cyclists of all abilities
	How will we measure success	- Active Transport Strategy 2017 - Increase percentage of people cycling to work (Census data) - Increase percentage of residents who said they have used walkways around the city (Annual Community Views Survey)
An affordable network which is economically sustainable	What are the benefits from investing in the problem?	- Improved environment (reduction in pollution, greenhouse gas emissions and noise) - Encouraging walking and cycling will lead to a sustainable and integrated transport network. - Reduce our impact on the environment and help reach emission reduction targets. - Fuel savings from not using vehicles - Improved Hauora for Whanganui residents by increasing physical activity and reducing obesity and cardio-vascular diseases.
	How will we do this?	- Investigate and develop programmes that are designed to increase active transport affordability. - Prioritising active transport modes through the employment of local area traffic management measures to influence driver behaviour and reduces the convenience of car use to provide safer streets for everyone. - Smart buyer – Procurement (Alliancing) where the payment mechanism contributes to lower overall costs
	How will we measure success	- Department of Internal Affairs measure (Council measure) - Customer Complaints – CRM Response - Customer Satisfaction Survey
A safe and well connected network for all modes	What are the benefits from investing in the problem?	- Reduced actual cycle deaths/serious injury - Improved perception of cycling safety - Improved Hauora for Whanganui residents by increasing physical activity and reducing obesity and cardio-vascular diseases.
	How will we do this?	- Identifying where safety risks are for cyclists and implement traffic controls to mitigate these risks. - Create pedestrian friendly neighbourhoods. - Address safety issues in the urban environment for all active modes of travel. - Collaborate with partners to ensure public transport stations are accessible by everyone - Implement cycling supporting facilities and parking improvements to increase accessibility and encourage new cyclists
	How will we measure success	- ONRC Performance Measures - Safety - Customer Performance Measures applicable to active modes and Safety – Technical Performance Measures applicable to active modes - Peer group comparison - Active Transport Strategy 2017 - Cyclists are recorded to feel safe when using shared pathways and cycle lanes (Annual perception Survey) - Annual decrease in deaths, serious and minor injuries from crashes involving cyclists and pedestrians (Annual NZTA/WDC transportation data)



Problem Statement Four

A range of factors such as urban intersections layout, age, capability and experience of drivers are resulting in death and serious injuries

Current Situation

The Whanganui transport network is a varied and complex system providing Whanganui stakeholders with a growing range of transport choices over a wide and diverse geographic area.

Despite substantial progress over the last 10 years, Whanganui District still lags behind nationally in road safety. Every year, we are having fatal and serious injury accidents on our roads. These numbers reflect lives lost and ruined in what are mostly preventable crashes, but they do not show the effect of these crashes on families, the wider community and the health system.

Having an effective road network is crucial for the economic, social and cultural well-being of our district. However this can come at a price in terms of road safety if not carefully considered and implemented. Improvements in road safety are needed, not only to save lives, but to also enhance the economic development and productivity of the district through both effective and safe road use.

Road Safety

Road Safety is one of the top three priorities in the Government Policy Statement (GPS), and is strategically driven through the NZ Safer Journeys Road Safety to 2020 Strategy. Safer Journeys is the government's strategy to guide improvements in road safety over the period 2010 to 2020.

The strategy's vision is a safe road system increasingly free of death and serious injury and introduces the Safe System approach to New Zealand.

The Safe System approach aims for a more forgiving road system that takes human fallibility and vulnerability into account. Under a Safe System we design the whole transport system to protect people from death and serious injury.

We accept that:

People make mistakes - We need to recognise that people make mistakes and some crashes are inevitable.

People are vulnerable - Our bodies have a limited ability to withstand crash forces without being seriously injured or killed.

We need to share responsibility - Those who design the road system and those who use the roads must all share responsibility for creating a road system where crash forces don't result in death or serious injury.

We need to strengthen all parts of the system - We need to improve the safety of all parts of the system - roads and roadsides, speeds, vehicles, and road use - so that if one part fails, other parts will still protect the people involved.

Communities at Risk Register 2017

The Communities at Risk Register has been developed by the Transport Agency to identify communities of road users that are over-represented in terms of road safety risk. The register highlights personal risk to road users by ranking communities by local authority area based on the Safer Journeys areas of concern.

The Communities at Risk Register highlights personal risk to road users. Alongside these personal risk calculations are the average annual death and serious injury (DSI) counts based on the latest five year data (the collective risk at a local body level, regional level and national level) from the Transport Agency's Crash Analysis System (CAS).

PERSONAL RISK TO ROAD USERS	WHANGANUI DISTRICT	
All deaths and serious casualties	24/73	
Young drivers (of light vehicles aged 16 – 24 yrs)	36/73	
Alcohol and/or drugs	18/73	
Speed (too fast for the conditions)	20/73	
Urban Intersections	23/73	
Rural intersections	57/73	
All intersections	16/73	Medium risk
Rural road loss of control/or head on >70km/hr	23/73	
Motorcyclist involved	9/73	Medium risk
Cyclist involved	31/73	
Pedestrian involved	29/73	
Distraction (attention diverted)	10/73	High risk
Fatigue	33/73	
Older road users (aged 75yrs and older)	29/73	
Restraints (seatbelt not worn)	59/73	

Key Statistics



2.2	Fatalities 5 yr avg	2.1	Fatalities 10 yr avg
12.2	Serious Injuries 5 yr avg	11.4	Serious Injuries 10 yr avg

Fourteen strategic areas of concern from Safer Journeys are presented; in ranking personal risk for each we have identified two groups of concern: High concern is assigned to communities with personal risk profiles greater than one standard deviation from the mean. Medium concern is assigned to communities with personal risk profiles greater than half a standard deviation from the mean and below one standard deviation.

It is apparent from the statistic that Whanganui has significant work to do to address obvious deficiencies in the transportation network. Analysis of crash rates at intersections and targeted improvements at these locations is an area that Council can develop further to when compiling future safety improvement programmes.

Education is clearly required to improve choices adopted by drivers in the Whanganui district if we are to reduce distractions and Motorcyclist related crashes.



Problem Statement Consequences

Road safe network for road users

Roads can be unpredictable and unforgiving of mistakes. They need to be self-explaining encouraging safe driving practices and travel speeds. Roads that don't meet this criteria can result in unexpected consequences. A number of poor safety statistics for Whanganui district indicate that some work is required to address these deficiencies.

Alcohol and/or drugs

Road users are required to be alert and unimpaired when driving. When under the influence of drugs or alcohol they are less likely to make correct choices resulting in potential crash situations. Alcohol/drug impaired driving is one of the largest causes of serious road crashes. Whanganui has been identified as an area where crashes of this kind require intervention.

Speed (too fast for the conditions)

Travel speeds suit the function and level of safety of the road. People understand and comply with the speed limits and drive to the conditions. In Whanganui it is apparent that speed related crashes are higher than the national average.

Urban Intersections

A number of intersections in the city have high crash rates. Poor layout and visibility have been identified is contributing to the high crash rate. These sites have been identified for upgrade.

Motorcyclist involved

The risk of a motorcyclist being killed or seriously injured in a crash is about 18 times higher than for a car driver. The potential outcomes of any crash, whether caused by the rider, other road users, the road environment or the vehicle itself, are severe.

Distraction (attention diverted)

Driving safely requires a driver's full attention. Drivers need to maintain control of their vehicle and stay aware of the surroundings while looking out for and reacting to potential hazards. The increase in distraction related crashes can be in some cases be linked to the number and types of technologies that can distract (e.g. MP3 players, navigation systems and entertainment systems).

Benefit Statement		
Addressing death and serious injury accidents linked to urban intersections layout, age, capability and experience of drivers will contribute to the following agreed benefits:		
A safe and well connected network for all modes	What are the benefits from investing in the problem?	- Ensuring a safe and reliable access for all - An improvement in crash rates in Whanganui district - Roads and roadsides will be safer because transport and urban planning, and road design will accommodate errors; surfaces will be improved and roadside hazards removed or barriers installed - speed will be managed to safe levels through more appropriate limits, and there will be smarter self-explaining roads and roadsides that show people what safe speeds mean - Road users will be alert and aware of the risks and drive or ride to the conditions; there will be more in-vehicle technologies to give drivers safety feedback, ensure alertness and reinforce compliance with the road rules. - make the road transport system more accommodating of human error - Minimise the level of unsafe road user behaviour.
	How will we do this?	- Adequate funding available to implement safety initiatives - Identify at risk areas on the transportation network and undertake safety related improvement works (i.e. Intersection improvements) - Get involved in safety education programmes targeted at key, at risk groups in the Whanganui District - Responding to safety related concerns from stakeholders - Work with industry to identify areas that pose a safety risk. Opportunity through good policy to get third party contribution as part of consenting requirements. - Innovation (Dust Suppressants) - Appropriate maintenance and renewal programmes, and implementation that ensures road assets are fit for purpose
	How will we measure success	- Positive trends developed and reported against target measures Department of Internal Affairs Measure (Council measure) - Safety: Number of reported injury crashes (all roads combined) ONRC Performance Measures - Safety - Customer {Performance Measures - Safety – Technical Performance Measures - Peer group comparison - National statistical reporting “Communities at Risk”



Business Drivers

The transportation assets are the largest asset group owned by Whanganui District Council, and accordingly the management of these assets is of critical concern to both the Council and the community alike.

The business drivers for the current operation of transportation are defined by statutory requirements, the 10-Year Plan (LTP), health and safety and sustainability performance indicators. These are overviewed in the following section.

The LTP states that Whanganui District Council:

- Provides road, cyclist, pedestrian and parking facilities, and public transportation infrastructure for the sustainable, safe, convenient, comfortable and cost effective movement of people, goods and vehicles throughout the District, as well as to destinations outside the District
- Fosters an integrated approach to road safety that includes a range of education, engineering and enforcement initiatives designed to enhance the safety of the environment, the vehicle, the road user, cyclists and pedestrians
- Monitors, enforces and administers the Council's Parking Bylaw, as well as vehicle defects such as Warrants of Fitness and Registration.

Delivery of Transportation Services

Levels of Service standards define the levels to which Whanganui District provides services to the community. Some standards are defined by statutory requirements, ONRC, others in conjunction with the community, and some with key stakeholders. These standards (or levels of service) provide a basis for determining whether assets need to be constructed, replaced, remanufactured, or maintained and if they assist delivery of road transport outcomes. These performance measures have been defined to enable Whanganui District's performance to be measured and reported against. These are covered in detail in the Levels of Service section of this Plan.

Intergenerational Equity

Council has to think about the well-being of our communities now as well as in the future. Many of the expenditures in a local authority are for infrastructure that have long service lives (such as transportation networks). Current ratepayers should not be expected to fund benefits for future users, so there is a requirement to spread costs across current and future users.

Intergeneration equity requires Council to address these identified problems facing the transportation network by assisting how much of the expenditure required should be funded by current ratepayers (through rates or other funding sources) and by future ratepayers (by borrowing

now, collecting development contributions as new ratepayers arrive and other funding sources).

Health and Safety

Whanganui District's Health and Safety Policy:

"Whanganui District Council is committed to providing the safest working environment possible for all Elected Members, Employees, Contractors, and Visitors while they are engaged in Council business and/or visiting Council buildings or property".

Whanganui District will also demonstrate a commitment to best management practice in equal employment opportunities.

Statutory Requirements

Council comply with the following standards and legislation when maintaining, operating, renewing and developing the land transport assets:

- This AM plan
- Resource Management Act 1991
- Building Act 2004
- Relevant Technical Standards, including
- Council standards for urban and rural streets and roads
- Code of Practice for Utilities' Access to the Road Corridors
- Code of Practice for Temporary Traffic Management
- Standards published by Standards Association of New Zealand including NZS 4404 – Code of Practice for Urban Subdivision
- Austroads guidelines
- Manufacturer's Specifications
- Emergency management plans
- Health and Safety in Employment Act

The key legislation, policy and planning documents affecting the levels of service provided by the land transport activity are:

Local Government Act 2002

The LGA provides for democratic and effective local governance that recognises the diversity of New Zealand communities. It promotes transparency and accountability and sets the purpose of local government:

"To enable democratic local decision-making and action by, and on behalf of, communities and to meet the current and future needs of communities for good-quality local infrastructure, local public services and performance of regulatory functions in a way that is most cost-effective for households and businesses, to enable democratic local



decision-making and action by, and on behalf of, communities; and to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.

In this Act, good-quality, in relation to local infrastructure, local public services, and performance of regulatory functions, means infrastructure, services, and performance that are efficient; and effective; and appropriate to present and anticipated future circumstances.”

The Local Government Act 2002 Amendment Act 2010:

- Introduces a focus on core business
- Requires the establishment of rules specifying the performance measures for core services
- Reduces some of the consultation requirements
- Requires additional financial reporting

The retained sections of LGA 1974 provides for the formation, management, stopping, closing, and control of roads, limited access roads, and provision of public safety.

Resource Management Act (RMA)

The RMA 1991 is New Zealand's primary legislation dealing with the management of natural and physical resources. It provides a national framework to manage land, air, water and soil resources, the coast, subdivision and the control of pollution, contaminants and hazardous substances.

The RMA has a single overarching purpose:

To promote the sustainable management of natural and physical resources.

The RMA establishes a hierarchy of policy documents from national instruments to regional policy statements, and regional (and district) plans. This 'hierarchy' and requirement to ensure consistency between plans, is to promote sustainable management and ensure integrated management of natural and physical resources at a national, regional and local level.

Civil Defence Emergency Management Act 2002

The Civil Defence Emergency Management Act 2002 (CDEM Act 2002) came into force on December 1, 2002. The CDEM Act 2002 ensures that New Zealand has the resources to manage disasters.

Emergency Management focuses on 'the 4Rs':

- **Reduction** – identifying and analysing risks to human life and property.
- **Readiness** – developing capabilities before an emergency occurs.
- **Response** – taking action immediately before, during or directly after an emergency.
- **Recovery** – initiating activities after impact, and extending them until the community's capacity for self-help is restored.

The Civil Defence Emergency Management Act 2002 requires:

- Whanganui District to form a Civil Defence and Emergency Management Group (CDEM Group).
- Development of a Civil Defence Emergency Management Plan that identifies risks from hazards and puts readiness, response and recovery procedures in place. The Plan is developed with public input to ensure hazards and risks are dealt with to a level accepted by the community.

Health and Safety at Work Act 2015

The objective of the Health and Safety at Work Act 2015 is to promote the prevention of harm to all people at work, and others in, or in the vicinity of, places of work. The Act applies to all New Zealand workplaces and places duties on employers, the self-employed, employees, principals and others who are in a position to manage or control hazards.

The emphasis of the law is on the systematic management of health and safety at work. It requires employers and others to maintain safe working environments, and implement sound practice. It recognises that successful health and safety management is best achieved through good faith co-operation in the place of work and, in particular, through the input of those doing the work.

Transit New Zealand Amendment Acts 1995 and 1997

Primarily provides a legislative framework for Transit New Zealand, but also includes requirements for other road controlling authorities. Section 42H (6) requires district transportation programmes to be in keeping with the national land transport strategy and any relevant regional land transport strategy. Section 42H (7) requires the programme to implement the regional land transport strategy.

Land Transport Act 1998

Controls aspects of road and traffic operations and includes traffic regulations, bylaws, and enforcement.

Land Transport Management Act 2003, and Amendment 2008

Sets out requirements and process for development of Council's Land Transport Programme, provides a framework for the receiving funding from NZTA and allows for the establishment of future toll roads under certain conditions.



Local Government (Rating) Act 2002

The Local Government (Rating) Act 2002 replaced the Rating Powers Act 1988 with updated and streamlined rating powers. The intention is to ensure that the community has the opportunity to be well informed about what its money is being spent on, and to express its views when major decisions are being made.

The three main purposes of the Act are to:

- Provide local authorities with flexible powers to set, assess and collect rates
- Ensure that rates reflect decisions made in a transparent and consultative manner
- Provide for processes and information to ensure that ratepayers can identify and understand their liability for rates.

Transit New Zealand Act 1989

This Act was established to set up how the government controlled transportation authority would be set up and operated, including how funding to local authorities was to be managed.

Transit New Zealand was created by the Transit New Zealand Act 1989. It reports to the Board of Transit New Zealand, appointed by the Government to direct both overall policy and funding allocation.

Transit New Zealand was formed to deliver a safe and efficient state highway network within the parameters of the new economic models. The most notable change was a legislative requirement to let network management and maintenance contracts through competitive pricing procedures.

Traffic Regulations Act 1976 & Land Transport (Road User) Rules

This legislation details Road Rules and Regulations to be adhered to and monitored. This affects the operation and use of transportation assets e.g. signage, speed limits, parking restrictions, installation of traffic signals (if appropriate in the future), and school patrols.

Building Act 2004

In New Zealand, the building of houses and other buildings is controlled by the Building Act 2004. It applies to the construction of new buildings as well as the alteration and demolition of existing buildings.

The Building Act 2004 has repealed the Building Act 1991 and introduces a number of changes to the law governing building work.

Public Works Act 1981

Public works often cannot be carried out without affecting private landowners and their interests in land. For these reasons the Crown provides themselves with legislative powers to compulsorily acquire land for public works so

that public works proposals are not unreasonably delayed. A basic principle of the Act is that no person shall be deprived of land without receiving fair compensation.

Hazardous Substances and New Organisms Act 1996 (HSNO)

The Hazardous Substances and New Organisms (HSNO) Act was enacted in 1996 with the hazardous substances related provisions of the Act coming into force in July 2001.

Territorial authorities have an enforcement role in the following areas:

- Premises not covered by the other enforcement agencies (e.g. private dwellings and public spaces)
- Dangerous goods licensing during the transitional period of the HSNO Act
- Enforcing the HSNO Act when enforcing the RMA
- Functions transferred by other enforcement agencies.

The first two enforcement roles are mandatory for territorial authorities and unitary authorities under the HSNO Act. The second two enforcement roles are voluntary, depending on any authority's preparedness and ability to take on such an enforcement role.

Telecommunications Act, Electricity Act, Gas Act, Railway Safety and Corridor Management Act

Provide utility operators and others with powers to use road corridors.

Land Transport Rule - Setting of Speed Limits 2017

The rule establishes a new speed setting mechanism that is focussed on assisting road controlling authorities to set safe and appropriate speed limits, in particular in areas where there are high-benefit cost opportunities for the optimisation of safety and efficiency

In addition the rule enables the setting of a 110km/h speed limit on roads where it is safe and appropriate to do so and establish a more flexible approach to signage requirements.

Specific Requirements for Asset Management Planning

The Local Government Act 2002 (LGA 2002) brought about some significant changes to the way councils operate, with a focus on community consultation and participation and the promotion of social, economic, environmental and cultural well-being of communities in the present and in the future.

The enactment of the LGA 2002 Amendment Act 2010 has seen a focus towards improved transparency, accountability and financial management, with emphasis in Schedule 10 on financial reporting. Section 3 (1) of



Schedule 10 requires that Council report in the LTP the capital expenditure budgets to:

- (a) Meet additional demand for an activity; and
- (b) Improve the level of service; and
- (c) Replace existing assets.

This has an implication for asset management planning, which must address:

- **Demand** – In relation to estimated additional capacity and the associated costs and funding sources. Section 5: Growth & Demand of this AMP covers this in more detail.
- **Levels of Service (LoS)** – Intended LoS performance targets and other measures by which actual levels of service provision may be meaningfully assessed, and the estimated costs of achieving and maintaining identified LoS, including sources of funding. Section 4: Levels of Service of this AMP covers this in more detail.
- **Renewals** – Including maintenance renewal and upgrades. This is covered in considerable detail Section 10: Life Cycle Management of this AMP.

NZ Standard SNZHB 4360:2004 'Risk Management for Local Government'

This standard provides guidelines for the implementation of a risk management programme and is applicable to Territorial Authorities, Regional Councils and Unitary Authorities. The elements for the risk management process, defined in AS/NZS 4360, have been divided into seven broad categories: governance, legal compliance, business risks, built assets, human resources, information systems and financial risk management.

National Standards

Council refers to the relevant documents contained with Transit New Zealand Standards and Guidelines Manual SP/M/021 Version 2 – August 2005. This document contains up-to-date standards and guidelines in current use throughout New Zealand, including international documents. Note Transit New Zealand has now become New Zealand Transport Agency.

District Bylaws

The Whanganui District Council makes Bylaws for its District with the purpose of protecting the public from nuisance, protecting, promoting and maintaining public health and safety; and minimising the potential for offensive behaviour in public places. The Bylaws are made in accordance with powers contained in the Local Government Act 2002 and other legislation that specifies bylaw making powers

Table 2.3: Bylaw Status

Bylaw	Purpose	Year	Status
Traffic and Speed Limits Bylaw	This bylaw facilitates traffic management and speed limits in the urban and rural area of Whanganui.	2017	Draft
Streets Infrastructure Bylaw	This bylaw aims to control activities affecting streets within the Whanganui District so that the public's health, safety and convenience are protected. Specific reference is made to vehicle crossings, overhanging trees, property numbering and the erection of barbed wire, razor wire and electric fences.	2015	Current
Animal Control Bylaw	This bylaw is specific in the keeping of dogs, cats, pigs, poultry, bees, goats, sheep, horses, cattle, deer, or any other animal; however, the Bylaw does not contain specific controls relating to dogs as these aspects are covered by the Whanganui Council's Dog Control Bylaw. The relevance to transportation is that this bylaw makes specific reference to the movement and control of animals in the road corridor.	2014	Current



District Policies, Strategies, Standards & Guidelines

Table 2.4: Policies

The following policies, strategies, standards and guidelines are currently in place:

Policy Name	Purpose	Year	Status
Risk Management Policy and Process	To state our policy and objectives in relation to risk management and to articulate our risk management process.	2014	Current
Procurement Policy	This document provides information on Whanganui District Council's procurement policies which include procurement principles and rules. The principles and rules are designed to provide an efficient and effective procurement practice on a best value for money basis for the delivery of the Council's 10-Year and Annual Plans and overall corporate strategy. Procuring in line with the information provided in this document, the Office of the Auditor-General's "Procurement guidance for public entities", NZTA's Procurement Manual where required as well as relative legislation, will assist in ensuring probity is achieved in WDC's procurement practices.	2017	Current
Street Tree Policy	The Whanganui District Council Street Tree Policy has been developed to provide policy guidance and a consistent approach to the planting and removal of trees on Council owned land.	2016	Current

Table 2.5: Strategies and Guidelines

Document Name	Purpose	Year	Status
Activity Management Plan	Activity Management Plans (AMP) provide key input into the 10-Year Plan, and 30 year strategy document supporting the functions and forecasts. The key objective of the AMP is to provide a desired level of service in the most cost effective manner while demonstrating responsible stewardship for present and future customers.	Year plan is adopted	Current
Leading Edge Strategy	This strategy acts as Council's overarching strategic context, from which all work programmes and strategic documents will flow from.	2014	Current
Local Emergency Management Plan	This Plan is a collaborative effort from the Councils of the Manawatu Whanganui region and has been devised to co-ordinate successful hazard management. As a result, it has focused on measures to avoid or mitigate the effects of hazards, the identification of key issues for this region, and the development of long-term objectives to rectify these issues.	2017	Current
Active Transport Strategy	The Active Transport Strategy establishes Whanganui District Council's strategic direction for active transportation over the next 10 years. It addresses the need to improve connectivity and mobility in the district through an interconnected transportation network that prioritises active transport modes.	2017	Current
Rural Roads Strategic Plan	The document provides guidelines for councillors and Council officers to make decisions on requests for works on rural roads.	2009	Current
Rural Pavement Maintenance Strategy as a	This strategy establishes the risks and costs associated with increased heavy commercial vehicle movements from forestry harvesting	2017	Current



Document Name	Purpose	Year	Status
Consequence of Forestry Activity			
Whanganui Urban Transport Strategy	The strategy sets out the direction for Council's direction for the city's transportation network over the next 30 years. The strategy is a guiding document for sustainable integrated planning of the road network servicing all modes of land transport. The strategy also aligns with the strategies Council has adopted for economic, social and environmental outcomes for the District that will guide transportation infrastructure investment.	2011	Current
Parking Management Plan	The Plan identifies how we will provide for and manage the development, distribution and ongoing management of parking facilities within our city centre environment.	2012	Under Review
Local Emergency Management Plan	This Plan is a collaborative effort from the Councils of the Manawatu Whanganui region and has been devised to co-ordinate successful hazard management. As a result, it has focused on measures to avoid or mitigate the effects of hazards, the identification of key issues for this region, and the development of long-term objectives to rectify these issues.	2017	Current



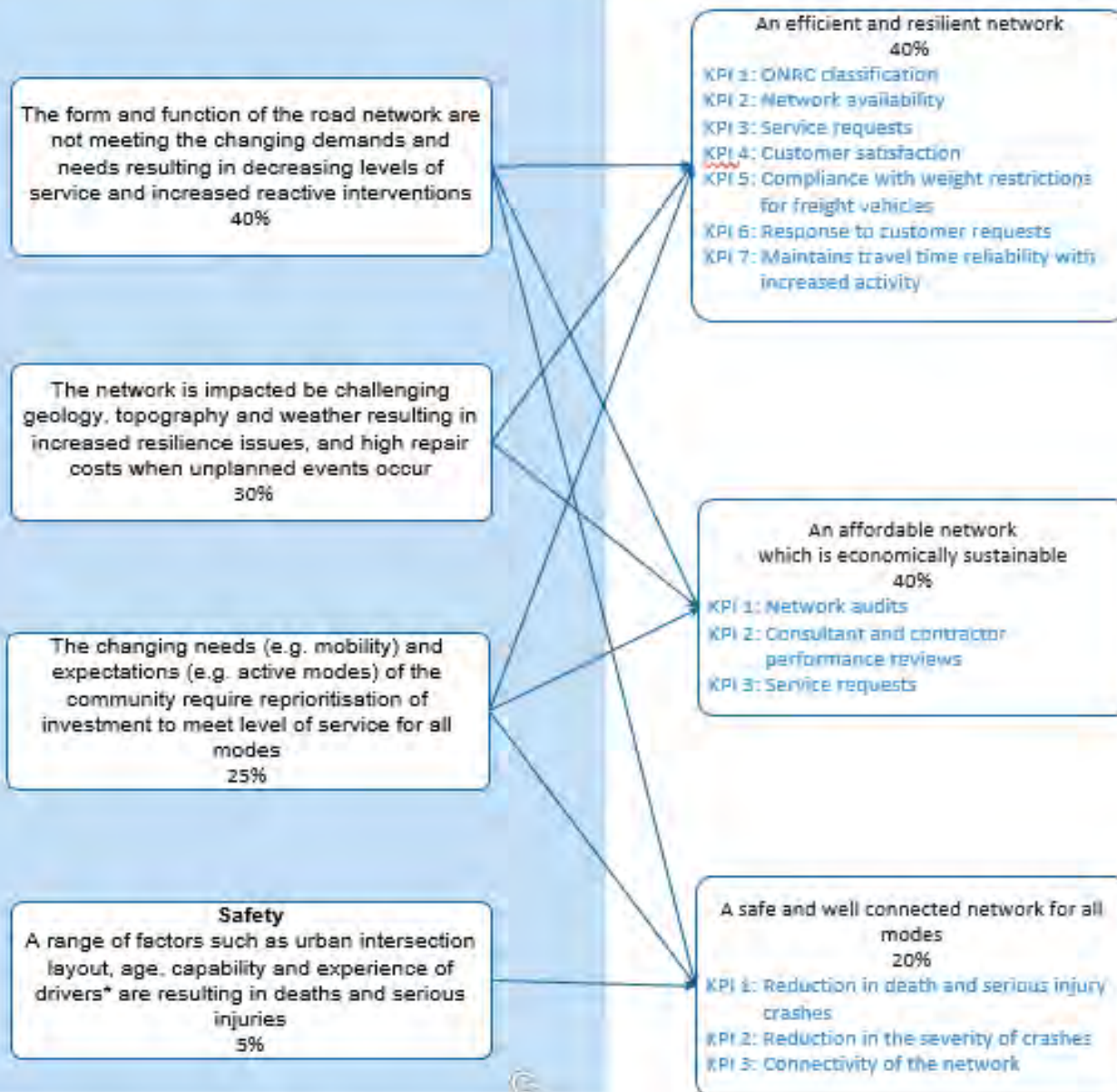
Whanganui District Council

2018 – 2048 Road Transport Activity Management Plan

INVESTMENT LOGIC MAP

PROBLEM

BENEFIT



* Safety related factors are to be updated after analysis of the causation of crashes and safety issues is completed during the AMP process

Investor: Rul Letao
Facilitator: Tim Eldridge
Accredited Facilitator: No – Registered Business Case Professional

Version no: 1.0
Initial Workshop: 8 March 2017
Last modified by: Tim Eldridge, GHD 20/03/2017
Template version: Rev 1.0

Whanganui District Council

2018 – 2048 Road Transport Activity Management Plan

BENEFIT MANAGEMENT PLAN

Part 1: Benefit Map

BENEFIT	INVESTMENT KPI	MEASURE	BASLINE	TARGET
An efficient and resilient network 40%	Network availability	Reduced number of full and partial closures	Value mm/yyyy	Value mm/yyyy
		Increased mode share (peds and cyclists)	Value mm/yyyy	Value mm/yyyy
		Increased compliance with weight restrictions for freight vehicles	Value mm/yyyy	Value mm/yyyy
		Maintain travel time reliability with increased activity	Value mm/yyyy	Value mm/yyyy
		Meets performance measures of ONRC Classification	Value mm/yyyy	Value mm/yyyy
		Number of customer complaints and/or service requests	Value mm/yyyy	Value mm/yyyy
An affordable network which is economically sustainable 40%	Customer Satisfaction	Meetings and communication to the community and industry	Value mm/yyyy	Value mm/yyyy
		Benchmark comparison costs to meet ONRC outcomes	Value mm/yyyy	Value mm/yyyy
		Reduced lifecycle costs from routine maintenance	Value mm/yyyy	Value mm/yyyy
		Network condition indices, defects per km	Value mm/yyyy	Value mm/yyyy
A safe and well connected network for all modes 20%	Network Audits	Network connectivity for all modes	Value mm/yyyy	Value mm/yyyy
		Number of deaths and serious injury crashes	Value mm/yyyy	Value mm/yyyy
		Reduced severity of crashes	Value mm/yyyy	Value mm/yyyy
		Connectivity	Value mm/yyyy	Value mm/yyyy

RESPONSIBILITY FOR DELIVERING THE BENEFITS

Name	Position	dd/mm/yyyy
Investor: Rul Letao		
Facilitator: Tim Eldridge		
Accredited Facilitator: No – Registered Business Case Professional		

Version no: 1.0
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03 Customer Levels of Service



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Overview

Activity Management (AM) planning enables the relationship between levels of service and the cost of the service (the price/quality relationship) to be determined. This relationship is then evaluated in consultation with the community to determine the levels of service they are prepared to pay for.

This section defines the levels of service Council delivers to its customers and the measures which are used to identify Council's performance in delivering these.

It also identifies how levels of service for transportation activities contribute to the 2018 Government Policy Statement (GPS), Regional Land Transport Plan, and the Council's overarching Community Outcomes.

Additionally new transportation levels of service measures have been introduced by NZTA. The One Network Road Classification (ONRC) was designed to standardise the performance of roads throughout New Zealand, aiming to address historical inconsistencies, and promote economic growth. As part of the process of embedding the ONRC in the management of the district roads, the way in which Council has defined levels of service has changed.

The ONRC framework defines six Customer Outcomes:

- Resilience
- Travel time reliability
- Accessibility
- Amenity
- Safety
- Cost efficiency

The expected customer experience for each road classification is defined for each of these outcomes. Council then defines the outputs necessary to ensure the customer experience on the Whanganui transportation network is consistent with these expectations.

Defined Levels of Service (LoS) are used to:

- Inform customers of the proposed LoS
- Develop AM strategies to deliver LoS
- Measure performance against defined LoS
- Identify the costs and benefits of services offered
- Enable customers to assess reliability, simplicity, quality, friendliness, and convenience to further streamline the process.

In this context LoS define the quality of delivery for a particular activity or service against which service performance can be measured.

This section of the AMP covers the following:

Local Government Act 2002 Requirements – Details the legislation behind the process, including clause references and requirements.

Linking Levels of Service to Council Outcomes and the Relationship with Activity Management Planning –

Explains the links between this plan, LoS and Council Outcomes.

Transportation and Pathways Levels of Service –

Provides details of the process of establishing LoS for the transportation activity including embedding of ONRC in standardising road network performance.

Understanding Community Priorities – Details how the community will assist in determining LoS and indicate its willingness to pay for those services.

Customer Core Values and Outcomes – Details Core Values and Levels of Service Outcomes and how these relate to Customer and Technical LoS. This is presented in a table format to ensure each value is addressed, outcomes identified and relevant LoS established for future consultation.

LGA 2002 Requirements

The Local Government Act 2002 (LGA 2002) prescribes that LoS must now be developed from a community perspective. This is a fundamental change from the previous approach.

Historically, LoS have been expressed in a technical way that describes what Council has expected from its internal or external service providers. These need to be presented to the community in a clear, informed way as 'customer levels of service', and consultation used to obtain the 'community perspective'.

LGA 2002 Amendment Act 2010

In 2010, the Local Government Act 2002 was amended to require the Secretary for Local Government to make rules specifying non-financial performance measures for local authorities to use when reporting to their communities on roads, footpaths, stormwater drainage, flood protection and control works, water supply and the provision of sewerage and the disposal.. The aim was to help the public to contribute to discussions on future levels of service for their communities and to participate more easily in their local authority's decision-making processes.

The performance measures will provide information on local authorities' levels of service in providing roads and pathways. Being able to compare the levels of service provided by different local authorities will help communities to assess whether they need a better or lesser level of service.

Changes in Community Consultation Requirements

Enactment of the LGA 2002 Amendment Act 2010 and 2014 brought about some changes in several of the sections previously affecting Council's requirements around decision-making and consultation with the community.

Table 3.1 over-page lists the sections and their current status since the Amendment Acts



Customer Levels of Service

Table 3.1: Legislative Requirements under the Local Government Act 2002 as at 8 August 2014

Section	Title	Status	Implications of the Changes
76AA	Significance and Engagement Policy	Current	Every Council must adopt a policy. There is greater emphasis on engagement.
76	Decision-making	Current	Every decision must be in accordance with the Act
77	Requirements in relation to decisions	Current	Council must identify and assess all practicable options when making decisions
78	Community views in relation to decisions	Section (2) repealed by 2010 Amendment	Council must still give consideration to the views of people who are likely to be affected by Council's decisions; however it is no longer a requirement to consult at prescribed stages of the decision-making process
79	Compliance with procedures in relation to decisions	Section (3) and (4) added (under the 2004 Amendment Act)	These sections (which were added for the avoidance of doubt) require that when decisions are made, they include the decision-making requirements of any other legislative act
80	Identification of inconsistent decisions	Current	
81	Contributions to decision-making processes by Māori	Current	
82	Principles of consultation	Current	Section 82(1)(f): Replaced under 2014 Amendment
82A	Information requirements for consultation required under this Act	Inserted by 2014 Amendment	Council must make information publically available if it must consult under the requirements of section 82
83	Special consultative procedure	Current	Replaced under 2014 Amendment.
83AA	Summary of information	Inserted by 2014 Amendment	Must outline the major matters in the statement of proposal
83A	Combined or concurrent consultation	Inserted by 2004 Amendment	For the avoidance of doubt, consultation under special consultative procedure can be combined with other special consultative procedures
84	Special consultative procedure in relation to long-term plan	Repealed by 2014 Amendment	
85	Use of special consultative procedure in relation to annual plans	Repealed by 2014 Amendment	
86	Use of special consultative procedure in relation to making, amending or revoking bylaws	Replaced by 2014 Amendment	Statement of proposal must include a draft of the bylaw or a statement that the bylaw is being revoked and why
87	Other use of special consultative procedure	Current	Section 87(1)(a) Amended by 2014 Amendment
88	Use of special consultative procedure in relation to change of mode of delivery of significant activity	Repealed by 2010 Amendment	
89	Summary of information	Repealed by 2014 Amendment	



Customer Levels of Service

Statement of Service Provision

Schedule 10, Section 4 of the LGA 2002 requires Council to include a statement of service provision in its 10-Year Plan. The statement is to include the intended levels of service for each group of activities that provides some specific requirements for the development of LoS as follows:

- Targets for each performance measure.
- Intended changes in the level of service and reasons for the change.
- Reasons for any significant change in the cost of a service.

LoS Reporting

Schedule 10, Section 25 of the LGA 2002 requires that an audited statement must be included in the Annual Report that:

- Compares the LOS achieved in relation to a group of activities with the performance target or targets for the group of activities.
- Specifies any intended change to LOS have been achieved.
- Provides reasons for any significant variation between the LOS achieved and the intended LoS.

Changes in LoS

A change in LoS will either be reflected as a requirement to increase or decrease the LoS.

Any significant change will need to be consulted on with key stakeholders and the community. The outcomes must then be incorporated into the decision making process.

LoS Relationship to AM Planning

One of the basic cornerstones of sound activity management is:

“To provide the levels of service that the current and future community want and are prepared to pay for.”

LoS therefore provide the platform for all decisions relating to management of transportation facilities as illustrated below in Fig 3.1. Before developing detailed asset management strategies, Council needs to agree the LoS with the community with consideration given to the following:

- Planned outcomes
- Legislative requirements
- Technical constraints

A key objective of the Activity Management Plan is to match the level of service provided by the asset with the expectation of customers, corporate goals and legislative requirements. This requires a clear understanding of customer needs and preferences. The levels of service:

- Inform customers of the proposed type and level of service to be offered
- Provide a focus for the asset management strategies developed to deliver the required level of service
- Identify the costs and benefits of the services offered
- Enable customers to assess suitability, affordability, and equity of the services offered.
- Customer Research and Expectations

Figure 3.1: Adapted from NAMS - Developing LOS and Performance Measures, 2007

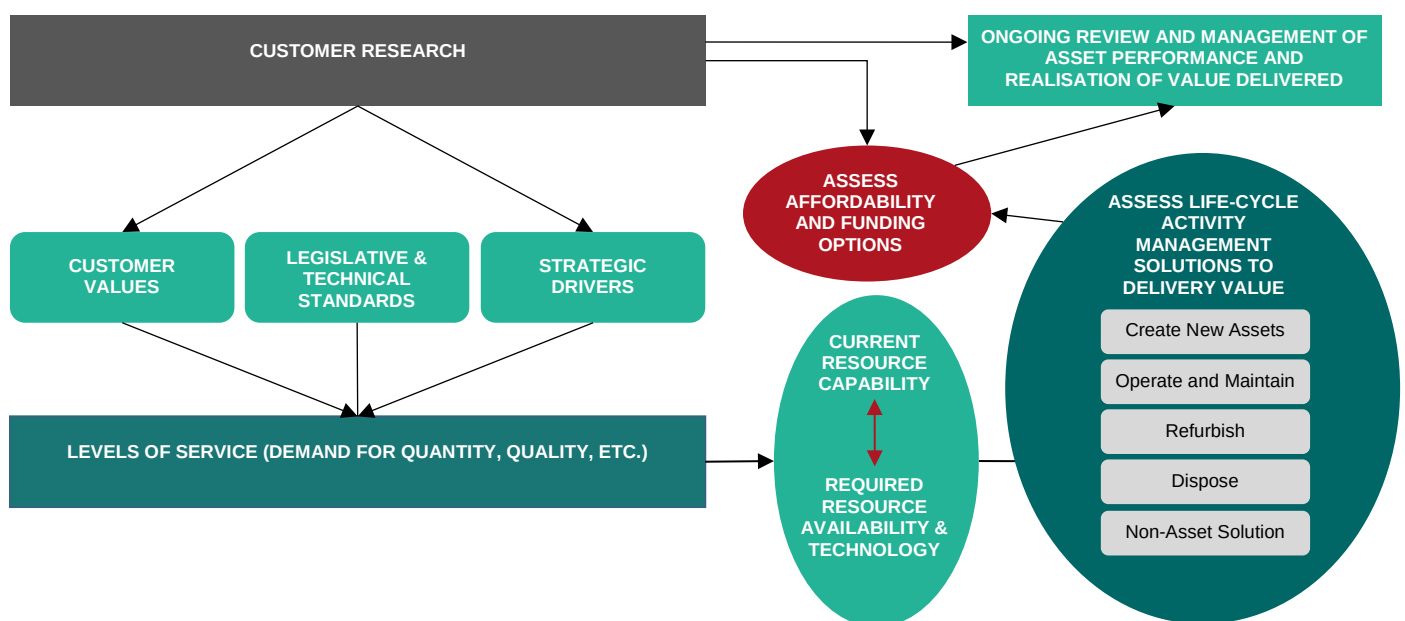




Figure 3.2: Council Outcomes, Leading Edge Strategy



Deeply united



Globally connected



Powered by creative smarts



Flowing with richness



Works for everyone

Customer Research and Expectations

Research

Customer research provides an understanding of customer expectations of cost and quality which allows AMPs to more clearly reflect the levels of service desired by customers. Customer research is undertaken by Council for the land transport activity on a regular basis, and the results influence the levels of service that will be provided through the development and maintenance of core access infrastructure.

Monitoring levels of service against set targets can help improve Council's transportation activity service delivery. However, care has to be taken in their interpretation and in using them to determine specific service targets, the levels of service desired by customers, or other reasons behind various satisfaction levels.

Expectations

The expectations and requirements of the transportation customers must be identified before levels of service and associated KPIs can be developed. The following groups of customers are identified as the primary users of the Transportation assets and network:

- **Drivers** – includes all customers using motorised vehicles and motor cycles as a mode of Transportation and utilising the roads of WDC (business, leisure and recreational uses included).
- **Cyclists** – includes all customers using cycles as a mode of transport and utilising the road, cycleways and cycle paths of WDC.
- **Pedestrians** – includes all customers on foot utilising WDC Transportation assets, focusing on footpaths.

Council ensures that all interested stakeholders listed above have an opportunity to influence the level of service decisions by:

- Engagement with key stakeholders throughout the development of the activity management programmes, including involvement in identifying and prioritising works needs and option selection
- NZTA in terms of One National Transportation Classification outcomes
- Making this Land Transport AMP available on Council's website
- Undertaking periodic focus group consultation as part of the LTP development
- Public opportunity to provide submissions on strategic targets through Council's LTP process
- Consulting with affected persons on specific projects (as required by the RMA 2001)
- Carrying out one yearly residents surveys to monitor customer satisfaction
- Monitoring and analysing requests for service from customers recorded within Councils customer service request system, CRM
- Transportation Focus Groups

Risks to consider

- The impact of forestry harvest on the rural network
- The aging of Council's bridges and their strategic significance
- NZTA decreasing investment on Council's network from 65% (2013/14) to 61% (2018/19 onwards).





Linking LoS to Council Outcomes

The definition of Community Outcomes has changed. These are now the outcomes that Council aims to achieve in meeting the current and future needs of our community for good quality local infrastructure, local public services and performance of regulatory functions.

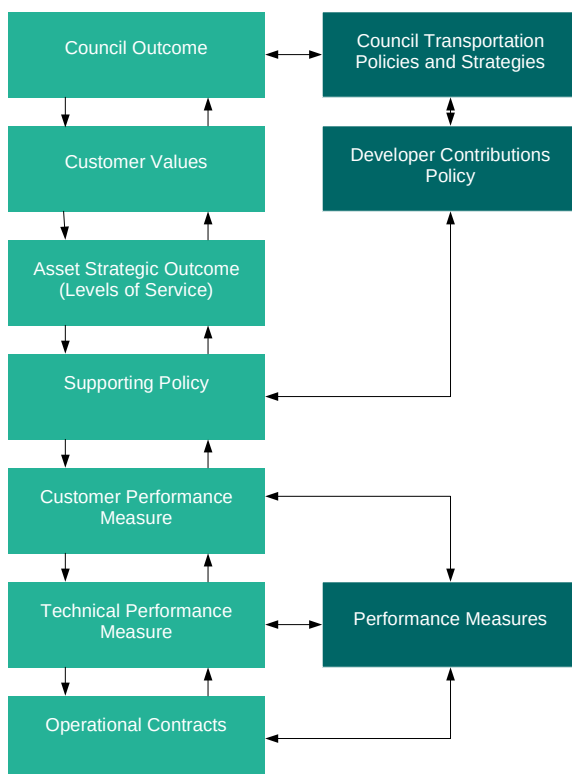
As outlined in the Section 2: Strategic Case, Council's transportation activity contributes to the following Council Outcomes:

- Deeply united
- Globally connected
- Powered by creative smarts
- Flowing with richness
- Works for everyone



In order to deliver these outcomes, it is important that the technical and customer performance measures and operational and maintenance contracts are clearly linked to achieve this. These linkages are illustrated in Figure 3.3.

Figure 3.3: LoS Linkages



LoS Development Process

Levels of service fall into two categories:

Customer Performance Measures

Customer performance measures relate to how the customer receives the service in terms of:

- Tangibles (information sheets, etc.)
- Empathy (understanding, individual attention)
- Responsiveness
- Assurance (knowledge, trust, confidence)
- Courtesy.

Technical Performance Measures

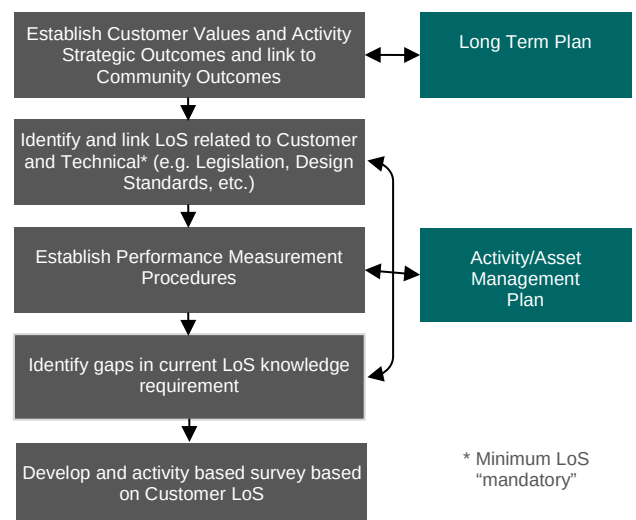
Technical measures relate to the outputs the customer receives in terms of:

- Quality
- Quantity
- Availability
- Legislative requirements
- Maintainability
- Reliability / performance
- Capacity
- Environmental impacts
- Cost / affordability
- Comfort
- Safety

The best practice model for developing LoS statements is described below in three parts. Linkages to the activity management plan and LTP are shown at each stage of the process.

Part 1 is depicted in Figure 3.4.

Figure 3.4: LoS Process (Part One)



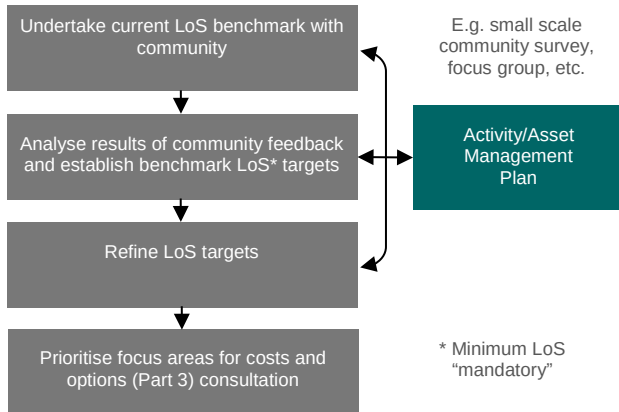
* Minimum LoS "mandatory"



Customer Levels of Service

Part 2 - The next step is to establish LoS benchmarks for the Transportation Facilities assets by way of surveys, focus groups, etc. as shown in figure 3.5.

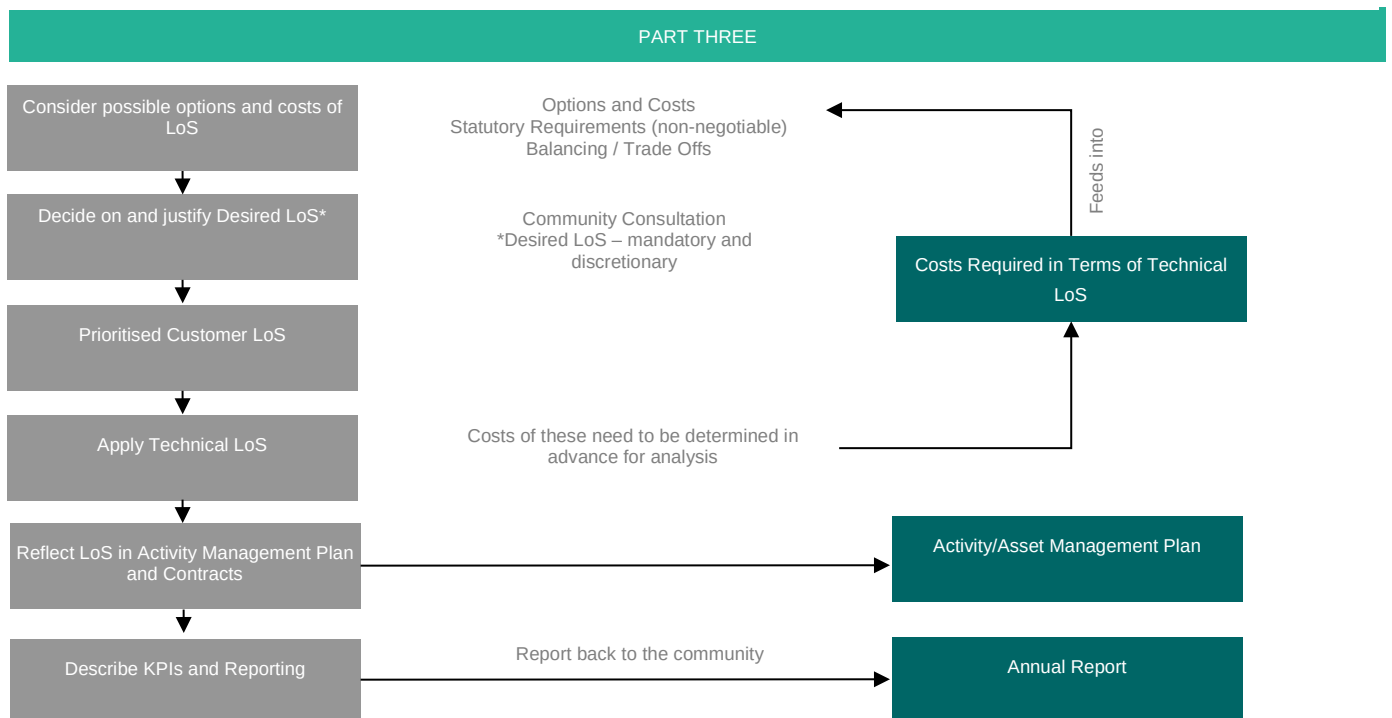
Figure 3.5: LoS Process (Part 2)



Part 3 - The third part is to consult with the community on service delivery options and their associated costs (as required under Schedule 10, Section 2(a) of the Local Government Act 2002).

It should be noted that this process may be repeated in its entirety or specific parts, such as technical levels of service in contracts, updates. All changes must be reintegrated and linked back into the process.

Figure 3.6: LoS Process (Part 3)





Customer Levels of Service

Establishing Core Customer Values

Core Customer Values provide the cornerstone to the development of Levels of Service from both a customer and technical point of view. They describe what is considered necessary by the community that receives the road transportation services.

The core customer values relating to the provision of the transportation activity (Department of Internal Affairs and ONRC) are:

- Customer Service / Responsiveness
- Safety
- Reliability / Availability
- Accessibility
- Value for Money

Council Outcomes will be reviewed and form the basis for development of the 10-Year Plan 2018-28. Further work will be necessary firstly to confirm the customer values and then to align activity levels of service outcomes with the agreed customer values. The linkage between customer values and levels of service should be shown for each activity. Table 3.2 has been provided below to link activity level of service outcomes with the core customer values.

Table 3.2: Transportation Customer Values and Activity Levels of Service Outcomes

WDC Customer Core Value	Activity Levels of Service Outcomes
Accessibility	Adequate and appropriate access to individual properties. Adequate parking provided, parking controls appropriately implemented and enforced. All weather access available throughout the formed road network (urban and rural). Service Lanes and loading bays provided where necessary. Utility companies have unimpeded access to services located within the transportation corridor.
Affordability	Reasonable process such as public transport, tolls, road user charges, impact on property rates. Fair charging and value for money.
Community Benefits	Transportation services are available to everyone who needs to move goods, services or people. Infrastructure is provided to facilitate economic growth.
Community Involvement	People are informed, consulted and heard.
Customer Service	Customers are treated fairly and consistently, within acceptable timeframes, demonstrating respect, empathy and integrity.
Safety	The network is designed and managed for safe use with low crash and injury rates. Effective enforcement maintains safe roads such as enforcement of speed limits.

WDC Customer Core Value	Activity Levels of Service Outcomes
	Promotion of awareness and safe behaviour by other users. Separated road users such as trucks, cars, cyclists. Safe road works management. Good lighting for safety, navigation, security and walking.
Amenity	Smooth, comfortable ride on sealed roads. Comfortable ride on unsealed roads, free of corrugations and loose gravel. Well-designed roads and footpaths provide and enjoyable usage experience. No surprises, consistent road surface, ride, driving environment and standards.
Resilience / Responsiveness	Good lighting for safety, navigation, security and walking. Traffic control systems are sensitive to changes in flow. Minimised road closures. Information easily available about restrictions and other usage issues. Emergency procedures minimise impact of natural hazards or traffic incidents. Road authority or agents respond quickly, politely and efficiently when contacted about issues or problems.
Sustainability / Value for Money	Effects of traffic on the environment are properly controlled. The whole "Corridor" is well managed. Major routes integrated into the landscape. Planning ensures that transportation provision keeps up with community and business needs. No dust from unsealed roads on crops, washing, in houses, or in drinking water supplies No noise which is disruptive or a nuisance. No nuisance from other road users such as boy racers, heavy vehicles. No vibration from passing traffic.



Current Levels of Service

The following LoS tables have been developed based on the NZ NAMS Manual section: “*Developing Levels of Service and Performance Measures*” and the mandatory performance measures set by the Department of Internal Affairs (DIA). It is critical that linkages are made clear from the Government Policy Statement (GPS), Regional Land Transport Plan, Council Outcomes “Leading Edge” and the One Network Road Classification.

Each Activity Strategic Outcome should link to a specific Council Outcome and to a customer value. Customer and technical performance measures should then be developed to align with the defined customer values. Targets for each customer and technical performance measure should be established.

The tables following show the linkages and provide the customer performance measures included in the 10-Year Plan 2018-2028 and technical performance measures to support the Activity Levels of Service Outcomes

Relationships with Other Agencies

The Levels of Service contained within this section deal with only those Levels of Service that Whanganui District Council has direct control of.

The following service levels are based on Council's statutory obligations, corporate goals, currently accepted industry standards and the historic interpretation of customer expectations of service levels.



Transportation Activity - Customers Levels of Service, and Performance Measures

Table 3.3: Economic Growth and Productivity

Levels of Service – Economic Growth and Productivity					
GPS Objective	A land system that addresses current and future demand for access to economic and social opportunities A land transport system that is resilient				
RLTP Objective	An optimised transport network that provides efficient, reliable access and movement for people and freight to and from key destinations Maximise the strategic advantage of central New Zealand through efficient and well serviced hubbing and freight distribution activities A reliable multi modal transport system with less modal conflict that mitigates potential environmental effects and improves environmental outcomes				
WDC Objective Customer Value	A local Transportation network that provides a smooth travel experience Footpaths help people move about safely and comfortably and get them where they need to go Quality				
					
Links to Community Outcomes	Deeply united	Globally connected	Powered by creative smarts	Flowing with richness	Works for everyone
Customer LoS	Council Mandatory customer performance measures required by the Department of Internal Affairs related to Quality include: • Council LTP Customer Outcome 1 - Smooth travel exposure (all sealed roads) • Council LTP Customer Outcome 2 - Roughness % km below 180 NAASRA (all sealed roads) • Council LTP Customer Outcome 3 - Average Roughness (all sealed roads) • Council LTP Customer Outcome 4 - Smooth travel exposure % roads smooth (all sealed roads) ONRC Customer outcome measures are benchmarking measures. • Resilience Customer Outcome 1 – The number of journeys impacted by unplanned events • Resilience Customer Outcome 2 – The number of instances where road access is lost • Amenity Customer Outcome 1 – Smooth travel exposure • Amenity Customer Outcome 2 - Peak Roughness • Accessibility Customer Outcome 1 – Proportion of network not available to Class 1 heavy vehicles and 50 MAX vehicles • Travel Time Reliability Customer Outcome 1 – Throughput at indicator sites				
Technical LoS	Technical ONRC measures linked to the GPS strategic objective “Economic Growth and Productivity” are detailed in the Section – Lifecycle Management • Amenity Technical Outcome 1 – Roughness of the road (median and averages) • Amenity Technical Outcome 2 – Aesthetic faults • Accessibility Technical Outcome 1 – Accessibility				



Customer Levels of Service

Council Mandatory Customer Levels of Service – Economic Growth and Productivity

Measurement Type	Council LTP – Economic Growth and Productivity (Quality)				
Council Customer Outcome 1	Smooth traffic exposure (all sealed roads)				
Measure Description	The average quality ride on a sealed local road network				
Targets	Current performance trend (2016/17)	Year 1 target 2018/19	Year 2 target 2019/20	Year 3 target 2020/21	Years 4-10 target 2021-28
That a minimum 90% of the local Transportation network is smooth.	94%	88 - 92%	88 - 92%	88 – 92%	90%
What is the LoS are we delivering?	The level of smoothness on district roads have been steady improving over recent years. This has been achieved by targeting predominantly Arterial roads which have a significant influence over network results. Current result is considered acceptable.				
Council Customer Outcome 2, 3 & 4	Roughness % km below 180 NAASRA (all sealed roads) Average Roughness (all sealed roads) Smooth travel exposure % roads smooth (all sealed roads)				
Measure Description	Local roads that are smooth and to a national quality standard				
Targets	Current performance trend (2016/17)	Year 1 target 2018/19	Year 2 target 2019/20	Year 3 target 2020/21	Years 4-10 target 2021-28
% km of local authority roads in the district that are below a roughness level of 180 as measured by NAASRA.	94%	> 90%	> 90%	> 90%	> 90%
The district local authority roads are to have an average road roughness below 110 NAASRA count.	103	< 110	< 110	< 110	< 110
% km of local authority roads in the district that are smooth as measured by Smooth Travel Exposure	89%	88 - 92%	88 - 92%	88 – 92%	88 - 92%
What is the LoS are we delivering?	Currently the LoS is higher than target levels which indicates that we are over delivering. The yearly results however indicate a descending trend is prevailing which over time will bring results for NAASRA back to target levels.				
How do we compare against peer group?	No current peer group information available				
Is there a gap we need to invest in?	<i>In order to establish whether a gap in LoS exists we will:</i> - Investment levels appear adequate at present. - The effects of increased demand on the network from forecasted heavy vehicles is expected to influence future network strategies. In expectation of increased network demand Council has implemented dTIMS predictive modelling to establish future network condition trends. This effect is further detailed in AMP.				



Customer Levels of Service

How will we deliver the LoS?	<i>We will achieve these service levels by:</i> • Having a works programme that targets rough roads particularly high volume roads, where the most value for motorists will be achieved. • By carrying out an annual roughness surveys to obtain roughness condition data that can be analysed to establish trends. • Having a funding allocation that allows for the appropriate level of service to be achieved.
How are we going to measuring it?	<i>The following procedures will measure whether the level of service is achieved:</i> • Smoothness/roughness is measured annually. The national standard for 'smoothness' set by the New Zealand Transport Agency (NZTA) is that at least 90% of sealed roads should be below 180 NAASRA count, which signifies 'bump' count per kilometre as measured by a certified road roughness measuring vehicle. • NAASRA stands for 'National Association of Australian State Transportation Authorities' and is the standard measure of road roughness. • The average roughness is measured annually. The aim of this measure is to ensure the sealed Transportation network isn't overall getting rougher. • Smooth Travel Exposure (STE) is measured annually. The national benchmark set by NZTA is 90% and it measures the proportion % of vehicle kilometres travelled (VKT) in a year that occurs on 'smooth' sealed roads and indicates the ride quality experience by motorists.



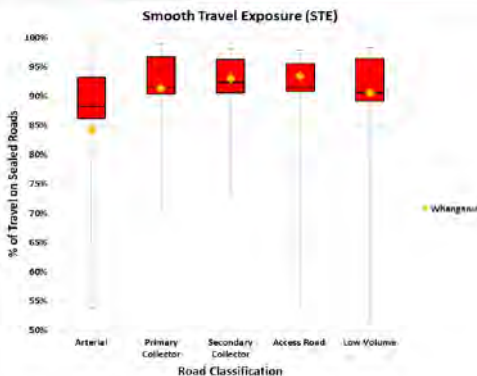
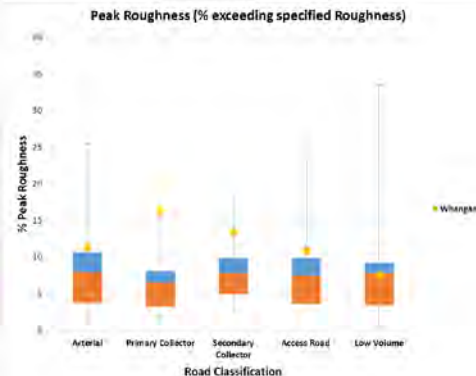
Customer Levels of Service

ONRC Customer Levels of Service – Economic Growth and Productivity

Resilience (Mobility)			
Levels of Service Customer Outcome (Resilience) 	ROAD CATEGORY	CUSTOMER LEVEL OF SERVICE OUTCOMES	
	Arterial	Route is nearly always available except in major weather events or emergency event and alternatives may exist.	Clearance of incidents affecting road users will have a high priority. Road users may be advised of issues and incidents.
	Primary Collector	Route is nearly always available except in major weather events or emergency event and alternatives may exist.	Clearance of incidents affecting road users will have a moderate priority. Road users may be advised of issues and incidents
	Secondary Collector		
	Access	Route may not be available in weather events and alternatives may not exist.	Clearance of incidents affecting road users will have a lower priority.
	Access (low volume)		Clearance of incidents affecting road users will have the lowest priority.
Customer Measures	Customer Outcome 1: the number of journeys impacted by unplanned events Customer Outcome 2: the number of instances where road access is lost		
What is the LoS are we delivering?	Our aim is to limit the number of vehicles affected by unplanned closures annually. When an event does occur the impact of this is minimised by ensuring we are prepared, responsive and provide consistent and up to date information to our customers. The reporting for this Customer outcome measure is in development. Guidance on acceptable target levels of service are still to be established. Audits will commence for the 2017/18 financial year		
How do we compare against peer group?	No comparative peer group data is currently available for this Customer Outcome measure. Once the ONRC reporting process is completed Council will be able to compare how the Whanganui network compares with roads of the same classification across New Zealand.		
Is there a gap we need to invest in?	<i>In order to establish whether a gap in LoS exists we will</i> - This customer outcome measure is new and therefore no evidence is available that might enable a gap in service delivery to be established. - This measure will enable Council to identify if network resilience is improving over time by comparing annual performance.		
How will we deliver the LoS?	<i>We will achieve these service levels by:</i> - Provide resources to response to unplanned closure - Determine areas in the network that are susceptible to closure and where practical undertake remedial action to improve resilience. - Have systems in place to ensure prompt response to closures when notified - Monitor known “hot spots” and at risk areas on the network and secure these areas as a priority when the need arises - Network availability information via Council web site and customer service		
How are we going to measuring it?	<i>The following procedures will measure whether the level of service is achieved:</i> - A database is currently being established to log unplanned closures. An administrator will manage the process and ideally this person will have access to all information, instances and duration. - Record the number of unplanned road closures and calculate the total number of vehicles affected annually by classification. Enter the number of closures and the total number of journeys impacted into the ONRC reporting tool.		



Customer Levels of Service

Amenity						
Levels of Service Customer Outcome (Amenity) 	ROAD CATEGORY	CUSTOMER LEVEL OF SERVICE OUTCOMES				
	Arterial	Good level of comfort, occasional areas of roughness.	Aesthetics of adjacent road environment reflects journey experience needs of both road users and land use.	Urban Collectors reflect urban fabric and contribute to local character.	Some separation of road space for active road users for amenity outcomes in urban areas.	Clean and secure [lighting, good cycle numbers, including cycle park facilities, and weather protection for PT users
	Primary Collector	Moderate level of comfort, occasional areas of roughness.	Aesthetics of adjacent road environment reflects journey experience needs of all road users and adjacent land use.		Specific provision where active road users present.	Clean, safe and secure [lighting, reasonable PT and cycle numbers, accessible PT and parking facilities
	Secondary Collector	Moderate level of comfort, longer areas of roughness.				
	Access	Lowest level of comfort, may include extended areas of roughness and unsealed surfaces (on rural roads).	Aesthetics of adjacent road environment strongly reflects land use and place function.	Strong shared philosophy between active road users (if present) and vehicular traffic.	Active road users expect environment appropriate to their needs.	Urban areas clean, safe [low vehicle speed] and secure [lighting].
Access (low volume)						
Customer Measures	Customer Outcome 1: Smooth travel exposure Customer Outcome 2: Peak roughness					
What is the LoS are we delivering?	The level of smoothness on district roads have been steady improving over recent years when all road classifications are combined and evaluated. When split into individual classifications it is apparent the STE result for Arterials roads perform poorly. These are also the roads that are most frequently used by our customers and therefore require further analysis to identify the worst performing road sections. Guidance on acceptable target levels of service for STE for the different ONRC classifications are still to be established.					
How do we compare against peer group?	 Arterial roads perform poorly when compared against our peer group. Classification results appear to indicate Whanganui is generally performing mid-range.			 Whanganui District roads have a high percentage of roads by classification exceeding target NAASRA when compared against peer group.		



Customer Levels of Service

Amenity	
Is there a gap we need to invest in?	<i>In order to establish whether a gap in LoS exists we will</i> - Identify key carriageway sections affecting results - Check roughness data - Check Rural / Urban split - Check traffic count data – estimates with particular focus on poor performing sections - Develop data collection strategy, timing and frequency as this is essential for accurate reporting and confidence.
How will we deliver the LoS?	<i>We will achieve these service levels by:</i> - Target individual road sections that are underperforming for intervention treatments appropriate to the road classification - Review Maintenance Intervention Strategy (MIS) by road classification. Some maintenance and renewal treatments currently used will be not be appropriate, by ONRC classification (surface levelling). - Implement data collection strategy, delivery and timing - Annual review of STE results during compiling of forward programmes - We just be careful to not to over deliver on those road classifications that provide the least benefit and invest in higher classification roads.
How are we going to measuring it?	<i>The following procedures will measure whether the level of service is achieved:</i> - The ONRC reporting tool will generate the result for the percentage of journeys which are on roads smoother than the threshold, by ONRC classification. - Key inputs into the calculation of this measure are Roughness (NAASRA) and Traffic Counts. A full network survey is undertaken bi-annually and a part survey of all road classifications excluding Access and Low Volume in alternate years. - A programme of annual traffic counting is undertaken and estimates updated to reflect any changes in demand on the Transportation network

Accessibility		
Levels of Service Customer Outcome (Accessibility) 	ROAD CATEGORY	CUSTOMER LEVEL OF SERVICE OUTCOMES
	Arterial	Some land use access restrictions for road users, both urban and rural. Road user connection at junctions with national, arterial or collector roads, and some restrictions may apply in urban areas to promote arterials. Traffic on higher classified roads generally has priority over lower order roads. Numerous bus stops with high frequency services to key destinations and interchanges. Some separation of road space for active road users in urban areas to provide network access and journey continuity. Parking for all modes and facilities for mobility impaired at activity centres, and some shared spaces. Extra care required around activity centres due to mixed use, including goods vehicles. Provision of quality information relevant to arterial road user needs.
	Primary Collector	Land use access for road users generally permitted but some restrictions may apply. Road user connection at junctions with arterial or collector roads, and some restrictions may apply in urban areas to promote arterials. Traffic on higher classification roads generally has priority over lower classification roads. Regular bus services to key destinations and interchanges. Active road users should expect mixed use environments with some variability in the road environment, including vehicle speed. Parking for all modes and facilities for mobility impaired at activity centres. Provision of quality information relevant to collector road user needs.
	Secondary Collector	Land use access for road users generally permitted but some restrictions may apply. Road user connection at junctions with other collectors or access roads. Collector road traffic generally has priority over access road traffic. Regular bus services to key destinations and interchanges. Active road users should expect mixed use environments with some variability in the road environment, including vehicle speed. Parking for all modes and



Customer Levels of Service

Accessibility		
		facilities for mobility impaired at activity centres. Provision of quality information relevant to collector road user needs.
	Access	Access to all adjacent properties for road users. Road user connection at junctions ideally with collectors and other access roads. Access road traffic generally has lower priority over traffic on all higher classification roads. Active road users should expect mixed use environments with some variability in the road environment, including vehicle speed. Enhanced accessibility via 'share the road' philosophy (active road users, mobility impaired and drivers), journey connectivity to key destinations via all modes, and provision of quality information.
	Access (low volume)	
Customer Measures	Customer Outcome 1: Proportion of network not available to Class 1 heavy vehicles and 50 MAX vehicles	
What is the LoS are we delivering?	The Transport Agency requested that Whanganui District review their bridge stock and advised of any bridge restrictions for Class 1 heavy vehicles and 50MAX vehicles. These bridges are off limits to 50MAX vehicles and were plotted on maps to graphically show these structures as 'restrictions', and that operators are not permitted to cross them. Currently 56.19km or 6.28% of the network is not available to 50MAX vehicles.	
How do we compare against peer group?	No comparative peer group data is currently available in the ONRC reporting tool for this customer outcome measure.	
Is there a gap we need to invest in?	<i>In order to establish whether a gap in LoS exists we will</i> - Mapping highlights areas of the network where transport efficiencies from using Class 1 heavy vehicles and 50MAX vehicles cannot be realised. - The upgrading / strengthening of bridges would be a costly exercise and would only be entertained if it could be established that there are benefits to be realised from the investment.	
How will we deliver the LoS?	<i>We will achieve these service levels by:</i> 50MAX vehicle combinations have one more axle than conventional 44-tonne vehicles combinations, meaning the overall truck load is spread further and there is no additional wear on roads per tonne of freight. This means 50MAX gives operators an option to carry increased payloads on parts of the network that, while economically important to New Zealand, carry lower volumes of freight. - Restrictions to 50MAX on the network are mapped and available on the NZTA website - Where appropriate and economically viable Council will undertake upgrade bridge structure that will enable Class 1 heavy vehicles and 50 MAX to access currently restricted areas of the network.	
How are we going to measuring it?	<i>The following procedures will measure whether the level of service is achieved:</i> - The proportion of each road classification that is not accessible to Class 1 Heavy Vehicles and 50MAX vehicles. - Measure the length of each road classification that is not accessible and input the length into the ONRC reporting tool which will generate the result.	

Travel Time Reliability		
Levels of Service Customer Outcome (Travel Time Reliability) 	ROAD CATEGORY	CUSTOMER LEVEL OF SERVICE OUTCOMES
	Arterial	Generally road users experience consistent travel times with some exceptions in urban heavy peak, holidays, during major events or during moderate weather events.
	Primary collector	Route is nearly always available except in major weather events or emergency event and alternatives may exist. Clearance of incidents affecting road users will have a moderate priority. Road users may be advised of issues and incidents
	Secondary collector	
	Access	Route may not be available in moderate weather events, and alternatives may not exist. Clearance of incidents affecting road users and road user information will have a low priority.



Customer Levels of Service

Travel Time Reliability		
	Access (low volume)	Route may not be available in weather events and alternatives may not exist. Clearance of incidents affecting road users and road user information will have the lowest priority.
Customer Measures	Customer Outcome 1: Throughput at indicator sites	
What is the LoS are we delivering?	This customer service measure is targeted at metropolitan areas. Need to determine whether it is applicable to Whanganui District Currently no information is available that might determine whether or not we are delivering an appropriate LoS.	
How do we compare against peer group?	No comparative peer group data is currently available in the ONRC reporting tool for this customer outcome measure.	
Is there a gap we need to invest in?	<i>In order to establish whether a gap in LoS exists we will</i> Firstly establish if this measure applicable to Whanganui District	
How will we deliver the LoS?	<i>We will achieve these service levels by:</i> establish a methodology to capture data required	
How are we going to measuring it?	<i>The following procedures will measure whether the level of service is achieved:</i> establish a methodology to capture data required	



Customer Levels of Service

Table 3.4: Road Safety

Levels of Service – Road Safety					
GPS Objective	A land transport system that is a Safe System, increasingly free of death and serious injury				
RLTP Objective	A safe land transport system increasingly free of death and serious injury				
WDC Objective Customer Value	The provision of a safe and secure local Transportation network Safety				
					
Links to Community Outcomes	Deeply united	Globally connected	Powered by creative smarts	Flowing with richness	Works for everyone
Customer LoS	Council Mandatory customer performance measures required by the Department of Internal Affairs related to Safety include: • Council LTP Customer Outcome 1: The change from the previous financial year in the number of fatalities or serious injury crashes on the local road network • Council LTP Customer Outcome 2: A local Transportation network that is consistent and comparable to neighbouring and similar national networks ONRC Customer outcome measures: • Safety Customer Outcome 1 – The number of fatal and serious injuries on the network • Safety Customer Outcome 2 – Collective Risk (fatal and serious injury rate per kilometre) • Safety Customer Outcome 3 - Personal Risk (fatal and serious injury rate by traffic volume)				
Technical LoS	Technical ONRC measures linked to the GPS strategic objective “Safety” are detailed in the Section – Lifecycle Management • Safety Technical Output 1 - Permanent Hazards • Safety Technical Output 2 - Temporary Hazards • Safety Technical Output 3 - Sight Distances • Safety Technical Output 4 - Loss of control on wet roads • Safety Technical Output 5 - Loss of driver control at night • Safety Technical Output 6 - Intersections • Safety Technical Output 7 - Hazardous faults • Safety Technical Output 8 - Cycle path faults • Safety Technical Output 9 - Vulnerable user • Safety Technical Output 10 - Roadside Obstructions				



Customer Levels of Service

Council Mandatory Customer Levels of Service – Safety

Measurement Type	Council LTP - Safety				
Council Customer Outcomes 1 & 2	Fatal and serious injury crashes Frequency of injury crashes by vehicle kilometres travelled				
Measure Description	The change from the previous financial year in the number of fatalities or serious injury crashes on the local road network				
Targets	Current performance trend (2016/17)	Year 1 target 2018/19	Year 2 target 2019/20	Year 3 target 2020/21	Years 4-10 target 2021-28
All network reporting	10	-1	-1	-1	-1

Measure Description	A local Transportation network that is consistent and comparable to neighbouring and similar national networks				
Targets	Current performance trend (2016/17)	Year 1 target 2018/19	Year 2 target 2019/20	Year 3 target 2020/21	Years 4-10 target 2021-28
Number of reported injury crashes per 100 million vehicle kilometres travelled	New	< 49	< 48	< 47	< 45
What is the LoS are we delivering?	Council's goal is always to reduce accidents on the Transportation network where this can be achieved in a decisive and efficient manner. Investing in projects that contribute to reducing fatal and serious injury accidents where this has been identified through analysis of red flag areas is of high priority.				
How do we compare against peer group?	No comparative peer group data is available				
Is there a gap we need to invest in?	<i>In order to establish whether a gap in LoS exists we will</i> Sufficient budget is available to undertake all but the largest of identified projects which require specific funding.				
How will we deliver the LoS?	<i>We will achieve these service levels by:</i> - Council will continue to work on road safety issues with the NZ Police, Horizons Regional Council, NZTA and ACC through a Road Safety Action Plan (RSAP) group. - By carrying out a formal Crash Reduction Study (CRS) every three years. The CRS includes the RSAP members. - Undertaking Safety Audits on improvement works. (As required by the NZTA) - Ensuring there is high quality Temporary Traffic Management. - Maintaining a Deficiency Database - Maintaining a Hazard Register - By maintaining the minor improvement programme at around 8% (\$800K) of the total maintenance/renewal budget. - Following regular maintenance programmes for traffic control devices and other key components of the infrastructure. - By ensuring corridor design and construction for new subdivisions to comply with NZS: 4404 and Council's Companion Document.				
How are we going to measuring it?	<i>The following procedures will measure whether the level of service is achieved:</i> The CAS system provides a file of crashes on the Whanganui District Transportation network. This file can be loaded into RAMM to enable annual reporting. CAS data is required to be updated prior to reporting results.				



Customer Levels of Service

ONRC Customer Levels of Service – Safety

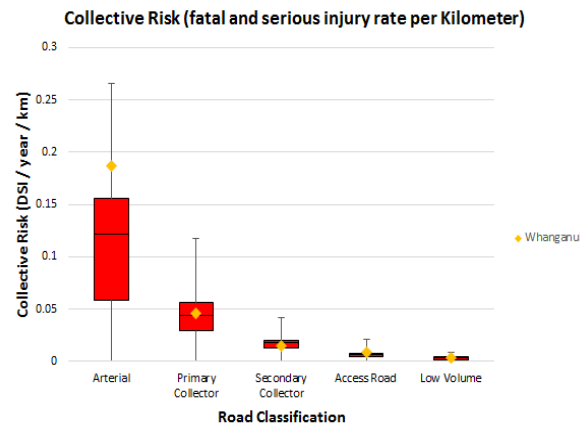
Safety					
Levels of Service Customer Outcome (Safety) 	ROAD CATEGORY	CUSTOMER LEVEL OF SERVICE OUTCOMES			
	Arterial	Variable road standards	Lower speeds and extra care required on some roads/sections particularly depending on topography, access, density and use.	Road user safety guidance provided at high risk locations.	Some separation of road space foractive road users in urban areas
	Primary Collector	Variable road standards and alignment	Lower speeds and greater driver vigilance required on some roads/sections particularly depending on topography, access, density and use.	Active road users should expect mixed use environments with some variability in the road environment, including vehicle speed.	Road user safety guidance provided at high risk locations.
	Secondary Collector				
	Access			All road users should expect mixed use environments with some variability in the road environment, including vehicle speed	Road user safety guidance may be provided at high risk locations.
	Access (low volume)				
Customer Measures	Customer Outcome 1 – The number of fatal and serious injuries on the network Customer Outcome 2 - Collective Risk (fatal and serious injury rate per kilometre) Customer Outcome 3 - Personal Risk (fatal and serious injury rate by traffic volume)				
What is the LoS are we delivering?	Our goal is always be to reduce accidents on the Transportation network wherever this can be achieved. Investing in projects that contribute to reducing fatal and serious injury accidents where this has been identified through analysis of red flag areas. Proactively respond to areas of concern when these arise. Trends for fatal and serious injuries for the majority of the ONRC classifications indicate a positive trend is developing over the analysis period.				



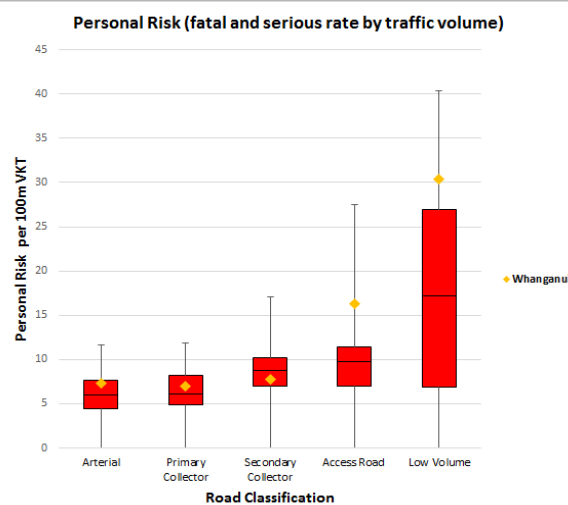
Customer Levels of Service

Safety

How do we compare against peer group?



Network Arterial classification in Whanganui performs poorly in the peer group. Rest of the classification results appear to indicate Whanganui is generally performing in 75 – 25 percentile range.



Results for Access and Low Volume roads generally outside 75 percentile ranges when compared against peer group.

Is there a gap we need to invest in?

In order to establish whether a gap in LoS exists we will

Investment in safety initiatives have shown positive results in past years. Analysis of the Arterials roads to identify crash site locations and trends will focus future investment.

How will we deliver the LoS?

We will achieve these service levels by:

- Council will continue to work on road safety issues with the NZ Police, Horizons Regional Council, NZTA and ACC through a Road Safety Action Plan (RSAP) group.
- By carrying out a formal Crash Reduction Studies (CRS) when 3 year increasing trends are established. The CRS includes the RSAP members.
- Undertaking Safety Audits on improvement works. (As required by the NZTA)
- Ensuring there is high quality Temporary Traffic Management.
- Maintaining a Deficiency Database
- Maintaining a Hazard Register
- By maintaining the minor improvement programme at around 8% (\$800K) of the total maintenance/renewal budget.
- Following regular maintenance programmes for traffic control devices and other key components of the infrastructure.
- Land Use / Planning Regulatory Controls
- By ensuring corridor design and construction for new subdivisions to comply with NZS: 4404 and Council's Companion Document.

How are we going to measuring it?

The following procedures will measure whether the level of service is achieved:

- The CAS system provides a file of crashes on the Whanganui District Transportation network. This file can be loaded into RAMM to enable reporting by ONRC road classification via the ONRC reporting tool. CAS data is required to be updated prior to reporting results.



Customer Levels of Service

Table 3.5: Value for Money

Levels of Service – Value for Money					
GPS Objective	A land transport system that delivers the right infrastructure and services to the right level at the best cost				
RLTP Objective	A resilient transport network with secure inter and intra-regional routes, that can perform following an unplanned event				
WDC Objective	A local road corridor network that meets the needs of the users				
Customer Value	Responsiveness				
					
Links to Community Outcomes	Deeply united	Globally connected	Powered by creative smarts	Flowing with richness	Works for everyone
Customer LoS	Council Mandatory customer performance measures required by the Department of Internal Affairs related to Safety include: • Council LTP Customer Outcome 1 - The percentage of the sealed road network that is resurfaced • Council LTP Customer Outcome 2 – Footpath (No. Faults) • Council LTP Customer Outcome 3 - Footpaths % defect score < 50 • Council LTP Customer Outcome 4 - % satisfaction with Transportation network • Council LTP Customer Outcome 5 - % satisfaction with footpath surfaces • Council LTP Customer Outcome 6 – Customer service request response ONRC Customer outcome measures • Cost Efficiency 1 – Pavement Rehabilitation • Cost Efficiency 2 – Chipseal Resurfacing • Cost Efficiency 3 – Asphalt Resurfacing • Cost Efficiency 4 – Unsealed road metalling • Cost Efficiency 5 – Overall network cost, cost by work category				

Council Mandatory Customer Levels of Service – Value for Money					
Measurement Type	Council LTP – Value for Money				
Council Customer Outcome 1	The percentage of the sealed road network that is resurfaced				
Measure Description	The percentage of the sealed road network that is resurfaced annually. This is the achievement length as determined from as-built measurement divided by the total length of the sealed network				
Targets	<i>Current performance trend (2016/17)</i>	<i>Year 1 target 2018/19</i>	<i>Year 2 target 2019/20</i>	<i>Year 3 target 2020/21</i>	<i>Years 4-10 target 2021-28</i>
Percentage Sealed	6.7%	> 4%	> 4%	> 4%	> 4%
What is the LoS are we delivering?	The target of 4% was exceeded. There was 30.1km of the sealed road network resurfaced. In total there is 573.9km of sealed roads.				



Customer Levels of Service

	Resurfacing of sealed surfaces is required to waterproof underlying pavement layers and provide surface friction for vehicles. Timing of surface coats is undertaken on a just in time basis for safety reasons and as a proactive road maintenance response to prevent wastage.
How do we compare against peer group?	NZTA reporting indicates that currently the average life of top surface treatments achieved for Whanganui District is higher than the national average.
Is there a gap we need to invest in?	<i>In order to establish whether a gap in LoS exists we will:</i> - A reduction in the length of sealed roads resurfaced would increase average life to unsustainable levels. We can conclude that current investment levels for this activity are currently appropriate but require monitoring in relation to: - Increase in maintenance faults - Deteriorating pavement network statistics
How will we deliver the LoS?	<i>We will achieve these service levels by:</i> - Identifying and producing the resurfacing works programme a year in advance. - Allocating budgets to achieve target length of resurfacing - Providing resourcing to undertake physical works
How are we going to measuring it?	<i>The following procedures will measure whether the level of service is achieved:</i> - Physical achievement is measured and entered into the RAMM database - Information extracted from annual achievement reporting to NZTA

Measurement Type	Council LTP – Value for Money				
Council Customer Outcome 2 & 3	Footpaths (no. faults) Footpath % defect score < 50				
Measure Description	The number of footpath defects and percentage not complying with Council's condition rating standard				
Targets	Current performance trend (2015/16)	Year 1 target 2018/19	Year 6 target 2023/24	Year 11 target 2028/29	Years 16 target 2033/34
The total number of footpath faults	15,916	< 35,000	< 35,000	< 35,000	< 30,000
The percentage of footpaths that meet Council's standard of a defect score of <50	98%	> 90%	> 90%	> 90%	>95%
What is the LoS are we delivering?	Council goal is to provide safe, comfortable and convenient footpaths that allow people (including the physically disabled) access to their chosen destination. The number of footpath faults identified during footpath condition rating surveys has been steadily decreasing. This indicates that investment levels are having an impact on footpath condition.				
How do we compare against peer group?	No comparative peer group data is available for footpath condition data				
Is there a gap we need to invest in?	<i>In order to establish whether a gap in LoS exists we will</i> - Council increased investment into footpath assets in recognition of poor condition and have kept funding at that level for a number of years. - Condition survey results indicate that footpath condition is steadily improving as the worst performing footpaths are replaced. - Current investment levels look adequate to meet current levels of service targets. - Target satisfaction levels as captured in the annual Community Views Survey indicate that residents are still somewhat dissatisfied with footpath performance.				
How will we deliver the LoS?	<i>We will achieve these service levels by:</i> By carrying out footpath condition rating surveys at five yearly intervals.				



Customer Levels of Service

	- A footpath condition rating survey, counts the number of bumps, depressions, cracks, scabs and settlement in footpaths. - Analysis of faults establishes footpath rating and forms the basis of forward works programmes. - RAMM database footpath condition rating data accurate and up to date. - Maintain funding and resources at levels that enable physical works for maintenance and renewals to be undertaken.
How are we going to measuring it?	<i>The following procedures will measure whether the level of service is achieved:</i> - Five yearly footpath condition rating surveys. Next footpath condition rating due 2019. - Condition rating data used to establish severity rating for footpath sections and establish work priorities and programme development.

Measurement Type	Council LTP – Value for Money						
Council Customer Outcome 4 & 5	% satisfaction with Transportation network % satisfaction with footpath surfaces						
Measure Description	Annual % resident satisfaction levels with the local Transportation network and footpath surfaces						
Targets	Current performance trend (2014/15)	Year 1 target 2018/19	Year 2 target 2019/20	Year 3 target 2020/21	Years 4-10 target 2021-28		
% of residents who are fairly or very satisfied with the local transportation network	60%	> 65%	> 65%	> 65%	> 65%		
% of residents who are fairly or very satisfied with footpath surfaces	44%	> 50%	> 50%	> 50%	> 50%		
What is the LoS are we delivering?							
	Very Fairly Satisfied						
	Transportation Network (Trends)	2015	2014	2013	2012	2011	2010
		60%	48%	53%	54%	59%	48%
	Very Fairly Satisfied						
Footpath Surfaces (Trends)	2015	2014	2013	2012	2011	2010	
	44%	43%	46%	42%	47%	57%	
How do we compare against peer group?	No comparative peer group data is available						
Is there a gap we need to invest in?	<i>In order to establish whether a gap in LoS exists we will:</i> - Investigate the Community Views survey responses to establish trends and areas in Whanganui District. - Yearly trends to establish if investment levels are influencing satisfaction level results						
How will we deliver the LoS?	<i>We will achieve these service levels by:</i> - Investigating customer complaints. - Intervention Strategy Plans that allow solutions to customer issues that are linked to long-term asset management strategies. This allows for solutions that are value for money. - Ensuring Council's 'Road Asset Maintenance Management' (RAMM) system is current and linked to the Transportation programme. - Undertaking 'All Fault' asset surveys, which identify network degradation and its effect on customers' health and safety.						
How are we going to measuring it?	<i>The following procedures will measure whether the level of service is achieved:</i>						



Customer Levels of Service

	- Yearly customer satisfaction surveys will be undertaken by Council using an independent specialist company. These are very subjective, but allow Council to assess the mood of Council's customers. - CRM performance will be reported monthly by the Maintenance Alliance team. The Maintenance Alliance is a public/private collaboration contract between Council and a lead Contractor, with participants from both bodies forming part of the delivery team. - CRM customer feedback surveys will be carried out monthly. A 10% sample of each month's CRM's will be carried out randomly by the Maintenance Alliance team.

Measurement Type	Council LTP – Value for Money				
Council Customer Outcome 6	Customer service request response				
Measure Description	The percentage of customer service requests that are actioned within five working days				
Targets	Current performance trend (2016/17)	Year 1 target 2018/19	Year 2 target 2019/20	Year 3 target 2020/21	Years 4-10 target 2021-28
% Service Requests Actioned	92.2%	> 90%	> 90%	> 90%	> 90%

What is the LoS are we delivering?	Percentage of customer service requests actioned within five working days <table border="1"> <thead> <tr> <th>Year</th> <th>Actual (%)</th> <th>Target (%)</th> </tr> </thead> <tbody> <tr> <td>2011/12</td> <td>97%</td> <td>90%</td> </tr> <tr> <td>2012/13</td> <td>98%</td> <td>90%</td> </tr> <tr> <td>2013/14</td> <td>97%</td> <td>90%</td> </tr> <tr> <td>2014/15</td> <td>99%</td> <td>90%</td> </tr> <tr> <td>2015/16</td> <td>92%</td> <td>90%</td> </tr> </tbody> </table> The target of 90% continued to be exceeded. There were a total of 1008 Transportation requests actioned within five working days – which is 134 less than the previous year, continuing the decreasing trend.	Year	Actual (%)	Target (%)	2011/12	97%	90%	2012/13	98%	90%	2013/14	97%	90%	2014/15	99%	90%	2015/16	92%	90%	The percentage of footpath requests actioned within five working days of notification <table border="1"> <thead> <tr> <th>Year</th> <th>Actual (%)</th> <th>Target (%)</th> </tr> </thead> <tbody> <tr> <td>2012/13</td> <td>98%</td> <td>90%</td> </tr> <tr> <td>2013/14</td> <td>97%</td> <td>90%</td> </tr> <tr> <td>2014/15</td> <td>99%</td> <td>90%</td> </tr> <tr> <td>2015/16</td> <td>99%</td> <td>90%</td> </tr> </tbody> </table> The target of 90% was exceeded, and there was an increase of 3% from the previous year. We were unable to measure this at the start of the 2015/16 year, and requests were recorded from February 2016.	Year	Actual (%)	Target (%)	2012/13	98%	90%	2013/14	97%	90%	2014/15	99%	90%	2015/16	99%	90%
Year	Actual (%)	Target (%)																																	
2011/12	97%	90%																																	
2012/13	98%	90%																																	
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2012/13	98%	90%																																	
2013/14	97%	90%																																	
2014/15	99%	90%																																	
2015/16	99%	90%																																	

How do we compare against peer group?	No comparative peer group data is available.

Is there a gap we need to invest in?	<i>In order to establish whether a gap in LoS exists we will:</i> Current performance levels indicate that the response to customer service response is appropriate.

How will we deliver the LoS?	<i>We will achieve these service levels by:</i> - Investigating customer complaints. - Intervention Strategy Plans that allow solutions to customer issues that are linked to long-term asset management strategies. This allows for solutions that are value for money. - Ensuring Council's 'Road Asset Maintenance Management' (RAMM) system is current and linked to the Transportation programme. - Undertaking 'All Fault' asset surveys, which identify network degradation and its effect on customers' health and safety.

How are we going to measuring it?	<i>The following procedures will measure whether the level of service is achieved:</i> - Yearly customer satisfaction surveys will be undertaken by Council using an independent specialist company. These are very subjective, but allow Council to assess the mood of Council's customers. - CRM performance will be reported monthly by the Maintenance Alliance team. The Maintenance Alliance is a public/private collaboration contract between Council and a lead Contractor, with participants from both bodies forming part of the delivery team. - CRM customer feedback surveys will be carried out monthly. A 10% sample of each month's CRM's will be carried out randomly by the Maintenance Alliance team.

ONRC Customer Levels of Service – Value for Money



Customer Levels of Service

Cost Efficiency		
Levels of Service Customer Outcome (Value for Money) 	ROAD CATEGORY	CUSTOMER LEVEL OF SERVICE OUTCOMES
	Arterial	To understand how efficiently we are utilising resources and existing assets to deliver the CLoS outcomes.
	Primary Collector	To confirm that the delivery of cost effective treatments that ensure asset lives are being cost effectively maximised.
	Secondary Collector	Assess how well forward works programme are planned, optimised and delivered.
	Access	To assess whether the delivery of the works is completed early, on-time or too late.
	Access (low volume)	Demonstrate that network maintenance and renewal activities is timed to minimise whole-of-life cost while delivering the required customer outcomes.
Customer Measures	Cost Efficiency 1 – Pavement rehabilitation Cost Efficiency 2 – Chipseal resurfacing Cost Efficiency 3 – Asphalt resurfacing Cost Efficiency 4 – Unsealed road metalling Cost Efficiency 5 – Overall network cost, cost by work category	
What is the LoS are we delivering?	Physical works costs are currently captured for works completed under the various routine maintenance activities. Cost per km and vkt can be calculated manually from the data available. NZTA report maintenance and renewal costs annually.	
How do we compare against peer group?	NZTA produce graphs and tables that compare Whanganui against all other local authorities. Historically in a number of areas Whanganui's costs appear high. This must however be taken into context	
Is there a gap we need to invest in?	<i>In order to establish whether a gap in LoS exists we will:</i> - Analyse individual cost centres to ensure actual costs are a true and accurate representation of existing work strategies. - Make notes regarding variations from submitted budgets (influence of storm events on programmes and network condition) - Undertake analysis of unit costs (Target cost estimates vs Actual) - Compile annual performance report (comparisons against peers)	
How will we deliver the LoS?	<i>We will achieve these service levels by:</i> - Annual achievement and costs for works completed will be captured for the individual work categories. - Up to date traffic count data will be provided in RAMM to enable vkt to be calculated. - Ensure the correctness of costs to appropriate work activities.	
How are we going to measuring it?	<i>The following procedures will measure whether the level of service is achieved:</i> - Physical achievement and costs for the maintenance and renewal activities are captured from monthly progress claims. - Information will be entered into RAMM for automatic reporting into the ONRC reporting tool when this facility is available. Quantities (lane km and m2) and costs are inputted into RAMM - The ONRC reporting tool will generate the reports by ONRC classification	



Capital Works Programme and Funding

Capital Works Levels of Service

Key projects identified in the plan relating to increasing LoS as a key driver for capital investment are shown in Table 3.6 below.

Development projects expenditure (proportion directly relating to LoS) for the 2018 – 2048 period has been estimated at \$84.5M to upgrade or extend development works as a result of LoS.

Table 3.6: Capital Works

Capital Works – Levels of Service	Growth (\$'000')	Renewals (\$'000')	LOS Improvement (\$'000')	Funding Source			2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031	2031/2032	2032/2033	2033/2034	2034/2035	2035/2036	2036/2037	2037/2038	2038/2039	2039/2040	2040/2041	2041/2042	2042/2043	2043/2044	2044/2045	2045/2046	2046/2047	2047/2048	Total for 30-year period (\$'000')	
				Development Contributions (\$'000')	Depreciation (\$'000')	Subsidy / Loan (\$'000')																																
Studies and Strategies	33.3	33.3	33.3			100.0	100.0																													100.0		
Activity Management Plans		20.0	20.0			40.0	20.0	5.0	15.0																												40.0	
Bridge Replacement - Wakefield St (Br 74)		890.0	890.0			1780.0	1780.0																														1780.0	
Bridge Replacement - Dublin Street (Br 71)		11,350.0	11,350.0			22700.0											100.0	300.0	500.0	800.0	8400.0	12600.0															22700.0	
Mosston Road Reconstruction		4,769.9	4,769.9			9539.8								80.0	1662.1		3929.7	3868.0																			9539.8	
Montgomery Road Reconstruction		545	545			1090.0										50.0	70.0		970.0																		1090.0	
Heads Road / Beach Road Intersection	465.9	465.9	465.9			1397.6		1397.6																														1397.6
Low Cost / Low Risk	16960.1		16960.1			33920.2	3338.0	1900.0	1705.0	883.6	851.0	869.0	1040.8	1008.1	1003.3	1003.8	1030.1	1035.8	1021.2	1025.1	1049.7	1047.2	944.1	939.0	969.0	967.6	970.8	1001.4	1000.5	1004.3	1035.6	1035.4	1039.8	1068.4	1065.5	1067.1		33920.2
Cycleways	775.0		775.0			1550.0		1550.0																														1550.0
Cycle Education Programme			12399.1			12399.0	356.5	418.0	370.5	371.0	386.5	372.0	372.0	387.0	372.0	387.0	390.9	394.8	398.7	402.7	406.7	410.8	414.9	419.1	423.3	427.5	431.8	436.1	440.4	444.8	449.3	453.8	458.3	462.9	467.5	472.2		12399.0
Total	18234.3	18074.1	48208.2			84516.6	5594.5	5270.6	2090.5	1254.6	1237.5	1241	1412.8	1475.1	3037.4	1440.8	5520.7	5598.6	2889.9	2227.8	9856.4	14058	1359	1358.1	1392.3	1395.1	1402.6	1437.5	1440.9	1449.1	1484.9	1489.2	1498.1	1531.3	1533	1539.3		84516.6



04 Growth and Demand



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Overview

This section describes the strategy that Whanganui District Council will adopt for growth and demand related to the transportation activity.

The Local Government Act (Schedule 10) requires that growth and demand be considered as part of activity management planning to ensure that future requirements are identified and planned for. This will ensure that the needs of individuals, the community and the District can be maintained over the long term.

Growth vs. Demand

Although Growth and Demand are considered together in this section, it is worth noting that they do have different implications regarding the on-going function/delivery of the activity.

Growth in relation to the transportation activity mainly refers to the growth/changes in population or areas that are growing due to new residential developments. These changes can affect traffic flows due to commuting, increase in heavy commercial vehicles due to increased demand for goods and services etc. This essentially leads to an increase in the volume of traffic in the network and changes in the location of traffic movements.

Demand for services can be influenced by growth, alternative modes of transport, type of developments (e.g. commercial/industrial development will generally have greater requirements) and customer expectations and trends, and costs of transport.

Overview of Key Demand Drivers

The key demand drivers influencing the growth and the demand on the Councils transportation assets are summarised in the subsections below, which are:

- Population and Development considerations
- Travel behaviour
- Community expectations and trends
- Diminishing Worldwide Reserves
- Climate change
- Legislation

Introduction

Planning for future growth and demand is imperative to provide an economically sustained pathway to meet the needs of the District and visitors to the District. The planning process is an essential element in the provision of the transportation assets and their management.

Growth and demand planning allows for the identification and quantification of areas within the District that are likely to experience significant pressures.

To assist in the development of this section a number of sources have provided important information around growth and demand drivers, which are considered key for the Districts progression.

Planning for growth and demand must also take into account collaborative/partnership projects initiated on a regional basis.

Census Demographics

The Census of Population & Dwellings (2013) recorded a resident population of 42,153, with a population density of 0.18 persons per hectare. It is projected that Whanganui's population will decline slightly over the next two decades.

Whanganui has a different ethnic mix when compared to the rest of New Zealand. Over three-quarters (82%) of residents described themselves as European (74% nationally) and 1.9% as New Zealanders (1.6% nationally). Maori comprise a considerably larger proportion of Whanganui's residents when compared nationally: 23% in Whanganui versus 15% nationwide. Only 3% of residents identified themselves as Pacific and Asian, less than that recorded nationally (7% and 12%).

Compared to national averages, the population is slightly older, less ethnically diverse, less well educated and less wealthy.

Whanganui's population is markedly older than average with a median age of 40 years in 2013 compared with 37 years across New Zealand. The higher median age results from two main factors: adults aged less than 45 years are under-represented and people aged 50 and over are over-represented.

Apart from the main urban area in Whanganui, there are small rural settlements at Kai Iwi, Mowhanau, Fordell, Upokongaro, Maxwell and Mangamahu. Marae based settlements are at Kaiwhaiki, Pungarehu, Parikino, Atene, Koriniti, Matahiwi, Ranana and Jerusalem.



Growth Strategies

Council's Growth Management Strategy

Further refinement of the information held by the Council's Infrastructure group is being gathered to determine the capacity of the network infrastructure which will be a key determinant for future growth and enable Council to provide the services in an efficient and effective way.

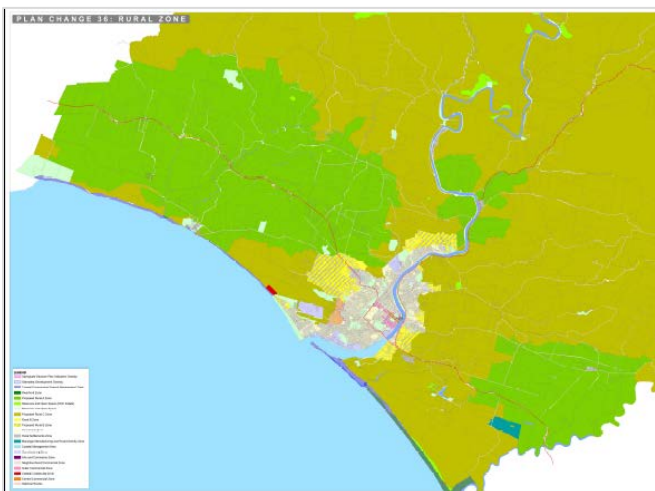
Both the population and residential occupancy rate (the number of persons living in each dwelling) is projected to decline. Council is implementing policies to try to reverse the decline (see strategic alignment section below); it is however planning for a decline in the short to medium term. Approximately 82 new dwellings are expected to be built per year. It is projected that approximately 60% of the new residential development will occur within the existing urban area with the remaining development on greenfield sites.

The strategy that the current district plan review is based on, is to encourage infill development in the existing urban area, to allow un-serviced residential lifestyle development in the Rural B zone which is an extension of the old Restricted Services Zone, and to discourage residential use in the Rural A zone so as to protect the District's Class 1 and 2 soils. See Figure 1.

Strategic Alignment

Council adopted a new vision in October 2014 under the banner of being Leading Edge. Leading Edge represents the feedback we received about our district being increasingly innovative, clever and unique. People told us that we should capitalise on these aspects and back ourselves to be trailblazers. The strategy provides deliberate stretch – it takes a longer term view and is more aspirational than some of our previous strategic intentions.

Figure 4.1: Proposed District Plan zones (Plan Change 36)



This strategy acts as Council's overarching strategic context, from which all work programmes and strategic documents will flow from. As a result, the new strategy sets our Community Outcomes and acts as a filtering mechanism for projects and actions. It has a strong strategic focus, with a clear sense of purpose. It helps us achieve our goals directly, effectively and with a minimum of waste – ensuring that we meet the tests of 'cost effectiveness' and 'good quality' mandated under the Local Government Act 2002.

In order for the strategy to be successful the actions contained within it will need to be funded and committed to. Specific actions have been included in our 10-Year Plan as a reflection of this strategy but new projects to assist with meeting our vision will need to similarly assessed and funded.

The strategic priorities plan links the key elements of all strategies, and identifies catalyst projects in a coordinated sequence. Limitations on resources and need for change means that all projects should be measured against their capacity to be transformational. Catalyst projects include Riverfront development; economic development; community development, environmental enhancement, movement and access.

Population Considerations

The following section investigates the demographics of the Whanganui district; to gain an understanding of the potential needs of the community and where services may be required in future as growth occurs in different areas

Demographic Overview

At the 2013 census, the District had a population of 42,153 (a decrease of 486 people from 2006) with the largest urban area being Whanganui city.

The spread of and change in population within the district is illustrated in Table 1 over-page.



Growth and Demand

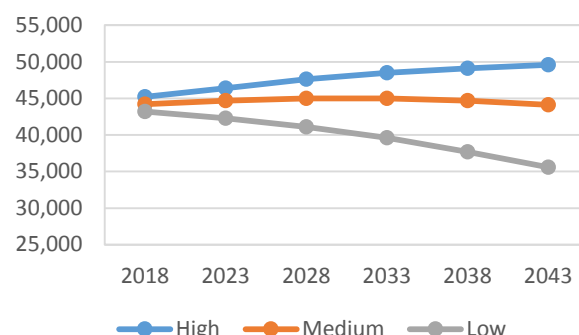
Table 4.1: Population Changes (2006 to 2013 census)

Area	Population (2013)	Change from 2006	
Otamatea	1281	+774	
Blueskin	1752	+231	
Maxwell	1635	+111	
Castlecliff North	1917		-258
Castlecliff South	1251		-15
Mosston	1047		-96
Balgownie	225		-84
Tawhero	1779		-36
Gonville South	3027		-81
Gonville East	1302	0	
Gonville West	1527		-150
Springvale West	1347	0	
Springvale East	1869	+12	
Whanganui Collegiate	1416	+300	
Laird Park	2190		-24
Whanganui Central	1242		-141
Spriggens Park	315		-12
Cook Garden	330		-39
St. Johns Hill	2106	+48	
Lower Aramoho	1680		-141
Upper Aramoho	2001		-141
Williams Domain	2127	+3	
Wembley Park	1545		-216
Kowhai Park	2085		-63
Bastia Hill	627		-48
Durie Hill	1452	+6	
Putiki	321		-36
Marybank	474	+27	
Fordell/Kakatahi	2526	+399	

Table 4.2: Projected population to 2043

Year	Actual population	High projection	Medium projection	Low projection
1991	45,082			
1996	45,318			
2001	43,629			
2006	42,639			
2013	42,153		45,000	
2018		45,200	44,200	43,200
2023		46,400	44,700	42,300
2028		47,600	45,000	41,100
2033		48,500	44,500	39,600
2038		49,100	44,700	37,700
2043		49,600	44,100	35,600

Figure 4.2: Whanganui District Population Projection



Historical population of the district over the last six census periods as well as projected population based on low, medium and high growth projections are shown in Table 4.2. Actual populations shown are taken from census data.

Statistics NZ projections of population for 2018 and beyond use a base of estimated resident population at 30 June 2013.

The district's population was growing slowly until the 1996 census and has been declining since that time. The medium projection from Statistic NZ approximates the real change in population over the last ten years.



Growth and Demand

Figure 4.3 to Figure 4.5 show the comparison of ethnicity, age distribution, and type of families between district residents and the rest of New Zealand.

Figure 4.3: Ethnic Group distribution – Whanganui vs New Zealand – 2013 Census

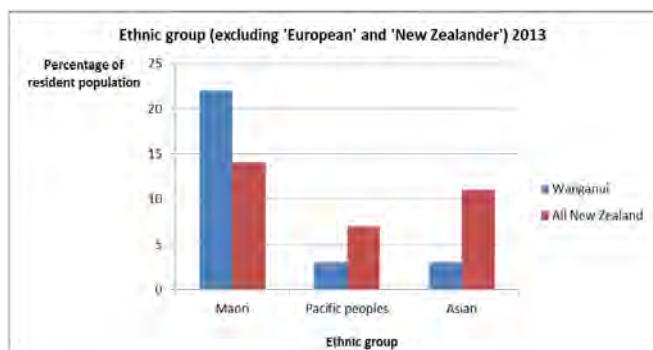


Figure 4.4: Age Distribution

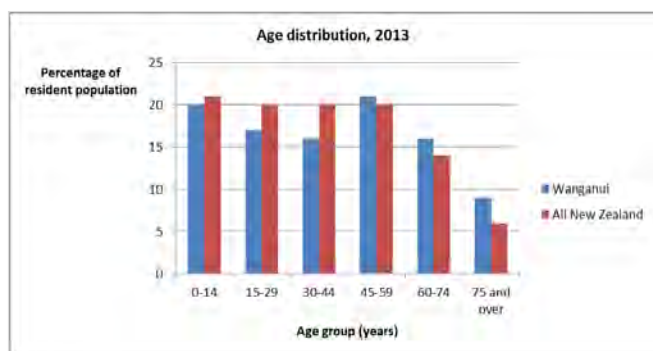
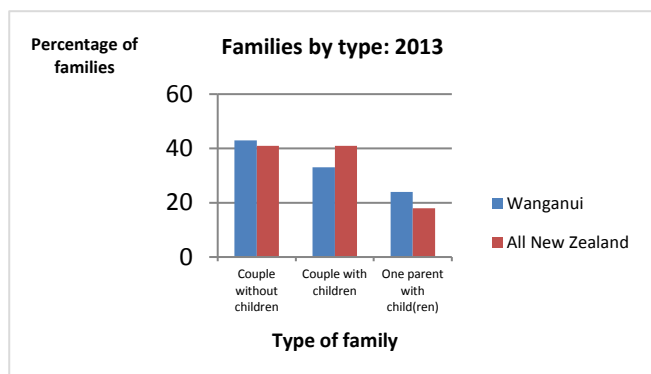


Figure 4.5: Families

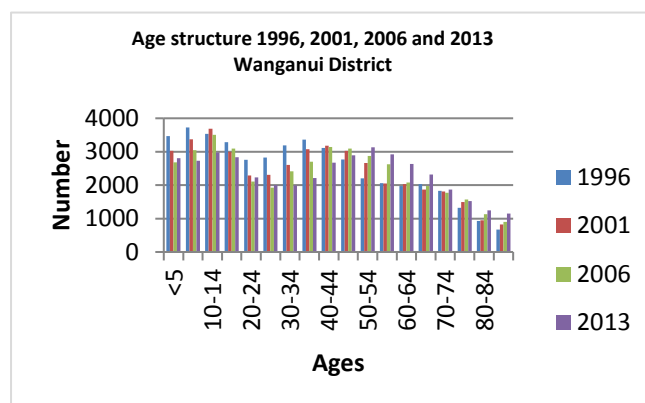


The proportion of Maori people in the district is higher when compared to the national average. Speakers of Te Reo equated to 5% of Whanganui's population, which is almost twice the national rate of 3%.

The proportion of Maori people in the district is higher when compared to the national average. Speakers of Te Reo equated to 5% of Whanganui's population, which is almost twice the national rate of 3%.

shows that the district has a higher proportion of older people (above 45 years) than the national average.

Figure 4.6: Changing Age Distribution 1996-2013



In 2013, there were 11,127 families in Whanganui. The distribution of family types here differed from the rest of the country, having fewer couples with children and more one-parent families (Census of Population & Dwellings, 2013).

Age Profiles

Figure 6 indicates the changing population distribution in the Whanganui District since the 1996 census. The graph shows a clear trend which points to an increasing aging population (50+ years) and a decreasing younger population (0-39 years). There is a slight increase in the 20-29 years band in 2013. This reflects the national trend and is not unexpected.

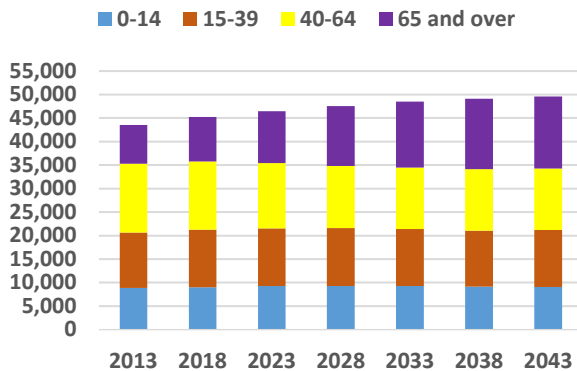
The following table from Statistic NZ's high population projection set out age profile projections for Whanganui's resident population forecasts for the period to 2043.

Table 4.3: Population Age Profiles

Year	0-14	15-39	40-64	65 and over	Total
2013	8,840	11,820	14,610	8,260	43,500
2018	9,000	12,260	14,500	9,460	45,200
2023	9,270	12,260	13,900	11,010	46,400
2028	9,270	12,340	13,220	12,700	47,600
2033	9,280	12,090	13,070	14,030	48,500
2038	9,170	11,920	13,030	15,000	49,100
2043	9,080	12,100	13,070	15,370	49,600



Figure 4.7: Projected Age Profiles



Whanganui, along with the rest of New Zealand and other OECD countries, has an ageing population.

In 2013, 52% of the Whanganui population was over the 40 year age bracket. Projections indicate that this will increase to 54% for 2023. In 2013, 19% of Whanganui's population were aged over 65 years. Projections indicate that 24% of the population will be aged 65 and over by 2023.

Education

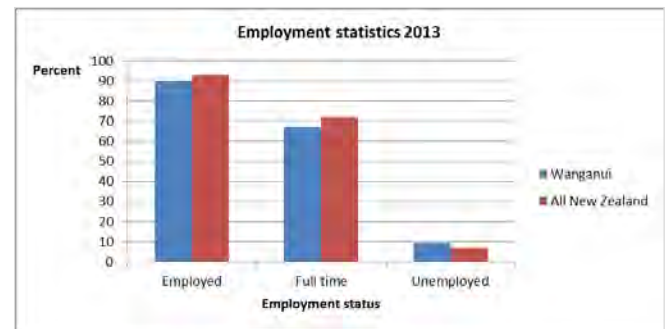
Whanganui residents aged 15 years and over hold fewer qualifications than the rest of New Zealand as a whole. 29% had no educational qualification, which is higher than the 21% recorded nationally. Pleasingly, 21% held post-school certificates or diploma, slightly higher than for the rest of New Zealand (20%). 12% held a Bachelor degree or the equivalent compared to 20% nationally. A considerably higher proportion of Whanganui Districts' Maori population had no educational qualifications – 39% for Maori versus 29% for non-Maori.

Employment Statistics

At the time of the 2013 census around 17,481 Whanganui residents were employed. Approximately 58% of the population aged 15 and over was employed which is less than the national average of 64%. Just over two thirds (67%) of the district's employed residents worked full time compared to 72% nationally.

The census recorded that 9.6% of the Whanganui labour force was unemployed, a higher figure than the then national average of 7.1%.

Figure 4.8: Comparison with National Employment Statistics



Income

Figure 4.9 below shows a comparison of occupations performed by Whanganui residents compared to the national average

Overall adult residents of Whanganui had a lower personal income in 2013 than New Zealanders as a whole (\$23,500 compared with \$28,500). This results in Whanganui residents being over-represented in the income bands below \$40,000 and under-represented in bands above \$40,000.

Median income for families was significantly lower in Whanganui at \$43,800 compared to the then national average of \$72,700. Highest median incomes were recorded in Blueskin, Otamatea and St Johns Hill. Lowest incomes were recorded in Gonville West, Whanganui Central and Laird Park.

Figure 4.9: Professions

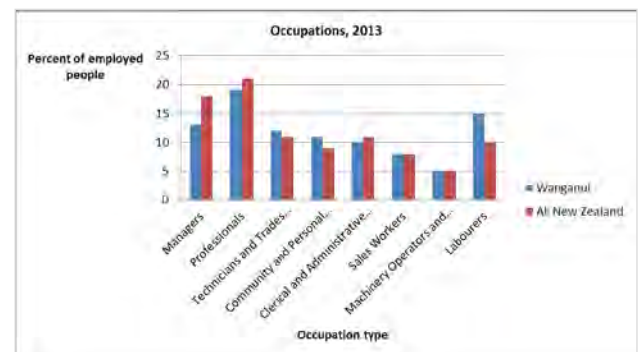


Figure 4.10: Comparison with National Personal income

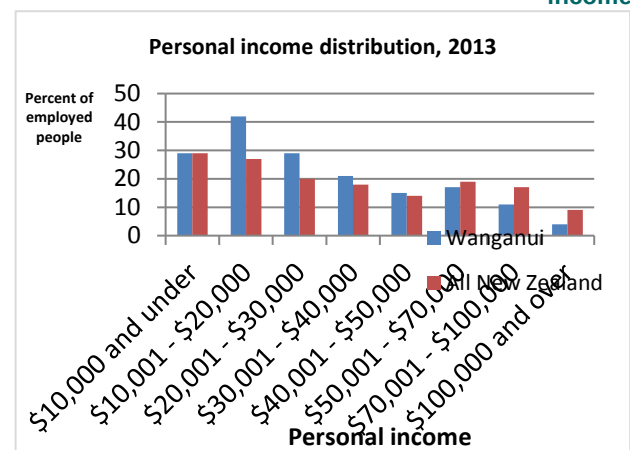
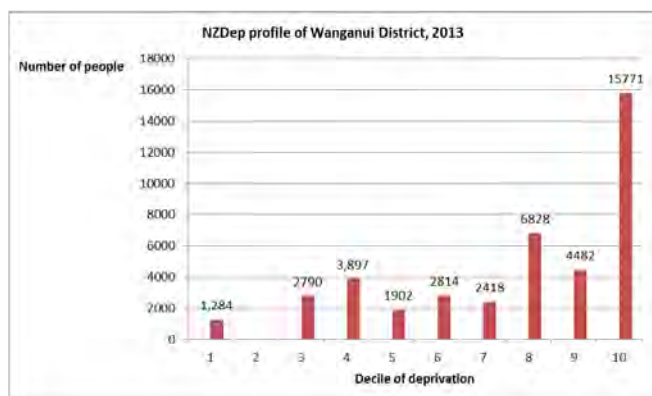




Figure 4.11: Deprivation Index



Deprivation Index

The New Zealand Deprivation Index for 2013 (NZDep2013) is a measure that takes into account various factors including employment status, income, lifestyle and accessibility, with the most deprived areas having a greater value. It is a decile-based measurement, which compares relative deprivation throughout the country. Figure 4.11 shows the decile for each census area unit of the District and shows the deprivation profile of the Wanganui District. The Wanganui District has high levels of deprivation, which may affect development and growth patterns.

Household Occupancy

“32% of the Wanganui District's households contained only one person, compared with 22.9% in the New Zealand, with the most dominant household size being 2 persons per household in 2013.”

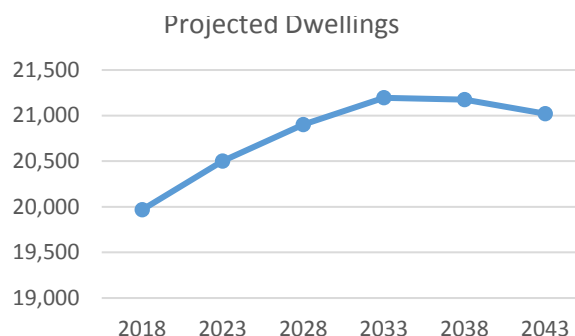
The rate of home ownership in Wanganui is similar to the country as a whole. Just under half (48%) of the district's private households owned their dwelling, while another 13% had their homes in a family trust. Thirty one percent did not own the dwelling in which they lived. The majority of rental properties (82%) are owned by the private sector, with Housing New Zealand Corporation a distant second at 12%. Wanganui District Council owned almost 5%. The mean weekly rent was \$180 compared to \$280 nationally.

Projections 2013 census indicate that there will be a modest increase in the overall number of households in the district up until 2038, however there is likely to be a decrease in the occupancy rate from around 2.37 in 2013 to 2.25 projected in 2038. This mirrors a current national trend with smaller families and a larger proportion of individuals living on their own. This is demonstrated below.

Impacts on the Transportation Activity

Wanganui's total population is expected to remain fairly stable over the next 20 years. Population trends impact upon the roading assets, in some cases creating demand for new subdivisions and associated dwellings as well as increasing demand for council services

Figure 4.12: Projected Increase in Households Considerations



However, across New Zealand it is recognised that the increasing age of the population, deprivation index, and less than average incomes inhibits people's ability to pay for services.

Whanganui will continue to monitor trends, changes in traffic volumes across the network and projections of traffic volumes/ demand to have sufficient time to act upon any significant changes and determine the impacts upon existing infrastructure.

Residential Development

Residential Development is occurring in all areas.

It is both infill of currently populated areas and greenfield development.

New Development

Assets created to cater for growth as a result of new building consents, changes in land use, subdivision consents and the vesting of assets to Council.

Commercial Development

Commercial development includes business, office blocks and hotels/motels.

Whanganui has a variety of commercial industries, including light manufacturing, food processing and tanning.

Industrial Development

After the economic recession in 2008/2009, the local economy has stabilised. New demand for exports has fuelled an increase in production in the primary goods sector, which is centred mostly in the Heads Rd Industrial area. An increase in rail traffic and consents for industrial improvements signals a demand for industrial property which would require an appropriate response from an Infrastructure point of view.

Transportation Infrastructure is a necessity for modern society which is dependent on motorised transport for its sustainable existence. Business and industry is a more intense generator of trips and contributes a substantial



share of Network demand and consumption of life from road pavement assets.

Much of Whanganui's economic activity however is based around forestry, honey and pastoral farming and the processing / transportation of the produce from these activities. Demand for these commodities is solid and reflected in current prices on international markets. The short to medium term outlook is positive for this to continue.

Forestry

Activities based around harvesting forests are set for long-term increase. Forest harvesting activities will be the single largest influence on the need for improvements and upgrades in the rural network in the foreseeable future.

The last three decades has seen intense phases of forestation in the Whanganui region. Due to these phases of large scale forest establishment, forest harvest of plantation blocks will coincide as they reach maturity changing road usage patterns and placing pressure on the road network.

In 2017 the Whanganui District Council commissioned a report to establish:

- Current regional forestry trends.
- Location of forestry plantations.
- Future forest harvest volumes (summarised into three year periods).
- Roads most likely to be affected, and
- Estimated tonnage on at risk roads (summarised into three year periods).

The scope of the report covered a 30 year period being the average of age of trees at harvest.

High volumes of harvestable timber will mature in the Whanganui District in the 2020-2030 period. The highest periods occur in the 2024-2026 and 2027-2029 periods when over 50% of the district's available wood volume reaches maturity.

Due to an uneven age-class distribution, plantation forestry is not spread evenly through the district. A

number of plantation forestry 'epicentres' exist across the district and identify key road catchments that will be affected by high volumes of forestry-related traffic.

These high-volume areas will egress onto a number of rural roads. In addition to large commercial plantations accessing State Highway 4 directly (e.g. Lismore forest), these roads include Rangitatau East Road, Tokomaru East Road, Kauarapaoa Road and Creek Road. Other minor forest epicentres affect roads such as Whanganui River Rd, Okoia and related valley roads (e.g. Longacre Valley Rd).

Roading impacts will primarily be influenced by the amount of logs (tonnages, vehicular movements) and distance of road usage (distance of road pavement used). These factors, in addition to other factors (local geology, susceptibility to storm events etc.) will help identify priority road maintenance schedules.

Despite harvest groups reaching maturity in the specified 3-year age classes, harvesting may not occur in these time windows.

It is estimated that 243.0 km or 27.7% of the WDC roading network will be affected by forestry activities.

Honey Industry

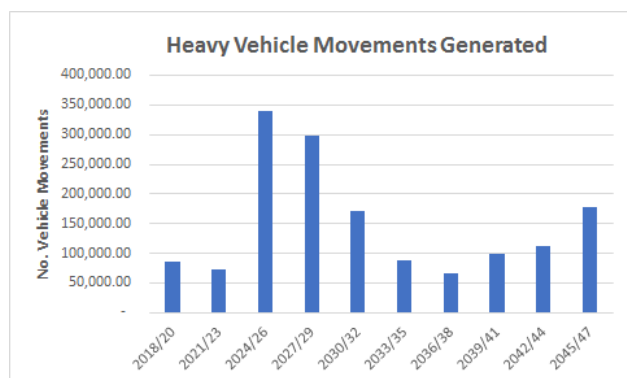
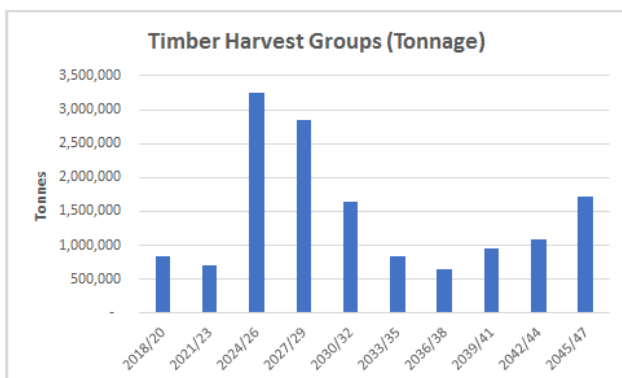
The local Beekeeping industry has been lifted by strong demand for New Zealand honey in export markets. This increase was driven by the strong market demand for mānuka honey.

Whanganui is following the trend and currently has 19478 hives being managed by 189 beekeeping enterprises across 938 apiaries.

Pastoral Farming

It is expected that traditional pastoral farming of sheep and beef, and to lesser extent deer, will continue to be a significant contributor to future demand on the rural transportation network. Dairy farming is an important growth industry in the Whanganui region with international demand for dairy produce making it a significant contributor to the local economy and the catalyst for the construction of "Open Country's" milk processing facility in Whanganui.

Figure 4.13: Regional Volume by Harvest Period
Figure 4.14: Heavy Vehicle Movements (Forestry)





The fertile soil of the lower coastal plains supports the growing of crops, predominantly barley, maize and farming supplements (hay and silage).

Rail hubs

It is apparent that in the last two year period that transportation of logs via rail is gaining favour with local forestry companies. Two log rail transfer yards have been established on both sides of the river within the city boundaries.

- Whanganui West Rail Yard (via Somme Parade to George Street)
- Whanganui East Rail Yard (via Eastown Road to Holyoake Street)

The direction of forestry related traffic flows is influenced by a number of factors. Locally, route choice is influenced by road standard, site access, bridges (e.g. loading limits, entry and exit angles), overhead obstructions (i.e. height limits), passing width, site access, paved/unpaved surface, traffic volume and road gradient.

Roads to these newly established rail log transfer yards generally meet all the requirements for effective safe travel. We can therefore conclude that the direct route quite often on local roads is an attractive option to keep transportation costs to a minimum when travelling to these rail hubs.

Impacts on the Transportation Activity

It is evident from the information and predictions detailed above that the actual population is set to remain fairly constant with a slight downward trend. However due to the reduction of the average number of people per household, housing projections are on a rising trend. The Council's growth strategy provides a guide to future residential and industrial development in Whanganui and to assist in asset management planning.

This movement of the population can impact on the transportation network in a number of ways, which include.

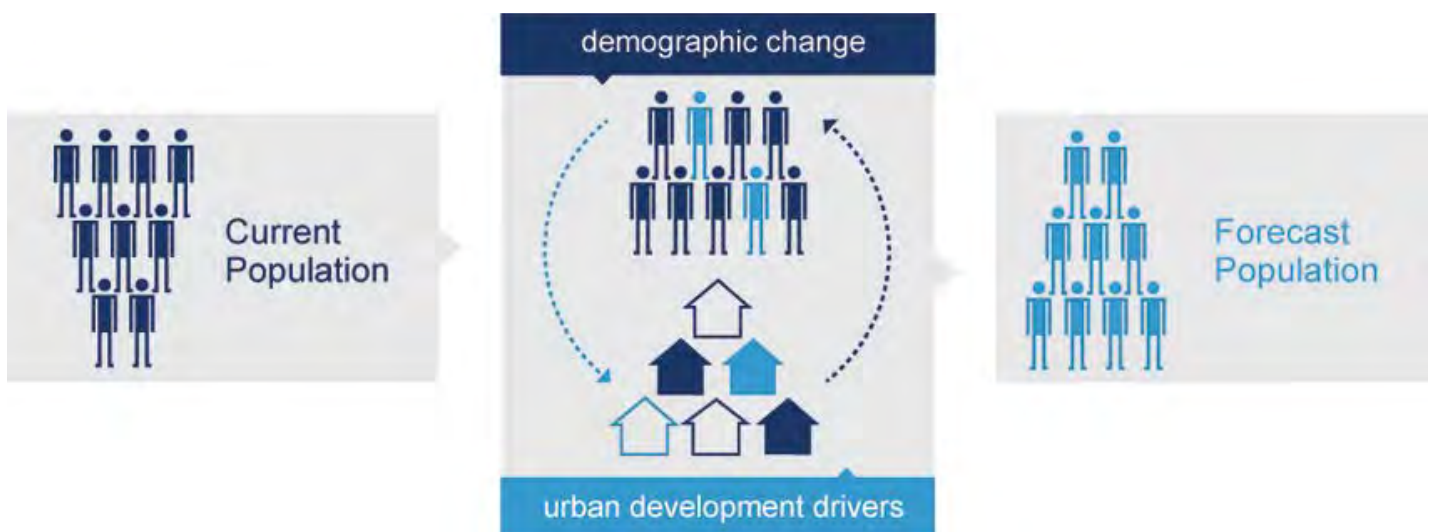
- An increase in housing may require new roads (and associated assets) to be developed and vested to Council
- Existing roads may need to be upgraded to service the shift toward urbanisation and the associated increased use of areas of the current network. This could involve realignments or the sealing of existing metal roads
- Requirement to provide for additional commercial car parks and service lanes to accommodate growth. This will mean an increase in the assets vested in Council
- New infrastructure is needed to provide improved links or establish new links between suburbs
 - Shared Pathways (Walking/Cycling)
 - Mill Road extension
 - Fitzherbert Road extension

All of the above will lead to increase in operations, maintenance and capital work costs which in turn will lead to increase in costs to the ratepayers.

There will be pressure on maintenance budgets in the future as growth and development place increasing demands on the existing infrastructure. It can be expected that identified increased traffic loadings generated by trucks movements from forestry operations will adversely affect road pavements with the frequency of reactive interventions predicted to increase. This will make it increasingly difficult to optimise maintenance expenditure on these roads in the future.

Between 60 and 80 new dwellings projected to be constructed each year. These will potentially be constructed in the Restricted Services Residential zoned

Figure 4.15: Demographic change and urban development drivers





areas on the edge of the city, in the rural zone, and as infill within the existing residential zone. It is currently not possible for Council to confidently plan infrastructure to lead growth, because there is no certainty that the infrastructure installed will be used, let alone used efficiently.

Management Strategy

Management is typically through land use zoning in the District Plan. This determines where residential, commercial and industrial development may take place and the conditions or restrictions that are placed on the development.

In addition, all development is required to comply with NZS 4404: Land Development and Subdivision Engineering and Council's Companion Document.

The use of structure planning in the identification of growth related infrastructure requirements also allows Council to determine the long term form of the urban area of Whanganui. It gives Council options to encourage development in areas that have available infrastructure capacity i.e. inner city infill, to ensure that Whanganui in the future is a city that provides what the community requires, and remains efficient and affordable.

To minimise the requirement to increase capacity of the network, network modelling and data capture can be used to help to reconcile the accuracy of asset data as well as identifying the condition of the assets and capacity issues to allow timely upgrades and renewals.

Demand on the Transportation activity will be managed by ongoing monitoring of population, residential, commercial and industrial growth.

Managing Forecasted Forestry Harvest

In response to the predicted forestry growth in the Whanganui District and the effect of the impact of increased HCV traffic movements on the transportation network WDC commenced a study in 2012.

Specific maintenance strategies were developed for roads identified as being affected by forestry harvesting operations over a 30 year analysis period. Subsequent review of the outputs highlighted deficiencies in the analysis and an improvement plan was put in place to increase confidence in derived results.

A comprehensive picture of the effects of increased demand on the Whanganui from forestry harvest has been developed. A systematic process of data



improvement and collection for sealed pavements has supported the development and implementation of dTIMS modelling for the sealed network.

Accelerated pavement deterioration from forestry traffic is the reality facing Whanganui District. Management strategies in response to forecasted demand including costing are detailed further in *Section 6: Programme Business Case*

Travel Behaviour

Current Travel behaviour

Traffic Volumes - Roads

In road networks, the patterns of traffic flow change over time. Across the Whanganui District network as a whole, the average daily traffic is increasing, but the increase is not uniform. Some roads have high traffic growth, while others are declining. The indicative growth rates below have been determined from a representative sample of roads and are set out below in Table 4.4.

Table 4.4: Traffic Growth

Road Type	Historical Annual Growth	Basis
Urban Arterial	1.5%	Average over more than 20 years of traffic counts.
Urban Collector	2.5%	Average over more than 20 years of traffic counts.
Rural Collector	1.0%	Average over 6 years of traffic counts.
State Highways	1.7% to 2.2%	Annual traffic counts from 1980 to 2000.

No comprehensive measurements of growth in heavy vehicle traffic on the Whanganui District network are available. However, heavy traffic volumes as a portion of total traffic closely follows national and regional averages.

It is expected that traffic growth in the Whanganui District will continue to grow in line with current trends. Short-term peaks of heavy traffic volumes are expected to occur on specific routes associated with the harvesting of timber in the District.

Traffic Volumes - Bridges

On rural bridges, traffic volumes are no greater than 2000 vehicles per day, with most carrying significantly less. Thus there is excess traffic capacity on all rural bridges.

Dublin St Bridge (two lanes) is the only bridge that carries a traffic flow greater than 5000 vehicles per lane per day (estimated at more than 7,300 vehicles per lane per day).



The traffic capacity of the intersections on either side of Dublin St Bridge and the City Bridge restrict full capacity at times of peak traffic flow. Improvements at the City Bridge (Taupo Quay / Victoria Street intersection) were undertaken in 2015 which involved changes to traffic light phasing and traffic lane configuration to improve traffic flow.

Weight Capacity on Bridges

Bridges are designed and constructed to carry traffic specified in terms of axle weights and gross vehicle weights. These have typically been specified by national standards, which have been occasionally reviewed and updated to reflect anticipated changes in heavy vehicle sizes and configurations. As a consequence, some bridges in the network were designed and constructed with load capacities less than the current design standard.

Prior to the 1980's, roads were classified as Class 1 or Class 2, and bridges on these roads were constructed according to the applicable weight restrictions. In the 1980's all roads were deemed to be Class 1. As a consequence of this, it is necessary to post axle weight, gross weight and speed restrictions on a number of bridges to protect them from damage.

Bridges in the hill and high country areas are susceptible to increased traffic volumes and weights from the developments in these areas e.g. forestry. This could potentially have a flow through effect when forests reach maturity and are logged.

Apart from posted bridges there are no constraints on Class 1 compliant vehicles.

Currently, restrictions on axle and vehicle tare weight are imposed on twelve bridges within the District. These are sign posted and advertised annually in accordance with the heavy Motor Vehicle Regulations 1974. At present these restrictions do not create a significant restriction on the network. They are generally located on low volume no exit roads.

Congestion

The traffic at some intersections in the urban area is near capacity for short periods of time during peak flows. Queuing of traffic occurs at some intersections, resulting in delays. Intersections where regular queuing occurs at peak times are:

- Somme/Dublin Roundabout
- Victoria/Dublin Street Traffic Signals
- Victoria/Glasgow Street Traffic Signals
- Taupo Quay/Victoria Avenue Traffic Signals
- SH3/Grey Street Traffic Signals
- Heads Road/Beach Road Intersection

Currently delays due to peak flow congestion are short by national standards, seldom exceeding 5 to 10 minutes. The cost of any proposed improvement works to reduce congestion generally outweighs the value of benefits gained by the travelling public.

Walking and Cycling

At the time of the 2013 census 534 or 3.1% Whanganui residents surveyed rode a bicycle to work. The census also recorded that 849 or 4.9% either walked or jogged as a means of transport to work in the Whanganui District

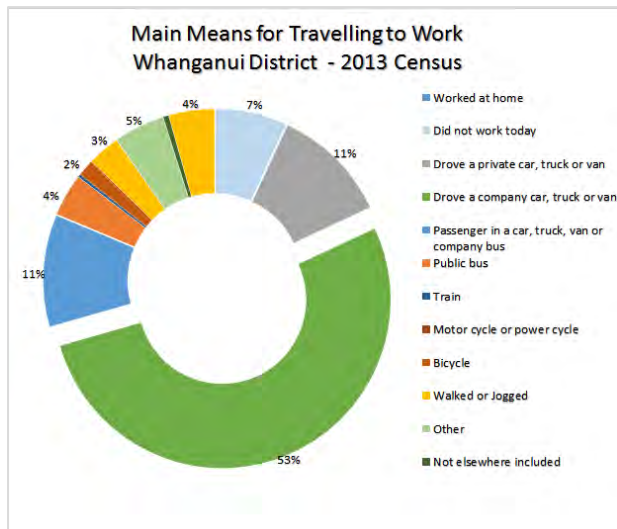
Trends between census dates 2001 to 2013 show the following:

- A 36.9% decrease (846 – 2001, 627 – 2006, 534 - 2013) in bicycle usage as a main means of travelling to work.
- 14.8% decrease in those walking and jogging to work (996 – 2001, 1011 – 2006, 849 - 2013)
- National averages are 2.2% (bicycle) and 5.3% for walking and jogging.
- Whanganui District is above the national average for residents riding a bicycle to work and below the national average for walking and jogging to work.





Figure 4.126: Main Means of Travel to Work In Whanganui District - 2006 Census



Whanganui Cycling Strategy

The Active Transport Strategy was adopted by Council in July 2017 after a 6 months' community engagement process. It establishes Whanganui District Council's strategic direction for active transportation over the next 10 years. The strategy addresses the need to improve connectivity and mobility in the district through an interconnected roading network that prioritises active transport modes such as walking and cycling.

This strategy aligns with the objectives of the Government's National Policy Statement on Land Transport towards sustainable and safe transport models, and addresses current and future transport demands. It also aims to realise Whanganui District Council's Leading Edge Strategy objective in achieving greater accessibility to and within the district for all modes of transport by making our district more walk and cycle friendly.

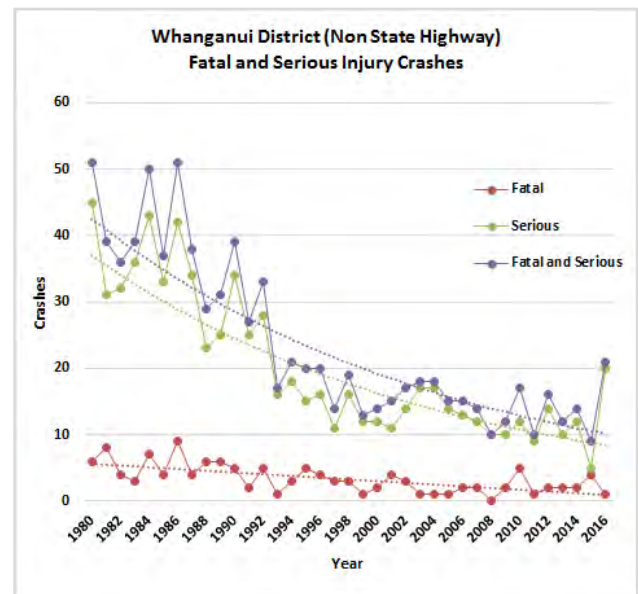
This strategy covers the Whanganui District Council's approach in providing infrastructure and collaborative partnerships that will deliver sustainable and safe active transport provision, applicable to the district's roading network and public transport.

It will apply to all residents and visitors of the Whanganui District with initiatives targeting school aged children and their whānau, recreational users, tourists, and local businesses. The Active Transport Strategy also includes behaviour change and cycling education systems such as Let's Go and Bikes in Schools.

Road Safety

The NZTA Crash Analysis System (CAS) contains crash data recorded back to 1980. The crashes in the Whanganui District have dramatically reduced from the early eighties. From 1980 - 1985 the fatal crashes fluctuated from around 4 - 8 fatal crashes and around 30 - 45 serious injury crashes per year. From 2008 - 2013 the fatal crashes fluctuated from 0 - 5 fatal crashes and 9 - 14 serious injury crashes per year.

Figure 4.137: Road Crash Data



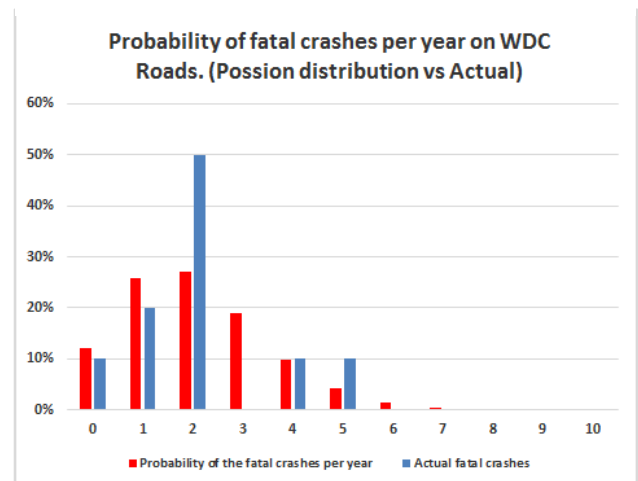
The latest 10 year data shows a slight downward trend serious injury crashes and a flat trend in fatal crashes.

Due to the random nature of fatal crashes and the mean number of crashes being close to the variance, the probability of a crash in the subsequent year can be estimated by the Poisson Formulae resulting in the data below.

The Communities at Risk Register highlights personal risk to road users. Alongside these personal risk calculations are the average annual death and serious injury (DSI) counts based on the latest five year data (the collective risk at a local body level, regional level and national level) from the Transport Agency's Crash Analysis System (CAS).

Fourteen strategic areas of concern from Safer Journeys are presented; in ranking personal risk for each we have identified two groups of concern: High concern is assigned to communities with personal risk profiles

Figure 4.18: Road Crash Data





greater than one standard deviation from the mean. Medium concern is assigned to communities with personal risk profiles greater than half a standard deviation from the mean and below one standard deviation.

The Communities at Risk Register 2017 is based on fatal and serious injury crash data in the crash analysis system (CAS) database over a five year period to 2012 to 2017.

Table 4.5: Communities at Risk

Personal risk to road users	Whanganui District (2017)	
All deaths and serious casualties	24/73	
Young drivers (of light vehicles aged 16 – 24 yrs)	36/73	
Alcohol and/or drugs	18/73	
Speed (too fast for the conditions)	20/73	
Urban Intersections	23/73	
Rural intersections	57/73	
All intersections	16/73	Medium risk
Rural road loss of control/or head on >70km/hr	23/73	
Motorcyclist involved	9/73	Medium risk
Cyclist involved	31/73	
Pedestrian involved	29/73	
Distraction (attention diverted)	10/73	High risk
Fatigue	33/73	
Older road users (aged 75yrs and older)	29/73	
Restraints (seatbelt not worn)	59/73	

The Whanganui District is rated as high risk concern for "Distraction". It is rated medium risk for "All Intersections and Motorcyclist involved" type personnel risk to road users.

Resilience and Route Security

One of the major challenges facing the district is its vulnerability to extreme weather events and natural disasters. This has an impact on all modes and is a factor in the planning of both land use and transportation infrastructure.

The majority of bridges within the District were designed and constructed prior to 1980 when the first national guidelines for seismic design of bridges were published.

The "Local Emergency Management Plan 2009" identifies key at risk routes and structures in the Whanganui District and details contingency plans to deal with emergencies resulting from:

- Earthquakes
- Tsunami
- Cyclonic Storm
- Flooding
- Volcanic Eruption
- Utility Failure
- Hazardous Substance Spills
- Major Fire
- Human Pandemic

Impacts on the Transportation Activity

Roads

The capacity of the road asset relates to the ability of traffic to travel to its destination without undue delays and with a degree of safety that is consistent with the particular type of road. As growth in traffic occurs, the remaining road capacity reduces.

Based on current subdivision standards a significant number of roads in the urban area have carriageways significantly wider than is necessary for present traffic volumes. Roads in the rural area tend to be narrower than is desirable.

In general, across the network, there is sufficient remaining capacity to provide for the present growth in traffic into the foreseeable future.

Performance and management of road assets is advanced in New Zealand. Since the traffic volumes are relatively low in the district, it is envisaged that the current day to day management will stay the same. Medium to long term projections will improve with the use and advancement of asset management practices detailed in the plan.

Congestion

The concept of Level of Service has been used to identify deficiencies, ie where congestion is experienced, by using capacity as a subjective measure of the way in which a link or intersection is operating under the traffic demands that are placed on it.

The impacts of congestion are:

- Decrease standard of living (i.e. through delays in traffic, increased pollution etc)



- Potential new routes may need to be investigated as existing routes become congested around the newly populated urban areas

Note that while the level of congestion might seem high at a local level, when assessed against the national criteria, and the wider congestion problems in other parts of the network, the levels may be well below the threshold where it will attract funding from NZTA.

Bridges

The traffic capacity of the District's bridges is unlikely to be exceeded in the foreseeable future if current traffic growth trends continue.

Changes to axle loadings on bridges by increasing vehicle mass or length with the vehicle limit going from 44 to 62 tonnes, will have an impact on bridge assets. This is because heavy vehicle journeys almost always start and finish on roads under the control of local authorities.

Bridges, culverts and structures are at risk from natural hazard events such as earthquakes, floods and the failure of attached and adjacent services e.g. water mains. It is only in recent times that adequate earthquake resistance has been incorporated into bridge designs.

Management Strategy

Congestion

The cost of any proposed improvement works to reduce congestion generally outweighs the value of benefits gained by the travelling public.

Currently improvement works at the Heads Road / Beach Road intersection are proposed for the 2018/19 financial year subject to funding approval from NZTA to address congestion and safety concerns.

Changes to Axle loadings

An initial assessment of routes for High Productivity Motor Vehicles (HPMV) on selected (investment) routes was undertaken in 2012. HPMV's are vehicles with increased allowable dimensions (length) and/or mass. As at the end of 2016 routes SH3/Heads Rd/Bryce Street and Mosston Rd / Montgomery Rd have been assessed as being suitable for HPMVs based on mass. These routes serve the key industrial areas within the Whanganui District.

Following the assessment, which indicated that there would be a very limited number of routes for HPMV's (based on increased mass) available throughout New Zealand, NZTA proposed a 50MAX vehicle for assessment. A screening assessment of the District's bridges was completed which identified those structures which have inadequate capacity for 50MAX.

These structures have been mapped and co-ordinates tabulated for inclusion into an NZTA managed system for authorising, by delegation from Whanganui District Council for 50MAX vehicles on local roads. The availability of 50MAX vehicles is a key level of service reporting measure in the ONRC reporting tool. Currently

6.28% of the transportation network is unavailable to 50MAX vehicles.

NZTA has not yet proposed a (funding) strategy for increasing the network accessibility for 50MAX vehicles.

Resilience and Route Security

A seismic rise screening program should be based on network importance taking into account traffic volumes and alternative route availability. No earthquake risk assessment of the district bridges has been undertaken and this is considered to be a high priority risk item which will be included in the AMP Improvement Plan. A simple lifelines type assessment is recommended to be completed by 2020.

Footpaths and Shared Walking/Cycleway facilities

To meet future demand, Council has policies in place for creating new footpaths for new development. This is mainly done by the developer or through development contributions. Other than this, Council has no plan to create new footpaths, except for shared walking and cycleway construction projects which align with the Active Transport Strategy. New works are possible based on requests from residents through the Annual Plan process.

The timing of new subdivisions, and thus the footpaths they contain, is under the control of the respective property developers and is thus strongly influenced by market forces. This work is not funded by the Council and is not programmed in this, or any other Council plan.

Council currently has no budget allocation for new footpath works but in the event that council does undertake any new works they are usually linked to existing strategies including the "Active Transport Strategy 2017". New works generated from strategies are funded through the Council's subsidised Land Transport Programme. Council has been successful in securing subsidised funding for the construction of cycleways in the last three years which has kick started the active mode programme of work

Footpaths are replaced under Council's capital replacement programme depending upon the condition of the footpath. At this time footpath widths are reviewed and widened if it is considered that they are under width for current usage or to address future demand.

Safety

Increasing the safety of the roading network is a continuous improvement project of identifying issues, prioritisation, and undertaking road safety improvements. The Council's deficiency database logs the possible projects from where they are prioritised according to their risk and cost benefits. The highest prioritised projects are undertaken each year.



Community Expectations and Trends

Increasing population leads to an increased demand and in most cases an expectation of increased levels of service. These expectations must be managed through wider community engagement and education to ensure stakeholders understand the impact both physically and economically on decreasing, extending or raising levels of service; this understanding of “cause and effect” will assist in effectively managing the impacts that result on growth and demand and the demographic profile of the District.

The Transportation activity contributes primarily to the following Council outcomes:

- Deeply United
- Globally Connected
- Works for everyone

Table 4.6: Programmes Relating to Council Outcomes

Council Outcome	New projects/initiatives over the next 30 years
Deeply United	• Minor Improvement projects • Accident Investigation Study • Mosston Road widening
Globally Connected	• Walking and Cycling Projects • Bridge Replacement Projects
Works for every one	• Heads Road / Beach Road Intersection Improvements • Fitzherbert Avenue extension linking Mosston Road to Carlton Avenue • Mill Road Extension



Information is gained from customers with regard to their expectations on the effectiveness of the delivery and costs associated with transportation services. This information is collected via a number of mechanisms that include:

- Customer Survey
- Submissions on the Annual Plan and Long term plan (LTP)
- Analysis of customer calls (CRM)
- Community consultation

Levels of Service	Council has a duty to provide services that are effective, delivered in a timely manner and are affordable. Responses received from customers indicate whether or not Council are meeting those Levels of Service

Perceptive Research with Insight carries out Community Views Surveys to ascertain the level of customer satisfaction with the various services provided by Council.

The following services were surveyed although in recent years customer satisfaction for the footpath and roading assets has not been undertaken.

- Footpath Surfaces
- Roading Network
- Parking Services

Balancing community expectations with what the community are able/willing to pay for is important. The imbalance of wealth and therefore expectations is evident across the district and this also needs to be managed.

Impacts on the Transportation Activity

Over time communities expect higher level of services from Council as part of a progressive improvement in the standard of living. It is also considered that expectations will continue to rise in the future particularly those of new residents to the district and that further refinement of maintenance contracts and intervention levels will be required to accommodate these increased expectations.

Council has striven to meet these expectations by increasing the scale and scope of services they deliver. They have focused on planning, organising and controlling the supply of services and resources required to support them. The rapid growth of our stock of physical assets over the past decades is evidence of how successfully this was pursued.

The 10-Year Plan is the key document that Council and the community have that defines what Council plans to do regarding the Transportation activity, why this will occur and when.

Community expectations are related to the delivery and overall quality of the service. A harmonious relationship between expectations and service delivery can alleviate



issues at critical planning stages. Levels of service for this activity are outlined in *Section 4: Customer Levels of Service*.

Focussing on service supply alone is not sustainable in the long term, as:

- The capital cost of additional assets must be considered in the light of the limited resources of the community at large
- It will cause the overall stock of assets to grow, bringing about an increase in the operating and maintenance costs of the assets.

Management Strategy

Ongoing investigation e.g. network modelling, routine maintenance, funding applications and continued communication and consultation with the local residents are all tools that can be combined to align community expectations with levels of service and their associated costs.

Other strategies could include education, campaigns to promote safety.

Diminishing Worldwide Reserves

World energy demand is rising to meet the needs of the world's ever-growing economy. Many previously underdeveloped countries in the east and on other continents are catching up with developed countries in the west in levels of economic development and activity. High rates of growth are anticipated in many other developing countries during the coming decades.

There is now a large body of research indicating that the global supplies of fossil fuels may have reached (or are near to reaching) their peak. As nations compete for available supplies, the cost of oil and gas will continue to climb, impacting economies that are heavily reliant on hydrocarbons for powering their industries and cities.

Competition for scarce natural resources such as iron ore, copper, titanium and bauxite has mirrored the rise in demand for oil and gas. Steadily rising world prices for many of these materials reflects this demand and is contributing to the increasing cost of construction.

A district that anticipates and adapts early to resource constraints may achieve significant long-term benefits and it is critical that Whanganui makes the best strategic choices in this regard.

Impacts on the Transportation Activity

There is potential for a gradual return to smaller and more economical private transport vehicles due to increased cost of fuel. However, these changes affect new vehicle numbers. Given the relatively low incomes of the district's population, it will be several years before smaller more fuel efficient cars have an impact here. Further, the effect of such changes on traffic volumes is negligible, since it is

a weak driver of change in vehicle numbers and movements.

Climate Change

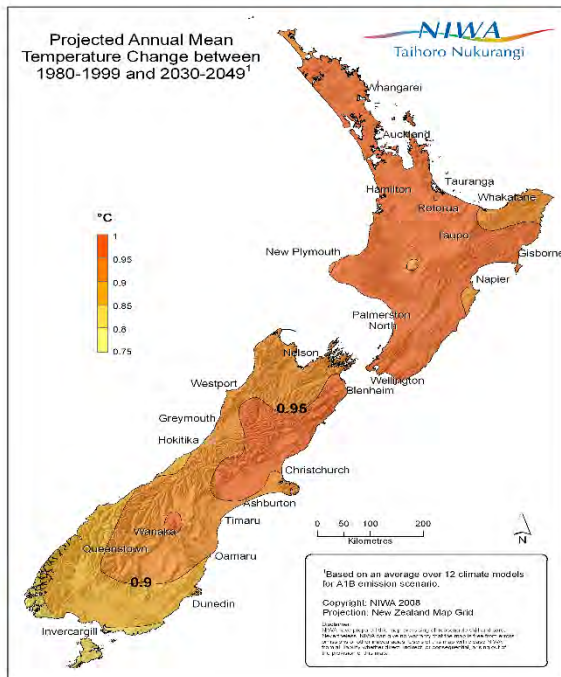
New Zealand climate varies significantly from year to year and from decade to decade. Human-induced long-term trends will be superimposed on these natural variations, and it is this combination that will provide the future climate extremes to which New Zealand society will be exposed.

The Ministry for the Environment (MfE) has produced a document entitled 'Climate Change and Long-Term Council Community Planning', which advises that, "Projections of New Zealand's future climate indicate:

- Temperatures increase on average 1°C by 2040 and 2°C by 2090
- Rainfall has a pattern of increases in the west (up to 5 percent by 2040 and 10 percent by 2090) and decreases in the east and north (exceeding 5 percent in places by 2090). There is marked seasonality in the rainfall distribution pattern changes
- Sea-levels will rise
- Decreased frosts
- Increased frequency of high temperatures
- Increased frequency of extreme daily rainfalls
- Higher snow lines and possible reduced snow coverage
- Possible increase in strong winds
- Wetter in the west and south, drier in the north and east
- Increase in the frequency and severity of extreme events (e.g. heavy rainfall, storm surges, drought, very high temp)



Figure 4.19: Projected Annual Mean Temperature Change between 1980-1999 and 2030-2049



The document states “Key principles for responding to climate change – Local government is required to operate under a range of principles that are set out in law or have evolved through good practice and case law. These principles should also be kept in mind when adapting to the effects of climate change. The key principles are:

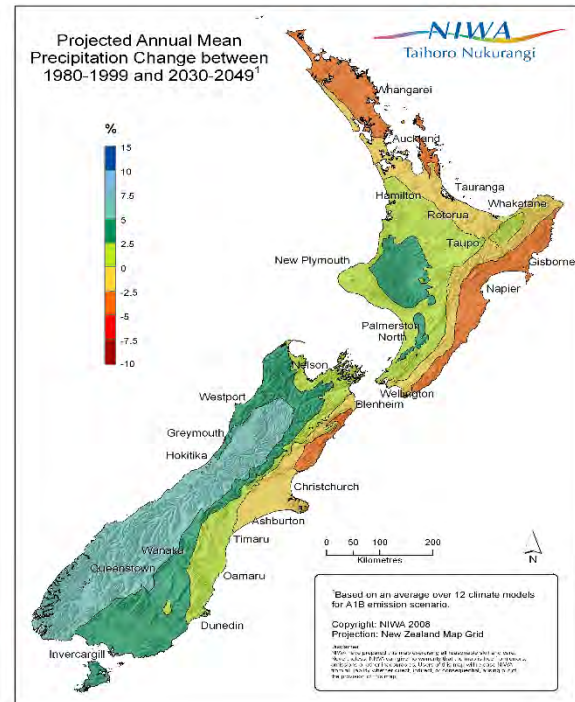
- Sustainability
- Consideration of the foreseeable needs of future generations
- Avoidance, remedy or mitigation of adverse effects
- Adoption of a precautionary/cautious approach
- The ethic of stewardship/kaitiakitanga
- Consultation and participation
- Financial responsibility
- Liability
- Resilient communities

Risk assessment procedures provide a method to evaluate the implications of elements of climate change, in terms of risks to communities and community assets. The risks can then be prioritised, and response options evaluated in terms of costs and benefits to assist Council in making a wide range of decisions. In applying risk assessment in local government decision-making, keep in mind also:

- The range of established principles influencing local government decisions, which relate to environmental and financial responsibility and the needs of the future

- The growing recognition of climate change effects in planning case law
- Uncertainty, which can lead to a range of responses – from ‘avoid if possible’ for issues that are long-term and have significant implications, to ‘manage’ for shorter-term issues with smaller-scale implications.

Figure 4.20: Projected Annual Mean Precipitation Change between 1980-1999 and 2030-2049



It is essential to recognise that climate change effects are going to occur, over time, and that risks that are slight now will increase. Thus, responses can and should be planned in advance. Elements of climate change should be built into most council planning, depending on risk assessment and priorities.

Monitoring undertaken by councils helps build up a picture of change over time, and contributes to more accurate future predictions.

Climate change considerations are particularly important when making decisions on the likes of infrastructure. Any significant investment in infrastructure should always be preceded by a risk assessment that includes climate change implications and a cost-benefit analysis. Climate change effects should be factored in to infrastructure design where the resulting asset ‘life-cycle’ costs are less than the expected additional costs from premature retirement of the asset or unprogrammed upgrades. In some situations, the design of new infrastructure may ‘lock in’ resource requirements in a way that makes later upgrading virtually impossible.

Impacts on the Transportation Activity

The effects of climate change on the Transportation activity have been assessed in this Plan because



Whanganui District has experienced more frequent and intense rainfall events in recent years.

Pre-planning for a change in Whanganui's climate as a result of global warming and other influences and the resulting potential impacts from climate change on levels of service needs to be considered in asset management planning.

The effects of climate change may bring significant costs to the community. As extreme weather events become more frequent or severe, the costs and damages associated with them are also likely to increase. The costs of dealing with stock losses, replacing or repairing damaged transportation infrastructure, property and increased soil erosion and nutrient loss could be formidable. On the up side, benefits and opportunities from a change in climate will be better crop growing conditions and faster growth of pasture. There could be opportunities to grow new crops with longer growing seasons and fewer frosts.

If the magnitude of climate change is not slowed, any beneficial effects are expected to diminish and the adverse and long-term risks are expected to increase

Management Strategy

Further investigations into potential changes to levels of service as a result of climate change needs to be undertaken, including a climatic risk assessment and cost-benefit analysis prior to significant investment in infrastructure.

Emission Trading

Emissions trading is a market-based instrument used for environmental protection.

It has been adopted as one of the primary tools for international cooperation to reduce greenhouse gas emissions under the Kyoto Protocol.

New Zealand is not alone in considering an emissions trading scheme. Internationally, emission trading is increasingly seen to be the favoured policy instrument to address energy related greenhouse gas emissions.

The Kyoto Protocol counts six types of gas in assessing anthropogenic greenhouse gas emissions: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), two groups of synthetic gases known as hydro fluorocarbons (HFCs) and per fluorocarbons (PFCs), and sulphur hexafluoride (SF₆). Other gases contribute to the atmospheric greenhouse effect but cannot be attributed to human actions or sources (e.g. water vapour).

Over time, the entire economy will be participating in the New Zealand emissions trading scheme, in the sense that the cost of greenhouse gas emissions will be reflected in the price of the fuels, foods, and other goods and services we buy. In this way, the emissions trading scheme sets up a framework in which we are all contributing and, over time, will change behaviour towards more resource, energy and emissions efficient practices.

The most obvious impact of emissions trading will be on the price of electricity and petrol. Over time, there will also be an emissions price embedded in all of the other goods and services we purchase, because they require energy to produce and transport. Eventually, the cost of greenhouse gas emissions will even be reflected in the disposal of waste and in agricultural products such as milk.

Carbon sequestration through forestry represents one possible area of comparative advantage for New Zealand, given the availability and cheapness of land relative to other developed countries. However, this too is currently limited by issues surrounding the verification of forest sinks and the reluctance of existing carbon markets to accept sink credits for trade.

Legislation

There are a number of key regulations or legislation that impact on the activity, its management, renewal, repairs, upgrades and impacts. The key legislative Acts are discussed in more detail in Section 3: Strategic Case.

Resource Management Act 1991 & Amendments

Safeguarding the life-supporting capacity of air, water, soil and ecosystems; and

(c) Avoiding, remedying or mitigating any adverse effects of activities on the environment.

Local Government Act 2002

So that the community can have confidence that the public health of the community is adequately protected, Section 125 of the LGA 2002 includes a requirement to assess water and other sanitary services that are available to the community.

Schedule 10 Section 6 now requires that the LTP identifies and explains any significant variation between the proposals outlined in the long-term plan and the Assessment of Water and Sanitary Services.

Section 3 (1) (a) of Schedule 10 requires that the LTP include a statement of the amount of capital expenditure that is budgeted to meet additional demand for an activity, to improve the level of service, and to replace existing assets.

Civil Defence Emergency Management Act 2002

The CDEM Act 2002 requires that a risk management approach be taken when dealing with hazards. In considering the risks associated with a particular hazard, both the likelihood of the event and the consequence must be considered (Refer to *Section 8: Risk Management* in this AMP).

Impacts on the Transportation Activity

Legislative change can significantly affect Councils ability to meet minimum levels of service that have been agreed with the community, and may require improvements to infrastructure assets. This will affect the community if



increased levels of service affect the community's ability to pay for services.

Council needs to be able to identify growth and demand needs over a long period of time (Schedule 10). This requires robust knowledge of the network, past performance, network modelling and future growth strategies and policies.

Management Strategies

Council will ensure it is compliant with the relevant legislative requirements related to the Transportation activity. This includes environmental performance and governance through the implementation and continuous improvement of this AMP. Council will involve the community to far greater levels through consultation and decision-making and will implement the following:

- Ensure an adequate level of understanding of the legislation is obtained by key staff
- Carry out reviews of policy changes to establish what the impacts may be (if any)
- Ensure compliance with consent conditions (where relevant)
- Development of a Community Consultation Strategy
- Promote the preparation, mitigation and response aspects in compliance with the CDEM 2002
- Remain involved with the Lifelines technical forums

Demand Management Planning

Growth and demand planning allows for the identification and quantification of areas within the District that are likely to experience significant pressures, or other situations that will impact upon the demand for services.

Understanding the 'needs vs. wants' and 'service vs. assets' relationship are central to identifying the real demand since there is often a direct link between these relationships.

The concept of managing the demand-service-asset relationship in a holistic sense is one of the basic tenets of Asset Management. It affects all elements of an agency's operations - its financial, social, technical and environmental activities. It is a fundamental aspect of the day-to-day business of the public sector and its people.

Demand Management is an evolving process requiring ongoing review in order to achieve the most equitable, cost-effective and efficient service delivery and best use and distribution of resources.

The objective of demand management planning is to actively seek to modify customer demands for services, in order to maximise utilisation of existing assets or to reduce or defer the need for new assets or services, including non-asset solutions. Future scenarios need to be investigated.

Demand Management is not intended to reduce the scope or standard of services to offset management deficiencies elsewhere. It aligns demand for services with the available resources to ensure genuine needs are met and community benefit is maximised.

Demand management is a broad term, which encompasses the following:

- Transportation demand management – a Transport system approach which seeks to achieve modal shift (to low impact modes, eg cycling)
- Traffic demand management – a single network approach which seeks to optimise or reduce traffic flows.
- Travel demand management – focuses on the individual traveller and seeks to change travel behaviour through various initiatives (e.g. education and marketing tools).

Demand management involves providing people with options for travel other than simply constructing more transportation infrastructure. It involves giving people realistic options for making trips, that do not involve using a car, and/or making best use of the road capacity available, including altering the times of day when people choose to make vehicle trips.

Demand management is a means of planning to balance infrastructure for walkers, public transport users and drivers, and to reduce travel demand. For example, demand management initiatives can include such measures such as improving the level of mode share for public transport, improving network functionality, upgrading pedestrian and cycle facilities, identifying freight corridors, promoting rural taxi services, integrating Rooding and land use planning.

Management Strategies

Demand management strategies provide alternatives to the creation of new assets in order to meet demand and looks at ways of modifying customer demands in order that the utilisation of existing assets is maximised and the need for new assets is deferred or reduced.

Demand management is practiced continuously to maintain the total demand at reasonable and sustainable levels. The five key components of demand management when promoted as a package or strategy rather than in isolation can dramatically reduce the demand on the network. The key components with examples are provided in Table 4.7.

Table 4.7: Demand Management Strategies

Demand Component	Rooding Examples
Legislation/ Regulation	Council bylaws and policies
	Compliance with national standards
	Compliance with NZTA funding requirements



Demand Component	Roading Examples
Education	Education on safety Sustainable Rooding
Incentives	Provide incentives e.g. reduction in taxes for energy efficient cars
Operation	Ensuring a safe and reliable Rooding network Continual improvements to the network User charges (ie metered parking)
Demand Substitution	Alternative transportation modes (bicycles, public transport) Signals and Controls (restrictions to access)

In addition to the above, new technologies can be effective in reducing impacts of growth and demand and the associated costs, such as:

- More fuel efficient cars
- New materials become available which provide for a longer life of the assets
- New construction/rehabilitation methods can make way for savings in reinstatement or renewal costs as well as time savings
- New treatment systems can achieve better quality roads

Development Contributions

First adopted by Whanganui District Council (WDC) in 2006, the WDC Development Contributions Policy required that development which creates the need for additional Council capital expenditure, pay a development contribution to cover the cost of providing for the increase in service demand. Since the adoption of development contributions as a mechanism for collecting for growth related costs, the legislative environment in addition to the economic environment has changed markedly.

As a result of these changes Whanganui District Council has resolved to no longer collect development contributions for the purpose of paying for additional network infrastructure in favour of alternative mechanisms such as infrastructure access fees, targeted rates and private developer agreements.

Section 102 of the Local Government Act 2002 (Act) and its amendments (the LGA) requires local authorities to adopt a policy on development contributions or financial contributions as part of their funding and financial policies. The decision to no longer collect development contributions satisfies the requirements of Section 102 of the Act.

Development contributions under the LGA are in addition to, and separate from, financial contributions imposed as a condition of a resource consent under Section 108 of the Resource Management Act 1991. Council no longer levies financial contributions under the provisions of its District Plan. However, developers may still be required to remedy, mitigate or avoid adverse effects of their development (either as a condition of consent or in accordance with the rules of the District Plan). Financial contributions may also be required for infrastructure that will solely benefit the proposed development and/or is needed to deal with its specific impacts.



Capital Works Programme and Funding Associated with Growth

A summary of the projects related to growth over the next 30 years (2018/19– 2047/48) is listed in Table 4.8 following.
A total project expenditure of \$37.1 million is estimated for growth projects

Table 4.8: Development Works – Growth Summary

Capital Works – New Development	Growth (\$000)	Renewals (\$000)	LOS Improvement (\$000)	Funding Source			2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031	2031/2032	2032/2033	2033/2034	2034/2035	2035/2036	2036/2037	2037/2038	2038/2039	2039/2040	2040/2041	2041/2042	2042/2043	2043/2044	2044/2045	2045/2046	2046/2047	2047/2048	Total for 30-year period (\$000')
				Development Contribution s (\$000)	Depreciation (\$000)	Subsidy / Loan (\$000)																															
Whanganui Central Transportation Hub	250.0					250.0				250.0																										250.0	
Cycleways	775.0		775.0			1,550.0		1,550.0																													1,550.0
Heads Road / Beach Road Intersection	465.9	465.9	465.9			1,397.6		1,397.6																													1,397.6
Low Cost / Low Risk	16960.1		16960.1			33920.2	3338.0	1900.0	1705.0	883.6	851.0	869.0	1040.8	1008.1	1003.3	1003.8	1030.1	1035.8	1021.2	1025.1	1049.7	1047.2	944.1	939.0	969.0	967.6	970.8	1001.4	1000.5	1004.3	1035.6	1035.4	1039.8	1068.4	1065.5	1067.1	33920.2
Total	18451.0	465.9	18201.0			37117.8	3338.0	4847.6	1705.0	1133.6	851.0	869.0	1040.8	1008.1	1003.3	1003.8	1030.1	1035.8	1021.2	1025.1	1049.7	1047.2	944.1	939.0	969.0	967.6	970.8	1001.4	1000.5	1004.3	1035.6	1035.4	1039.8	1068.4	1065.5	1067.1	37117.8

A photograph of two people in a yellow canoe on a river. The person in the foreground is wearing a red and white striped life vest and a red cap, holding a paddle. The person in the background is wearing a blue and yellow life vest and a white shirt, also holding a paddle. They are positioned in front of a large, powerful waterfall cascading down a rocky, moss-covered cliff. The water is white and frothy as it falls. The surrounding area is lush with green vegetation, including ferns and other plants. The overall scene is dynamic and adventurous.

05 Programme Business Case



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Introduction

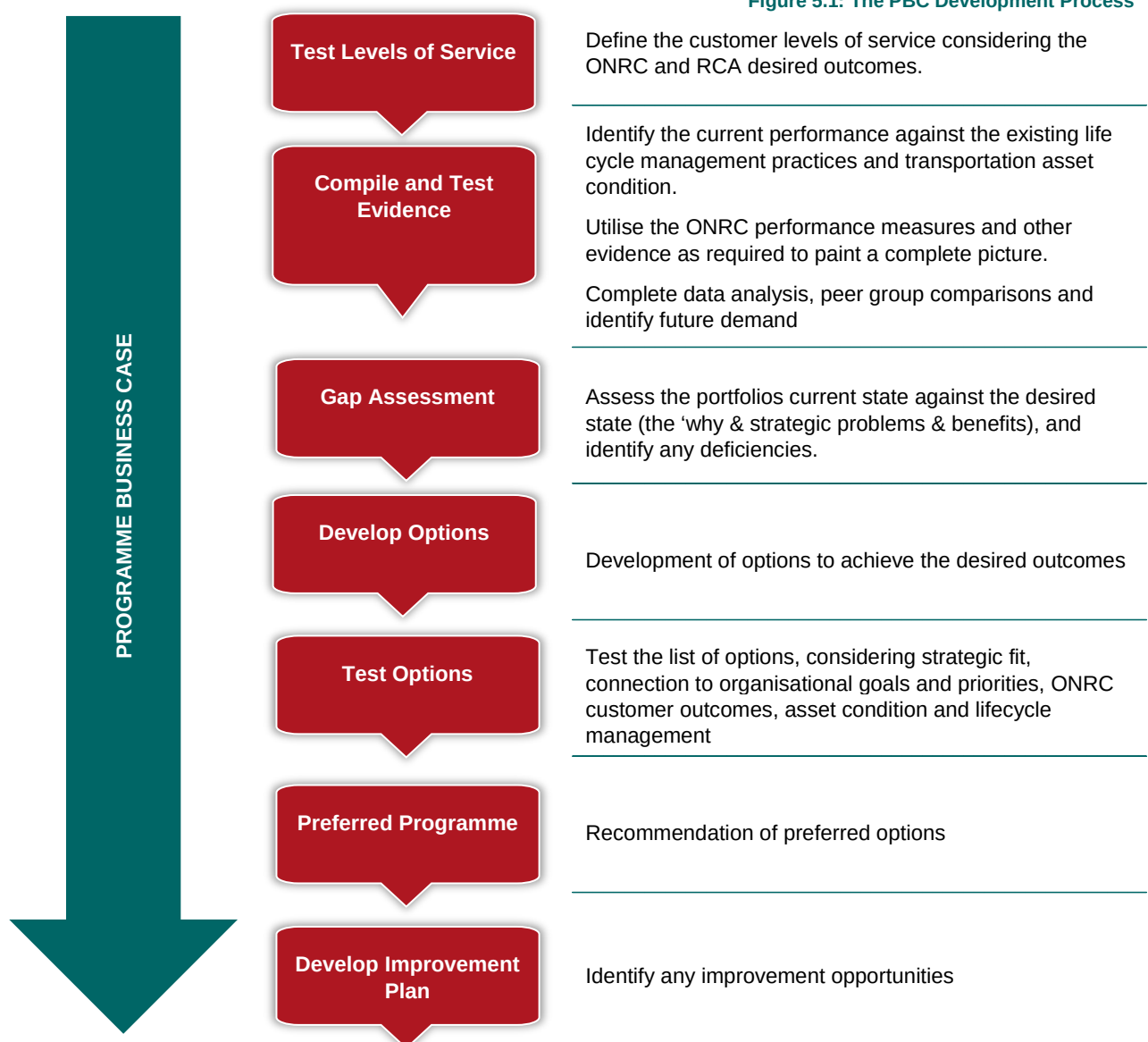
The Programme Business Case for the transportation activity proves the case for investment in the transportation assets to ensure a safe, efficient and sustainable transportation network exists now and into the future.

It allows Council and our co-investor the opportunity to consider a transport corridor management programme (or combination of programmes) to adopt by allowing a trade-off to be made between risks and benefits.

A systematic approach is required in the development of the PBC for the transportation activity to ensure that key messages in our investment story are adequately communicated to our investors.

The Programme Business Case also demonstrates an understanding of the strategic objectives for the transportation activity by a strong linkage to the benefits and problems identified in the Strategic Business Case.

The Transportation Programme Business Case pulls together the key investment related information from other sections of this Activity Management Plan and summarises them into a succinct synopsis of the case for investment in the transportation activity.





Programme Business Case

Investment Summary

The Strategic Business Case identified the following benefits for investment in the transportation activity.

1	An efficient and resilient network
2	An affordable network which is economically sustainable
3	A safe and well connected network for all modes

Investment in the transportation activity is described in detail in the activity management plan. The investment strategies to realise these benefits are summarised here for each of three main investment categories:

- Maintenance and Operations
- Renewals
- Capital Improvements

Maintenance and Operations

Investment in Maintenance and Operations increases approximately \$700,000pa for the 2018-21 period predominantly in response to funding slip clearing and detritus removal (Work Categories Minor Events and Environmental Maintenance) that have previously been underfunded.

Traffic Services operations benefits from the reduced power and maintenance costs generated from the proposed LED upgrade of the streetlight assets.

Renewals

A reduction in Drainage Renewal investment is offset by increases in Sealed Road Resurfacing and Pavement Rehabilitation with a total increase of approximately \$300,000pa.

This increase addresses a resurfacing shortfall for second coat seals and covers the cost of the repair of chip seals damaged from June 2015 flood event. Pavement rehabilitations at Kauangaroa Road and Rangitatau East Road are required due to increased traffic loadings. **Increased forestry activity is likely to require additional renewal investment commencing in the 2024/25 funding period.**

Capital Improvements

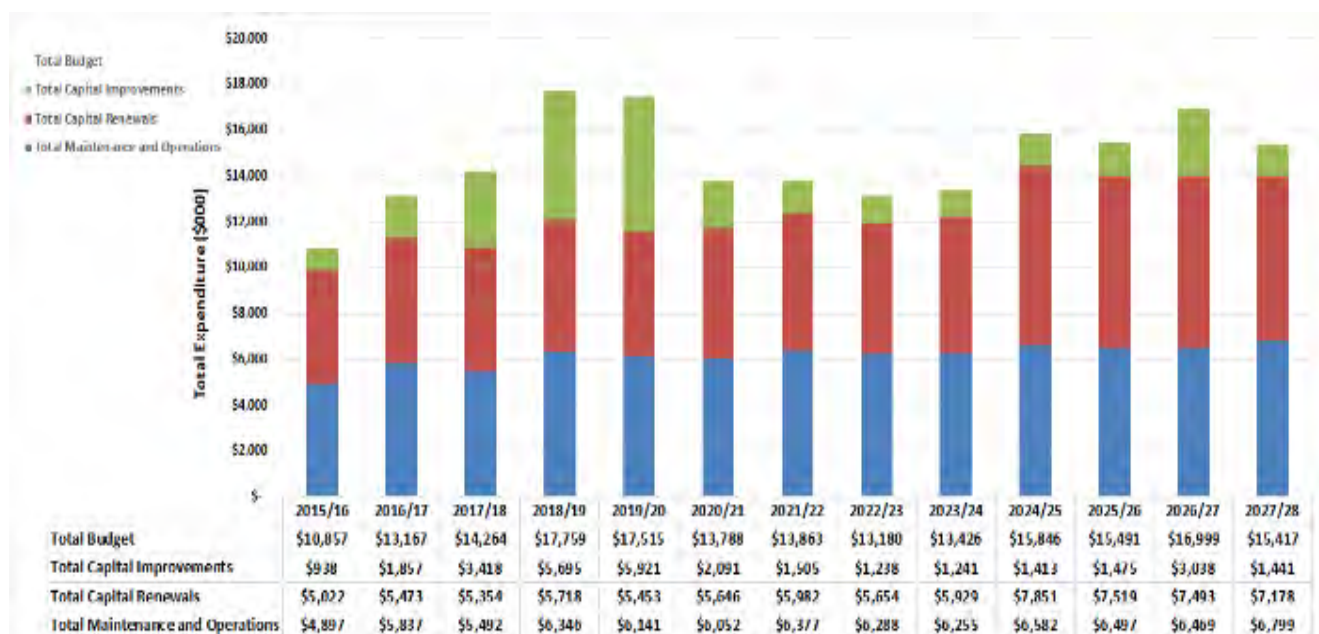
Significant capital improvement investment is proposed during the 2018-21 funding period including the Wakefield Street Bridge Replacement, the Kauarapaoa Road (Ernies) Bridge Replacement, the Heads Rd / Beach Road roundabout, and the Urban Cycleway Project (UCP) on Aramoho Rail bridge cycleway.

A programme of Low Cost / Low Risk Improvements (formally called Minor Improvements) is also proposed including the Urban Cycleway project, Fitzherbert Avenue extension, Wikitoria Road Culvert Renewal, Mill Road extension, Traffic Signal Upgrades and multiple safety projects.

Financial Summary

The following table summarises the financial expenditure for the 2015-18 Land Transport Programme and forecast expenditure for the 2018-28 Long Term Plan. Future expenditure forecasts are included in *Section 9 – Projects and Financial Forecasts*.

Figure 5.2: Transportation Activity Investment





Programme Business Case

Consequences

The risks and implications of the funding request proposal not being realised for the transportation activity have

been summarised in the table below; aligned to GPS priorities, Council and ONRC customer level of service outcomes.

Table 5.1: Consequences

GPS	Community Outcomes	ONRC	Risks	Implications
Economic Growth & Productivity	  	  	Damage to property	Council/NZTA Liability
			Reduction in network availability due to unplanned disruption	- Increased frequency results road user dissatisfaction - Disruption to business and freight movement and increased road user costs - Loss of productivity with assets not contributing to NZ Inc.
			Asset Condition/Performance deterioration	Agreed levels of service not being realised ONRC
			Increase in complaints received by Council from affected parties	Organisational Embarrassment
Safety	 		More frequent breaches of safety thresholds	- Potential for extreme consequences (Death and Serious Injuries) - Potential safety hazards for pedestrians if footpath maintenance is not carried out (Vulnerable Users) - Improvements
Value for Money			Consumption of transportation assets from under investment	Increase in cost to return asset condition to customer levels of service
			Increase in unplanned interventions	Increase in total maintenance cost due to inefficiencies (Planned vs Reactive)



Pavements

The purpose of sealed roads are to provide a network that is suitable for the effective movement of agricultural, commercial industrial goods, produce and people, has a safe suitable all-weather surface that is appropriate to its location and function in terms of skid resistance, noise reduction, smoothness, and has a structure suitable for legal loading requirements.

In Whanganui the transportation network is diverse which means multiple challenges to maintain pavements to Customer and Technical Levels of Service. In order to

satisfy the expectations of the public for a consistent, accessible and safe network with limited funding the prioritisation of pavement activities needs to be carefully balanced.

Strategic Case Linkage

Table 5.2 below shows the linkage between the Strategic Case and pavement –related activities.

Table 5.2: Linking Pavement activities to the Strategic Case

GPS Objectives	A land system that addresses current and future demand for access to economic and social opportunities				
	A land transport system that is resilient				
	A land transport system that is a Safe System, increasingly free of death and serious injury				
	A land transport system that delivers the right infrastructure and services to the right level at the best cost				
	A land transport system that increasingly mitigates the effects of land transport on the environment				
RLTP Objective	Effective road maintenance and delivery				
WDC Community Outcomes	Supporting communities along the Whanganui River				
	Use best practice to provide and operate a safe local road network.				
	Provide the core infrastructure that will allow access to all healthcare services				
	Well connected pathways throughout the district				
	Improved access to port, rail, air and road networks				
	Use best practice to provide sustainable and efficient use of the district's resources. Provide the core access infrastructure that will allow Whanganui to become business friendly.				
	Provide the core access infrastructure that will continue to allow a strong rural economy.				
					
	Deeply united	Globally connected	Powered by creative smarts	Flowing with richness	Works for everyone
ONRC Customer Level of Service	Safety	Fault identification and prioritisation ensures that unsafe pavement defects are located and a prompt response initiated. Intervention works are completed in a timely and safe manner. Compliance Audits undertaken at agreed frequency, evaluate results and act as required			
	Resilience	Pavement maintenance faults that have potential to result in unplanned closure are identified and appropriate treatments initiated.			



Programme Business Case

		Programme of preventative maintenance works undertaken that addresses key network risk areas or hot spots.
	Amenity	Pavement treatments are appropriate to the individual road classification thus ensuring alignment of level of service nationwide. Smoothness of the journey experienced by stakeholders reflects ONRC classification of the road. Measurement of network roughness undertaken annually to ensure network compliance
	Accessibility	Physical state of the network is maintained in an economically sensible manner that allows for safe travel at a sensible and appropriate speed to intended destinations
	Efficiency	Demonstrate through prudent programming and clustering of maintenance activities that value for money is being achieved in delivery of outputs. Minimise through strategic planning whole of life costs while delivering the required customer outcomes.
Linkage to Problem Statements	The following identified Problem Statements have relevance to the road pavement asset group: - The form and function of the road network are not meeting the changing demands and needs resulting in decreasing Levels of Service and increasing reactive interventions. - The network is impacted by challenging geology, topography and weather resulting in increased resilience issues and high repair costs when unplanned events occur. - A range of factors such as urban intersection layout, age capability and experience of drivers are resulting in death and serious injuries.	

Test Levels of Service

Levels of Service (Pavements) – (Technical)

The following technical levels of service (LoS) influence strategy and investment decisions for the pavement asset group. Customer (LoS) are discussed in detail: *Section 4 – Customer Levels of Service*

Table 5.3: ONRC Technical Levels of Service – Pavements

Levels of Service Technical Output  Amenity	Road Category	Customer Level of Service Outcomes
	Arterial	Good level of comfort, occasional areas of roughness.
	Primary Collector	Moderate level of comfort, occasional areas of roughness.
	Secondary Collector	Moderate level of comfort, longer areas of roughness.
	Access	Lowest level of comfort, may include extended areas of roughness and unsealed surfaces (on rural roads).
	Access (low volume)	



Programme Business Case

Technical Measures	Technical Output 1: roughness of the road (median and average)																															
What is the LoS are we delivering?	<table><caption>Average Roughness 2015/16</caption><thead><tr><th>Road Classification</th><th>NAAASRA (Approx.)</th><th>ONRC Target Roughness (Approx.)</th></tr></thead><tbody><tr><td>Urban Arterial</td><td>90</td><td>100</td></tr><tr><td>Urban Primary Collector</td><td>90</td><td>110</td></tr><tr><td>Rural Primary Collector</td><td>90</td><td>100</td></tr><tr><td>Urban Secondary Collector</td><td>105</td><td>110</td></tr><tr><td>Rural Secondary Collector</td><td>90</td><td>110</td></tr><tr><td>Urban Access</td><td>110</td><td>120</td></tr><tr><td>Rural Access</td><td>95</td><td>120</td></tr><tr><td>Urban Low Volume</td><td>110</td><td>140</td></tr><tr><td>Rural Low Volume</td><td>105</td><td>140</td></tr></tbody></table>	Road Classification	NAAASRA (Approx.)	ONRC Target Roughness (Approx.)	Urban Arterial	90	100	Urban Primary Collector	90	110	Rural Primary Collector	90	100	Urban Secondary Collector	105	110	Rural Secondary Collector	90	110	Urban Access	110	120	Rural Access	95	120	Urban Low Volume	110	140	Rural Low Volume	105	140	When compared against ONRC target roughness measures it is apparent that all road classifications are currently over delivering a level of service to our customers The gap between actual average roughness and ONRC targets is particularly pronounced for Access and Low Volume Roads. Over time all roads in a particular category should offer increasingly consistent, fit for purpose customer level of service for road users. Currently no roughness measurements are undertaken on unsealed roads.
	Road Classification	NAAASRA (Approx.)	ONRC Target Roughness (Approx.)																													
Urban Arterial	90	100																														
Urban Primary Collector	90	110																														
Rural Primary Collector	90	100																														
Urban Secondary Collector	105	110																														
Rural Secondary Collector	90	110																														
Urban Access	110	120																														
Rural Access	95	120																														
Urban Low Volume	110	140																														
Rural Low Volume	105	140																														
How do we compare against peer group?	<table><caption>Average Roughness (Peer Group)</caption><thead><tr><th>Road Classification</th><th>Whanganui (Yellow Diamond)</th></tr></thead><tbody><tr><td>Arterial</td><td>~85</td></tr><tr><td>Primary Collector</td><td>~80</td></tr><tr><td>Secondary Collector</td><td>~85</td></tr><tr><td>Access Road</td><td>~90</td></tr><tr><td>Low Volume</td><td>~105</td></tr></tbody></table>	Road Classification	Whanganui (Yellow Diamond)	Arterial	~85	Primary Collector	~80	Secondary Collector	~85	Access Road	~90	Low Volume	~105	<table><caption>Median Roughness</caption><thead><tr><th>Road Classification</th><th>Whanganui (Yellow Diamond)</th></tr></thead><tbody><tr><td>Arterial</td><td>~85</td></tr><tr><td>Primary Collector</td><td>~80</td></tr><tr><td>Secondary Collector</td><td>~85</td></tr><tr><td>Access Road</td><td>~90</td></tr><tr><td>Low Volume</td><td>~105</td></tr></tbody></table> Average Roughness ONRC higher classification road pavements are generally performing below average against our peer group. (Outside 25% - 75% reporting limits) for average roughness. Access and Low volume roads are performing either on, or just above peer group mean. We can conclude from the results that Whanganui District is not the only Council exceeding specified ONRC targets for average roughness. Median Roughness Whanganui District performs poorly when compared against our peer group. We must take this result in an overall environment of over delivery across the peer group.	Road Classification	Whanganui (Yellow Diamond)	Arterial	~85	Primary Collector	~80	Secondary Collector	~85	Access Road	~90	Low Volume	~105						
	Road Classification	Whanganui (Yellow Diamond)																														
Arterial	~85																															
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Road Classification	Whanganui (Yellow Diamond)																															
Arterial	~85																															
Primary Collector	~80																															
Secondary Collector	~85																															
Access Road	~90																															
Low Volume	~105																															
Is there a gap we need to invest in?	In order to establish whether a gap in LoS exists we will Currently Whanganui roughness is lower than ONRC target measures for all classification																															



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	• Identify key carriageway sections and roads categories affecting results • Check roughness data • Check Rural / Urban split • Develop data collection strategy, timing and frequency as this is essential for accurate reporting and confidence.
How will we deliver the LoS?	We will achieve these service levels by: • Review Maintenance Intervention Strategy (MIS) by road classification. Some maintenance and renewal treatments currently used will not be appropriate, by ONRC classification (surface levelling). • Implement data collection strategy, delivery and timing • Annual review of roughness survey results during compiling of forward programmes • We must be careful to not to over deliver on those road classifications that provide the least benefit and invest in higher classification roads.
How are we going to measuring it?	The following procedures will measure whether the level of service is achieved: • The ONRC reporting tool will generate the result, by individual ONRC road classification. • The key inputs into the calculation of this measure is Roughness (NAASRA). A full network survey is undertaken bi-annually and a part survey of all road classifications excluding Access and Low Volume in alternate years.



Pavements: Current Condition and Performance

Compile and Test Evidence

Performance of pavements is measured by how well it meets the requirement to provide safe, smooth, all weather access and does it have sufficient capacity for

both the volume and weight of all the vehicles that wish to use it.

Current information indicates that some of the ONRC customer and technical measures are exceeding the expected target e.g. low volume rural roads, while others, like the Urban Arterial roads are not meeting smooth travel exposure and average roughness expectations.

Significant one off events are resulting in unplanned reactive maintenance and renewal interventions and contributing to sections of the network performing below the target levels of service

The extreme weather event in June 2015 and unannounced forestry traffic have given rise to impromptu changes in forward works programmes. This has highlighted the need for Council to be vigilant to changing dynamics on the network so that rapid responses can be initiated to mitigate against poor outcomes.

A review of the Maintenance Intervention Strategy (MIS) is required to better align pavement maintenance and renewal activities with ONRC classification and target measures. Care must be taken to ensure that abrupt changes to network performance do not occur whereby road user safety is compromised.

Changes in level of service must therefore be undertaken in incremental steps with a robust process of monitoring network condition. An example of this will be comparative analysis of the number of defects identified to the level of

customer feedback to highlight if the level of service drop is perceived or real.

Specific changes to the MIS will be developed with an emphasis on preventative maintenance activities including:

- Crack sealing
- Drainage improvements
- Pre reseal repairs

Predictive Modelling - dTIMS

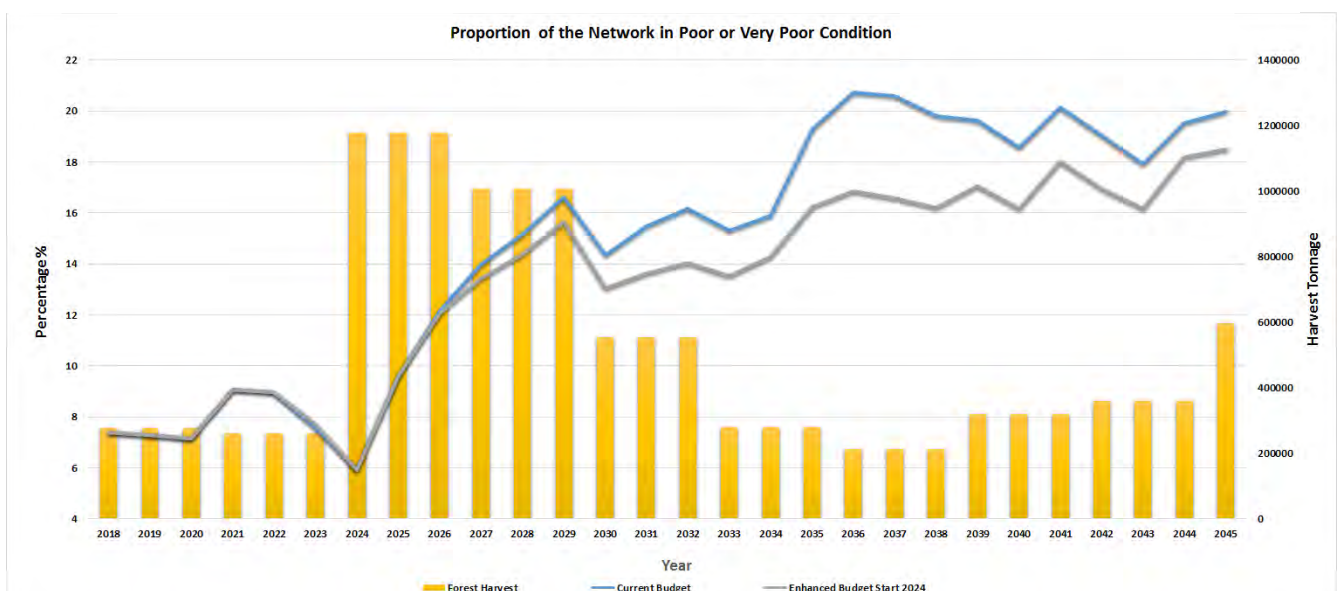
Predictive modelling using the Deighton Total Infrastructure Management System (dTIMS) was undertaken to identify the impact additional demand (traffic loading, generated predominantly from forestry harvesting) will have on the sealed road network.

To help support our investment story, we have invested time and effort to create a dTIMS model that allows us to assess the impact of the additional traffic loading and varying levels of investment over a 30-year period.

Outputs of the modelling to date have shown that there will be an impact on the sealed road network as a result of additional traffic loading. The largest impact will be seen in the renewals investment category as roads deteriorate more quickly to the point of requiring resurfacing and rehabilitation interventions.

Figure 5.3 shows the distribution of the pavement conditions index, which represents the general condition of pavements in terms of various factors. These factors include rutting, roughness, texture and surface condition. Over the 30 year analysis period, there is a general decline of the PCI index, before stabilising. The graph shows rapid increase in poor and very poor pavements condition which aligns with increased network traffic demand from forestry harvest.

Figure 5.3: dTIMS – Pavement Condition Index (PCI)





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Results clearly indicate that at current investment levels pavement deterioration will remain stable until 2024 when the percentage of poor and very poor pavements will rapidly increase. The enhanced programme has the effect of stabilising deterioration at an earlier stage.

dTIMS – Investment Forecasts

To maintain the integrity of the sealed road network, an average budget increase in sealed resurfacing and rehabilitation of \$1,800,000 per annum is anticipated for the period beyond 2024, as shown in figure 5.4 below. This is a combination of pavement resurfacing and rehabilitation renewals required to maintain pavement deterioration within acceptable levels.

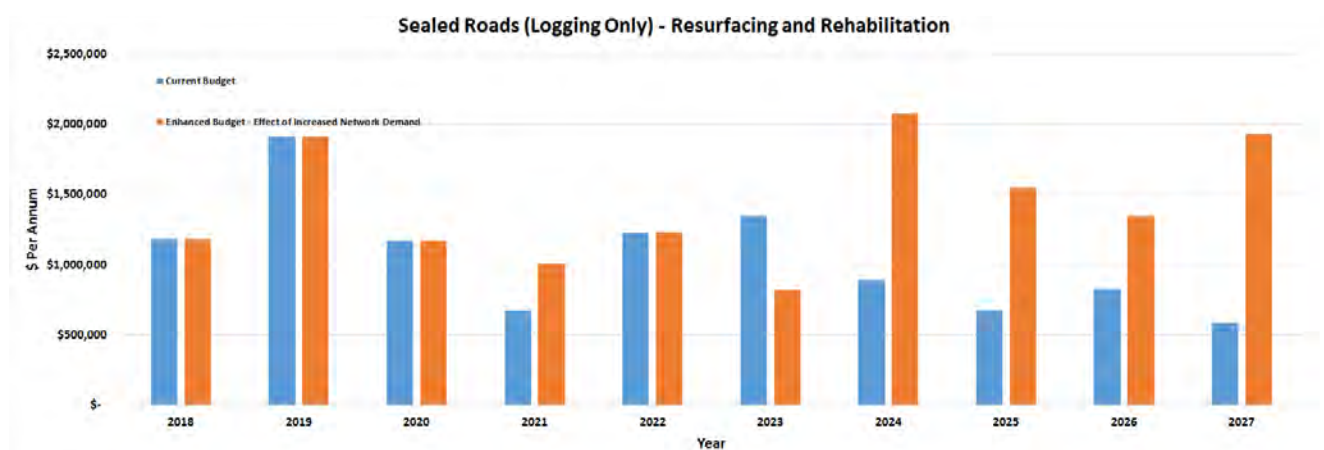
Figure 5.5 below provides a summary of forecasted investment for the sealed road sections affected by additional traffic loading expected from the forestry harvest. These roads which represent 28.8% of the total sealed network are predicted to consume 40.2% of the forecasted resurfacing and rehabilitation budget for the period 2018/19 to 2027/28.

It should be noted that the predictive modelling undertaken in dTIMS for this purpose is a first generation model and further testing and validation of the model is required to provide greater assurance in the outputs.

Figure 5.4: Forecast Sealed Roads Investment



Figure 5.5: Forecast Sealed Road Investment for Forestry Affected Roads





Sealed Pavement Maintenance and Operations

Sealed Pavement Maintenance Strategy

The maintenance strategies used on the road network are focused on undertaking the maintenance work necessary to ensure the various maintenance intervention levels are met, minimise life-cycle costs, preserve the integrity of the transport asset and maintain safety for road users.

In recent times the main focus of the maintenance programme has been on the urban road network primarily in response to an identified deterioration of pavements and surfacing in Whanganui City. Reactive maintenance originating from logging activities contribute to the majority of rural maintenance activity.

Pavement repairs are prioritised and carried out in accordance with the maintenance intervention levels for the network and in conjunction with the periodic resurfacing of the network. They are also carried out when required in other situations to ensure the safety of road users and the integrity of the road pavement. A key factor in the prioritising of work is the network classification with higher standards being applied to the more heavily used roads.

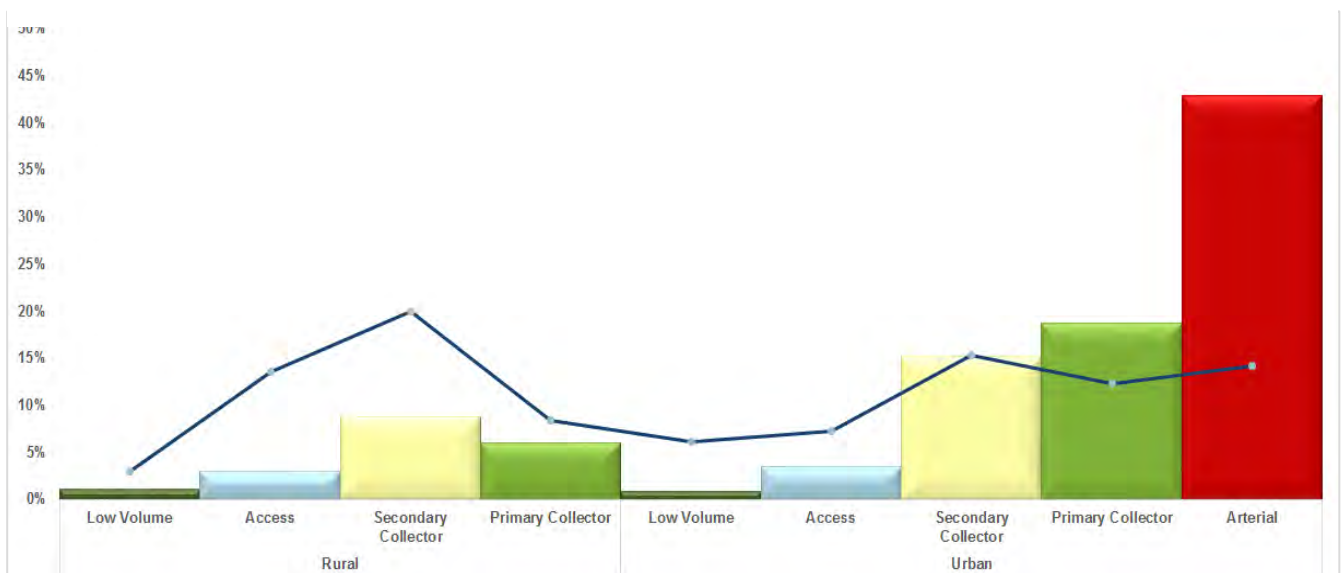
Pre reseal repairs are undertaken prior to resealing. The type of repairs undertaken is dependent on the level of usage of the road and the corresponding level of service. There is an expectation that the pre reseal repairs undertaken will be sufficient to provide the existing pavement with a 10-year life. In some situations, a reseal will be applied as a holding treatment with only a limited amount of pre reseal repairs undertaken. This is to extend the life of the existing pavement as long as possible and to keep the road serviceable until such time as the pavement can undergo a full rehabilitation.

Investment in the Right Place

Initial analysis shows that the maintenance expenditure does not align perfectly with road use, as measured by vehicle kilometres travelled, as shown in the chart below. The solid line indicating proportion of maintenance spend.

Analysis of the maintenance cost data shows that we are spending a disproportionate amount on the secondary collector roads when contrasted to the volume of traffic they are carrying. Our maintenance strategy is to align maintenance expenditure to carriageway use.

Figure 5.6: Proportion Sealed Pavement Maintenance Budget Spend vs VKTs





Programme Business Case

Peer Group Comparison (Sealed Pavement Maintenance)

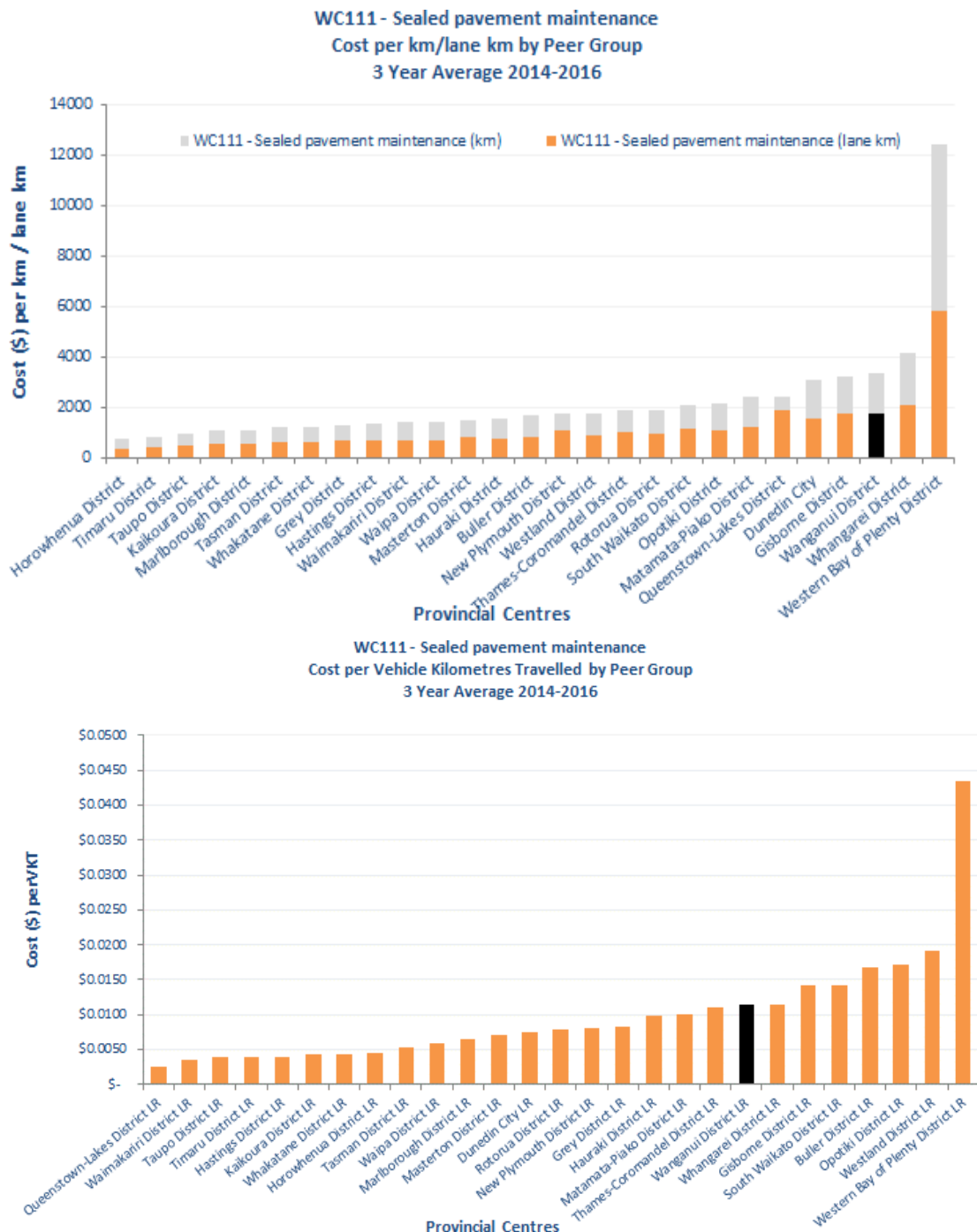
Currently the annual cost for the sealed pavement maintenance activity is approximately \$3,600 per km of sealed network per year. Compared to our peers of other provincial centres we are currently at the higher end of the investment scale. When compared against cost per Vehicle Kilometres Travelled (VKT) Whanganui's higher traffic volumes contribute to a different result against our peers.

Sealed maintenance activity primarily targets pre reseal sites in advance of resurfacing works and in response to

pavement damage caused by forestry traffic. Concerted effort by Council to do pre reseal maintenance a year in advance is a key strategy to ensure effective resurfacing delivery.

The flow on effects of recent flooding events in 2015 and 2017 have necessitated the requirement for sealed pavement funding to be allocated to the repair of pavement reinstatement works. Predominantly this activity is a result of highly saturated pavements causing pavement failures exacerbated by construction traffic carryin out emergency repairs.

Figure 5.7: Peer Group Comparison - Sealed Pavement Maintenance





Testing the level of service

Our maintenance strategy is to align maintenance expenditure to carriageway use. We will monitor the success of this re-distribution by customer feedback and annual assessment of ONRC reporting measures. The level of expenditure on the lower classification roads is largely driven by customer enquiries and the change in level of this will be actively checked to ensure over delivery is not achieved.

Specific levels of service which are identified as possibly being too high will be put through a testing cycle of:

- Reduction of level of service in incremental steps
- Monitoring of the level of customer feedback

We will use comparative analysis of the number of defects identified to the level of customer feedback to highlight if the level of service drop is perceived or real. Maintenance Strategy Summary

The focus for our sealed pavement maintenance strategy is to extend asset life and limit the need for expensive rehabilitation treatments through timely:

- Maintenance Interventions
- Pre reseal repairs
- Preventative Maintenance

Predicted Maintenance Costs

There will be increased pressure on the pavement maintenance and renewal budgets in the future as demand, growth and development place an increasing burden on the

existing infrastructure. It is considered that expectations will continue to rise in the future particularly those of new residents to the district and that further refinement of corridor maintenance contracts and intervention levels will be required to accommodate these increased expectations.

It can also be expected that increased traffic loadings from logging in particular on the local roads with weak pavements will result in higher maintenance costs and these roads will be subject to rapid deterioration during sustained periods of heavy traffic loading. This will make it difficult to optimise maintenance expenditure on these roads in the future.

Predictive modelling scenarios confirm pavement deterioration is imminent but the distribution across maintenance and renewal activities needs further development.

Deferred Maintenance

On a network basis there is generally no significant backlog of routine maintenance despite current funding levels being significantly reduced by NZTA from requested levels. The reallocation of budgets for individual work activities within the block allocation has been required to address the maintenance need where it has been greatest.

Adverse climatic conditions can create additional pressures that mean that scheduled maintenance work may need to be deferred to address the more urgent problems that arise from these types of events. If an event is serious enough, and creates repair and reinstatement that cannot be sensibly met from normal funding allocations, road controlling authorities can apply for additional funding from the NZTA under Work Category 141 – Emergency Reinstatement.



Unsealed Pavement Maintenance and Operations

Sealed Pavement Maintenance Strategy

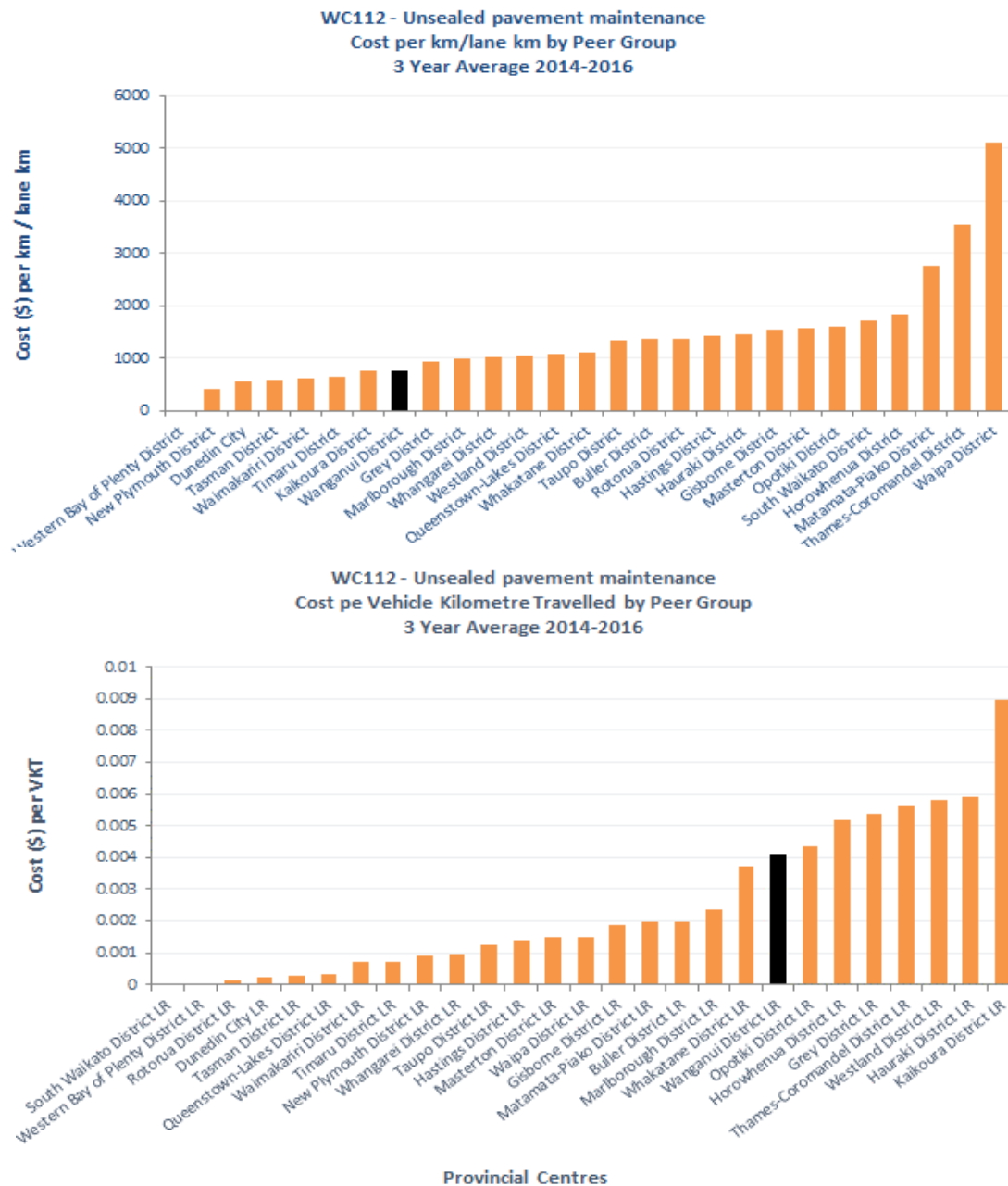
While the usage of the unsealed roads is limited, it still plays a major part in keeping the regions' economy moving and as such the importance of a functional unsealed network is high.

The unsealed network also suffers from the sealed networks' vulnerability to the combination of topology, geology and rainfall which under certain conditions can leave access to parts of the network limited or non-existent.

Although these roads are typically classified as Access and Low Volume as per ONRC, there is an expectation that they are:

- Fit for purpose
- Safe and trafficable: "no surprises"
- Provide a reasonable and consistent ride
- Economical in maintenance
- Maintained to exceed the design life
- Not a nuisance (excessive dust) to our customers.

Figure 5.8: Peer Group Comparison – Unsealed Pavement Maintenance





Key maintenance practices, methodologies and a structured inspection regime outlined in *Section 07 – Lifecycle Management* ensure that unsealed maintenance cost are maintained at acceptable levels.

A programme of targeted inspections has ensured that the frequency of maintenance grading has been kept to a minimum. Surfacing deterioration as a consequence of forestry traffic is a key driver for an intervention being required. Strategic placement of metal aggregate limits the amount of unsealed road digouts being required presently.

Testing the level of service

The high influences of geological and climatic conditions on the unsealed road network influence the amount of work activity required to maintain an acceptable levels of service.

Our current methodology is meeting customer expectations in terms of the feedback received and levels of dissatisfaction. The frequency of unplanned interventions generally as a results of logging operations is on the increase and this will place additional strain on resources required to maintain the unsealed road network.

Unsealed Roads Maintenance Strategy Summary

Maintenance of the unsealed roads is about keeping the asset functional and fit for purpose throughout the life cycle.

The focus for our unsealed pavement maintenance strategy is to monitor pavement condition and react in a timely manner that ensures an acceptable level of service is maintained for our customers. In some situations this may trigger extensive renewal treatments.

Predicted Maintenance Costs

The unsealed roads maintenance budget provides for grading and the repair of damaged pavement (unsealed pavement digouts).

Increased demand and environmental effects are the two big considerations that will influence future maintenance costs. In anticipation Council will continue to monitor network condition and assemble data that will assist future additional investment decisions.

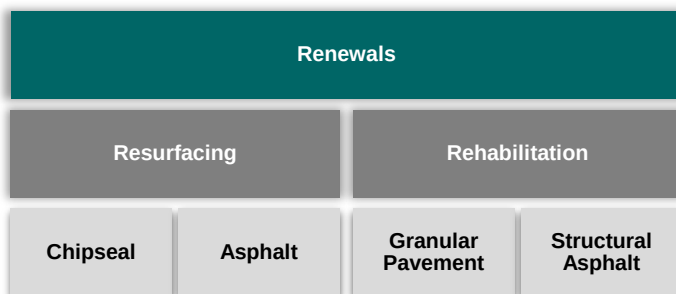


Pavement Renewals

Pavement renewal is a major work activity which restores, replaces or rehabilitates an existing asset to its original capacity.

There are two types of renewal carried out on the carriageway asset; resurfacing and rehabilitation:

- Resurfacing by replacement of either chipseal or asphalt (asphaltic concrete);
- Rehabilitation by granular pavement replacement or by structural asphalt (asphaltic concrete) layer construction.



The overall Levels of Service objective is to steadily renew assets considering the following:

1. The age profile
2. The condition profile
3. The level of on-going maintenance
4. The economic lives of the materials used
5. Financial and customer risks

Renewals are reviewed regularly, with any deferred work re-prioritised alongside new renewal projects and a revised programme established where required.

Capital Works Plan

Capital works are generally initiated through triggers such as growth, Levels of Service, regulatory, operational efficiency, or vested (gifted) through subdivisions.

Renewal Replacement Goals

The objective of renewing the asset is to apply the correct treatments at the optimum time so that the required level of service is delivered whilst minimising total life cycle costs.

It is important when developing a forecast for pavement renewals that future condition of the network is carefully considered. Under-funding of renewal work puts at risk the future integrity of the pavement network resulting in greater spending in the future to ensure levels of service are achieved. The desired strategy is to renew the asset before maintenance costs rise, resulting in the effective use of road funds (optimised decision making).

The required level of renewal works will vary, depending on:

- The age profile of carriageway surfacing and structure.

- The condition profile of carriageways.
- The level of ongoing maintenance demand, and
- The differing economic lives of the building materials used.

Renewal Decision Making Process

Renewal treatments such as pavement rehabilitation and resurfacing are programmed and carried out when they can be economically justified. The selection of the actual sections of carriageway treated each year and the treatment used is based on output from RAMM, which analyses average life data for each surfacing material, the volume and mix of traffic using the road, and current condition verified through network inspection regime.

Council makes provision for carrying out safety improvements to address crash blackspots and road deficiencies. The projects are identified from crash reduction studies, safety audits and public feedback and prioritised on the basis of crash records and the degree of risk posed at each site.

Resurfacing Renewal & Capital Works

The current resurfacing treatment selection process includes:

- The Treatment Selection Algorithm (TSA) in RAMM is currently used to identify candidates for resurfacing based on condition and maintenance cost data.
- Checking results of TSA against Maintenance Intervention Strategy for alignment against forward works programmes and other council works programmes.
- Field inspection to confirm treatment is appropriate and warranted.

It is important to note that the performance modelling through the RAMM treatment selection process includes the use of historical data when identifying possible sites for resurfacing. As such an emphasis is sometimes placed upon seal age and remaining life, resulting in a number of what is known as "Birthday Seals".

Although seal age should be an input to the selection process it should not necessarily drive the resurfacing priorities. Decisions should be made that focus on the immediate need to ensure that the required level of service is maintained.

Asphaltic Concrete (AC) is used on selected high stress areas e.g. cul-de-sac heads, roundabouts and other high impact areas where a specifically designed surfacing will be used.

Surfacing Treatment Selection

The type of surfacing used is determined using the NZTA 'Bituminous Sealing Manual' and is dependent on site specific factors such as the existing surface texture, surface defects, traffic stresses, traffic volumes and noise levels. The types of surfacing commonly used include single and



two-coat chipseals, polymer modified chipseals, slurry seals and asphaltic concrete.

Generally reseals have a life of 8-12 years though some surfacings such as texturing seals and voidfills are used either as a preparatory treatment or to extend the life of the existing surfacing and have a much shorter life span. The expected life of the surfacing is influenced by the underlying pavement structure and a road suffering deformation and requiring frequent repairs will usually undergo resurfacing at shorter intervals.

Level of service considerations driven by the ONRC has resulted in the use of high cost treatments being given greater scrutiny. Chip seal is significantly cheaper and more flexible than asphaltic concrete surfacing and it is only considered in the following situations:

- Areas of high turning stresses (e.g. busy intersection or cul de sac head)
- Roads in industrial / commercial areas where there is a high concentration of heavy commercial vehicle traffic
- Roads with short sections between two adjacent hot mix areas where the use of chipseal is uneconomic

- Roads subject to high usage by pedestrians, such as the CBD
- Roads requiring special treatment due to engineering reasons
- Compliance with Resource Consent requirements
- Whole of life cost can be proven to be less than alternative chip options.

Even in the above scenarios, AC can only be utilised if pavement deflection is less than certain levels. Pavement deflection, existing surface chip size, future loading and a number of other criteria are taken into account in the design of chip or AC surfacing.

It is anticipated that there will be a move toward the use of bitumen emulsions in preference to hot cutback bitumen. Emulsions are sprayed at much lower temperatures and use water instead of kerosene to reduce the viscosity. These two factors have both environmental and safety benefits but a higher cost.



Programme Business Case

Sealed Road Resurfacing Expenditure Peer Group Comparison

The sealed road resurfacing activity incorporates various surfacing types (Chip seal / Asphalt) and binders.

Whanganui strategy is to provide fit for purpose treatments that provide extended life as highlighted in Figure 4 above.

The flow on effects of the 2015 flooding events severely hindered programming of resurfacing sites effecting continuity and efficiencies.

Figure 5.9: Peer Group Comparison – Sealed Road Resurfacing

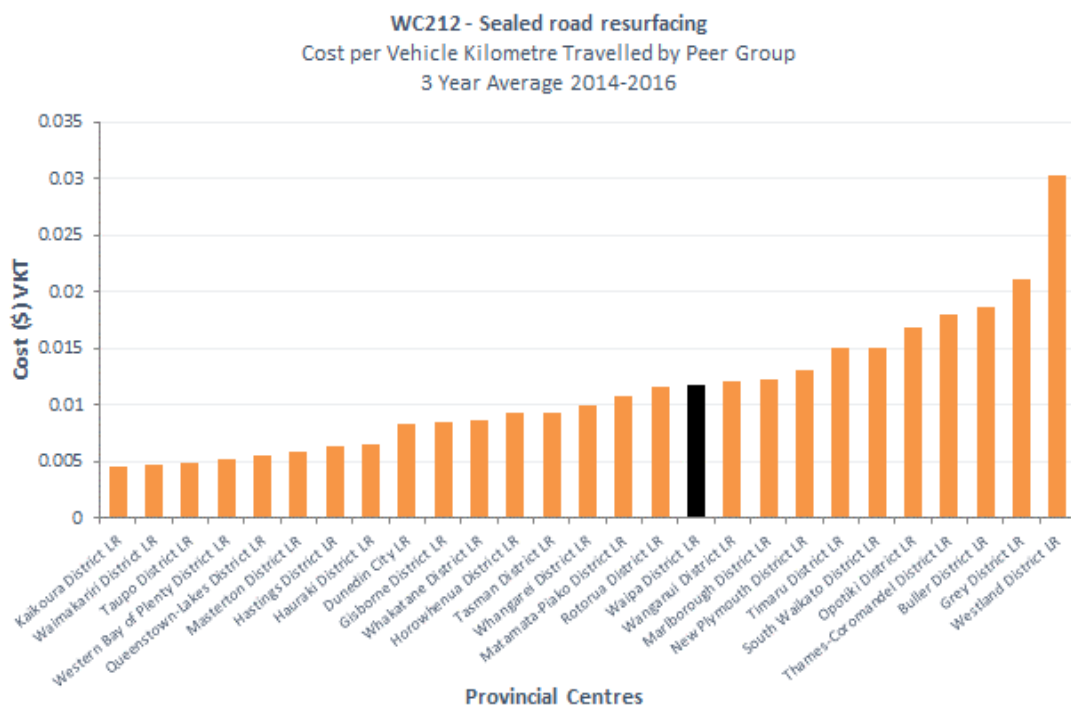
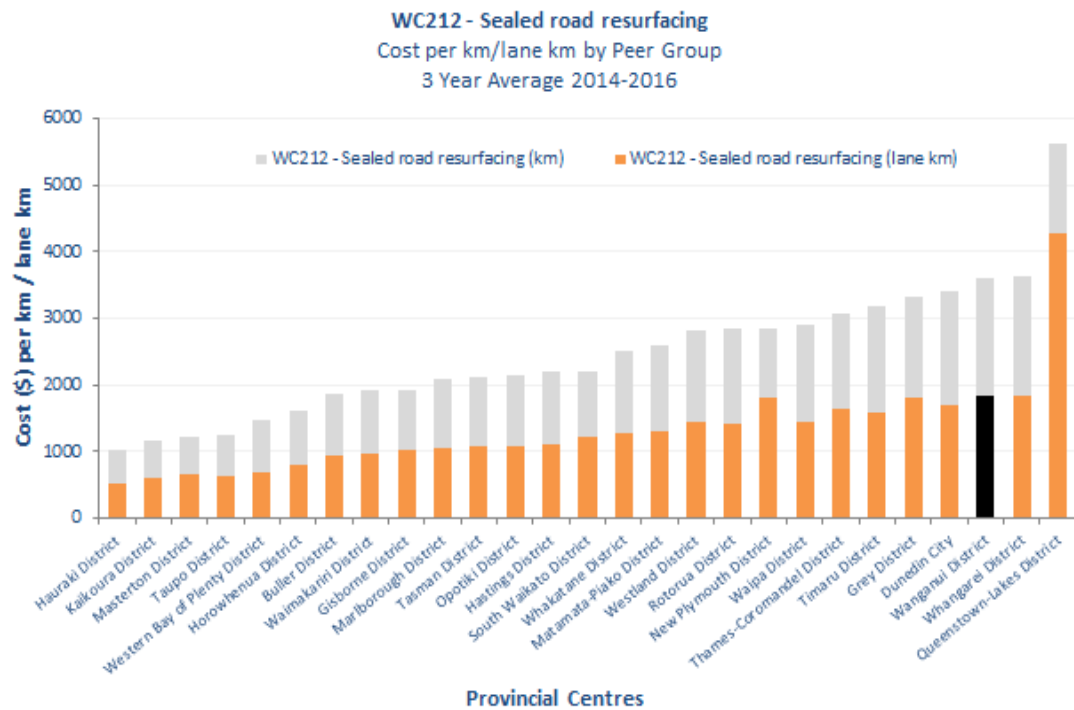
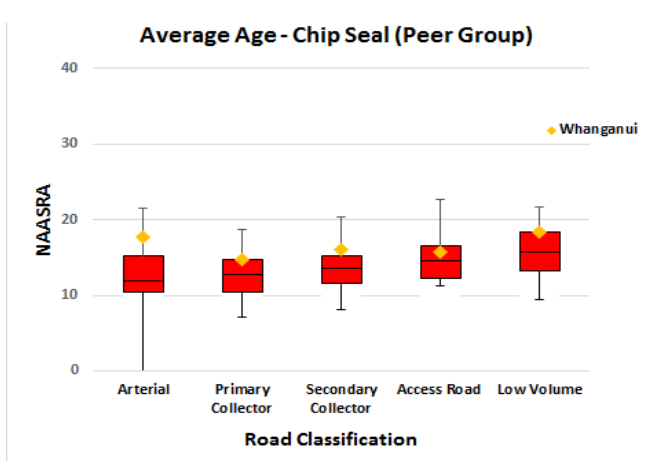




Figure 5.10: Average Chip Seal Age



Although resurfacing costing are slightly high this is because of the use of larger chip sizes which extend the life of reseals and reduce the amount of pavement deterioration.

Chip seal surfacing's in Whanganui District are generally lasting longer between resurfacing cycles when compared against our peers generally exceeding 15 yrs.

Testing the level of service

Chip seal surfacings in Whanganui District are generally lasting longer between resurfacing cycles when compared against our peers. We must be careful however to ensure that sealed surfacing are performing the function they are intended for and that underlying pavement structures are not being compromised.

It is important that inspections of those sections of road (highlighted as having reached their predicted design lives) are undertaken to ensure that the information within the RAMM database is a true reflection of the network and that resurfacing is undertaken as dictated by condition.

Pavement Renewal Works

Site Identification and Confirmation

Potential candidates for rehabilitation treatment are identified from the analysis of the RAMM Treatment Selection Algorithm (TSA), summarisation of All Faults data, dTIMS (maintenance & renewal forecasting tool) and staff judgement. These sites are investigated in detail as part of developing a programme of works.

The annual programme is developed with an emphasis on road hierarchy in the first instance. Priority is given to roads with high traffic volumes, especially heavy commercial

vehicles. Consideration will also be given to the likely rate of pavement deterioration should no action be taken, i.e. roads with the highest maintenance costs per unit length will be given priority for road rehabilitation.

Pavement Rehabilitation Treatments

Granular Overlay

The life of a pavement is extended by construction of an additional layer of basecourse, with a sealed surface, on top of the pavement that has reached the end of its useful life. This technique is generally referred to as an Area Wide Treatment and used predominately on rural roads.

This technique can be unsuitable where there is existing kerb and channel, such as in urban areas, as it builds up the crown of the road or street so that the resulting crossfall becomes too steep. The consequence can be that road users vehicles "bottom out" while accessing their properties due to the break over angles. In these circumstances it is usually more efficient to carry out a full reconstruction as described below and replace the pavement, and often the kerb and channel, to the appropriate levels.

Full Reconstruction

Removal of the existing basecourse and/or sub-base and its replacement with new metal courses and a new wearing course. This is the most likely technique used on urban streets.

Renovation

This increases the strength of existing basecourse/sub-base materials by chemical stabilisation such as adding a stabiliser (hydrated lime, cement or emulsion) and re-compacting. This involves the pavement being ripped in-situ and re-laid in place by heavy plant. This technique can incorporate blending in of new materials and stabilisation measures. This is used when the existing pavement formations can be reused in a reconstituted manner.

Smoothing

Irregularities in the road surface, where the structural condition of the carriageway is sound, are smoothed by placing additional (thick) surfacing on an existing sealed surface to smooth out irregularities. The materials used depend on traffic volumes/road geometry and road condition. The most commonly used material is asphaltic concrete.

The treatment type to be used is determined following an investigation of the existing pavement, an assessment of the future traffic loading and an economic assessment of the available options. The availability of suitable local aggregates is a prime consideration in determining the most cost-effective method of rehabilitating the existing pavement.



Programme Business Case

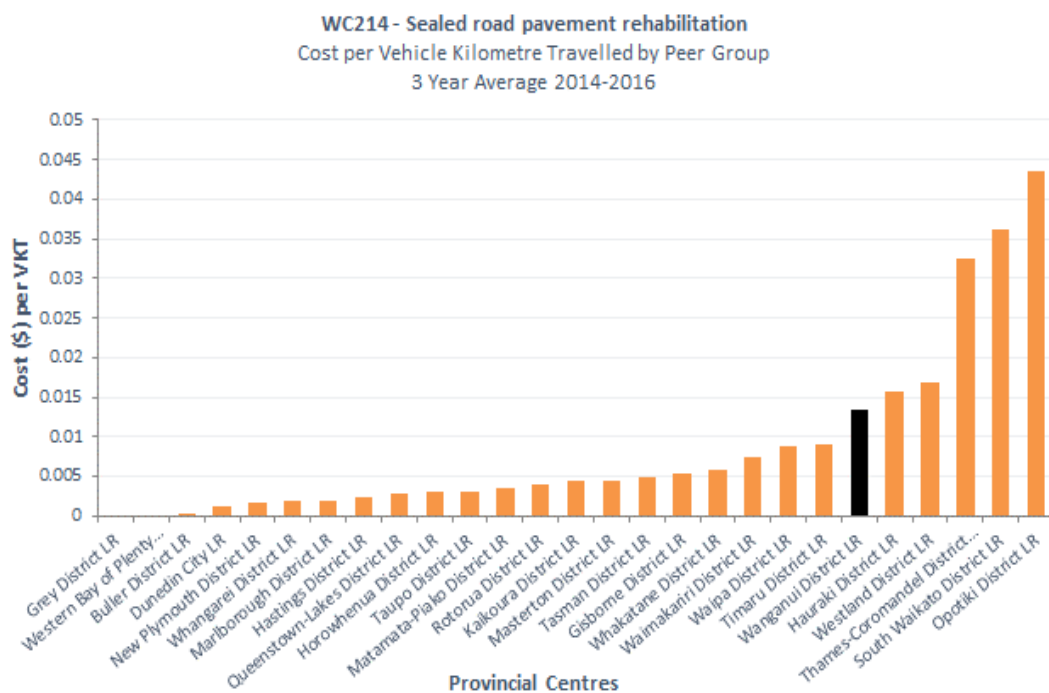
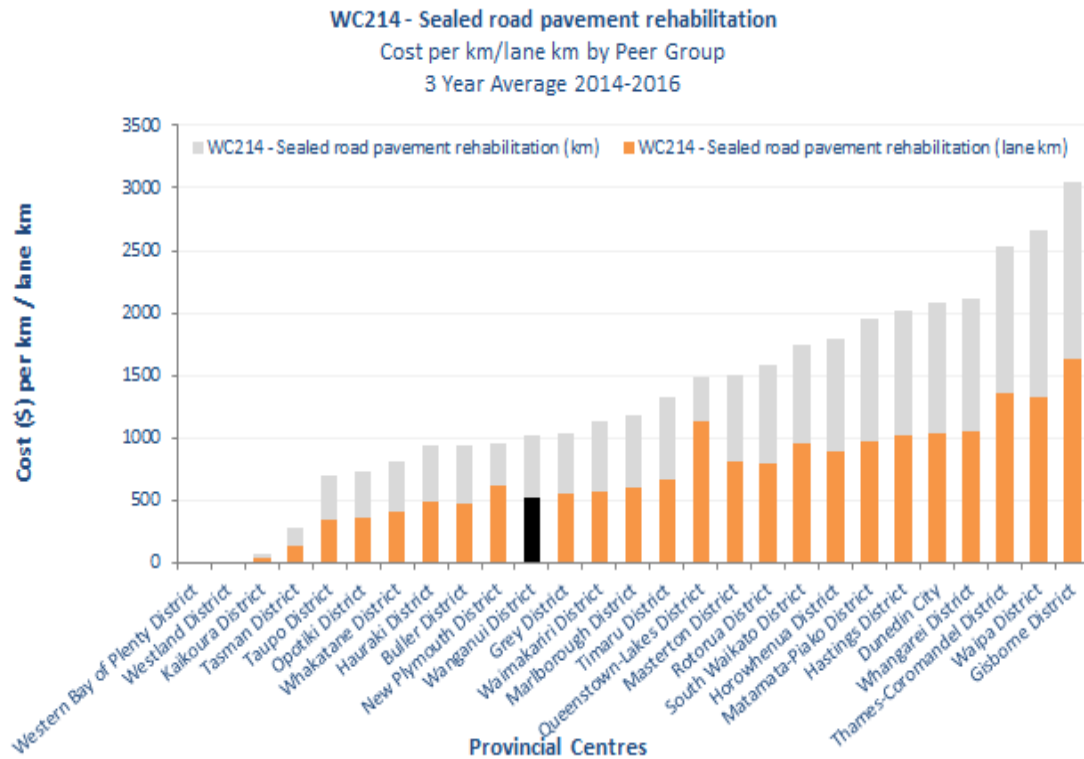
Pavement Renewal Expenditure Peer Group Comparison

Rehabilitation works undertaken in recent years have been on the higher classification roads which generally have

wider seals and robust pavement structures incurring higher costs per m2 for construction.

As this reporting result is a % of sealed network length it would tend to indicate that Whanganui District annual achievement is below the peer group average.

Figure 5.11: Peer Group Comparison – Sealed Rehabilitation





Programme Business Case

Figure 5.12: Average Chip Seal Age



Rehabilitation has been maintained at lower cost by targeting and planning works to be carried out and delivering best value for money.

Projected Pavement Rehabilitation Renewal Works

Our approach to option development is to consider the total expenditure of renewals and maintenance based on varying levels of renewal activity investment, to maintain the current level of service for the pavement assets.

We have derived multiple dTIMS scenarios to consider the forecasted effects of increased demand generated by forestry harvest traffic. Initial modelling would suggest that a significant increase in investment levels for pavement rehabilitation are required. Considerable work remains to raise confidence levels in the dTIMS output before Council signal to NZTA that an enhanced funding requirement is required for pavement rehabilitation.

We believe this proposed renewal programme is the minimum investment that can be justified without introducing excessive maintenance costs or significantly lowering the level of service provided.

Unsealed Pavement Renewal and Capital Works

Economic, social and legislative changes in recent years have all combined in impacting on the unsealed pavement network regarding its suitability for road users.

- Changing land-use - The decline of pastoral farming and increase in alternative uses, particularly forestry and dairying, has increased loadings on the network.
- Transport economics - Larger and heavier trucks have improved the economics of more remote properties and industries creating road user demand for improved roads.
- Lifestyle blocks - Desire for rural lifestyles has increased commuter activity. Generally road users associated with lifestyle blocks drive conventional low riding rather than 'farm' type vehicles which increases demand for smoother riding roads.
- Legislative changes - Legislative changes has resulted in heavier and longer vehicles being able to be driven on any road without restriction and with no appreciable upgrading in the network.

Unsealed roads pavement metalling is identified through inspection, network knowledge and maintenance need. Environmental factors can also influence programmes.

Table 5.4: Three Year Pavement Rehabilitation Programme

Road Name	2018/19	2019/20	2020/21
DENLAIR RD	RHAB		
GLASGOW ST			RHAB
GLASGOW ST		RHAB	
KAUANGAROA RD		RHAB	
KAUANGAROA RD			RHAB
KAUANGAROA RD			RHAB
NO 2 LINE		RHAB	
PAURI RD			RHAB
RANGITATAU EAST	RHAB		



Programme Business Case

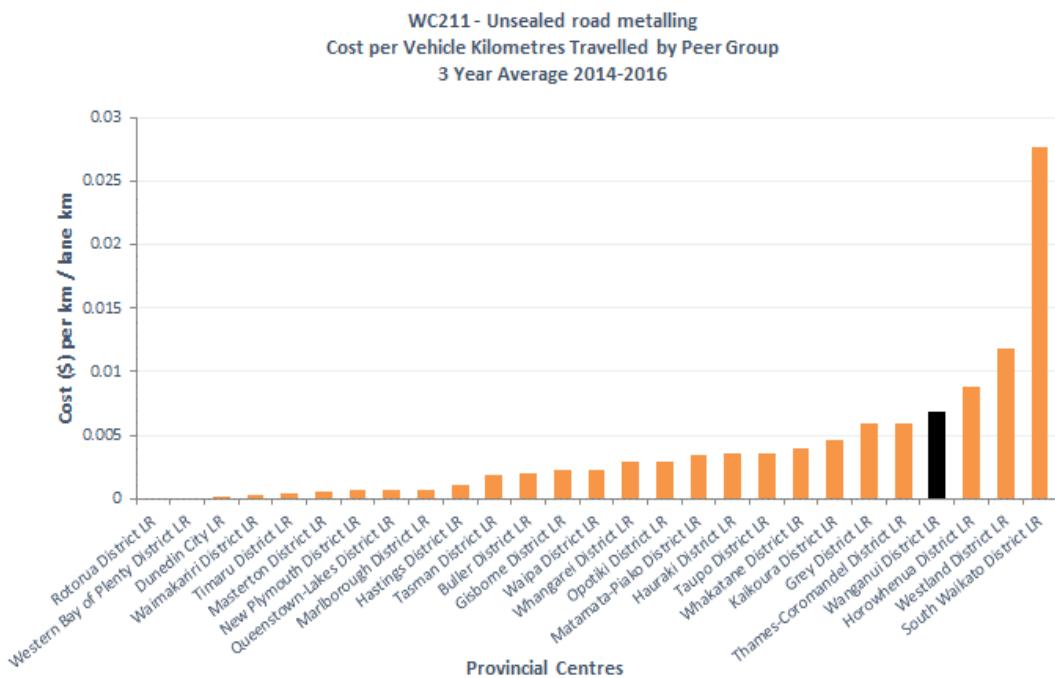
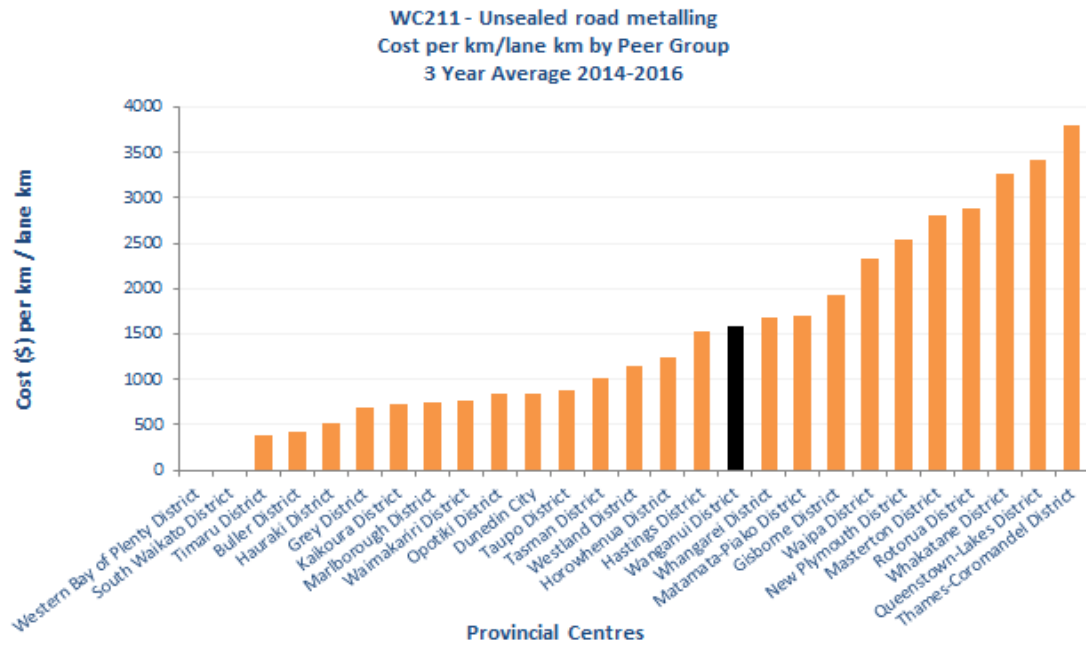
Unsealed Road Metalling Expenditure Peer Group Comparison

The period of analysis has included two significant flood events which saturated pavements and has contributed to

increased traffic loading from construction and reinstatement activities.

Metal quantities were also applied to flood affected pavement not linked to the unsealed road metalling work

Figure 5.13: Peer Group Comparison – Unsealed Road Metalling





Projected Unsealed Pavement Renewal

Over the last three years Council has been applying approximately 8,000m³ of metal to the network per annum by way of maintenance metal. This equates to an average depth of 7mm per annum over the entire unsealed network.

Generally this has retained the status quo however forecasted increases in traffic loading is having a detrimental effect on key routes necessitating the need for reactive interventions.

Asset Disposal

Disposal Plans

There are no plans to dispose of or cease to maintain any existing pavement network assets even though there is a

number of existing roads which serve only one or two property owner(s) and essentially provide solely private access. These will need to be reviewed and reassessed during the 2015/18 period.

There are however a large number of paper or unformed roads throughout the district which are not required for transportation purposes. When requested, these paper roads can be stopped and the land sold to the adjoining property owner(s). In these instances the full cost of stopping the road and purchasing the land is being met by the adjoining landowners.

A number of paper roads are used for access by adjoining landowners. These roads are not considered to be part of the transport network and are not maintained by Council.



Develop Options

Pavements Options Assessment

	Option Description	Benefits of Option	Negative Consequences of Option
W/C 111: Sealed Pavement Maintenance			
Maintain current level of Sealed Pavement Maintenance Investment as per 2015/18 approved funding allocation	Maintain current level of sealed pavement maintenance to current funding levels which currently maintains road network in stable condition. Includes core sealed maintenance activities and a component of preventative maintenance	Maintains sealed road network in stable condition across all ONRC technical and customer measures Provides opportunities to intervene with proactive maintenance initiatives. The level of customer requests will remain at current levels.	Higher cost compared to other option. Perception that the Whanganui District sealed network roads are in too good a condition when compared against target ONRC customer and technical measures.
Decrease in Sealed Pavement Maintenance from previously approved funding allocation	Budget decrease in recognition of progressive reduction in work activity required to progressively manage identified over delivery in some of the ONRC road classifications. Includes core maintenance activities and a component of preventative maintenance Redistribution of maintenance treatment types by ONRC road classification	Provide fit for purpose LOS which over time will better align with ONRC road classification customer and technical measures. Will target the right maintenance on the right roads at the right time. Budget decrease for sealed pavement maintenance work category	Increase customer complaints as network condition reverts to ONRC target levels of performance. Potential for sealed roads to deteriorate under increasing forecasted demand Higher number of defects Increased occurrences of unplanned interventions Strategy moves increased cost to other work activities
W/C 112: Unsealed Pavement Maintenance			
Maintain current level of Unsealed Pavement Maintenance Investment as per 2015/18 approved funding allocation	Maintain unsealed pavement maintenance with current level of maintenance grading. Undertake grading on those roads that require intervention in response to network inspections and customer requests. Undertake unsealed pavement repairs as required to maintain safety for road users and prevent further deterioration. Dust prevention as required.	Maintains current LOS for road users Maintains customer complaints at current levels	Response to network demand will be problematic increasing work activity inputs, increased costs, network deterioration. No facility to undertake improvements
Decrease in Unsealed Pavement Maintenance from previously approved funding allocation	Decrease unsealed pavement maintenance by reducing the intervals between grading. Severity of pavement faults will increase before response is initiated. No proactive response to dust suppression	Decreased work activity cost	Customer complaints will increase Unsealed surface condition will generally deteriorate Road user safety may be compromised Increase in other work activities, "Unsealed road metalling"
Increase in Unsealed Pavement Maintenance from previously approved funding allocation	Maintain unsealed pavement maintenance with current level of maintenance grading. Undertake grading on those roads that require intervention in response to network inspections and customer requests. Undertake unsealed pavement repairs as required to maintain safety for road users and prevent further deterioration. Dust prevention as required.	Improved level of surface condition, smoothness Improve road user safety through reducing backlog of work and reducing risk of evasive action due to likely hood of potholes corrugations etc. Reduce customer complaints	Increased unsealed road maintenance costs
W/C 211: Unsealed Road Metalling			
Maintain current level of Unsealed Road Metalling Investment	Maintain current levels of unsealed road metalling. Enables reactive response to instances of increased traffic demand on the unsealed road network causing damage	Maintains current LOS for road users Maintains customer complaints at current levels	Risk of unforeseen changes to network demand resulting in increased expenditure





	Aligns with preferred option development for W/C 211 Unsealed Pavement Maintenance “ preferred ” programme.		
Decrease in Unsealed Road Metalling	Decreasing unsealed road metalling budget will increase frequency of maintenance interventions as surface condition will deteriorate and customer complaints will increase. Difficulty in responding to unplanned events causing damage to unsealed roads	Decreased activity cost	Risk of unforeseen changes to network demand Customer complaints will increase
Increase in Unsealed Road Metalling Investment	Maintain current level of unsealed road metalling. Contributes to maximising intervals between grading and reducing customer complaints. Enables proactive response to forecasted traffic demand on the unsealed road network from forestry.	Improved level of surface condition, smoothness Improve road user safety through reducing backlog of work and reducing risk of evasive action due to likely hood of potholes corrugations etc. Reduce customer complaints	Increase of unsealed road maintenance costs
W/C 212: Sealed Road Resurfacing			
Maintain current level of Sealed Road Resurfacing Investment	Current average pavement and surfacing life will be maintained therefore realising maximum surfacing performance Treatments established using HSD to establish texture data and network traffic demand. Focus on using single coat seals where appropriate. High cost asphaltic concrete options vetted and consideration given to lower cost options. As a result of forecasted demand on the sealed road network dTIMS modelling predicts increased investment levels requirement in 2024/27 funding period	Maintains average surfacing lives at current levels Ensure pavements are waterproofed Current LOS customer and technical measures maintained Maintain road user safety at current levels	Alignment with 2015/18 funding levels, high than proposed option Increasing levels of unstable seal layers therefore increased maintenance costs and the level of pavement rehabilitation required would need to be reviewed
Decrease Sealed Road Resurfacing Investment	Investment levels established using dTIMS model outputs. Sites reviewed in the field. Treatments established using HSD to establish texture data and network traffic demand. Focus on using single coat seals where appropriate. High cost asphaltic concrete options vetted and consideration given to lower cost alternative treatment. As a result of forecasted demand on the sealed road network dTIMS modelling predicts increased investment levels requirement in 2024/27 funding period	Reduction in budget forecast costs Will contribute to overall reduction in whole of life costs Bring LOS in line with ONRC target measures over time	Will reduce the amount of resurfacing achievement Increase the likelihood of loss of control crashes due to extended age of surfacing's Potential for network deterioration if predicted traffic demand is not correct Customer complaints will increase
Increase Sealed Road Resurfacing Investment	This option hasn't been considered further as an increased investment would be counterproductive. As a result of forecasted demand on the sealed road network dTIMS modelling predicts increased investment levels requirement in 2024/27 funding period	Increased in LOS customer and technical measures Reduce customer complaints	Increase in costs for activity Increasing levels of unstable seal layers therefore increased maintenance costs and the level of pavement rehabilitation would need to be maintained
W/C 214: Sealed Road Pavement Rehabilitation			
Maintain current level of Sealed Road Pavement Rehabilitation Investment	Potential candidates for rehabilitation treatment are identified from the analysis of the RAMM Treatment Selection Algorithm (TSA), summarisation of All Faults data, dTIMS (maintenance & renewal forecasting tool) and staff judgement. Predictive modelling indicates that the network will be consumed generating a growing list of outstanding network defects and an increasing list of rehabilitation candidates over time. Option will improve road user safety in conjunction with our investment in Minor Improvements to improve geometry within our rehabs where widening and super elevation improvements have been identified to improve safety.	Maintain rehabilitation levels at current level	Alignment with 2015/18 funding levels, high than proposed option The network will not be consumed i.e. growing backlog of outstanding defects over time Customer complaints will increase





Increase in Sealed Road Pavement Rehabilitation Investment	Option investment level incorporates a list of proposed road sections requiring rehabilitation for the 2018/21 LTP. In conjunction with the preferred options for sealed pavement maintenance and pavement resurfacing, the level of investment for this option will allow us to network condition. As a result of forecasted demand on the sealed road network dTIMS modelling predicts a significant increase in investment levels for the 2024/27 funding period and beyond	Increase annual physical achievement Alignment with dTIMS model predictions Alignment with other work activities funding scenarios Will contribute to overall reduction in whole of life costs	Higher initial cost option Potential for network deterioration if predicted traffic demand is not correct Customer complaints will increase
Decrease in Sealed Road Pavement Rehabilitation	This option hasn't been considered further as a decreased investment would be counterproductive and result in sealed pavement deterioration.	Reduction in budget costs Will contribute to overall reduction in whole of life costs	The network will not be consumed with growing backlog of outstanding work. Safety compromised Customer complaints will increase



Test Options

Option	Assessment Summary Statement	Predicted LOS Outcomes	Option Costs
W/C 111: Sealed Pavement Maintenance			
Maintain current level of Sealed Pavement Maintenance Investment as per 2015/18 approved funding allocation	This is the highest cost option over the term of the LTP period. Over the term of the LTP it will allow for management of network demand and maintain safety at current levels.	Meeting and exceeding LOS specified by ONRC technical performance and customer for most measures. The current level of customer requests will increase by as a result of managing the low volume and access roads to the new ONRC levels	2015/18 agreed NZTA budget \$2,156,710 per annum
Decrease in Sealed Pavement Maintenance from previously approved funding allocation "Preferred Option"	This is the lower cost of the options, however the network consumption will be increased i.e. a backlog of outstanding work will increase which will need to be monitored . Redistribution of work activity to align better with target ONRC outcomes. Greater focus on Arterials, Primary and Secondary Collectors as per reviewed Maintenance Intervention Strategy documentation to refocus investment.	Closer alignment of LOS with ONRC technical performance and customer measures. Current level of customer requests will increase as a result of managing the low volume and access roads to the new ONRC levels	W/C 111 1,902,691 2018/19 1,902,691 2019/20 1,902,691 2020/21
W/C 112: Unsealed Pavement Maintenance			
Maintain current level of Unsealed Pavement Maintenance Investment as per 2015/18 approved funding allocation "Preferred Option"	This is a cost neutral option and maintains the current investment level over the full term of the analysis period. Takes into consideration increased forecasted network demand scenario. Over this period it will allow us to maintain current safety levels. However the network will be consumed especially as forecast network demand increases, i.e. a growing backlog of outstanding work will occur which may need to be addressed within the following LTP period.	Maintains current LOS which is deemed appropriate. The current level of customer requests will remain stable	W/C 112 231,944 2018/19 231,944 2019/20 231,944 2020/21
Decrease in Unsealed Pavement Maintenance from previously approved funding allocation	This is the lowest cost option, however the network consumption will be increased i.e. a backlog of outstanding work will continue to increase at a higher rate which will need to be addressed within the following LTP period.	Pavement deterioration with increased unplanned intervention required to maintain acceptable LOS The current level of customer requests will increase year on year.	Not preferred option
Increase in Unsealed Pavement Maintenance from previously approved funding allocation	This is the high cost option, and will deliver increased LOS outcomes. It will allow safety to be improved through improved surface condition. The network will not be consumed i.e. no growing backlog of outstanding work.	Proactive response to unsealed network needs as required Provides some security in terms of unforeseen network demand timing predictions The current level of customer requests will be reduced	Not preferred option
W/C 211: Unsealed Road Metalling			
Maintain current level of Unsealed Road Metalling Investment "Preferred Option"	This is the cost neutral option over the next 3 year funding term. Slightly higher overall cost compared to 2015/18 approved funding allocation but takes into consideration similar quantity of aggregates at current market rates at the quarry gate Over this period it will allow us to maintain current safety levels. The backlog of outstanding work and customer requests will be maintained at current levels	Maintains current LOS which is deemed appropriate. The current level of customer requests will remain stable	W/C 211 504,556 2018/19 504,556 2019/20 504,556 2020/21
Decrease in Unsealed Road Metalling	This is the lowest cost option over the next 3 year funding term but is more expensive over the 10 year term of the analysis period. Replenishment rates will be insufficient to maintain the structural integrity of pavements resulting in increased maintenance interventions and costly rehabilitation treatment	Pavement deterioration with increased unplanned intervention required to maintain acceptable LOS The backlog of outstanding work and customer requests will continue to increase.	Not preferred option



	Over this period current safety levels are expected to deteriorate.		
Increase in Unsealed Road Metalling	This is the least cost long term option, and will deliver improved LOS outcomes. Provide the resources to proactively manage forecasted increases in network demand by being proactive vs reactive. Put in place the required infrastructure in advance of increased demand requirements It will facilitate programmes to improve safety on the unsealed road network.	Proactive response to unsealed network needs as required The current level of customer requests will be reduced	Significant work is required to analyse unsealed road pavement strength and the effects forecasted demand will have on unsealed roads metalling replenishment rates.



	Assessment Summary Statement	Predicted LOS Outcomes	Option Costs		
W/C 212: Sealed Road Resurfacing					
Maintain current level of Sealed Road Resurfacing Investment	This is the higher cost option and was based on a schedule of proposed treatments established from network data and field inspection. dTIMS modelling indicates a redistribution of treatment types is required to optimise sealed network performance meaning a distribution of pavement resurfacing and pavement rehabilitation work activities.	Maintains current LOS which is not necessarily aligned to by ONRC classification.	2015/18 agreed NZTA budget \$2,192,691 per annum		
Decrease Sealed Road Resurfacing Investment	This is the least cost long term option, and is forecasted to deliver the desired outcomes and LOS.	Maintains current LOS which is deemed appropriate for asset preservation	W/C 212	2,200,000	2018/19
“Preferred Option”	Programme of works and investment levels established from dTIMS model outputs.	The current level of customer requests has the potential to increase.		2,050,000	2019/20
	2018/19 year is a catchup of resurfacing sites originally identified but deferred as a result of the June 2015 flood event and second coat sealing at remediated sites	Customer expectations Asphaltic Concrete vs Chip Seal need to be managed		2,050,000	2020/21
Increase Sealed Road Resurfacing Investment	This option hasn’t been considered further as an increased investment would be counterproductive.				
	As a result of forecasted demand on the sealed road network dTIMS modelling predicts increased investment levels requirement beyond 2024/27.				
W/C 214: Sealed Road Pavement Rehabilitation					
Maintain current level of Sealed Road Pavement Rehabilitation Investment	This is the least cost long term option, and is forecasted to deliver the desired outcomes and LOS.	General lowering of LOS over time as sealed network worsens.	2015/18 agreed NZTA budget \$781,499 per annum		
	The network will be consumed over time with a growing backlog of outstanding work.	Current level of customer requests will increase over time			
	As a result of forecasted demand on the sealed road network dTIMS modelling predicts increased investment levels requirement beyond 2024/27				
Increase in Sealed Road Pavement Rehabilitation Investment	This is the least cost long term option, and will deliver the desired outcomes and LOS.	Network will continue to deteriorate slowly over time.	W/C 214	976,144	2018/19
“Preferred Option”	dTIMS modelling indicates that the network will be consumed however a general lowering of LOS is deemed appropriate provided it targets existing ONRC road classification roads where it is currently being over delivered. Care must therefore be taken to monitor network performance indices.	A strategy that will over time bring ONRC customer and technical measures closer to target thresholds.		976,144	2019/20
	As a result of forecasted demand on the sealed road network dTIMS modelling predicts increased investment levels requirement beyond 2024/27	Maintain customer requests at current levels		976,144	2020/21
Decrease in Sealed Road Pavement Rehabilitation	This is the lowest cost option over the next 3 year funding term but is more expensive over the 10 year term of the analysis period. The network will be consumed with a growing backlog of outstanding work.	Lowering of LOS over time as sealed road network worsens.			
	Renewal rates will be insufficient to maintain the structural integrity of pavements resulting in increased maintenance interventions and a bow wave of deferred pavement rehabilitation treatments at a later date	The current level of customer requests will increase as pavements deteriorate			
	Over this period current safety levels are expected to deteriorate.				



Pavement - Financial Summary Expenditure

Preferred Programme

Table 5.4 summarises the pavement maintenance, renewal and capital works expenditure for the period 2018/19 to 2020/21

Table 5.4: Historical Sealed Roads Resurfacing Renewal and Capital Expenditure		2015 – 2017 (Request WDC)	2015 – 2017 (Approved NZTA)	*2015 – 2016 (Actual Expenditure)	Funding Request		
Work Category		Average (pa)	Average (pa)	Average (pa)	2018/19	2019/20	2020/21
Operations & Maintenance							
Maintenance (sealed)	W/C 111	2,250,050	2,156,710	1,516,704	1,902,691	1,902,691	1,902,691
Maintenance (unsealed)	W/C 112	231,565	231,565	148,968	231,944	231,944	231,944
Total (Pavement Operations & Maintenance)		2,481,615	2,388,275	1,665,672	2,134,635	2,134,635	2,134,635
Renewal & Capital							
Unsealed Road Metalling	W/C 211	489,164	488,164	413,797	504,556	504,556	504,556
Sealed Roads Resurfacing	W/C 212	2,299,668	2,192,691	1,857,593	2,200,000	2,050,000	2,050,000
Pavement Rehabilitation	W/C 214	781,499	781,499	808,679	976,144	976,144	976,144
Total (Pavement Renewal and Capital)		3,570,331	3,462,354	3,080,251	3,730,700	3,530,700	3,530,700

* 2015/2016 - Some budgets significantly underspent due to June 2015 flood event



Pavement – Improvements

Develop Improvement Plan

The following actions have been identified with regards to improving the efficiency and/or effectiveness of Pavement activity management.

Table 5.5: Improvement Actions – Pavements

Improvement Action	When	Who
Pavements		
Review of Maintenance Intervention Strategy (MIS) with better alignment to ONRC	Next 1 year period	Whanganui Alliance
Implement ONRC Audit Programme	This Financial Year	Whanganui Alliance
Road Pavement Classification Project	Next 3 year period	Whanganui Alliance
Data Collection Strategy	This Financial Year	Whanganui Alliance
dTIMS modelling review and development	This Financial Year	Whanganui Alliance
Carry out a gap analysis to assess areas needing work to capture One Network Road Classification (ONRC) customer needs. The aim is to ensure customers are consulted on significant service levels.	Next 1 year period	Whanganui Alliance



Structures: Bridges, Large Culvert & Retaining Structures

Structures assets provide continuous all weather access across our regions rivers, streams and uneven terrain, and form a crucial part of the Whanganui District transportation network. Structures facilitate the easy movement of people and goods through the district and contribute significantly to a vibrant economy.

Structures also have a key function as a lifeline especially to communities and customers with limited access to the rest of the transportation network. It is crucial the structures are maintained with Resilience in mind as consequences of under maintaining can be very expensive in both financial cost and user utility.

Table 5.6: Strategic Case Linkage to Structures related Activities

GPS Objectives	A land system that addresses current and future demand for access to economic and social opportunities				
	A land transport system that is resilient				
	A land transport system that is a Safe System, increasingly free of death and serious injury				
	A land transport system that delivers the right infrastructure and services to the right level at the best cost				
	A land transport system that increasingly mitigates the effects of land transport on the environment				
RLTP Objective	Improve connectivity and resilience of the strategic routes to and from key destinations linking North South and East-West that consider demographic changes and impacts on land use				
WDC Community Outcomes	Supporting communities along the Whanganui River				
	Use best practice to provide and operate a safe local transportation network.				
	Provide the core infrastructure that will allow access to all healthcare services				
	Well connected pathways throughout the district				
	A safe interconnected transportation network				
	Provide the core access infrastructure that will continue to allow a strong rural economy.				
					
	Deeply united	Globally connected	Powered by creative smarts	Flowing with richness	Works for everyone
ONRC Customer Level of Service	Safety	A programme of Routine, Regular and Detailed structures inspections is in place and initiated at industry accepted frequencies. Fault identification and prioritisation ensures that safety related defects are located and a prompt response initiated.			
	Resilience	Preventative maintenance activities that will secure access to structures are identified, evaluated and initiated where this has been determined as being the best whole of life option.			
	Amenity	Manage the number of faults on Structures that detract from the customer experience through appropriate inspections and interventions			
	Accessibility	Monitor % access for larger vehicles to the road network and establish what limitations structures contribute to the result Establish what can be done to improve accessibility to the transportation network			



	Efficiency	Minimise through strategic planning whole of life costs while delivering the required customer outcomes.
Linkage to Problem Statements	The following identified Problem Statements have relevance to the road pavement asset group: • The form and function of the road network are not meeting the changing demands and needs resulting in decreasing Levels of Service and increasing reactive interventions. • The network is impacted by challenging geology, topography and weather resulting in increased resilience issues and high repair costs when unplanned events occur.	

Levels of Service (Structures) – (Technical)

Test Levels of Service

There are currently no technical levels of service (LoS) influencing strategy and investment decisions for the structures asset group.

Structures: Current Condition and Performance

Compile and Test Evidence

The current condition and performance of the Whanganui structures assets portfolio is measured by how well they meet the requirement

to provide safe passage for our customers, unrestricted access to all areas of the district and do our structures have sufficient capacity for both the volume and weight of all the vehicles that wish to use them.

Bridges and Large Culvert Structures

The bridge and large culvert stock is generally in good condition as per the last recorded inspections with only minor maintenance works required at most sites. Significant works have been generated from the older suspensions bridges and those structures identified for replacement in the forward works programme. Nursing these structures is a significant burden on the Structures Maintenance and Structures Components Replacement funding activity

As a result of the recent flood events significant reinstatement works have been undertaken in securing bridge abutments and foundations.

Bridges in the hill and high country areas are more and more susceptible to increased traffic volumes and weights particularly as forestry harvest gains momentum. New vehicle weight classifications is elevating this situation with road users looking at maximising returns with cheaper transportation costs with larger payloads.

Identified structures in poor condition have been assessed and programmed for replacement. (Br 74 - Wakefield Street and Br 15 - Kauarapaoa Road).

Retaining Walls

A predetermine regime of inspections ensures that retaining wall structures are continually monitored in terms of condition and performance. A comprehensive programme

of maintenance works is ensuring that an acceptable level of condition level is maintained.

New retaining structures generated from recent flood events have been constructed, the details of which have been included in the asset inventory

Structures Maintenance and Operations

Structures Maintenance Strategy

Maintenance programmes are developed from the schedules of defects identified during the inspections by both the maintenance contractor and professional services consultant.

Bridge Maintenance tasks are identified and detailed in the Routine Bridge Repair Schedule. This work is of a non-structural nature and generally will not require specialist Engineering input.

Repair treatments and priorities are determined by considering the impact on:

- Public safety.
- Traffic movement and road hierarchy.
- Maintaining structural integrity and serviceability
- Future costs if the work is not done.

The works in the bridge maintenance programme are the most cost effective responses to the needs identified, except where a shorter term but lower cost remedies are selected when budget limitations apply and safety is not compromised. From an asset management perspective, the additional criteria are also required, and are applied to:

- Protect the investment in assets by extending the life of the structure.
- Minimise repair costs.

Predicted Maintenance Costs

A comprehensive list of maintenance defects and been established and costed for bridge and large culvert assets the details of which are summarised in the attached tables below.

In anticipation of proposed bridge renewals defects identified on those structures has been excluded.



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Figure 5.14: Bridge Maintenance Defects

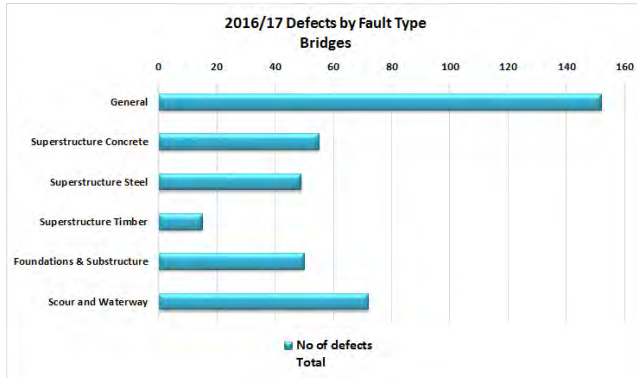


Figure 5.15: Bridge maintenance costs by fault type

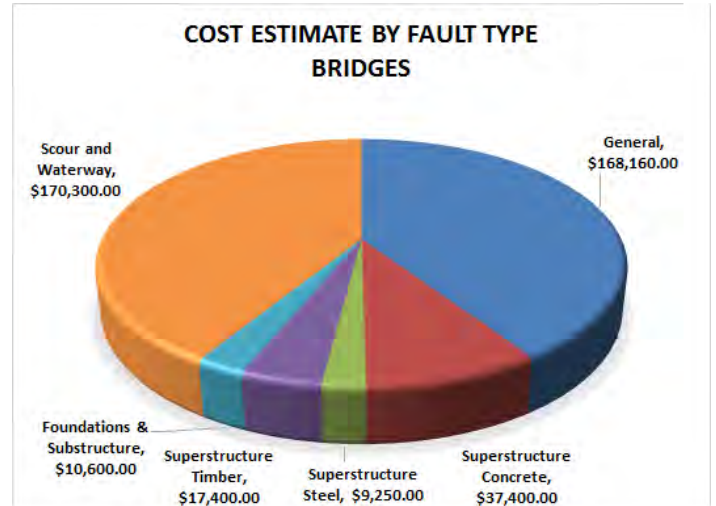


Figure 5.16 Large culvert defects

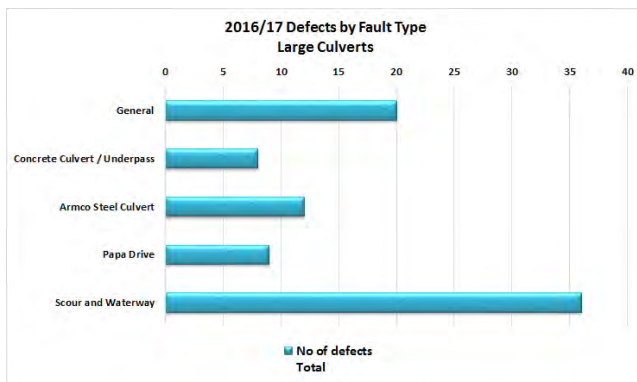
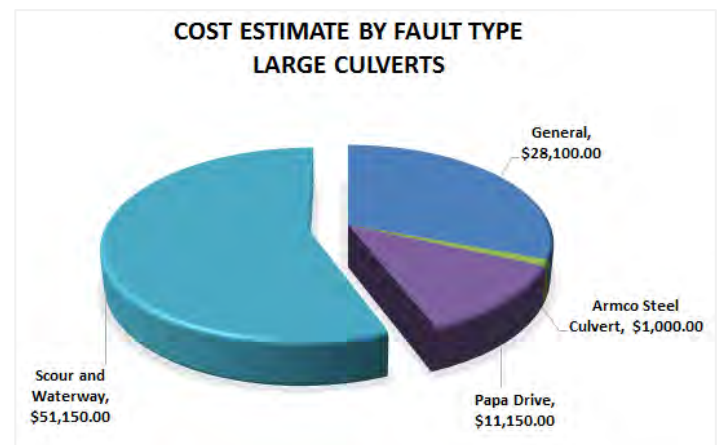


Figure 5.17: Large culvert maintenance cost estimates





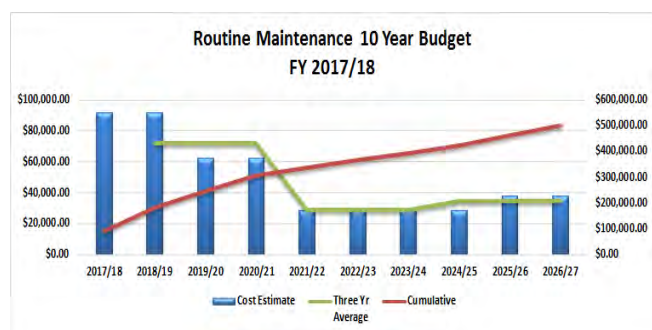
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Bridge Maintenance Strategy Summary

Whanganui District's structures are high value assets that require constant vigilance hence the stringent inspection requirements currently being implemented.

Addressing identified maintenance needs promptly prevents defects manifesting into high cost repairs at a later date. Appropriate levels of investment are required to ensure this strategy is actioned.

Figure 5.18: Routine Maintenance 10 Year Budget



Deferred Maintenance

The backlog of maintenance work is currently assessed at minimal to low providing:

- Maintenance repairs resulting from flood events continue to be funded by NZTA as emergency works
- Proposed bridge renewals are approved reducing the need to undertake repairs and maintain serviceability of these structures.

Structures Renewal & Capital Works

Bridge and Culvert Renewals Strategy

Renewal works are undertaken for the following reasons:

- The entire bridge has deteriorated to the extent that it no longer has the strength to carry its design loads (normal traffic) safely. (As all bridges were built to carry the normal maximum legal load that prevailed at the time, current lack of capacity is generally the result of deterioration or government imposed increases in axle and vehicle weight limits).
- Major components have worn or decayed to the extent that they are preventing the bridge carrying its design loads.
- The waterway's characteristics have altered to the extent that the bridge can no longer pass the design flood flows.
- Flood or earthquake damage has displaced or irrevocably damaged the bridge.
- Major vehicle impact damage

Renewal needs are identified, and priorities allocated, from inspections and in particular specific structural inspections. The economics of renewing these bridges are then reviewed, by looking at the net present value of the various

options, including the "do minimum" option, for a 30-year analysis period.

Projected Structures Renewal Works

Bridge Component Renewals and Bridge Replacements have been identified and programmed across the next 30 years.

Structures Component Replacements

Key programmed works proposed during the next three funding block include:

- Deck Replacements
 - Br 2 Handley Road
 - Br 19 Ahu Ahu Road
- Cables and Towers
 - Br 55 Mangamahu School Road
- Strengthening Investigations – 50 Max
 - Various structures
- Structures Underpinning
 - Various Whanganui River Road

Bridge Renewals

Br 15 Kauarapaoa Road Bridge Replacement

WDC Bridge 15 is located at 9.867km Kauarapaoa Rd approximately 31km from the Wanganui CBD. The bridge crosses the Kauarapaoa stream which is deeply entrenched in a deep mudstone (papa) gorge at that point.

A most recent assessment of the bridge is that the bridge does not have the capacity to carry Class I loads at normal stress levels.

In 2016 the bridge deck at the south end of the bridge had collapsed due to failure of the deck transoms, crushing of the timber beams in one span. While the bridge was scaffold, the opportunity was taken to inspect the bridge.

From that it was found, amongst other issues that the existing timber running beams were in poor condition. Some temporary strengthening works were installed. The extent of issues are such that it was decided not to undertake any more works than were needed to make the structure safe for 2-5 years.

Table 5.7: Br 15 Optioneering

Option	Description	PV	HCV Costs
1	Do Minimum Maintenance and Remove alternate route	\$95,545	8,084,401
2	Post and Maintain	\$554,096	\$5,801,350



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Option	Description	PV	HCV Costs
3	Strengthen	\$709,599	\$3,932,132
4	New Bridge	\$561,273	\$3,932,132

From this it can be concluded that Option 4, constructing a new bridge is the optimum solution. This has a B/C ratio which equals 8.7 when compared to Option 1 (Do Minimum maintenance & remove).

Br 74 Wakefield Street Bridge Replacement

Wakefield Street is a timber bridge crossing over the Marton to New Plymouth Railway Line and the passing loop at the eastern end of the KiwiRail Eastown Yard. The bridge was constructed around 1954 using second hand Australian hardwood as the principal structural components.

The bridge was originally designed for Class 2 traffic which corresponds to 70% of Class 1. Class 1 was the normal traffic loadings in New Zealand until February 2017. Up until 2014 the bridge has been "Posted" at Gross 70% Class 1; Axles 7200kg; and, Speed 30km/h. Following inspection and detailed assessment in 2014 lower limits were imposed - Gross 4500kg, Axles 2500kg, speed 30km/h.

In 2014 a detailed timber inspection was undertaken by Opus, involving close visual inspection, probing and test boring to evaluate the internal condition of the timber. Based on the inspections and analysis using the remaining timber sectional areas the reduced weight and speed limits were recommended to give at least a reduced level of service. A deterioration curve was extrapolated from measured remaining section properties and determined that closure of the bridge is imminent to vehicular traffic.

PV calculations have been completed for the options with the associated costs using the current discount value of 6% using the NZ Transport Agency templates. From that the following information is summarised:

Table 5.8: Br 78 Optioneering

Option	Description	PV	HCV Costs
1	Do Minimum Maintenance and Remove & upgrade alternate route	\$352,640	\$1,179,055
2	Renew Components	\$2,233,959	\$853,411
3	New Bridge	\$1,598,714	\$853,411
4	Demolish, construct footbridge and upgrade alternate route	\$1,104,723	\$1,179,055

From this it can be concluded that Option 3, constructing a new bridge is the optimum solution. This has a B/C ratio which equals 6.4 when compared to Option 1 (Do Minimum maintenance & remove, etc.).

Disposal Plans

There are no plans to dispose of or cease to maintain any existing pavement network assets even though there is a number of existing roads which serve only one or two property owner(s) and essentially provide solely private access. These will need to be reviewed and reassessed during the 2015/18 period.

There are however a large number of paper or unformed roads throughout the district which are not required for transportation purposes. When requested, these paper roads can be stopped and the land sold to the adjoining property owner(s). In these instances the full cost of stopping the road and purchasing the land is being met by the adjoining landowners.

A number of paper roads are used for access by adjoining landowners. These roads are not considered to be part of the transport network and are not maintained by Council.



Develop Options

Structures: Bridges, Large Culvert & Retaining Structures Options Assessment

	Option Description	Benefits of Option	Negative Consequences of Option
W/C 114: Bridge Maintenance			
Do-Minimum Reduction in Work Activity	Reduce the amount of work activity undertaken on bridges and retaining wall structures to that minimal work required to maintain the structural integrity of the asset stock . Restrictions on the superficial maintenance tasks that don't contribute to structural integrity.	Decrease in overall costs	Result in maintenance activity deferrals due to lack of budget . Aesthetically the bridges will look unkempt and send negative message to customers .
Status Quo Maintain current level of work activity	Routine maintenance activity is targeted at maintaining assets in their current condition. A portion of budget is used for general housekeeping and has an aesthetics/safety linkage associated with this (Painting handrails, sightrails vegetation removal etc) Level of proactive maintenance undertaken to address perceived issues/hazards that might affect structures. (Tree removal, obstructions)	Reduces the costs required for Structural Component Replacement and Bridge Renewals through timely and low cost interventions. Regime of proactive maintenance ensures that key components are maintained, intervention undertaken to extend life, ensure safety for customers.	Higher overall costs, increased budget compared with Do- Minimum Option.
W/C 215: Structural Component Replacement			
Do-Minimum Reduction in Work Activity	Prioritise defects identified further to regime of inspection to those critical asset components that contribute to structural integrity and safety outcomes. Targets immediate repairs with no consideration of longer term benefits for asset preservation.	Decrease in overall costs	Increase structural and maintenance costs over time due to deferral of work May reduce levels of accessibility for freight and 50 Max vehicles over the long term from present levels Risk of structure failure resulting loss of access, death or serious injury
Status Quo Undertake work as identified through bridge and structures inspection regime	Schedule of works identified prioritised and estimates prepared for funding submission. Work undertaken by specialists depending on complexity of task. Resilience work undertaken to prevent deterioration of assets if this is determined as having long term benefits	Decrease the risk of structural failure Maintain current level of service in terms of accessibility for freight and 50 Max vehicles on the road network Reduces deterioration of assets in line with depreciation, extends life in some instances.	No improvements to network accessibility for 50MAX vehicle above current levels
Increase Budget Addressing Improvement tasks, (Seismic risk assessment, network accessibility)	Establish through analysis key structures at risk from seismic activity and work required to improve resilience. Work required to upgrade structures to enable improved accessibility of 50MAX vehicle to the road network	Identifies at risk structures on the road network, work required to improve resilience Improvement in network accessibility for 50MAX vehicle	May increased level of funding requirement for structure component replacement and bridge renewal work categories





Test Options

Option	Assessment Summary Statement	LOS Outcome	Option Costs		
W/C 114: Bridge Maintenance					
Do-Minimum Reduction in Work Activity	A reduction in work output will revert the asset to pre (2008) levels. Considerable work has been undertaken by Council to address minor defects and improvements that add resilience and amenity outcomes to the bridge and retaining wall stock.	Does not contribute to improving accessibility for 50MAX vehicles and instead likely to increase unavailability to the road network over time as structures deteriorate (bridge weight restrictions imposed)	W/C 114:	\$330,625	2018/19
				\$75,000	2019/20
				\$75,000	2020/21
Status Quo Maintain current level of work activity “Preferred Option”	Current maintenance strategy provides confidence that structures are adequately resourced to enable programmes of identified work to be undertaken. Ensures early intervention preventing the need for major repair options .	This is the least cost long term option, and will deliver the desired outcomes and LOS. It will allow for planned intervention required as the result of inspections to maintain structures in serviceable condition Maintain ONRC LOS for accessibility for 50MAX vehicle at current levels	W/C 114	\$357,875	2018/19
				\$102,250	2019/20
				\$102,250	2020/21
W/C 215: Structural Component Replacement					
Do-Minimum Reduction in Work Activity	Option would see more reactive interventions with potential catastrophic outcomes. Focus on repairs that require immediate attention and not addressing longer term issues.	Does not contribute to improving accessibility for 50 MAX vehicles and instead likely to increase unavailability over time as structures deteriorate (Bridge weight restrictions imposed)	W/C 114	\$275,000	2018/19
				\$180,000	2019/20
				\$339,000	2020/21
Status Quo Undertake work as identified through bridge and structures inspection regime “Preferred Option”	Budgets are prepared based on a list of prioritised faults identified further to a robust schedule of inspections. Ensures early intervention preventing the need for reactive repairs and poor outcomes for customers.	This is the least cost long term option, and will deliver the desired outcomes and LOS. It will allow for planned intervention required as the result of inspections to maintain structures in serviceable condition Maintain ONRC LOS for accessibility for 50MAX vehicle at current levels	W/C 114	\$342,000	2018/19
				\$227,000	2019/20
				\$419,500	2020/21
Increase Budget Addressing Improvement tasks, (Seismic risk assessment, network accessibility)	Seismic assessments to be carried out on key structures based on criticality, (Life lines, arterials, freight routes. Extent of physical works not factored in budget Full assessment on bridges identified as to determine whether restrictions are necessary which has the potential to increase network availability. Establish physical works costs to improve network availability	Increase network resilience through understanding of bridges an there seismic capacity. Enable actions plans to be established Potential increase in network availability for 50MAX vehicle following assessment of restricted bridge structures	Seismic Assessments	\$100,000	
			50MAX Structures Assessment	\$125,000	



Structures - Financial Summary Expenditure

Preferred Programme

Table 5.9 summarises the Structures maintenance, renewal and capital works expenditure for the period 2018/19 to 2020/21

Table 5.9: Structures Maintenance, Renewal and Capital Expenditure		2015 – 2017 (Request WDC)	2015 – 2017 (Approved NZTA)	*2015 – 2016 (Actual Expenditure)	Funding Request		
Work Category		Average (pa)	Average (pa)	Average (pa)	2018/19	2019/20	2020/21
Operations & Maintenance							
Structures Maintenance	W/C 114	187,458	187,458	156,593	357,875	102,250	102,250
Total (Operations & Maintenance)		187,458	187,458	156,593	545,333	460,125	204,500
Renewal & Capital							
Structures Components Replacements	W/C 215	272,155	210,921	228,705	342,000	227,000	419,500
Total (Structures Components Replacements)		272,155	210,921	228,705	342,000	227,000	419,500
Bridge Renewals							
Bridge Renewal – Br 15 Kauarapaoa Road		0	0	0	100,000	650,000	0
Bridge Renewal – Br 74 Wakefield Street		0	0	0	1,780,000	0	0
Total (Bridge Renewals)		0	0	0	1,880,000	650,000	0

* 2015/2016 budget significantly underspent due to June 2015 flood event



Structures – Improvements

Develop Improvement Plan

The following actions have been identified with regards to improving the efficiency and/or effectiveness of Structures asset management.

Table 1.10: Improvement Actions - Structures

Improvement Action	When	Who
Structures		
Develop and Implement Structures & Retaining Wall condition rating by individual component	Next 3 year period	Whanganui Alliance
Develop process for Identification and Consideration of Divestment in Bridge and Large Culverts	Next 3 year period	Whanganui Alliance
Develop schedule of at risk structures	Next 3 year period	Whanganui Alliance
Dublin St Bridge lifecycle assessment	This Financial Year	Whanganui Alliance



Drainage

The purpose of this asset is to provide adequate drainage for water runoff from the carriageway, protect the road edge and substructure from stormwater intrusion and provide a protective barrier for pedestrians from passing traffic. The drainage systems represents a significant risk to the transportation network, where the cost of repairing the consequences of failure generally far exceed the value of the asset causing the failure.

Our investment in maintaining good drainage is critical to preserving the quality of the transportation asset and forms the backbone of one of our key investment decisions. An active and comprehensive drainage maintenance effort will extend pavement life as water ingress has been identified as a recurring mode of failure for both sealed and unsealed roads.

Table 5.17: Strategic Case Linkage to Drainage related Activities

GPS Objectives	A land system that addresses current and future demand for access to economic and social opportunities				
	A land transport system that is resilient				
	A land transport system that is a Safe System, increasingly free of death and serious injury				
	A land transport system that delivers the right infrastructure and services to the right level at the best cost				
	A land transport system that increasingly mitigates the effects of land transport on the environment				
RLTP Objective	Effective road maintenance and delivery				
WDC Community Outcomes	Use best practice to provide and operate a safe local road network				
	Provide the core infrastructure that will allow access to all healthcare services				
	A safe interconnected transportation network				
	Provide the core access infrastructure that will continue to allow a strong rural economy.				
					
	Deeply united	Globally connected	Powered by creative smarts	Flowing with richness	Works for everyone
ONRC Customer Level of Service	Safety	The drainage network contributes toward safe travel by removing stormwater from the carriageway so that it is not a hazard for vehicles Allowing the safe crossing of watercourses by way of culverts. Fault identification and prioritisation ensures that safety related defects are located and a prompt response initiated.			
	Resilience	Protecting the road pavement from damage caused by ponding stormwater ensures integrity and function is maintained Efficient drainage systems contribute to keeping the road pavement dry (by lowering the ground water table level)			



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		Flooding due to under capacity drainage or inadequately designed drainage assets.
	Amenity	Removal of detritus from drainage assets contribute to capacity being maintained. Manage the number of faults on drainage structures that detract from the customer experience through appropriate inspections and interventions

	Accessibility	A programme of routine maintenance ensures the removal of surface water from carriageways is achieved improving the reliability for road user travel to intended destinations
	Efficiency	Minimise through strategic planning whole of life costs while delivering the required customer outcomes.

Linkage to Problem Statements	The following identified Problem Statements have relevance to the drainage asset group:	
	- The form and function of the road network are not meeting the changing demands and needs resulting in decreasing Levels of Service and increasing reactive interventions. - The network is impacted by challenging geology, topography and weather resulting in increased resilience issues and high repair costs when unplanned events occur. - A range of factors such as urban intersection layout, age capability and experience of drivers are resulting in death and serious injuries.	

Levels of Service (Drainage) – (Technical)

Test Levels of Service

There are currently no technical levels of service (LoS) influencing strategy and investment decisions for the drainage asset group.

Drainage Current Condition and Performance

Compile and Test Evidence

Kerb & Channel

Current Performance issues for kerb and channel assets relate to:

- Poor gradient or other alignment problems
- Blockages from debris build up
- The profile of the channel
- The adequacy of supporting stormwater collection and disposal systems (blocked sumps and under capacity laterals)
- Impact of restrictions and obstructions to longitudinal grades from trees roots, detritus and breakages.

Surface Water Channel

Capacity / Performance issues for surface water channel assets relate to:

- Blockages from debris build up as result of
 - Slips and detritus from weather events
 - Vegetation
- Erosion / Scour
- Interference of third parties (dumping refuse and intentionally placing impediments to flow).
- The adequacy of the receiving stormwater collection and disposal systems, e.g. culverts, drains and streams.
- Vehicle entrance culverts restricting flow, e.g. undersized culverts, poor installation and headwall details, and
- No formal design phase undertaken on most surface water channels to establish capacity.

Culverts

Performance issues for culvert assets relate to:

- Pipe Capacity - Most of the stormwater channels and culverts have not been formally designed according to the individual catchment areas for each pipe, but sized according to the best available knowledge and funding. Many cannot manage runoff leading to areas of localised flooding.
- Variable performance caused by blockages caused by debris and slips.



- Downstream channels being impeded by fences and debris build up beyond the road reserve.
- The adequacy of supporting stormwater collection and disposal systems; and
- The types of pipes and jointing systems used.

In addition, there can be safety issues around the lack of adequate barrel length restricting the flow of traffic by narrowing the carriageway.

Sumps

Sumps are performing well in most conditions. The greatest issue for council is the build-up of leaf debris on sump grates in autumn. This can be a particular problem when strong winds and heavy rain coincide causing surface flooding. This is a maintenance issue and is resolved through additional maintenance being undertaken at the appropriate times.

Drainage Maintenance and Operations

Drainage Maintenance Strategy

The principal maintenance activities are the proactive or cyclic cleaning of kerbed water channels, sumps and catchpits in urban areas, to keep the asset in good operational condition. Blockages will cause ponding which can cause scouring, damage the carriageway pavement and create a safety hazard. There are environmental issues as well with debris being washed into Stormwater systems.

Proactive cyclic maintenance is based on asset criticality. Drainage assets on roads that cater for high traffic, cyclist and/or pedestrian volumes are treated with higher priority in order to manage the associated risk. They are therefore maintained at a higher standard than those assets on parts of the network that are a lower ONRC classification to appropriately address safety issues related to loss of control of road users on wet roads as well as ensure safety for other modes.

Drainage maintenance in the rural principally targets culverts and surface water channels to ensure these are clear of obstructions in order to function effectively. Recent flood events have reinforced the criticality of ensuring a regime of proactive maintenance for drainage asset is followed stringently to maintain network resilience and that an appropriate level of investment is available to facilitate this action.

Drainage Renewal & Capital Works

Drainage assets are considered for renewal if the condition is such that it is impacting on other asset types (pavement) or capacity to function as intended is not being realised resulting in resilience issues on the network.

Drainage renewals encompasses three main types;

- Pavement surface drainage – Verge / shoulder maintenance and kerb and channel

- Pavement structure drainage – surface water channels (lined / unlined), side slopes (verge's) side drainage, Sub soil drainage, etc.
- Stormwater transfer drainage – culvert renewal, inlet / outlet structures, sumps, SW treatment devices etc.

Drainage renewal programmes are developed by considering data from the:

- Road Surface
- Pavement Structure
- Stormwater transfer assets
- Drainage maintenance records
- Flood Zones or flooding records

Drainage Capital Works Plan

Drainage capital works are generally initiated through triggers such as growth, Levels of Service, regulatory, operational efficiency, or vested (gifted) through subdivisions. In recent times as a result of flood events, additional drainage assets have been created to address resilience and accessibility issues on the rural network.

Renewal Decision Making Process

Our approach to developing a forward works programme is to identify high priority areas based on analysis of specific performance criteria, using RAMM condition inspections and fault identification.

A list of candidate sites is produced, ranked by risk, which are then visualised in a map and the list formatted to prioritise treatments based on:

- Alignment with other forward works programmes
- Annual rainfall variation across the network
- Failure mode analysis outcomes

The prioritised renewal candidate sites are then compared to the annual budget to determine which sites can be added to the programme.

Stormwater Channel Programme

A detailed 5 year forward programme of renewal works has been established for the kerb and channel asset. The programme specifically focuses on aligning with other complementary asset groups such as footpaths, street pavements and street lighting.

The decision to renew kerb and channel is determined by detailed visual inspection and maintenance cost analysis. Stormwater channel programmes are aligned with the carriageway and footpath programmes to achieve operational efficiency and ensure a logical sequence of renewal of these related asset types.

- Ideally kerb and channel works should be done first as there may be opportunities to improve the levels. This should be followed by carriageway and possibly footpath works.



Programme Business Case

- When a kerb and channel renewal has been confirmed consideration is given to addressing safety related improvements.
- Street sumps are generally renewed as part of kerb and channel renewal works

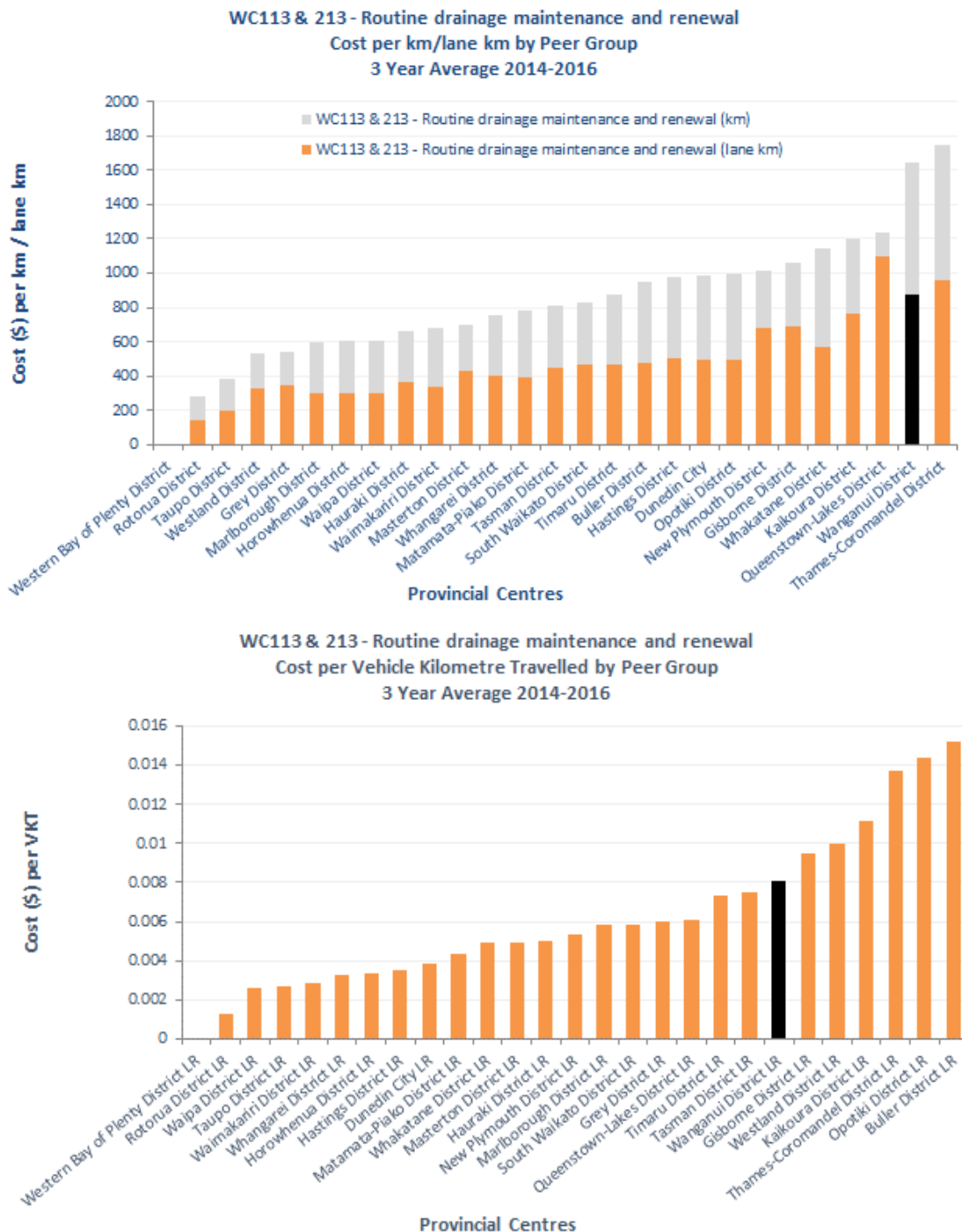
Drainage Maintenance and Renewal Expenditure Peer Group Comparison

Whanganui's position in relation to our peers is not surprising in terms of Councils strategic approach to

address identified asset condition and resilience issues in the transportation network including a comprehensive programme of:

- Drainage maintenance
- Kerb replacements - old city drainage infrastructure in poor condition due in part to the amount of mature street trees and consequently tree root damage
- Culvert renewals

Figure 5.19: Peer Group Comparison - Routine Drainage/ Renewals





Drainage renewals have been undertaken in conjunction with flood damage reinstatement works to improve network resilience where it has been determined that this will contribute to improved outcomes for council's stakeholders.

Other Drainage Asset Renewal

Other drainage assets are considered for renewal when associated assets are being programmed for resurfacing or rehabilitation. Typically these drainage assets are inspected when the adjoining section of carriageway, footway, or stormwater channel is proposed for a renewal treatment. A decision is then made based on condition as to whether or not to replace.

There is no specific culvert renewal replacements scheduled to occur in the next 20 years; however, some may be identified by inspections, as it is likely that some of the existing culvert stock will fail prematurely. Otherwise, considering the nature of the asset, culvert replacement can be considered as more reactive based on problems that may arise periodically. Every effort is made to align culvert renewal works with other programmed works including resurfacing and pavement rehabilitations.

From inspections it has been found that galvanised corrugated steel pipes installed in papa country are exhibiting accelerated corrosion. A programme is required for the treatment (including invert paving) of renewal for these structures.



Develop Options

Drainage Options Assessment Structures:

	Option Description	Benefits of Option	Negative Consequences of Option
W/C 113: Routine Drainage Maintenance			
Street Cleaning			
Do-Minimum Current Budget	Review current work practices and identify areas where operational efficiencies can be gained. Monitor network condition and customer feedback via level of complaints received.	Cost neutral budget	Potential to increase costs in other work activities, “Seal Pavement Maintenance” Decrease resilience of the road network affecting network availability. Higher frequency of flooding from poorly maintain drainage systems Customer dis-satisfaction with network appearance especially in Urban areas, detritus in kerbs and sumps.
Status Quo Maintain current level of work activity Actual cost model	Generally programmed work to ensure drainage systems operate efficiently in both urban and rural locations. City experienced areas of high leaf fall during autumn. Programme of defective surface water table drains, and high berm removal in rural area identified as requiring attention. Drainage inspections, culverts and sumps form basis of programmed work activity. Requirement to maintain sub-soil drainage systems in Whanganui City	Programme addresses identified deficiencies in rural network, water table drains and high berm removal. Maintains drainage systems in a state that ensures they operate as intended Able to meet ONRC LOS outcomes for amenity	Slight increase in budget General feeling is that the level of investment proposed for this option is appropriate to manage drainage maintenance activities on the network.
W/C 213: Drainage Renewals			
Programmed Drainage Renewals Current Budget	Drainage renewals currently include replacement of kerb and channel in the city and culvert replacements predominantly in the rural. Whanganui city has significant lengths of defective kerb and channel affecting road pavement performance. Where possible this activity is linked to other works including resurfacing and rehabilitation treatments. Culverts are usually replaced in advance of other activities were this can be managed. Recent flood events have highlighted deficient drainage system that require upgrading which forms the basis of forward work.	Enables Council to progress kerb replacement and culvert programmes Current actual cost per annum on average exceeds budget allocation	Overall condition of culvert assets will continue to deteriorate over network year on year Road user safety through road user evasive action required as a result of road surface ponding water will remain the same.
Programmed Drainage Renewals 10% Budget Reduction	As per above with the exception that kerb and channel achievement targets are reduced. Apply risk based approach to prioritisation of kerbs and channel renewals.	Budget reduced from current investment levels. Transparency in programme development ensuring renewal is warranted – benefit/cost	Potential for a general decline in service potential for drainage assets particularly kerb and channel. Increased number of complaints from customers is a real possibility. Effect on associated roading improvements activities
Programmed Drainage Renewals Increase Budget	As per above but includes a focus on improving network resilience. Identification of under capacity drainage structures that frequently underperform causing network condition and resilience issues.	Improvements to overall drainage assets condition Improve network resilience and accessibility at identified network hotspots Enable drainage works to be undertaken with other project work.	May increased level of funding requirement for structure component replacement and bridge renewal work categories





Develop Options

Option	Assessment Summary Statement	LOS Outcome	Option Costs			
W/C 113: Routine Drainage Maintenance						
Street Cleaning						
Do-Minimum Current Budget	Review current work practices and identify areas where operational efficiencies can be gained.	Current expenditure indicates that a lowering of LOS would be the outcome if current approved budgets are enforced.	W/C 113	\$208,477	2018/20	Routine Drainage
	Monitor network condition and customer feedback via level of complaints received.	Increased instances of non-compliance (increased litter, and drainage related issues on the road network		\$208,477	2019/20	Routine Drainage
				\$208,477	2020/21	Routine Drainage
			W/C 113	\$507,194	2018/19	Street Cleaning
			\$507,194	2019/20	Street Cleaning	
			\$507,194	2020/21	Street Cleaning	
Status Quo Maintain current level of work activity Actual Cost model “Preferred Option”	Provides the ability to undertake the work activity deemed necessary to efficiently manage drainage systems in Whanganui.	Maintains current LOS provided in terms of ONRC Amenity measures to current levels.	W/C 113	\$311,203	2018/20	Routine Drainage
	This level has been established by continually monitoring network condition through our All-Fault defect inspection regime and network audits.	Contributes to increasing availability of road network for customers through increased resilience Less defects from improved drainage systems maintenance, overall network improvement, end goal		\$311,203	2019/20	Routine Drainage
				\$311,203	2020/21	Routine Drainage
			W/C 113	\$472,677	2018/19	Street Cleaning
			\$472,677	2019/20	Street Cleaning	
			\$472,677	2020/21	Street Cleaning	
W/C 213: Drainage Renewals						
	Assessment Summary Statement	LOS Outcome	Option Costs			
Programmed Drainage Renewals Current Budget	This is the least cost option over the term of the LTP period.	LOS maintained at current levels	W/C 213	\$904,377	2018/19	
	Over the term of the LTP it will allow us to manage growth and improve safety.			\$904,377	2019/20	
	However the network will be consumed. A backlog of outstanding work will occur which will need to be addressed within the following LTP period.			\$904,377	2020/21	
Programmed Drainage Renewals 10% Budget Reduction	This is the lower cost of the options, however the network consumption will be increased.	Reduced LOS outcomes	W/C 213	\$822,160	2018/19	
	A backlog of outstanding work will continue to increase at a higher rate which will need to be addressed within the following LTP period	Reduced network resilience with high frequency of unplanned interventions		\$822,160	2019/20	
				\$822,160	2020/21	
Programmed Drainage Renewals Increase Budget “Preferred Option”	Option brings 3 year annual expenditure close to that value actually achieved.	Less defects from improved drainage system, overall network improvement end goal	W/C 213	\$952,822	2018/19	
	This is the least cost long term option, and will contribute to delivering the desired outcomes and LOS. It addresses identified asset renewal needs for substandard kerb and channel compromising pavements and facilitate culvert upgrades causing resilience issues on the network The current level of customer requests will be maintained.	Contributes to increasing availability of road network for customers through increased resilience Less defects from improved drainage systems maintenance, overall network improvement, end goal		\$952,822	2019/20	
				\$952,822	2020/21	



Drainage - Financial Summary Expenditure

Table 5.11 summarises the Drainage maintenance, renewal and capital works expenditure for the period 2018/19 to 2020/21

Preferred Programme

Table 5.11: Drainage Maintenance, Renewal and Capital Expenditure		2015 – 2017 (Request WDC) Average (pa)	2015 – 2017 (Approved NZTA) Average (pa)	2015 – 2016 (Actual Expenditure) Average (pa)	Funding Request		
Work Category					2018/19	2019/20	2020/21
Operations & Maintenance							
Drainage Maintenance	WC 113	208,477	208,477	280,437	311,203	311,203	311,203
Street Cleaning	W/C 113	507,194	507,194	488,639	472,677	472,677	472,677
Total (Operations & Maintenance)		715,671	715,671	769,076	783,880	783,880	783,880
Renewal & Capital							
Drainage Renewals	WC 213	904,377	904,377	1,080,516	952,822	952,822	952,822
Total (Drainage Maintenance and Renewals)		904,377	1,024,807	1,080,516	952,822	952,822	952,822



Drainage – Improvements

Develop Improvement Plan

The following actions have been identified with regards to improving the efficiency and/or effectiveness of Drainage activity management.

Table 5.12: Improvement Actions - Drainage

Improvement Action	When	Who
Drainage		
Formalisation of High Risk Asset Register & Inspection Programme	Next 3 year period	Whanganui Alliance



Street Lights

The purpose of street lighting is to provide agreed lighting levels in streets for the safe and efficient movement of vehicles, cyclists and pedestrians.

Table 5.13: Strategic Case Linkage to Street lighting related Activities

GPS Objectives	A land transport system that is resilient				
	A land transport system that is a Safe System, increasingly free of death and serious injury				
	A land transport system that delivers the right infrastructure and services to the right level at the best cost				
	A land transport system that increasingly mitigates the effects of land transport on the environment				
RLTP Objective	Effective road maintenance and delivery				
WDC Community Outcomes	Facilitate the use of digital technologies and smart approaches to drive innovation and productivity				
	Use best practice to provide and operate a safe local road network				
					
	Deeply united	Globally connected	Powered by creative smarts	Flowing with richness	Works for everyone
ONRC Customer Level of Service	Safety	Street lighting in urban streets provides for the safe and efficient movement of vehicles, cyclists and pedestrians. Flag lighting at rural intersections contributes to safe travel at night			
	Resilience	Replacement of obsolete light fittings and bulbs with LED's will reduce outages on the street light network. Fault identification and prioritisation ensures that defects are located and a prompt response initiated.			
	Amenity	Programmed LED replacement of all street lights will ensure consistency of light emitted. Manage the number of faults on street light assets that detract from the customer experience though appropriate inspections and interventions			
	Efficiency	The increasing of service levels, reduction of long term power costs and the reduction of maintenance by utilising energy efficient LED lighting.			
Linkage to Problem Statements	The following identified Problem Statements have relevance to the drainage asset group: - The form and function of the road network are not meeting the changing demands and needs resulting in decreasing Levels of Service and increasing reactive interventions. - A range of factors such as urban intersection layout, age capability and experience of drivers are resulting in death and serious injuries.				



Levels of Service (Street lights) – (Technical)

Test Levels of Service

There are currently no technical levels of service (LoS) influencing strategy and investment decisions for the street light asset group.

While there is no specific Customer Level of Service for Street Lighting the ONRC will be used as a guide for the standard of lighting on the network while also taking into account the safety aspects of lighting such as the importance of illuminating road intersections appropriately.

Street Light Current Condition and Performance

Compile and Test Evidence

The main cause of deterioration of lights in the Whanganui District is as a result of old age. Once a street light exceeds its design life, light output

from lamps can decrease markedly.

Common problems encountered are:

- Damaged or old seals that allow the ingress of dust and moisture
- Discolouration
- Corrosion on optical surfaces, and
- Obsolescent fittings.

Brackets and poles suffer from corrosion problems and loose fittings caused by wind. Concrete poles are susceptible to concrete spalling as a result of corrosion to reinforcing steel components expanding. The close proximity of Whanganui City to the coast makes corrosion of street lighting components a significant issue in relation to asset life.

Poles can be subject to vehicle collision damage and, if painted, the general deterioration of the coating can lead to unsightliness and eventual corrosion.

Whanganui applied for and was successful in our funding application to upgrade all street lighting to LED. The programme for LED renewals has commenced and is programmed to be completed by 2017/18.

Street Light Operations and Maintenance

Street lighting Maintenance Strategy

With the programmed roll out of the LED upgrade in Whanganui in progress a number of significant benefits will be realised in the maintenance activity.

- LED street lighting is much cheaper to run as they are far more energy efficient than the older technology street lights. EECA estimates that on average a LED

streetlight uses approximately 55% of the energy to generate the same amount of light as a HPS.

- The maintenance required for LED street lighting is far less than for HPS with LED lamps requiring to be replaced roughly every 20 years compared to just 4 years for HPS.
- The failure rates for LED street lights is low, at <1% compared to 6% for HPS. Each luminaire failure requires a crew to visit the luminaire to replace it, so less failures result in a lower operating costs.

The programmed replacement of LED street lighting is programmed for completion in the 2017/18 financial year. A reduction in annual operational maintenance cost and power charges have been factored into maintenance budget forecasts

Street Lighting Renewal & Capital Works

Drainage assets are considered for renewal if the condition is such that it is impacting on other asset types (pavement) or capacity to function as intended is not being realised resulting in resilience issues on the network.

Street light Renewal Strategy

Renewal needs will be identified from the planned inspection programme. Assets will be replaced when:

- This is more economic than repair of faulty or damaged assets.
- Faulty or damaged lanterns cannot be repaired because of obsolescence or replacement parts being unobtainable.
- The existing asset does not meet current design/safety standards.

Works are prioritised according to:

- Public safety.
- Benefit/ cost savings available, e.g. power efficiencies.

New LED street lighting will reduce the requirement for the renewal of faulty and damaged lanterns and a corresponding investment reduction.

Deferred Renewal Works

Council undertakes to replace streetlights with new assets when the asset cannot economically be repaired.

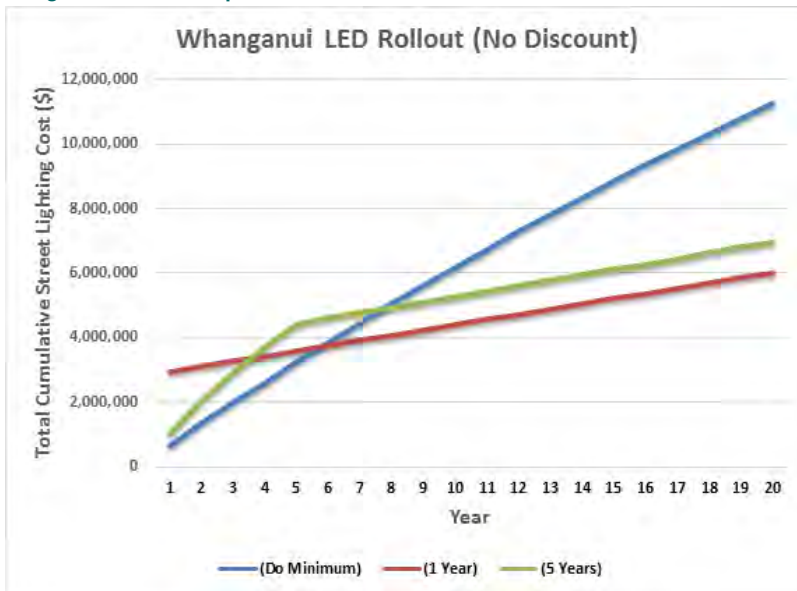
There is an expectation that all street lights should be operational and if not, repaired within the specified response times.

Capital Works Programme

There is currently no streetlight programme for new installations over this 10 year forecast period.



Figure 5.20: LED expenditure



Street Lighting – Improvements

Develop Improvement Plan

The following actions have been identified with regards to improving the efficiency and/or effectiveness of Street Lighting activity management.

Table 5.14: Improvement Actions – Street lighting

Improvement Action	When	Who
Street Lights		
Ensure Lighting Asset Register in RAMM is 100% Complete and Accurate	Next 3 year period	Street lighting Contractor



Traffic Services

Traffic Services aid the safe and orderly movement of vehicular and pedestrian traffic, and indicate road use restrictions and other information. A good standard of traffic services can contribute significantly to a safer road network.

Table 5.15: Strategic Case Linkage to Traffic Services related Activities

GPS Objectives	A land transport system that is resilient A land transport system that is a Safe System, increasingly free of death and serious injury A land transport system that delivers the right infrastructure and services to the right level at the best cost				
RLTP Objective	Effective road maintenance and delivery An appropriate network of tourism routes				
WDC Community Outcomes	Use best practice to provide and operate a safe local road network Provide the core infrastructure that will allow access to all healthcare services. Well-connected pathways throughout the district. Provide the core infrastructure that will allow access to the port in order to develop it to its full potential. Facilitate the use of digital technologies and smart approaches to drive innovation and productivity				
	Deeply united	Globally connected	Powered by creative smarts	Flowing with richness	Works for everyone
ONRC Customer Level of Service	Safety	Fault identification and prioritisation ensures that defective, obscured and unsecure traffic service assets are attended to within specified response times Compliance Audits including night inspections are undertaken at agreed frequency, evaluate results and act as required Network auditing will identify deficiencies on the transportation network.			
	Resilience	Programme of preventative maintenance works undertaken that addresses key network at risk areas or hot spots. Reliability of aging assets (Traffic Signals)			
	Amenity	Condition of traffic services assets reduce efficiency and clarity to road users. Traffic services asset appearance detracts from the customer experience.			
	Accessibility	A programme of routine maintenance ensures the removal of surface water from carriageways is achieved improving the reliability for road user travel to intended destinations			
	Efficiency	Demonstrate through prudent programming and clustering of maintenance activities that value for money is being achieved in delivery of outputs. Minimise through strategic planning whole of life costs while delivering the required customer outcomes.			



Programme Business Case

Linkage to Problem Statements	The following identified Problem Statements will influence traffic services decisions and investment: The form and function of the road network are not meeting the changing demands and needs resulting in decreasing Levels of Service and increasing reactive interventions. A range of factors such as urban intersection layout, age capability and experience of drivers are resulting in death and serious injuries.

Levels of Service (Traffic Services) – (Technical)

Test Levels of Service

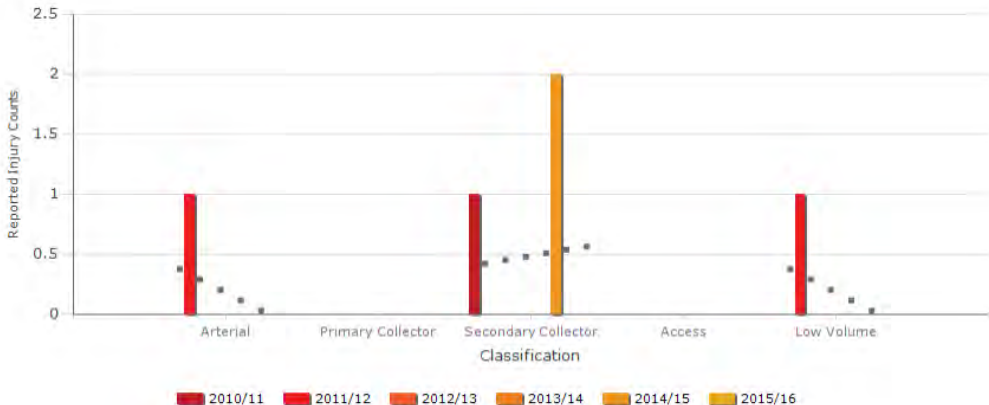
The following technical levels of service (LoS) influence strategy and investment decisions for the Traffic Services asset group.

Table 5.16: Safety

Levels of Service Customer Outcome  Safety	Road Category	Customer Level of Service Outcomes			
	Arterial	Variable road standards	Lower speeds and extra care required on some roads/sections particularly depending on topography, access, density and use.	Road user safety guidance provided at high risk locations.	Some separation of road space for active road users in urban areas
	Primary Collector	Variable road standards and alignment	Lower speeds and greater driver vigilance required on some roads/sections particularly depending on topography, access, density and use.	Active road users should expect mixed use environments with some variability in the road environment, including vehicle speed.	Road user safety guidance provided at high risk locations.
	Secondary Collector				
	Access			All road users should expect mixed use environments with some variability in the road environment, including vehicle speed	Road user safety guidance may be provided at high risk locations.
	Access (low volume)				
Technical Measures	Technical Output 1: Permanent Hazards Technical Output 2: Temporary Hazards Technical Output 3: Sight Hazards				



Programme Business Case

	Technical Output 5: loss of driver control at night																																										
What is the LoS are we delivering?	Permanent Hazards – The number of permanent hazards that are not marked in accordance with national standards RTS-5 and MOTSAM. Inspect at least a 10% sample of each classification and record the number of non-compliances per ten kilometres for rural roads; per one kilometre for urban roads. Contractual requirement require regular inspections to identify hazards on the transportation network. A formalised process in alignment with the ONRC reporting requirements will commence during the 2017/18 financial year. Temporary Hazards - The number of sites inspected and the number of audits compliant with COPTTM. Audit temporary traffic management at work sites, event sites and temporary hazards. Council regularly monitor contractor performance undertaking audits using the Short Form audit for temporary management. Sight Hazards - The number of locations where sight distance or signs are obstructed by vegetation, unauthorised signs or other items placed within the road reserve. Inspect at least a 10% sample of each classification and record the number of instances per ten kilometres for rural roads; per one kilometre for urban roads. Contractual requirement require regular inspections to identify sight hazards on the transportation network. The formalised process in alignment with the ONRC reporting requirements will commence in the 2017/18 financial year. Loss of Driver Control at Night - The number of fatal and serious injuries which occur in crashes at night, each year on your network. Results are inconclusive due to the small sample size.  <table><caption>Reported Injury Counts by Classification</caption><thead><tr><th>Classification</th><th>2010/11</th><th>2011/12</th><th>2012/13</th><th>2013/14</th><th>2014/15</th><th>2015/16</th></tr></thead><tbody><tr><td>Arterial</td><td>1.0</td><td>0.4</td><td>0.3</td><td>0.2</td><td>0.1</td><td>0.1</td></tr><tr><td>Primary Collector</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td></tr><tr><td>Secondary Collector</td><td>1.0</td><td>0.4</td><td>0.4</td><td>2.0</td><td>0.5</td><td>0.6</td></tr><tr><td>Access</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td></tr><tr><td>Low Volume</td><td>1.0</td><td>0.4</td><td>0.3</td><td>0.2</td><td>0.1</td><td>0.1</td></tr></tbody></table>	Classification	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	Arterial	1.0	0.4	0.3	0.2	0.1	0.1	Primary Collector	0.0	0.0	0.0	0.0	0.0	0.0	Secondary Collector	1.0	0.4	0.4	2.0	0.5	0.6	Access	0.0	0.0	0.0	0.0	0.0	0.0	Low Volume	1.0	0.4	0.3	0.2	0.1	0.1
Classification	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16																																					
Arterial	1.0	0.4	0.3	0.2	0.1	0.1																																					
Primary Collector	0.0	0.0	0.0	0.0	0.0	0.0																																					
Secondary Collector	1.0	0.4	0.4	2.0	0.5	0.6																																					
Access	0.0	0.0	0.0	0.0	0.0	0.0																																					
Low Volume	1.0	0.4	0.3	0.2	0.1	0.1																																					
How do we compare against peer group?	No comparative peer group data is available.																																										
Is there a gap we need to invest in?	In order to establish whether a gap in LoS exists we will Sufficient budget is available to undertake all but the largest of identified projects which require specific funding. Upgrading of traffic signals will be undertaken from the Minor Improvement budget. Review correctness of existing road marking by ONRC road classification																																										
How will we deliver the LoS?	We will achieve these service levels by: Council will continue to work on road safety issues with the NZ Police, Horizons Regional Council, NZTA and ACC through a Road Safety Action Plan (RSAP) group.																																										



Programme Business Case

	• Network audits are implemented so that the results can confirm whether gaps exist in service delivery. • By carrying out a formal Crash Reduction Study (CRS) when 3 year increasing trends are observed. The CRS includes the RSAP members. • Undertaking Safety Audits on improvement works. (As required by the NZTA) • Ensuring there is high quality Temporary Traffic Management. • By maintaining the minor improvement programme at around 8% (\$800K) of the total maintenance/renewal budget some that significant upgrade project can be implemented.
How are we going to measuring it?	The following procedures will measure whether the level of service is achieved: • The CAS system provides a file of crashes on the Whanganui District road network. This file can be loaded into RAMM to enable reporting by ONRC road classification via the ONRC reporting tool. CAS data is required to be updated prior to reporting results. • Network auditing as required in the ONRC performance measures



Traffic Services: Current Condition and Performance

Compile and Test Evidence

Performance issues for Traffic Services assets in the Whanganui District generally relate to the accuracy of placement, visibility, reflectivity and

conformity with standards.

Traffic Signals have become problematic due to their age with reliability issues being experienced. Council has difficulty servicing parts for these installations.

Traffic Services Operations and Maintenance

Traffic Services Maintenance Strategy

The general failure mode for the traffic services categories include cleanliness, visibility and damage. If the asset meets any of the failure criteria, it is entered into the All Faults database, analysed and programmed for either repair or replacement. The response and reinstatement times are managed to minimise the risk to public safety.

The all faults process is an on-going operation with asset inspectors continuously monitoring the deterioration of previously recorded sign faults and identifying new defects and reviewing/ adjusting the priority of recorded defects.

Traffic Signals

The maintenance strategy for traffic signals can be described as one of "scheduled preventive maintenance". Programmed inspections at 13/26/52 weekly cyclic intervals are undertaken by the Contractor, following clearly defined checks of components and scheduled replacement of lamps. The Contractor is required to have on hand a ready supply and availability of consumable items.

A 24 hour, 7 day a week emergency repair and accident callout response is required of the Contractor. On-site attendance is within 1 hour of notification and temporary repair initiated with 24 hours.

Traffic Services Renewal & Capital Works

Traffic Services Renewal Strategy

Traffic service renewals provide for the replacement of traffic signs, and traffic management equipment like

intersection signals. This links to maintaining and protecting strategic corridor use and safety identified as a key problem statement in the Strategic Case. Under ONRC the arterial/ collector and high traffic and freight routes will have higher levels of service and greater numbers of assets for renewal.

No changes to levels of service are anticipated although a review of current traffic service levels of service by new ONRC road classifications may result in additional assets being required and/or removed.

Renewal Decision Making Process

Signs, Rail and Barriers are renewed on a corrective basis. This means that although renewals are not planned on a large scale, their renewal is carried out when they fail to meet current standards. We have sufficient mitigation strategies and focused response times to prevent delays in renewals being a risk to public safety.

Road marking is refreshed to maintain condition and performance on a bi-annual basis: Only critical markings (Stop, Give Way and Pedestrian Crossing) Intersections) are remarked annually.

Traffic Signals

The Council will provide new traffic facilities where they are identified as being necessary for smooth traffic flow. An installed has been identified at the intersection of St Hill Street and Taupo key to be installed during the 2017/18 financial year.

The Council intends to upgrade all traffic signals to improve current performance issues highlighted. Installations will be funded from the "Low cost/Low risk finding category. As other sets of traffic signals in Wanganui are upgraded they will be connected to SCATS.

Traffic Services Capital Works

New works for additional signs are mainly driven by safety from Transport Agency audits and programmes to improve road safety and accessibility around schools. There are signs and road markings new works associated with programmes such as safety minor works. Signs are also installed as part of road upgrades and major new works projects. There are no other specific capital expenditure forecast for traffic facilities at this time.



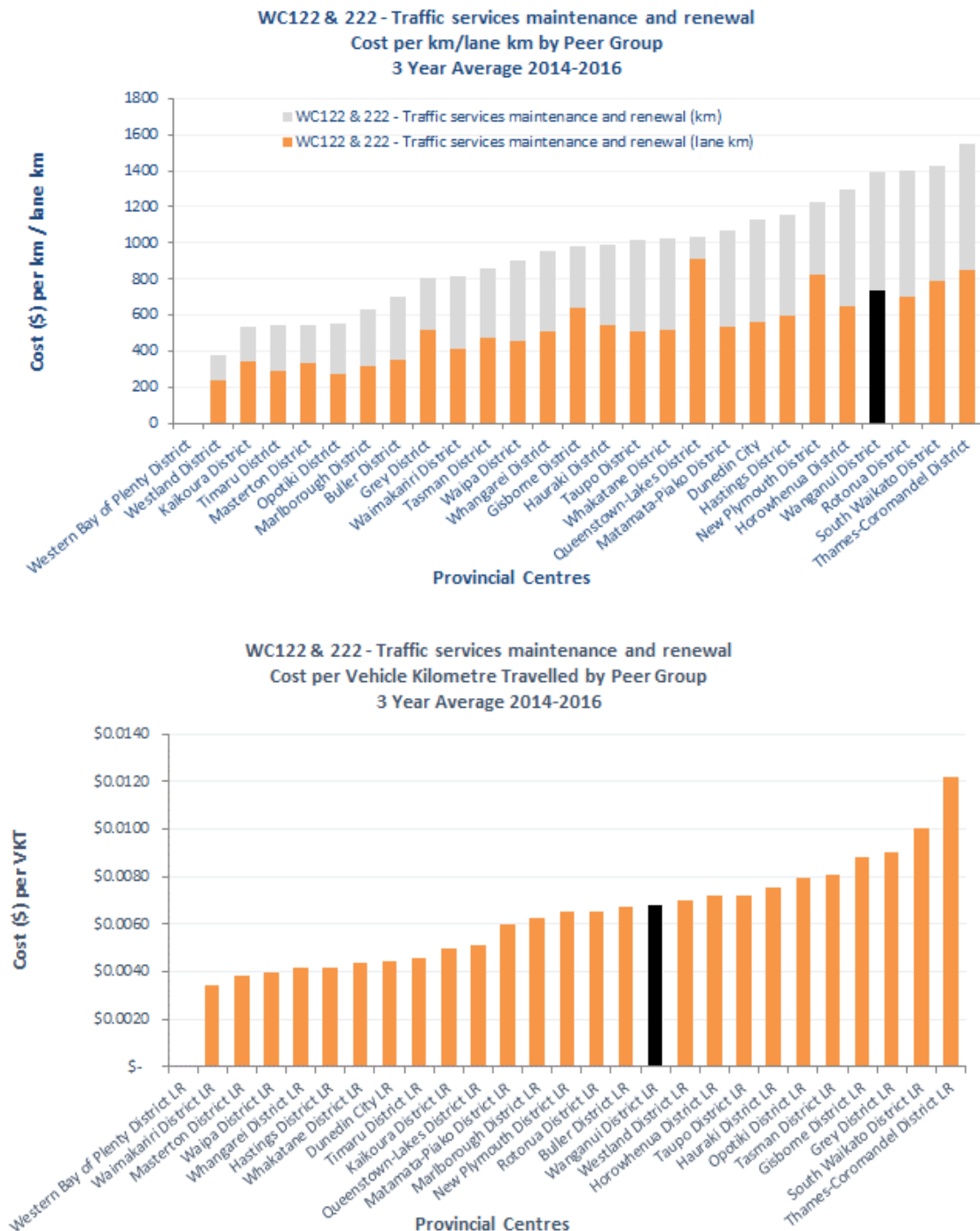
Programme Business Case

Traffic Services Expenditure Peer Group Comparison

Whanganui is in the higher cost reporting range of the peer group per km but mid-range for cost per VKT. This reflects a business as usual approach to maintenance and renewal

activities on the transportation network with no obvious standout expenditure activities driving the result. This result is expected to reduce as a consequence of Whanganui's planned LED streetlight conversion which will see more energy efficient and long life luminaries in operation.

Figure 5:21: Peer Group Comparison - Traffic Services

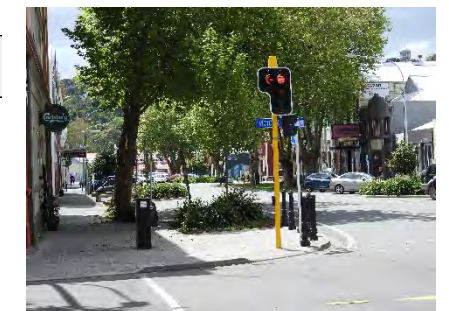




Develop Options

Traffic Services Options Assessment (including Street lighting)

	Option Description	Benefits of Option	Negative Consequences of Option
W/C 122: Traffic Services Maintenance			
Status Quo Maintain traffic services to current levels of inputs Budget decrease from previous NZTA approved allocation	Maintenance of traffic signs, road delineation marker posts, operation, maintenance and power costs of carriageway lighting. Also includes belisha beacons and lighting at pedestrian crossings. This option would result in maintaining current levels of response to maintaining traffic services. Provides the current LOS on carriageway lighting taking into account the carriageway maintenance cost saving as a result of the LED upgrades.	Decrease in overall costs Maintains current LOS for road users which is deemed to be appropriate. Clear understanding of costs required to maintain current standards. Recognises reduced power and maintenance cost as result of the LED upgrade project	No allowance for road network LOS improvements
W/C 123: Operational Traffic Management			
Status Quo Maintain network to previous approved funding levels (2015/18)	Maintenance of Traffic Signals is the key activity funded from this work activity. Option includes responding to outages and replacement of components. Proposed traffic signal upgrades to be funded from other work activities W/C - Low Cost, Low Risk proposal	Maintains current LOS for road users in the interim until scheduled upgrades are undertaken. Travel time reliability maintained to current levels	Age of traffic signals means increased likelihood of outages Potential for reactive maintenance requirement due to age of signals prior to upgrade works being undertaken
W/C 222: Traffic Services Renewals			
Do-Minimum Maintain network to previous funding levels (2015/18), Stay within approved budget allocation	Activity provides for the renewal of existing road furniture, lighting, signs and markings Council undertakes bi-annual roadmarkings of the road network. Key safety related markings (Stop and Give Ways) are marked annually. Vandalism of signs is an issue for Council consuming available budget. Current budget allocation is insufficient to complete all work activity deemed necessary including safety initiatives.	Cost efficiency – reduced costs	Negative effect on current LOS provided Increase in crashes Asset deterioration over time
Status Quo Apply current LOS	As per above except that increased budget will allow programmes of work to be completed and assist in delivering other safety and destination signage type projects Maintain and renew signage, respond to vandalism	Maintain current LOS, safety and accessibility Undertake network improvements to address identified issues.	Increase in budget requirement from previously approved amount





Test Options

Option	Assessment Summary Statement	LOS Outcome	Option Costs		
W/C 122: Traffic Services Maintenance					
Status Quo Maintain traffic services to current levels of inputs Budget decrease from previous NZTA approved allocation “Preferred Option”	Provides the current LOS on carriageway lighting taking into account the carriageway maintenance cost saving as a result of the LED upgrades.	Maintains Road User safety through maintaining current level of delineation and signs condition.	W/C 122	\$422,391	2018/20
	This is the least cost long term option, and will deliver the desired outcomes and LOS.	The current level of customer requests will be maintained		\$372,985	2019/20
				\$383,257	2020/21
	The asset will not be consumed ie. no growing backlog of outstanding work.				
W/C 123: Operational Traffic Management					
Status Quo Maintain network to previous approved funding levels (2015/18) “Preferred Option”	Funding levels appear historically correct for current work activities undertaken. Presently this is sufficient to ensure traffic signal operate efficiently in Whanganui.	The LOS impact for this option is neutral as no additional funding is requested	W/C 123	\$62,500	2018/20
	The proposed traffic signal upgrade is key to longer term reliability of operation and maintaining acceptable LOS for road users.	Assuming programme upgrades occur, travel time reliability will improve over the NLTP period for road users. The reverse will occur if this does not eventuate		\$62,500	2019/20
				\$62,500	2020/21
W/C 222: Traffic Services Renewals					
Do-Minimum Maintain network to previous funding levels (2015/18), Stay within approved budget allocation	Current budget allocation is insufficient to deliver programmed work activity (bi-annual roadmarking contracts) and complete necessary programmed and reactive signs replacements (asset condition and vandalism).	Decreases Road User safety through lower LOS for signage with an increased response time and increasing backlog	Previous approved 2015/18 funding allocation for Traffic Services renewal = \$355,946 per annum		
	Insufficient budget to undertake programmed upgrades and improvements identified to address safety concerns and assist road users navigate our city.	Maintains the current LOS on carriageway lighting taking into account the new LOS that will be provided by the upgrade to LED lighting			
Status Quo Apply current LOS “Preferred Option”	This is the highest cost of the options	The asset will not be consumed ie. no growing backlog of outstanding work.	W/C 222	\$401,964	2018/20
	Enable current level of work activity to be maintained. Complete bi-annual roadmarking contracts and programme defective signage. React to vandalism and undertake work to improve safety and assist travel for road users in Whanganui.	The current level of customer requests will be maintained		\$401,964	2019/20
		Maintains the current LOS on carriageway lighting taking into account the new LOS that will be provided by the upgrade to LED lighting		\$401,964	2020/21



Programme Business Case

Traffic Services - Financial Summary Expenditure (including Street lighting)

Table 5.16 summarises the Traffic Services maintenance, renewal and capital works expenditure for the period 2018/19 to 2020/21

Preferred Programme

Table 5.16: Traffic Services Maintenance, Renewal and Capital Expenditure		2015 – 2017 (Request WDC)	2015 – 2017 (Approved NZTA)	2015 – 2016 (Actual Expenditure)	Funding Request		
Work Category		Average (pa)	Average (pa)	Average (pa)	2018/19	2019/20	2020/21
Operations & Maintenance							
Traffic Services Maintenance	W/C 122	666,023	467,193	684,787	422,391	372,985	383,257
Traffic Signals Maintenance	W/C 123	61,542	61,542	63,043	62,500	62,500	62,500
Total (Operations & Maintenance)		727,565	528,735	747,830	484,891	435,485	445,757
Renewal & Capital							
Traffic Services Renewals	W/C 222	355,946	355,946	488,986	401,964	401,964	401,964
Total (Traffic Services Renewals)		401,964	355,946	488,986	401,964	401,964	401,964

Traffic Services – Improvements

Develop Improvement Plan

The following actions have been identified with regards to improving the efficiency and/or effectiveness of Traffic Services activity management.

Table 5.172: Improvement Actions – Traffic Services

Improvement Action	When	Who
Traffic Services		
Update Road Marking Asset Inventory	Next Year	Whanganui Alliance
Implement ONRC Audit Programme	This Financial Year	Whanganui Alliance



Footpaths and Cycleways

Footpaths provide a key link between journey origin and destination for all travel modes and are a means of transport in their own right. They are an essential component of our effective, efficient and sustainable transport system that enables our customers to make smart transport choices.

Table 5.18: Strategic Case Linkage to Footpath and Cycleway related Activities

GPS Objectives	A land system that addresses current and future demand for access to economic and social opportunities				
	A land transport system that is a Safe System, increasingly free of death and serious injury				
	A land transport system that delivers the right infrastructure and services to the right level at the best cost				
	A land transport system that provides appropriate transport choices				
	A land transport system that increasingly mitigates the effects of land transport on the environment				
RLTP Objective	Effective road maintenance and delivery				
	Effective, accessible and affordable multi-modal transport networks				
WDC Community Outcomes	Use best practice to provide and operate a safe local road network				
	Provide the core infrastructure that will allow access to all healthcare services				
	Well connected pathways throughout the district				
	A safe interconnected road network				
	Provide the core access infrastructure that will promote the sustainable development of cultural, sports and recreational activities and facilities for young people				
	Provide the core infrastructure that will allow access to active recreational and sporting opportunities				
					
	Deeply united	Globally connected	Powered by creative smarts	Flowing with richness	Works for everyone
ONRC Customer Level of Service	Safety	Fault identification and prioritisation ensures that defective and dangerous pathway sections are recorded and appropriate intervention undertaken.			
	Resilience	Programme of maintenance works undertaken to ensure journeys are not impacted by unplanned events.			
	Amenity	Regular programme of routine maintenance ensures the appearance of footpath and cycleway facilities don't detract from the customer experience. Regular audits undertaken and reported in the ONRC reporting tool.			
	Efficiency	Demonstrate through prudent programming and clustering of maintenance activities that value for money is being achieved in delivery of outputs. Minimise through strategic planning whole of life costs while delivering the required customer outcomes.			



Programme Business Case

Linkage to Problem Statements	The following identified Problem Statements have relevance to the footpath and cycleway asset group: - A range of factors such as urban intersection layout, age capability and experience of drivers are resulting in death and serious injuries. - The changing needs (mobility) and expectations (active modes) of the community require investment to meet level of service for all modes.

Levels of Service (Traffic Services) – (Technical)

Test Levels of Service

The following technical levels of service (LoS) influence strategy and investment decisions for Footpath and Cycleway asset group.

Table 5.19: Safety

Levels of Service Customer Outcome  (Safety)	Road Category	Customer Level of Service Outcomes			
	Arterial	Variable road standards	Lower speeds and extra care required on some roads/sections particularly depending on topography, access, density and use.	Road user safety guidance provided at high risk locations.	Some separation of road space for active road users in urban areas
	Primary Collector	Variable road standards and alignment	Lower speeds and greater driver vigilance required on some roads/sections particularly depending on topography, access, density and use.	Active road users should expect mixed use environments with some variability in the road environment, including vehicle speed.	Road user safety guidance provided at high risk locations.
	Secondary Collector				
	Access			All road users should expect mixed use environments with some variability in the road environment, including vehicle speed	Road user safety guidance may be provided at high risk locations.
	Access (low volume)				



Programme Business Case

Technical Measures	Technical Output 8: Cycle path faults
What is the LoS are we delivering?	The number of cycle path hazards requiring evasive action by cyclists. Inspect at least a 10% sample of each classification and record the number of instances per ten kilometres for rural roads; per one kilometre for urban roads. Contractual requirement require regular inspections to identify hazards on footpath and cycleways. A formalised process in alignment with the ONRC reporting requirements will commence during the 2017/18 financial year.
How do we compare against peer group?	No comparative peer group data is available.
Is there a gap we need to invest in?	In order to establish whether a gap in LoS exists we will • The growth/creation of cycleways assets is making current budgets insufficient to adequately maintain an appropriate level of service. • Unsubsidised footpath budgets appear sufficient in terms of the decline in the number of footpath related defects over time. This however doesn't reflect in the level of customer satisfaction (Community views surveys) and the customer complaints.
How will we deliver the LoS?	We will achieve these service levels by: • Continue to undertake footpath rating surveys at five yearly intervals and establish footpath condition scores. • Develop programmes of work that target worst performing footpath sections • Having a funding allocation that allows for the appropriate level of service to be achieved. • Implement Active Transport Strategy 2017
How are we going to measuring it?	The following procedures will measure whether the level of service is achieved: • Response to Customer Service Requests (CRM) as per Council KPI • Network auditing as required in the ONRC performance measures • Undertake reporting of Key Result Areas (KRA) identified in the Active Transport Strategy 2017

Footpath and Cycleway Current Condition and Performance

Compile and Test Evidence

The biggest condition concerns for this asset group are:

- Surface irregularities (potholes, trees roots, cracks, depressions, etc.) decreasing pedestrian safety through increased likelihood of tripping.
- Substandard restoration of utilities causing defects.
- Substandard appearance resulting from patching, deterioration and in the case of metalled and chip seal surfaces colour and loose stones.
- Vehicle damage, particularly where driveway crossing points have not been properly constructed

In 2003/04 the Wanganui District Council made a funding commitment to upgrade all footpaths with a footpath condition index score higher than 85. The most recently completed rating survey 2014 showed a 72.2% decrease in the number of footpath faults identified since the 2003 survey. The number of footpath sections with a footpath condition index score higher than 50 decreased from 59.7 km to 8.0 km over the same period. This equates to an 84% decrease in substandard footpath sections.

The condition of cycleways can be described as being in good condition as the majority of these have been recently constructed.

Footpath and Cycleway Operations and Maintenance

Footpath and Cycleway Maintenance Strategy

The primary aim is to ensure that the agreed levels of service are delivered for the lowest long term cost. This is done through a combination of general maintenance and



renewal to manage the number of footpath sections that have a high number of faults.

Council's approach of routine maintenance involves targeting high exposure footpath where pedestrian and mobility traffic is high (shopping centres, schools, around playgrounds and parks etc).

Footpath maintenance is impacted by the widespread use of the berm and footpath for the installation of underground services. This requires careful control over the work methods to ensure public safety during the works and satisfactory reinstatement and warranty of all disturbed surfaces. This is managed by the Corridor Access Request (CAR) process.

Both the maintenance and renewal programmes aim to co-ordinate timing with other activities especially those of the utility operators to avoid new work being disturbed by subsequent utility works.

Footpath and Cycleway Renewal & Capital Works

Footpath and Cycleway Renewal Strategy

The strategy is based on the need to maintain the asset in a safe, efficient and cost effective manner.

The collation and analysis of future condition rating surveys is likely to affect priorities and confirm whether or not the current levels of expenditure are appropriate to maintain the minimum level of service anticipated.

Concrete and interlocking block paths are generally replaced like with like. Interlocking blocks are used in areas where aesthetics are a primary consideration (shopping areas and high profile public spaces). Old Asphaltic Concrete footpath have surfacing removed prior to resurfacing especially where additional layers can create problems with "high lips" causing difficulty in matching into adjoining surfaces.

Concrete paths have reduced future maintenance needs but are initially more expensive to construct. They are less tolerant to heavy vehicle loading, cracking and spalling under repeating loading cycles. Concrete path are prone to differential settlement between panels over time if not constructed to high standard during construction. Access to services can be problematic as the footpath section usually requires removal to gain access to utility services.

Renewal Decision Making Process

Work needs are identified following condition rating surveys, routine inspections and follow up visual inspections.

Priorities are based on:

- Level of service deficiencies including safety related issues (settlement, trip hazards, undulations)
- Physical condition based on outstanding maintenance requirement; and
- Coordination with other road asset replacement works and forward programmes of other utilities.

Footpath and Cycleway Capital Works

Footpaths

The timing of new subdivisions, and thus the footpaths they contain, is under the control of the respective property developers and is thus strongly influenced by market forces. This work is not funded by the Council and is not programmed in this, or any other Council plan.

Council currently has no budget allocation for new footpath works. In the event that council do undertake any new works they are usually generated from submissions to the Annual Plan.

Cycleways

A lack of active travel infrastructure has been a barrier for people to be able to engage with cycling and walking options, because in the five years prior to the Te Tuaiwi and City Bridge to North Mole project there were no significant projects undertaken due to a lack of funding availability.

With a shift in National Government policy which prioritised active transport models, more infrastructure funding has been made available to local government to support their communities to travel in more healthy and sustainable ways.

Within Wanganui:

- cycling has a greater safety risk leading to a higher rate of deaths and serious injuries compared to other transport modes
- perceptions that cycling is unsafe, unattractive and inconvenient mean it is not effectively contributing to the transport system
- a focus on a narrow range of benefits has led to poor stakeholder buy-in across the city



Programme Business Case

There is compelling evidence to support our assessment of these problems. For example, while cycling comprises only 1.6 percent of total time travelled in New Zealand, cyclists comprise around 8 percent of all serious injuries in motor vehicle crashes and about 3 percent of on-road deaths.

Increased investment (including time and resources) in these areas will enable cycling to play a greater role in realising an optimised land transport system and reduce safety risks for people who cycle in Whanganui. The primary benefits are to:

- improved safety for cycling
- a more efficient transport network, particularly in Whanganui City

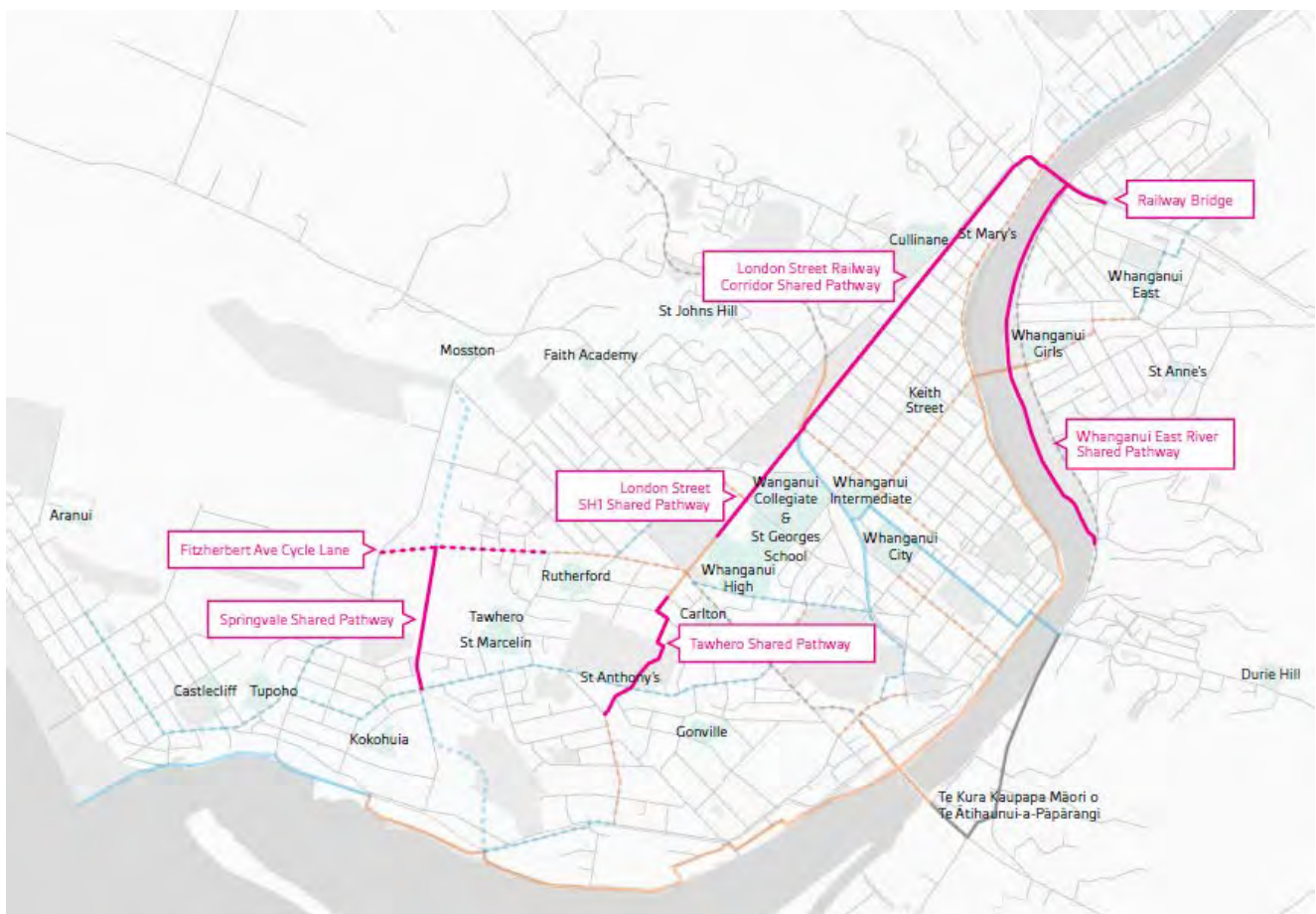
Whanganui District Council has been working with our partners and stakeholders, needs to invest more to improve

safety for cyclists and make cycling a more attractive transport choice so it plays a greater role in realising an optimised, total land transport network.

A number of cycleway projects have been completed and evidence indicates positive outcomes in terms of usage in a short time period. Council have committed to employing an “Active Transport Facilitator” to promote active mode engagement in Whanganui.

Council is committed to the success of the walking and cycling strategy and identified a number of routes for construction during the 2018/21 funding period resourced from the Urban Cycleway and Low Cost / Low Risk subsidised funding categories

Figure 5.22: Urban Cycleway Projects (2017/21)





Develop Options

Footpaths and Cycleways Options Assessment

	Option Description	Benefits of Option	Negative Consequences of Option
Footpaths (Unsubsidised)			
Status Quo Maintain footpaths maintenance at current investment levels (2015/18)	Work needs are identified following condition rating surveys, routine inspections and follow up visual inspections. Priorities are based on LOS deficiencies including safety related issues (settlement, trip hazards, undulations), physical condition based on outstanding maintenance requirement; and coordination with other road asset replacement works and forward programmes of other utilities.	Footpath defects will continue to reduce Provide the ability to undertake footpath renewals with other work activities Maintain safety and accessibility	Customer satisfaction levels continue to remain below target level
W/C 124: Cycle Pathway Maintenance			
Status Quo Maintain Cycle Pathways maintenance investment at previous funding levels (2015/18)	Work activity required to operation, maintain and renew pavement and facilities associated with cycle paths, including the operation of associated lighting. Undertake work as per status quo but reduce frequency of work on non-essential work items	Attempts to maintains current investment levels Costs remain stable	Potential due to increase length of new cycle paths that investment is insufficient to provide adequate levels of service Asset deterioration over time Increased customer dissatisfaction
Increase in Cycle Pathways maintenance Investment	Work activity required to operation, maintain and renew pavement and facilities associated with cycle paths, including the operation of associated lighting. Asset creation in recent years will require a higher level of level of investment to maintain current levels of service	Maintain safety and accessibility	Higher overall costs, increased budget
Footpath Renewals (Unsubsidised)			
Status Quo Maintain footpath investment at previous funding levels (2015/18)	Work needs are identified following condition rating surveys, routine inspections and follow up visual inspections. Priorities are based on LOS deficiencies including safety related issues (settlement, trip hazards, undulations), physical condition based on outstanding maintenance requirement; and coordination with other road asset replacement works and forward programmes of other utilities.	Footpath defects will continue to reduce Provide the ability to undertake footpath renewals with other work activities Maintain safety and accessibility	Customer satisfaction levels continue to remain below target level
W/C 452: Cycling Facilities			
Investment for implementation of Walking and Cycling strategy	Whanganui District Council's strategic direction for active transportation over the next 10 years is detailed in the Active Transport Strategy 2017. A programme of capital works is detailed in the strategy document which forms the basis of investment programmes.	Contributes to addressing identified problem statement "The changing needs (mobility) and expectations (active modes) of the community require investment to meet level of service for all modes".	Increased investment required





Test Options

Option	Assessment Summary Statement	LOS Outcome	Option Costs		
Footpaths (Unsubsidised)					
Status Quo Maintain footpaths at current investment levels (2015/18) “Preferred Option”	Significant improvement to the overall condition of Whanganui footpath assets have been achieved with stable footpath investment over the last nine years. This current level of investment is still considered appropriate to deliver on desired outcomes and LOS going forward.	Reduction in footpath defects	Unsub	\$482,720	2018/20
		There is an expectation that the current level of customer requests will improve		\$482,720	2019/20
		The asset will not be consumed i.e. no growing backlog of outstanding work.		\$482,720	2020/21
W/C 124: Cycle Pathway Maintenance					
Status Quo Maintain Cycle Pathways maintenance investment at previous funding levels (2015/18) “Preferred Option”	Cycle pathways in Wanganui are in good condition with no significant outstanding maintenance works identified. Work activity will be generally confined to removing detritus from hard surfaces.	The LOS impact for this option is neutral as no additional funding is requested.	W/C 123	\$8,500	2018/20
		Monitor cycleway faults for changes to LOS		\$8,500	2019/20
				\$8,500	2020/21
Increase in Cycle Pathways maintenance Investment	Increase in cycleway assets will make it harder to deliver acceptable LOS in the longer term. Forecasted expenditure requirement proposed in preceding funding requests Option investment proposal proportional to cycleway length increase during 2015/2018 funding period +200%	Monitor level of cycle path faults for fluctuation during 2018/21 funding period	W/C 123	\$13,500	2018/20
				\$13,500	2019/20
				\$13,500	2020/21
Footpath Renewals (Unsubsidised)					
Status Quo Maintain footpath renewal investment at previous funding levels (2015/18) “Preferred Option”	Significant improvement to the overall condition of Whanganui footpath assets have been achieved with stable footpath investment over the last nine years. This current level of investment is still considered appropriate to deliver on desired outcomes and LOS going forward. Enables work to be completed in alignment with other work activity programmes	Reduction in footpath defects	Unsub	\$341,000	2018/20
		There is an expectation that the current level of customer requests will improve		\$341,000	2019/20
		The asset will not be consumed ie. no growing backlog of outstanding work.		\$341,000	2020/21
W/C 452: Cycling Facilities					
- Increased investment for Capital Works programmes	Proposed investment will facilitate Whanganui District Council's strategic direction for active transportation over the next 3 year period. Project works align with the Walking and Cycling strategy developed specifically for Whanganui and will deliver sustainable and safe active transport provision.	Improved environment (reduction in pollution, greenhouse gas emissions and noise)	W/C 123		2018/20
		Encouraging walking and cycling will lead to a sustainable and integrated transport network.		\$1,550,000	2019/20
		Reduce our impact on the environment and help reach emission reduction targets.			2020/21
		Fuel savings from not using vehicles	Refer W/C Low Cost, Low Risk for other Cycleway investment		
		Improved Hauora for Whanganui residents by increasing physical activity and reducing obesity and cardio-vascular diseases.			
		Reduced actual cycle deaths/serious injury			
		Improved perception of cycling safety			
Improved Hauora for Whanganui residents by increasing physical activity and reducing obesity and cardio-vascular diseases.					



Programme Business Case

Footpath and Cycleway - Financial Summary Expenditure

Table 5.20 summarises the Footpath and Cycleway maintenance, renewal and capital works expenditure for the period 2018/19 to 2020/21

Preferred Programme

Table 5.20: Traffic Services Maintenance, Renewal and Capital Expenditure		2015 – 2017 (Request WDC)	2015 – 2017 (Approved NZTA)	2015 – 2016 (Actual Expenditure)	Funding Request		
Work Category		Average (pa)	Average (pa)	Average (pa)	2018/19	2019/20	2020/21
Operations & Maintenance							
Footpaths (Unsubsidised)							
Footpath Maintenance	Unsubsidised	432,434	0	376,985	482,720	482,720	482,720
Cycleway							
Cycle Path Maintenance	WC 124	4,997	4,997	1,314	8,500	8,500	8,500
Total (Operations & Maintenance)		437,431	4,997	378,299	491,220	491,220	491,220
Renewal & Capital							
Footpaths (unsubsidised)							
Footpath Renewals	Unsubsidised	359,619		411,986	341,000	341,000	341,000
Cycleways							
Low Cost / Low Risk Improvements	WC 341	0	0	0	2,365,000	255,000	820,000
Cycling Facilities	WC 452	1,221,333	1,221,333	1,046,792		1,550,000	
Total (Footpath and Cycleway)		1,580,952	1,221,333	1,458,778	2,706,000	2,146,000	1,161,000



Footpath and Cycleway – Improvements

Develop Improvement Plan

The following actions have been identified with regards to improving the efficiency and/or effectiveness of Footpath and Cycleway activity management.

Table 5.213: Improvement Actions - Footpath and Cycleway

Improvement Action	When	Who
Footpaths and Cycleways		
Audit Asset Register to ensure completeness	Next Year	Whanganui Alliance
Formalise Register of High Usage Footpaths	Next 3 Years	Whanganui Alliance



Other Features and Activities

Environmental Maintenance

Compile and Test Evidence

Examples of qualifying activities include, but may not be limited to:

- snow clearing and ice control
- vegetation control (see conditions of funding below)
- litter collection on rural roads
- removal of, and protection against, graffiti on road structures
- maintenance and removal of effluent from stock-truck effluent disposal facilities any special treatment of run-off from the road to maintain water quality
- sweeping loose chip and detritus from road intersections
- removal of rocks and minor slip material from the road or catch fences
- maintenance of rest areas
- maintenance of protection planting, including maintenance pruning
- non-recoverable costs arising from clearing the carriageway of damaged vehicles, crash debris and spillages that are not the responsibility of emergency services, and
- non-recoverable costs associated with removal of abandoned vehicles from road reserves.

Current Service Delivery Profile

The environmental maintenance activity provides for the routine care and attention of the road corridor to maintain safety, aesthetic and environmental standards, and provides for the reactive reinstatement of the transportation assets following adverse weather.

Current levels of service are designed to maintain asset functionality within affordability constraints. Erosion and fretting of steep cuttings is problematic and has been exasperated in recent time by significant emergency works events which has destabilised the countryside. Removal of detritus contributes to a significant proportion of the available budget and due to the randomness of occurrences makes budget forecasting difficult.

Environmental Maintenance Strategy

Routine and environmental maintenance programmes are currently achieving a good balance between network requirements and actual delivery within affordability.

We have been constantly pulling back on the routine activities and gauging our customer's appetite for a lowering of levels of service to that level recommended in the ONRC visual guide.

Environmental maintenance programmes are integrated in a simultaneous, whole of corridor maintenance strategy where this can be achieved.



Programme Business Case

Environmental Expenditure Peer Group Comparison

Whanganui result reflects considerable inputs required in the removal of slips and debris for district roads. Other activities are generally driven by climatic and seasonal variations which influence appropriate response, timing and frequency.

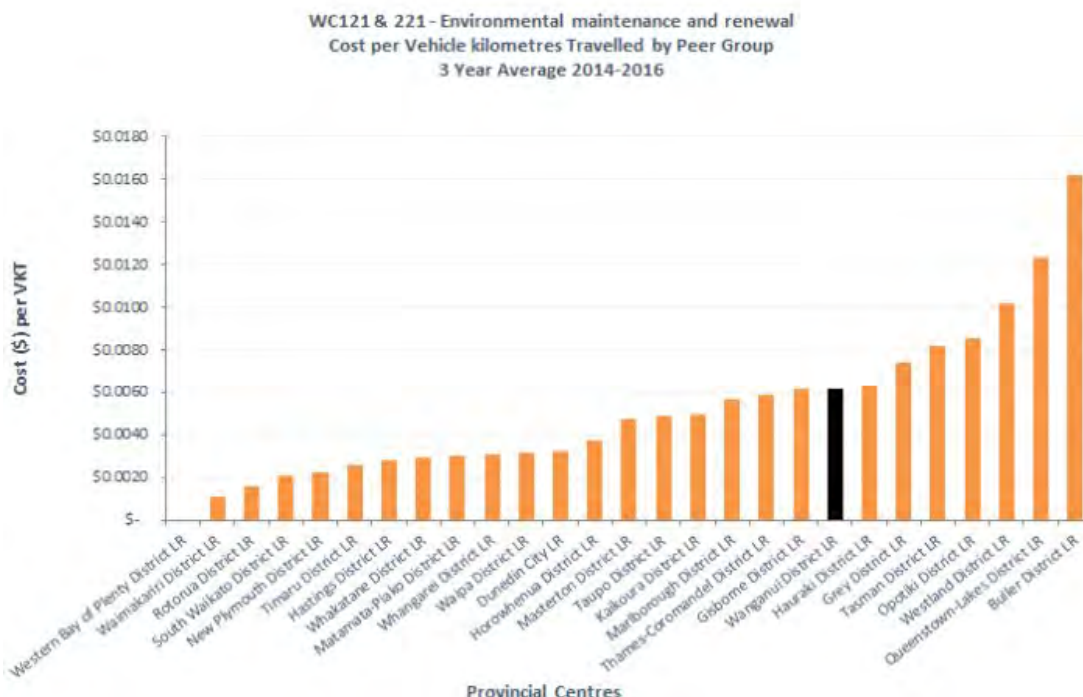
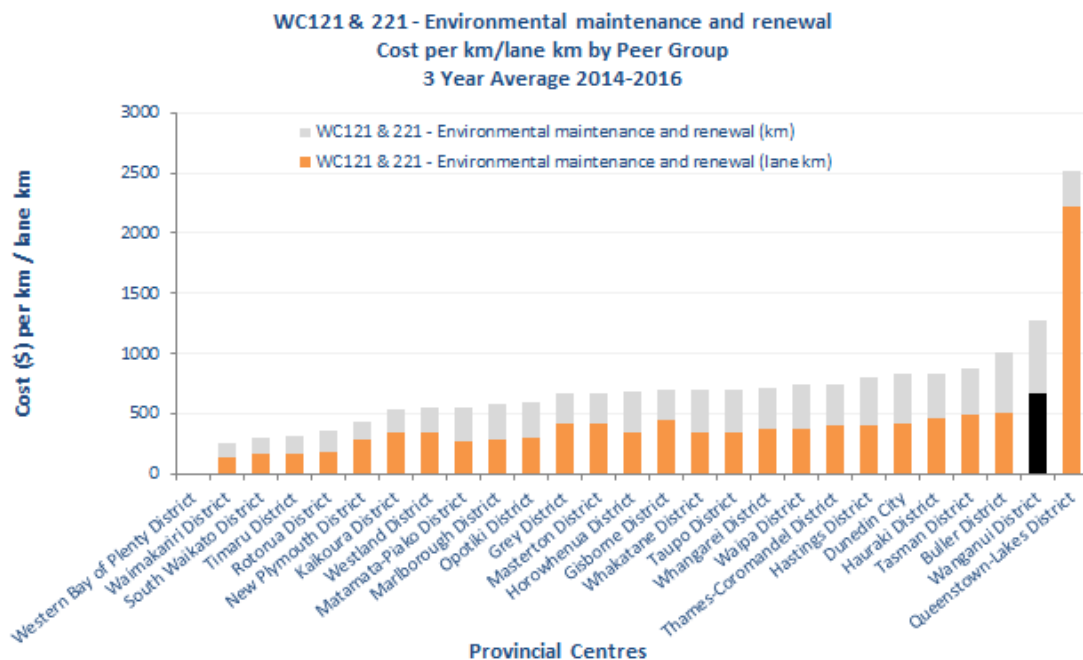
Level of Service Gap Analysis

Four ONRC measures are linked to environmental maintenance activity.

- Sight distance
- Roadside obstructions
- Aesthetic faults
- Activity contributes to Overall network cost

Whanganui District does not currently record information related to these measures by which a detailed trend can be established.

Figure 5.23: Level of Service Gap Analysis





Develop Options

Environmental Maintenance Options Assessment

	Option Description	Benefits of Option	Negative Consequences of Option
W/C 121: Environmental Maintenance			
Do-Minimum Maintain network to previous funding levels (2015/18), Stay within approved budget allocation	Roadside mowing and high reach vegetation trimming undertaken on a reactionary regime generally in response to customer complaint. Safety sightlines maintained for safety. Detritus removal undertaken at random frequency usually in response to network preservation Litter collection on rural roads at minimum levels. Disposal of waste to landfill is significant legislative cost which until recently (6 years) was not accounted for but budgets have remained unchanged, options limited. Emergency response to spills / accidents to specified response times.	Safety – maintained sightlines which will reduce the likelihood of crashes and serious injury, Sightlines only for safety and not for aesthetics. Amenity – Ensure the appearance of the road corridor is maintained to current LOS (litter. Graffiti, vegetation control) Removal of obstructions from roads and drainage assets at infrequent intervals Adequate response to emergency response maintained. Take minimalistic approach to tree removal, reactionary and not proactive Budget not exceeded	Safety –Increased exposure for road users to accidents while travelling on local roads Amenity – Network is visually shabby affecting customer perceptions and detracting journey experience Resilience issues affecting accessibility, increased Overall network deterioration
Status Quo Maintain network to previous funding levels (2015/18) Overspend current budget allocation	Roadside mowing and high reach vegetation trimming programmed further to inspection as per ONRC visual guide. Consideration given to pushing the limits on lower classification prior to intervention. Ensuring drainage systems operate effectively as a key driver to network resilience hence proactive removal of detritus and minor slip removal is imperative on particularly the rural road network. Maintains road user safety through removal of the build-up of detritus at intersections and outside of curves. Maintains current LOS on sealed network maintaining current levels of vegetation control (mowing, spraying and tree trimming) and tree removal. Waste disposal is a legislative requirement.	Safety – maintained sightlines which will reduce the likelihood of crashes and serious injury Amenity – Ensure the appearance of the road corridor is maintained to current LOS (litter. Graffiti, vegetation control) as per ONRC visual guideline Resilience of network is maintained through proactive removal of obstructions from roads and drainage assets Meeting legislative requirement and environmental needs for good of NZ	Higher overall costs, increased budget requirement





Test Options

Option	Assessment Summary Statement	LOS Outcome	Option Costs
W/C 121: Environmental Maintenance			
Do-Minimum Maintain network to previous funding levels (2015/18) Stay within approved budget allocation	A reduction in work output will be the result if expenditure is maintain within budget envelope. More instances of non-compliance with Council and ONRC measures will be the consequence placing customer safety at risk and contributing to a general decline in network resilience and appearance.	Not meeting LOS specified by ONRC performance and customer measures for • Sight distance • Roadside obstructions • Aesthetic faults • Safety	2015/18 approved budget \$653,423.
Status Quo Maintain network to previous funding W/levels (2015/18) Overspend current budget allocation “Preferred Option”	Option provides the ability for Council to achieve ONRC target levels of service. This is equal to or close to the service currently provided but which presently exceeds budget allocation.	This is the least cost long term option, and will deliver the desired outcomes and LOS. It will allow for planned intervention required to maintain road network to ONRC visual guidelines. Provide the ability to respond to network demands as required to meet response requirements. Stable road network condition trends	Increase budget from \$653,423 pa to \$ \$1,093,327 pa based on current historical annual expenditure.



Programme Business Case

Environmental Maintenance - Financial Summary Expenditure

Table 5.22 summarises the Environmental maintenance, renewal and capital works expenditure for the period 2018/19 to 2020/21

Preferred Programme

Table 5.22: Environmental Maintenance, Renewal and Capital Expenditure		2015 – 2017 (Request WDC)	2015 – 2017 (Approved NZTA)	2015 – 2016 (Actual Expenditure)	Funding Request		
Work Category		Average (pa)	Average (pa)	Average (pa)	2018/19	2019/20	2020/21
Operations & Maintenance							
Environmental Maintenance	WC 121	653,423	653,423	970,275	1,093,327	1,093,327	1,093,327
Total (Operations & Maintenance)		653,423	653,423	970,275	1,093,327	1,093,327	1,093,327
Renewal & Capital							
Environmental Renewals	WC 221	0	0	0	0	0	0
Total (Environmental Renewals)		0	0	0	0	0	0

Environmental Maintenance – Improvements

Develop Improvement Plan

The following actions have been identified with regards to improving the efficiency and/or effectiveness of Environmental management.

Table 5.23: Improvement Actions – Environmental Maintenance

Improvement Action	When	Who
Environmental Maintenance		
Regular inspections and assessments to identify areas which are repeating issues or higher than average maintenance cost sites, in order to identify causes and fix in order to avoid repeats. Identify roads with highest demand for environmental/routine maintenance.	Next 3 Years	Whanganui Alliance
Monitor and review programmes for targeted maintenance on those roads.		



Emergency Works and Minor Events

Compile and Test Evidence

Steep terrain and erodible soils make the Whanganui District highly susceptible to the effects of heavy and prolonged rain events affecting predominantly the

rural transportation network. The district can expect to receive flooding to various degrees of intensity during any particular year.

Reinstatement works to restore road access and repair damaged infrastructure adds considerable pressure to available resources, both physically and financially.

Current Profile - Emergency Works

The Whanganui District has experienced significant storm damage to transportation assets in 2004, 2006 and more recently in 2015. Not including these significant events the average annual cost incurred by Whanganui District to reinstate transportation affected by emergency works events is approximately \$2,000,000 per annum.

Most recently events meeting the threshold for emergency works funding have been experienced in April, June and July 2017, placing additional pressure on the transportation network and destabilising adjoining hillsides.

Current Profile – Minor Events

An amendment to the definition of Emergency Works has had the effect of making funding for emergency events harder to obtain. The higher threshold or significance of an event is now required to obtain funding outside core bulk allocations.

Whether Whanganui District has been fortunate or not the need to utilise this funding activity has been offset by the larger emergency works events in recent times.

Emergency Works and Minor Events Strategy

Maintenance of the road drainage assets are viewed as critical to reduce the risk associated with water and peak events that impact on the road assets. Pro-active maintenance and management of drainage assets is undertaken through regular inspections, cleaning and renewal programmes.

Removal of minor slips and other loose debris accumulating on roads is a key maintenance activity required to ensure a safe trafficable roadway for road users. Undertaking regular removal of slip material accumulating in water table drains and drainage structures contributes to the resilience of the network preventing unnecessary damage from surface water being diverted into unwanted areas which can result in high cost repairs as a consequence.

The erodible nature of the topography unique to the Whanganui District increases the frequency of reactive interventions required by maintenance crews to clear obstructions and maintain acceptable levels of service. The random nature of this occurrence means that expenditure levels can vary significantly from one year to the next.

Level of Service Gap Analysis

Two resilience ONRC measures are linked to emergency work and response.

- The number of vehicles impacted by unplanned events
- The number of instances where road access is lost

Whanganui District does not currently information related to these measures by which a detailed trend can be established.



Develop Options

Emergency Works and Minor Events Options Assessment

	Option Description	Benefits of Option	Negative Consequences of Option
Emergency Work			
Status Quo	Undertake reactive emergency initial response and planned reinstatement when extra ordinary events, meeting the NZTA threshold for Emergency Work occur. Initial response is initiated immediately, duration is dependent on size of event and available resources. Slips are removed and larger sites requiring investigation are secured to prevent further damage. Fit for purpose (risk vs reward) reinstatement options of larger sites designed and constructed. Application for funding applications prepared and submitted for approval.	Slips and debris are removed from carriageway surfaces and drainage assets making for safe travel Network availability is restored for customers without undue delay Road network does not suffer further unwarranted damage No overdesigning of remedial works provides value of money, opportunity for innovation	Costs can become a burden on Whanganui District particularly as frequency and size of events appear to be increasing. Resources are required to restore network causing programming issues for other planned works Potential for failure of remedial works
Resilience Planning	As per above including: Consider investment in longer term resilience projects to reduce frequency and severity of unplanned natural events (Preventative Maintenance and Resilience Projects development).	Frequency and severity of incidences is reduced resulting in lower recovery and reinstatement costs Increased availability of road network for customers	Additional funding pressure on maintenance and renewal budgets
Do -Minimum	Undertake reactive emergency initial response to ensure safety for road users is maintained only. Establish go/no go reinstatement of significant sites that require planned reinstatement. Consider high risk options for reinstatement in the first instance with the goal primarily of restoring access.	Lower costs for work activity outputs	Not investing correct levels to reinstate the road network will see a decline in condition, decrease resilience issues and reduce level of service to our customer who should expect decreased accessibility to roads for increased periods. Customer dissatisfaction with quality and timeliness of response, network deterioration over time.
Minor Events			
Status Quo	Respond promptly to instances of detritus on the road network with the expressed aim of ensure drainage systems are functioning and road user safety is maintained. Ensures network availability for road users is maintained at acceptable levels and impact of unplanned events is minimised.	Ensures network availability for road users is maintained at acceptable levels and impact of further unplanned events is minimised. Road network is in readiness for next unplanned event.	Expenditure comes from block maintenance and renewals budgets resulting in deferrals of programmed works. Resources are required to restore network causing programming issues for other planned works.
Resilience Planning	Identify serial hot spots on the road network, assess and implement programmes of work from other work activity budgets to improve resilience. An opportunity exists to identify at risk areas of the road network that frequently become impassable due to flooding and slips and programme works that improve. .network resilience	Reduce longer term frequency and severity of action required to maintain Status Quo. Increased availability of road network for customers.	Additional funding pressure on maintenance and renewal budgets.
Do -Minimum	Reduce frequency of routine slip and debris removal on the road network. Align response and level of effort by ONRC categories.	Lower costs for work activity outputs.	Network deterioration and customer dissatisfaction with network condition and availability.





Test Options

Option	Assessment Summary Statement	LOS Outcome	Option Costs
Emergency Work			
Status Quo "Preferred Option"	Responding to emergency works events with the aim of opening roads with a rapid initial response will prevent further deterioration at incident sites and provide safe roads for our customers.	Maintains current LOS provided in terms of ONRC Resilience measures at current levels. Current measure of resilience still to be established.	Cost are random based on size and frequency of emergency works events.
Resilience Planning	Establishing register of hot spot locations will improve network resilience.	Increase availability of road network and make travel on our roads safer.	Funded from other work activity budgets.
Do -Minimum	Undertake reactive work and assess follow up response based on a criteria matrix will have a negative outcome for the road network and customers.	Increased number of vehicles impacted by unplanned events. Increase in the number of instances where road access is lost.	Cost are random based on frequency of emergency works events.
Minor Events			
Status Quo "Preferred Option"	A focus on removing detritus removal promptly will ensures network availability for road users is maintained at acceptable levels and impact of unplanned events is minimised. Current funding allocation is insufficient to adequately maintain road resilience and safety compromising other maintenance and renewals activities.	Maintains current LOS provided in terms of ONRC Resilience measures at current levels. Current measure of resilience still to be established	Increase budget from \$100,000 pa to \$350,000pa based on current historical annum expenditure for Minor Event Activity.
Resilience Planning	Establish register of hot spot locations an establish programme of works that can be undertaken to improve network resilience and safety	Current measure of resilience still to be established Increased network availability	From other work activity budgets
Do -Minimum	Reduce work activity inputs, reacting only when essential for safety reasons and potential asset failure	Increased unavailability of network to road users	



Emergency Works and Minor Events - Financial Summary Expenditure

Table 5.23 summarises the Emergency Works and Minor Events expenditure for the period 2018/19 to 2020/21

Preferred Programme

Table 4.23: Environmental Maintenance, Renewal and Capital Expenditure		2015 – 2017 (Request WDC)	2015 – 2017 (Approved NZTA)	*2015 – 2016 (Actual Expenditure)	Funding Request		
Work Category		Average (pa)	Average (pa)	Average (pa)	2018/19	2019/20	2020/21
Operations & Maintenance							
Emergency Works	WC 141	13,262,493	13,262,493		0	0	0
Total (Emergency Works)		13,262,493	13,262,493		0	0	0
Renewal & Capital							
Minor Events	WC 140	102,250	100,000	200,711	350,000	350,000	350,000
Total (Minor Events)		100,000	100,000	200,711	350,000	350,000	350,000

* 2015/2016 budget for Minor Event significantly underspent due to June 2015 flood event

Emergency Works and Minor Events – Improvements

Develop Improvement Plan

The following actions have been identified with regards to improving the efficiency and/or effectiveness of Emergency Works and Minor Events management.

Table 5.24: Improvement Actions - Emergency Works and Minor Events

Improvement Action	When	Who
Emergency Works and Minor Events Improvements		
Establish process for collecting and collating ONRC data relating to: - The number of vehicles impacted by unplanned events - The number of instances where road access is lost	2018	Whanganui Alliance
Schedule of hot spot locations on the road network that are continually affected by adverse weather events resulting in loss of road access	3 years	Whanganui Alliance



Low Cost, Low Risk Roding Improvements

This work category provides for the construction/implementation of low-cost/low-risk improvements to the transport system to a maximum total cost for approval per project of \$1,000,000.

Examples of qualifying activities include:

- Small, isolated geometric road and intersection improvements
- Traffic calming measures
- Lighting improvements for safety
- Sight benching to improve visibility
- Facilities that comply with the definition for work category 451
- Cycle facilities that comply with the definition for work category 452
- Minor engineering works associated with community programmes.

All funding applications need to show alignment with outcomes desired by the Government Policy Statement

Current Profile – Low Cost, Low Risk Roding Improvements

The Low Cost, Low Risk funding category (formerly Minor Improvements) has been used by Council to facilitate implementation of physical work projects that have been identified as addressing predominantly safety related concerns on the transportation network.

Projects are prioritised based on expected results alignment, cost-benefit appraisal ratings and alignment with Councils transport strategies. This process has ensured that maximum value for money benefits are realised for the investment.

Council have historically spent \$600-\$800k per annum on minor improvement projects with the consequence that a number of key projects have been completed providing positive benefits to our customers and contributing to improved safety statistic for Whanganui.

Much work is still required to be undertaken to address issues highlighted in the Strategic Case and ensure the continued social and economic well-being of residents, visitors and businesses.

It is apparent from the statistic that Whanganui is overrepresented in a number of safety statistics when compared against other local authorities. Analysis of crash rates at intersections and targeted improvements at these locations are areas that Council can develop further when compiling future safety improvement programmes.

Low Cost, Low Risk Roding Improvements Strategy

Programme work category charges for WC 341: Low Cost, Low Risk Roding Improvements have been initiated by NZTA for the 2018/21 NLTP. Key changes include:

Table 5.25: Communities at Risk Register 2017

Personal Risk to Road Users	Whanganui District	
All deaths and serious casualties	24/73	
Young drivers (of light vehicles aged 16 – 24 yrs)	36/73	
Alcohol and/or drugs	18/73	
Speed (too fast for the conditions)	20/73	
Urban Intersections	23/73	
Rural intersections	57/73	
All intersections	16/73	Medium risk
Rural road loss of control/or head on >70km/hr	23/73	
Motorcyclist involved	9/73	Medium risk
Cyclist involved	31/73	
Pedestrian involved	29/73	
Distraction (attention diverted)	10/73	High risk
Fatigue	33/73	
Older road users (aged 75yrs and older)	29/73	
Restraints (seatbelt not worn)	59/73	

- Proposed name change to 'low cost/ low risk improvements'
- Proposed threshold increased – up to \$1M per activity
- Improved programme management during NLTP
- More alignment to BC principles/ IAF

Council sees these changes as an opportunity to proactively address issues highlighted in our Problem Statements

The raising of the threshold dollar value facilitates programming of important strategic transportation projects that struggle to progress to construction due to funding.

3

The changing needs (mobility) and expectations (active modes) of the community require investment to meet level of service for all modes.

4

A range of factors such as urban intersection layout, age capability and experience of drivers are resulting in death and serious injuries.



Table 5.26: Low Cost, Low Risk Roading Improvements Proposed Programme, Strategic Linkage to Government Policy Statement, One Network Road Classification, Customer Levels of Service and Estimates

Project Description	Problem /Opportunity	Description	Benefits of proposed activity	Linkage to Community Outcomes	ONRC Levels of Service Linkage	2018/19	2019/20	2020/21
Rural Road Delineation and Road Side hazard improvements	Vehicles running off road and the presence of road side hazards	Improve Rural Road Delineation and remove / protect Road Side hazards	Safety			20,000	50,000	50,000
Improved School Signage	Improved safety around schools	Improve School Signage and markings				10,000	10,000	10,000
Intersection improvements	Improve safety of intersections as part of the kerb renewal works on arterial roads and intersections.	Improve intersection safety by improving alignment, kerb extensions and central median islands when kerb renewal works are being undertaken.				110,000	125,000	50,000
Wilson St Safety Improvements	Safety deficiencies on Wilson Street	Kerb extensions and central median islands when kerb renewal works are being undertaken.				120,000	80,000	
Rapanui Road Stock underpass	Road side object which narrows road	Extend existing stock underpass					40,000	
Whanganui River Road Guard rail	Bridges approaches are unprotected	Install Guard Rails on approach to most dangerous bridges				40,000	40,000	40,000
City wide traffic calming	High speed on local urban streets	Vertical and Horizontal deflection devices				70,000	80,000	10,000
Victoria Ave / Ingestre St Intersection	The intersection has a poor safety record.	Redesign signalised intersection and upgrade				150,000		
Victoria Ave / Dublin St Intersection	The intersection has a poor safety record.	Redesign signalised intersection and upgrade					250,000	
Victoria Ave / Glasgow St Intersection	The intersection has a poor safety record.	Redesign signalised intersection and upgrade						250,000
Fitzherbert Avenue Extension	Safety improvements from bypassing 3 primary schools on Totara St and efficiency benefits linking Mill Rd industrial zone to State Highway 3	Road extension from Fitzherbert Avenue to Mosston Road (400m)				250,000	250,000	475,000
Signage and furniture	Improve Cycle safety	Introduce improved cycling/walking facilities				5,000	5,000	5,000
Cyclepath lighting	Improve Cycle safety	Introduce improved cycling/walking facilities				400,000		570,000
Crash reduction Study	Improved safety on district roads	Analysis and Investigate accident blackspots					20,000	
Tawhero Shared Pathway	Improve Cycle safety	Introduce improved cycling/walking facilities	Physical health				250,000	
Springvale Shared Pathway	Improve Cycle safety	Introduce improved cycling/walking facilities						245,000
London Street – SH 3 Shared Pathway	Improve Cycle safety	Introduce improved cycling/walking facilities				515,000		



Project Description	Problem /Opportunity	Description	Benefits of proposed activity	Linkage to Community Outcomes	ONRC Levels of Service Linkage	2018/19	2019/20	2020/21
Whanganui East River Shared Pathway	Improve Cycle safety	Introduce improved cycling/walking facilities				515,000		
London Street Railway Corridor Shared Pathway	Improve Cycle safety	Introduce improved cycling/walking facilities				930,000		
Wikitoria Culvert Replacement	Route security to Airport against effects of regular flooding as a consequence of State Highway drainage improvements	Culvert upgrade	Reliability				700,000	
Mill Road Extension	Provide alternative link to the suburb of Castlecliff.	Extension to existing road (Mill Road) to link with Manuka Street				203,000		
						3,338,000	1,900,000	1,705,000



Programme Business Case

Low Cost, Low Risk - Financial Summary Expenditure

Table 5.27 summarises the Low Cost Low Risk expenditure for the period 2018/19 to 2020/21

Preferred Programme

Table 5.27: Low Cost Low Risk Capital Expenditure		2015 – 2017 (Request WDC) Average (pa)	2015 – 2017 (Approved NZTA) Average (pa)	2015 – 2016 (Actual Expenditure) Average (pa)	Funding Request		
Work Category					2018/19	2019/20	2020/21
Capital Improvements							
Low Cost, Low Risk	WC 341	794,830	794,830	647,861	3,135,000	1,900,000	1,705,000
Total (Low Cost, Low Risk Improvements)		794,830	794,830	647,861	3,135,000	1,900,000	1,705,000

Low Cost, Low Risk – Improvements

Develop Improvement Plan

The following actions have been identified with regards to improving the efficiency and/or effectiveness of Low Cost, Low Risk Roding Improvements.

Table 5.285: Improvement Actions – Low Cost, Low Risk Roding Improvements

Improvement Action	When	Who
Develop comprehensive list of Low Cost, Low Risk projects	3 years	Whanganui Alliance



06 Transportation Assets



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06 Transportation Assets

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Transport Asset Overview

This section provides an overview of asset information regarding the individual asset groups within the Transportation activity.

The transport network comprises a broad range of assets that underpin the delivery of transport services. This chapter identifies the range, extent, valuation and current condition state of those assets. Whanganui's transport asset portfolio grows each year, as new assets are constructed through Council projects and by developers.

The transportation network enables the daily flow of people and commerce across the region through a portfolio of diverse assets including roads, footpaths, streetlights, signs, traffic signals, parking, cycleways, road drainage, kerbs and channels, bridges and retaining structures.

Whanganui District Council uses the RAMM system as a central repository for storing information on the transportation assets. RAMM contains a schedule of all roads in the network and information on carriageway widths, surfacing types and ages, pavement composition, traffic volumes and loadings and road condition data. Information on all other assets is also stored in the RAMM system.

The accuracy and completeness of asset inventories in RAMM is critical in the development of strategies for each of the asset groups within this Transportation Activity Management Plan.

The transportation asset network supports:

- 170 million vehicle kilometres travelled each year
- freight moved to, from and around Whanganui each year
- 1,000 customer requests for service each year
- the 72% of residents who have used walkways for trips around the City
- 34% of residents who have used a cycle way or cycle lane.

A high level summary of the transportation assets is shown in Table 6.1

Table 6.1: Asset Types and Quantities

Asset Group	Asset Type	Quantity
Pavements	Roads	843.397 km
Structures	Bridges	73 No.
	Large culverts	58 No.
	Retaining Walls	284 No.
Drainage	Kerb and Channels	437,352 km
	Road Culverts	3,185 No.
	Surface Water Channels	882.383 km
	Berms	827,290 m ²
Footpaths and Cycleways	Footpaths	332.752 km
Traffic Services	Traffic Signs	5,755 No.
	Traffic Signals	10 No.
	Traffic Control Devices	383 No.
	Pavement Marking	
	Safety Barriers	12,484 m
Street Lights	Street Lights	6154 No.
Other Features and Activities	Street Furniture	297 No.
	Carparks, Off Street	10,490m ²
	Riverbank Protection	2521 m





Data Confidence and Reliability

Table 6.2, Table 6.3 & Table 6.4 provide the confidence framework (NAMS IIMM) used to determine the confidence in the asset data used in this AMP.

Table 6.2: Asset Data – Confidence Grade

Grade	Description	Accuracy
1	Accurate	+/- 5%
2	Minor inaccuracies	+/- 10%
3	50% estimated	+/- 20%
4	Significant data estimated	+/- 30%
5	All data estimated	+/- 40%

Table 6.3: Overall Inventory Data Accuracy

	Asset Type	Accurate	Minor Inaccuracies	50% Estimated	Significant data estimated	All data estimated	Total Percentage
Pavements	Roads & Pavements		✓				
Structures	Bridges & Large Culverts	✓					
	Retaining Structures		✓				
Traffic Services	Traffic Facilities	✓					
Drainage	Drainage		✓				
Street Lights	Street Lighting		✓				
Footpaths and Cycleways	Footpaths		✓				
Other Features and Activities	Car parks		✓				

Table 6.4: Overall Data Completeness

	Asset Type	10-50%	50%	60%	70%	80%	90%	100%
Pavements	Roads & Pavements					✓		
Structures	Bridges & Large Culverts						✓	
	Retaining Structures					✓		
Traffic Services	Traffic Facilities						✓	
Drainage	Drainage					✓		



	Asset Type	10-50%	50%	60%	70%	80%	90%	100%
Street Lights	Street Lighting				✓			
Footpaths and Cycleways	Footpaths						✓	
Other Features and Activities	Car parks					✓		

Asset Valuation

By law, the Council is required to value all its assets regularly. This accounting procedure also establishes depreciation charges that may be used to fund the replacement of the asset. Valuation and depreciation of transportation assets is discussed further in *Section 9 – Projects and Financial Forecasts*.

The valuation consists of an assessment of the replacement cost, depreciated replacement cost and the annual depreciation or decline in service potential of the network. The annual depreciation or decline in service potential is the amount the asset declines in value over a year as a result of the remaining life of the asset reducing. Provision is required to be made for funding this depreciation so as to make suitable allowance for the future replacement of the asset. Depreciation is provided on a straight-line basis on all physical assets at rates which write off the cost of the asset to the estimated residual value at the end of its service life.

Expenditure on renewing or improving the capacity of the asset is capitalised annually, as are assets which are vested in Council by developers. Capital work in progress is not depreciated. The total cost of this work is capitalised at the end of the financial year in which it is completed and depreciated from then onwards.

The financial depreciation charges obtained by analysis can be interpreted as a statement of the value of the service potential of the asset, or its components, that is lost or consumed through its use. Council uses the Asset Valuation Module in RAMM to calculate the replacement cost, depreciated replacement cost and annual depreciation costs of its transportation assets. For accuracy of results it is critical that complete data sets of assets are stored in RAMM. Council undertakes a review of the RAMM database inventory to identify any data improvements required prior to undertaking valuations.

Description of valuation method

The valuation basis is depreciated replacement cost, which is in accordance with generally accepted accounting practice. Replacement cost is the cost of re-building the existing infrastructure using present day technology, but maintaining the originally designed level of service. Assuming present technology ensures that any additional costs of out-dated and expensive methods of construction are not reflected in the valuation.

The value of the assets has been depreciated on a straight-line basis over their nominal working life. Straight line depreciation has been assessed as the most appropriate method and applied to all assets.

Replacement valuations are determined by multiplying asset quantities by market rates per unit of quantity. To this figure are added estimates for design, supervision, and construction contingencies. Basis for determining effective lives used for valuation.

Effective lives are assessed using a combination of manufacturer's specifications, the NAMS guidelines, industry standards, and expert knowledge held by the relevant Council employees.

Allowance has been made to recognise a minimum remaining life that applies to all assets for the calculation of the minimum depreciated value. In all cases a minimum remaining life of 2 or 5 years has been adopted.

Key assumptions made in preparing valuation

- Average life assigned to asset component meets industry expectations.
- Asset data base is complete
- Unit quantities are correct
- Market rates are current
- Life cycle information is accurate
- The component level of the data is sufficient to calculate depreciation separately for those assets which have different useful lives.
- Assumes the benefit of continuity of tenure and rights of existing use.
- Any inaccuracies or incompleteness of the asset register will not materially affect the total valuation.





Asset Valuation Summary

Table 6.5 below is a summary of the assets currently owned by Whanganui District Council. The Gross Replacement Cost (GRC), Optimised Depreciated Replacement Cost (ODRC), annual depreciation is current as at 30 June 2017.

Gross Replacement Cost (GRC) is a methodology for measuring the estimated replacement cost of the roading asset, adjusted for new technologies and the changing

nature of the fit of the asset within the developing Roding network.

The replacement value of our transport assets is \$632.9 million. These assets are depreciating at rate of \$8.9 million per annum

Table 6.5: Asset Inventory as of 30 June 2017

Asset Group	Asset	Quantity	Length	Units	Optimised Replacement Cost (\$)	Optimised Depreciated Replacement Cost (\$)	Annual Depreciation (\$)
Pavements	Pavement Surface	4,167,059		m ²	30,834,467	9,923,343	2,059,506
	Pavement Layers	4,660,887		m ²	151,715,972	76,453,491	1,811,940
	Pavement Formation	4,660,887	843.397	km	111,731,367	111,731,367	0
Structures	Bridges	73		No.	101,251,851	45,430,971	1,012,519
	Large Culverts >3.4m ²	58		No.	20,290,687	9,430,597	202,907
	Retaining Walls	284		No	12,982,361	7,100,781	148,846
Other Features and Activities	River protection for Roads	2521		m	27,227,317	19,541,518	544,546
Drainage	Drainage Control				106,525,471	43,866,902	1,389,398
Drainage	Berms	827,290		m ²	10,519,820	10,519,820	0
Footpaths and Cycleways	Footpaths & Cycleways	550,421		m ²	30,363,473	9,480,962	685,517
Street Lights	Street Lighting	6,154		No.	20,686,069	3,687,635	557,605
Traffic Services	Traffic Signs	5,755		No.	2,048,760	1,056,219	114,715
	Road Marking				288,134	144,067	139,045
	Traffic Signals	10		Each	1,753,871	350,774	88,694
	Traffic Control Devices	383		Each	2,085,983	840,096	58,477



Asset Group	Asset	Quantity	Length	Units	Optimised Replacement Cost (\$)	Optimised Depreciated Replacement Cost (\$)	Annual Depreciation (\$)
	Safety Barriers	488		m	699,800	269,242	32,358
Other Features and Activities	Street Furniture	297		No.	1,937,145	880,296	38,818
	Totals				632,942,548	350,708,081	8,884,891

Pavements

Overview

The purpose of pavements is to provide a road network that is suitable for the effective movement of agricultural, commercial industrial goods, produce and people, has a safe suitable all-weather surface that is appropriate to its location and function in terms of skid resistance, noise reduction, and smoothness, and has a structure suitable for legal loading requirements.

As a result of the 2012 GPS on land transport and ministerial taskforce recommendations, a streamlined road classification system for New Zealand known as the One Network Road Classification (ONRC) was developed.

The One Network Road Classification (ONRC) involves categorising roads based on the functions they perform as part of an integrated national network and specifies target levels of service for each classification. The classification is expected to assist local government and the Transport Agency to plan, invest in, maintain and operate the road network in a more strategic, consistent and affordable way throughout the country.

Asset Description

The road network of Whanganui District consists of 843.397 km of road of which 573.864 km is sealed and 269.533 km is metalled.

There are 107 km of state highways in Whanganui District which are administered by NZTA. These state highways are State Highway 3 which runs east to west from Whangaehu (Rangitikei District) to Nukumarū (South Taranaki District) and State Highway 4 which runs north from State Highway 3 in Whanganui City to just south of the Ruakawa Falls (Ruapehu District).

There are 227.597 km of sealed roads classified as urban which generally have a speed restriction of 70 km/hr or less. Nearly all of the urban roads are in Whanganui City.

Most unsealed roads are located in the rural area. Of the 269.533 km of unsealed roads approximately 64% are 'no-exit' roads with the majority accessed from sealed roads.

The roads administered by Whanganui District Council have been separated into three categories based on their function in the District Plan. These three categories are as follows:

Table 6.6: Roading Hierarchy

Hierarchy	Management option
Arterial	These are roads which serve as links between residential, commercial, industrial or recreational land use activities which: - Serve as links of strategic district importance within or between districts, and in particular provide 'commuter' routes for car traffic from the suburbs to the city centre; - Are a significant element in the local economy - Often also serve as local roads
Collector	These are locally preferred routes between or within areas of population or activity. They complement district arterials but have property access as a higher priority.
Local	These are all other roads servicing land use activities with standards appropriate for the level of usage they receive. Generally these roads carry low traffic volumes

The roading hierarchy in Council's District Plan links land use and network connectivity. Previously to the establishment of the ONRC classification it was used in determining the standards of maintenance and construction to be used in the prioritisation of future transportation improvements.



The ONRC tries to homogenise this approach but at a nationwide level, though there are significant issues matching the ONRC with the District Plan, especially for the urban network.

Table 6.7: Roading Hierarchy (District Plan)

Category	Sealed Roads			Unsealed Roads (km)	Length (km)
	Arterials (km)	Collectors (km)	Locals (km)		
Urban	36.00	20.26	171.31	0.53	228.10
Rural	0.00	13.87	332.40	269.00	615.30
Totals	36.00	34.13	503.26	269.53	843.40

Table 6.8: Roading Network by One Network Roading Classification (ONRC)

ONRC Category	Sealed & Urban (km)	Sealed & Rural (km)	Unsealed Urban (km)	Unsealed Rural (km)	Total (km)	%
Arterial	29.458	0.000	0.000	0.000	29.458	3.49%
Primary Collector	27.691	35.445	0.000	0.000	63.136	7.49%
Secondary Collector	73.521	134.059	0.344	2.366	210.218	24.93%
Access	51.308	132.399	0.065	17.353	201.125	23.85%
Low Volume	45.619	44.364	0.127	249.278	339.206	40.22%
Sub-Total	227.597	346.267	0.536	268.997	843.397	100%
Totals	39.66%	60.30%	0.20%	99.80%		
	573.863		269.533			
	68.04%		31.96%			

The total Gross Replacement Cost for road pavement assets is \$294,281,806. This is broken down by component in the table that follows.

Table 6.9: Pavement Asset Summary

Asset Type	Length / Quantity	Unit	GRC (\$000)	ODRC(\$000)	AD (\$000)
Pavement Surface	4,167,059	m ²	30,834	9,923	2,059
Pavement Layers	4,660,887	m ²	151,716	76,453	1,812
Pavement Formation	843.397	km	111,731	111,731	0
Totals			294,282	198,108	3,871



Structures: Bridges, Large Culverts & Retaining Structures

Overview

The purpose of bridges and culvert structures is to provide continuous all-weather road access over rivers, streams and uneven terrain, supporting vehicles and ensuring the safety of road users.

Asset Description

Bridge and Large Culvert Assets

The Council maintains 140 bridges ranging in size from large culverts and short single span bridges to the 350m long steel Dublin Street Bridge over the Whanganui River. Bridge assets account for 16% of the total transportation asset group based on the optimised replacement cost.

There are three bridges that straddle the District's boundary. One of these, over the Whangaehu River is a State Highway 3 bridge that is the responsibility of NZTA

Table 6.10: Shared Bridges Partly Owned by Whanganui District

Bridge	Ownership	Management Responsibility
Wyley's Bridge	50% Whanganui District Council 50% Rangitikei District Council	Whanganui District Council
Kauangaroa Rd Bridge	100% Rangitikei District Council	Rangitikei District Council

Table 6.11: Description of Bridges and Large Culverts

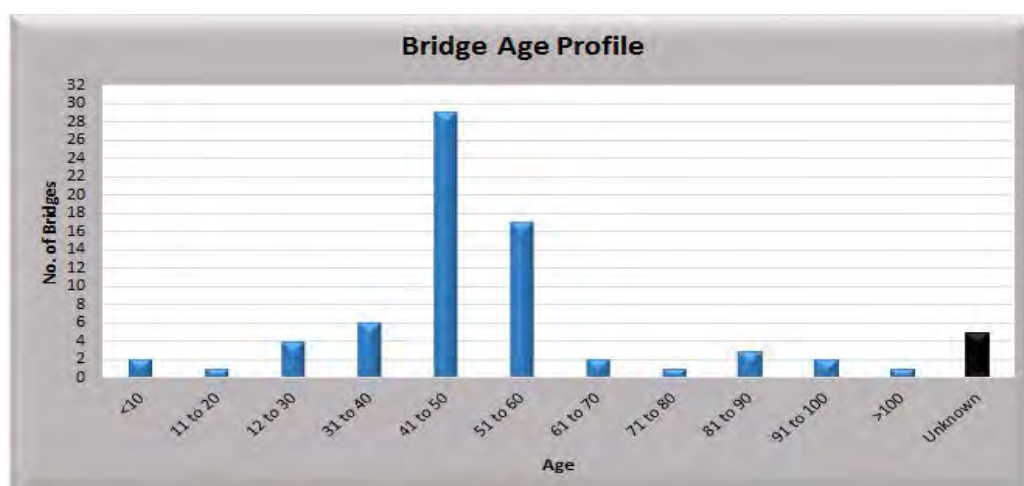
Description	Number of Structures	Aggregate Length [m]
Total WDC Bridges	73	2825
Single Lane	62	2049
Double Lane	10	591
Four Lane	1	185
Restricted (Speed/Weight)	10	496
Restricted (Weight only)	1	309
Timber (or significant proportion of structure)	6	188
Private Stock Underpasses	8	91
Large Culverts	58	1542

Bridges and culverts in the hill and high country are over natural streams and rivers origination from the catchments in the area. Bridges and culverts in the low land area serve the continuation and tributaries of the main rivers being the Whanganui and Whangaehu Rivers discharging to the Tasman Sea.

The largest bridges are Bridge 70 City Bridge and Bridge 71 Dublin St which are 215 and 350 metres long respectively.

There are also 8 stock underpasses on the roading network that have been installed by adjoining landowners. Council provides some financial assistance to landowners to encourage the installation of these structures on the basis of the benefits to road users and in accordance with NZTA W/C 341 – Minor Improvements.

Figure 6.1: Bridge Age Profile





Of the 73 bridges, 62 are single lane, one is four lane and the remainder are two lane structures. The 67 single lane bridges are all located on low volume roads carrying less than 200 vehicles per day. Culverts with a waterway area of greater than 3.4 m² are classified as bridges by NZTA for

funding purposes and are included in the “bridge” inventory for management purposes.

All weight restricted bridges are listed in Table 6.12.

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Table 6.12: Weight Restricted Bridges (2014)

Name of Bridge	Name of Road	Maximum Weight on any One axle	Gross Weight (Maximum sum of axle weights)	Maximum Speed Limit (km/h)
McNabs Access	off Kauarapaoa Road	4,000kg	12,500kg	20km/h
Heao	Heao Road	6,600kg	70% of Class I	20km/h
Mangamahu School	off Whangaehu Vly Rd	7,200kg	60% of Class I	20km/h
Harris	off Whangaehu Vly Rd	6,600kg	70% of Class I	15km/h
Aranui	off Whangaehu Vly Rd	6,600kg	70% of Class I	15km/h
Polson	Polson Road	6,600kg	60% of Class I	15km/h
Aotea	off SH4 (Parapara Rd)	7,200kg	60% of Class I	20km/h
MacIntoshs	MacIntoshs Rd	7,200kg	60% of Class I	20km/h
Wicksteed	Wicksteed Rd	2,500 kg		15km/h
Wakefield St O/br	Wakefield St	2,500 kg	4,500kg	30km/h
Dublin Street	Dublin Street	3,500kg	6,000kg	

Retaining Wall Assets

An initial assessment in 2004 of retaining walls within the district identified around 284. Of this number approximately 10-20% are in the rural network and have typically been constructed as permanent reinstatement following storm damage. Retaining walls supporting the carriageway are to be designed in accordance with the current NZTA (Transit) Bridge Manual and the New Zealand Building Code Handbook and Approved Documents with reference to Section B1/VM4.

The location and construction types of known retaining walls have been entered into the RAMM database. Estimates of replacement construction cost, construction date, condition, remaining useful life and depreciated replacement cost have been made where the information is known.

The following table summarises financial information for bridges, large culverts and retaining structures.

Table 6.13: Asset Information for Bridges, Large Culverts & Retaining Structures

Asset Type	Length /Quantity	Unit	GRC (\$000)	ODRC(\$000)	AD (\$000)
Bridges	73	No	101,251	45,431	1,012
Large Culverts > 3.4m ²	58	No	20,291	9,431	202
Retaining Walls	284	No	12,982	7,101	149
Totals			134,524	61,963	1,363



Drainage

Overview

The purpose of this asset is to adequately drain storm runoff from the carriageway, protect the road edge and substructure from stormwater intrusion, provide a protective barrier for pedestrians from passing traffic, and delineate the edge of the carriageway.

Asset Description

Drainage facilities cover all drainage assets that are necessary for the purposes of protecting the pavement integrity and to protect adjacent property from runoff generated from the road surface. This includes the provision and maintenance of:

- Culverts (<3.4m²)
- Sumps and Sump Leads
- Surface water channels (kerb and channel and earth formed)

Transport network drainage assets in urban areas are defined as those carriageway collection facilities within the road reserve that catering for drainage from the carriageway and deliver the stormwater to a point of mains reticulation. These assets include:

- Kerb and Channel
- Earth formed surface water channels where no kerb and channel exists
- Sumps including piped connections to mains reticulation
- Bubble up sumps including piped connections between sumps
- Subsoil drainage reticulation

In rural areas carriageway drainage assets are purely a roading responsibility with side swales, open drains and road culverts being the main assets types.

Kerb & Channels

There is 446.1 km of kerb and channel on the roading network. Almost all of the kerb and channel is in the Whanganui City area.

Kerb and channel is a specific type of surface water channel. Their purpose is to:

- Provide a path for stormwater runoff from the carriageway, footpaths, berms and adjacent properties, protecting the pavement from water ingress, and consequential structural deterioration.
- Allow the convenient and safe movement of pedestrian and vehicular traffic.
- To enhance the convenient and safe movement of pedestrians and traffic by separating these two streams of road users.

The use of concrete kerb and channel, as opposed to earthen surface water channels is a recognised and accepted sign of urban development. Apart from its functional role, kerb and channel also protects the carriageway seal edge from the higher exposure to traffic within the urban area.

Kerb and channel is required in all new urban subdivisions by the District Plan. In some of the smaller and more rural orientated townships kerb and channel may be seen as unnecessary, or not be wanted by the residents. Kerbing is also installed at some rural intersections, bends and corners in conjunction with other road improvement works, such as minor improvements at intersections. Kerbing in these situations protects the edge of seal from edge break problems in these high-wear areas while also providing positive drainage of stormwater runoff. In addition, kerbs delineate corners of an intersection to a higher degree than a plain seal edge.

Table 6.14: Summary of Kerb & Channel

Kerb & Channel Description	Total Length (m)	%
Dished Channel (Asphalt)	165	0.04%
Dished Channel (Concrete)	5,013	1.12%
Dished Channel (Sealed)	1,074	0.24%
Kerb & Channel (Concrete)	349,466	78.34%
Kerb & Channel (Stone)	47,568	10.66%
Kerb & Dished Channel (Concrete)	140	0.03%
Kerb Only (Concrete)	19,817	4.44%
Kerb Only (Stone)	785	0.18%
Mountable Kerb & Channel (Concrete)	18,743	4.20%
Other Type	534	0.12%
Total	446,068	100.00%

Surface Water Channels

The primary purpose of all surface water channels (SWC) is to provide a path for stormwater runoff from the carriageway, footpaths, berms, and sometimes adjacent properties, to protect the pavement from the ingress of water, and resulting structural deterioration; and to allow the convenient and safe movement of vehicular and pedestrian traffic.

Surface water channels are described as either “shallow” or “deep” channels. These channels are invariably unlined except in very exceptional circumstances where there is a requirement to prevent erosion of the channel.



Surface water channels are depressions formed with the invert located at varying distance from the carriageway edge and ideally 150mm to 300mm below the edge of the carriageway. Surface water channels are predominately found in rural areas including rural townships.

Table 6.15 provides a summary of the surface water channels asset information stored in Council's RAMM database.

Table 6.15: Summary of Surface Water Channels

Surface Water Channels Description	Total Length (m)	%
SWC (Deep, >200 Below Seal Edge)	29,378	3.33%
SWC (Shallow, <200 Below Seal Edge)	853,005	96.67%
Total	882,383	100%

Culverts

Culverts convey natural watercourses or stormwater across the road without adversely affecting the pavement or surface of the road or disrupting its use.

There are 3,178 culverts on the roading network ranging in size from 100mm to 2.0 metres in diameter. Culverts larger in size than 2.1 metres in diameter or with a waterway area greater than 3.4 square metres are classified as bridges for asset management purposes.

Most of the culverts are constructed of concrete but there are still a few smaller clay and asbestos pipes in use. These culverts are prone to collapse as they age. Most of the culverts on the roading network are 20 – 40 years old although some are up to 80 years old. Concrete culverts make up 84.2 % of all culvert installations. 39 installations are referred to as natural ground or "papa drives".

The details for the following tables were collected in conjunction with other roading data, and are stored in the Council's RAMM database.

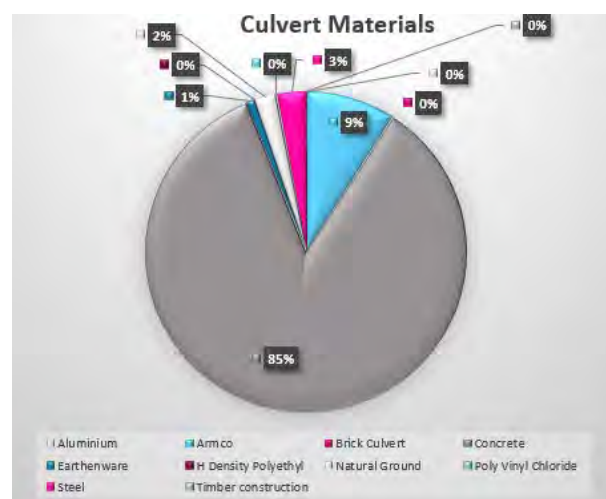
Table 6.16: Summary of Culvert Size and Length Distribution

Size (mm)	No.	%	Length (m)	%
150 - 300	1,341	42.2%	13726.5	35.3%
375 - 600	1,575	49.6%	20810.6	53.6%
675 - 900	148	4.7%	2193.1	5.6%
975 - 1200	46	1.4%	780.9	2.0%
1350 - 1600	34	1.1%	629.3	1.6%
1700 - 2000	34	1.1%	693.1	1.8%
Total	3,178	100.0%	38,833.5	100.0%

Table 6.17: Summary of Culvert Material

Culvert	Qty	Length	%
Aluminium	1	25	0.1%
Armco	311	3484.5	9.0%
Brick Culvert	3	36	0.1%
Concrete	2687	32944.5	84.8%
Earthenware	37	331.7	0.9%
H Density Polyethyl	1	15.5	0.0%
Natural Ground	38	813.8	2.1%
Poly Vinyl Chloride	7	79	0.2%
Steel	91	1089.5	2.8%
Timber construction	2	14	0.0%
Total	3178	38833.5	100.0%

Figure 6.2: Culvert materials





Sumps

Sumps are used to remove stormwater from kerb and channel or other surface water channels when there is no suitable open watercourse available. Sumps by definition connect to a pipe and usually contain a silt trap. Sometimes this asset sub group is referred to as “catchpits” as a generalised description.

Sumps are recorded in The Council's RAMM database, in the Drainage Table. A detailed inspection and inventory update of all sumps was undertaken in 2009. Table 6.18 summarises the asset holdings.

Table 6.12: Summary of Sump Types

Sumps		
Type	No.	%
Catchpit type 1 – Single Sump	3423	97.9%
Catchpit type 2 – Double Sump	45	1.3%
Catchpit type 3 – Side Entry	27	0.8%
Total	3495	100.0%

The following table summarises financial information for Drainage assets.

Table 6.13: Asset Information for Drainage (Kerb & Channel, Surface Water Channels, Culverts & Sumps)

Asset Type	Length / Quantity	Unit	GRC (\$000)	ODRC(\$000)	AD (\$000)
Drainage Control			106,525	43,867	1,389
Totals			106,525	43,867	1,389



Street Lights

Overview

Streetlighting is provided to agreed lighting levels in streets for the safe and efficient movement of vehicles, cyclists and pedestrians.

Asset Description

Streetlight Assets

In Whanganui District, streetlighting is provided for a variety of reasons and ranges from lighting of residential and rural residential streets and roads, lights at specific rural intersections to improve traffic safety where there is a crash problem, and the lighting of pathways through township reserves that connect between streets.

Council has managed the street light network since 1994 following the break-up of electricity supply authorities to lines and energy supply companies. At this time Council instituted maintenance and energy supply contracts. The streetlighting system in Whanganui District has remained more or less as it was over this period except that a considerable number of luminaries have been replaced to a modern type.

The inventory is maintained in the RAMM database using the SLIM module. This allows continual maintenance and updating of asset information and progressively more accurate predictions of component lives and capital needs.

The use of the terminology "lights" when referring to the asset is inclusive of the following two sub asset components:

- Luminaire: the fitting that houses the lamp; and
- Lamp: the light source that produces the light

Brackets are the mounting bracket that attaches the light to a pole or other fixture, while a pole is a support structure that supports the bracket and light at the correct position, height and inclination. Rural lights are primarily for flag lighting at road intersections and other significant locations such as rural halls and schools. The asset also includes some lighting in reserves and other amenity areas.

The Council owns all dedicated light poles (lamp posts). Where a street light is supported by a utility company's pole (electricity or telephone), the light and its bracket are owned by the Council and included in the lighting asset register, but not the pole. In the newer subdivisions, lights may often be mounted on decorative poles.

There are currently 5,694 streetlights on the roading network. Council owns 2,041 streetlight poles, light fittings and lamps. It further owns 3,653 lamps and light fittings which are attached to poles owned by Powerco and Telecom. The council also owns the circuits and control equipment. The streetlights operate from "dusk to dawn" and are controlled by Powerco.

Fluorescent, mercury vapour and low-pressure sodium lights are nearing, or have reached the ends of their

Figure 6.3: Lamp Types in Whanganui Streetlighting Network

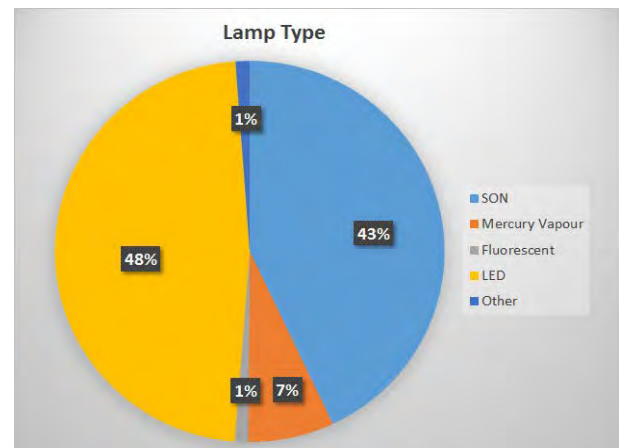
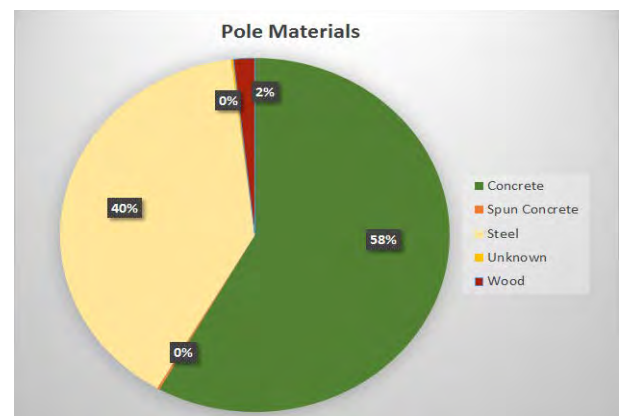


Figure 6.4: Poles Material in Whanganui Streetlighting Network



supported lives, with spare replacement parts being increasingly hard to obtain. Many of these fittings are therefore obsolescent and are being progressively replaced at expiry of lantern by LED technology.

With the introduction of more energy efficient LED technology many of these lights are now obsolete. Council identified the benefits of the new technology and applied for funding to replace all existing light fittings. The programmed replacement is expected to be completed during the 2017/18 financial year.

The following table summarises financial information for Streetlights.

Table 6.14: Asset Information for Streetlights (Poles, Brackets, Lights, Cables & Controls)

Asset Type	Length / Quantity	Unit	GRC (\$000)	ODRC (\$000)	AD (\$000)
Street lights	5,694	Each	20,686	3,688	558
Totals	5,694	Each	20,686	3,688	558



Footpaths & Cycleways

Overview

The primary purpose of footpaths is to provide a safe, comfortable and convenient facility allowing people (including the physically disabled) access to their chosen destination. Cycleways have an analogous purpose. It is becoming more common to provide shared facilities utilising pathways that are wider than what would be normally provided.

Asset Description

Footpath Assets

There are 4.97 km of footpaths in Whanganui District. 71.7% of the footpath is constructed of in-situ concrete, 14.5% sealed and some 5.7% concrete paving slabs. The latter give rise to many complaints and these are being replaced with in situ concrete paths. The central business area has interlocking block footpaths.

Table 6.15: Footpath Length by Treatment Type

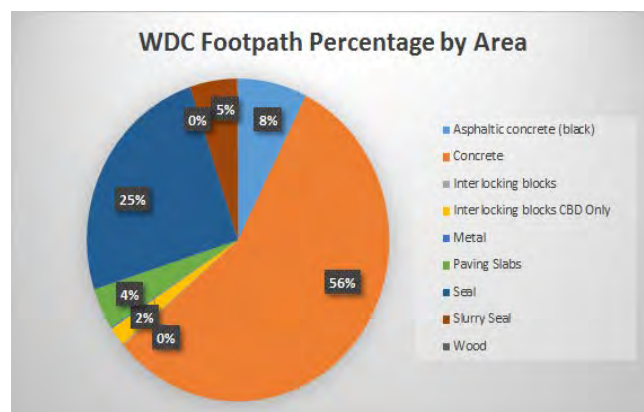
Material	Length (m)	%
Asphaltic concrete (black)	14,641	4.4%
Concrete	240,166	71.7%
Interlocking blocks	3,190	1.0%
Metal	460	0.1%
Paving Slabs	18,930	5.7%
Seal	48,640	14.5%
Slurry Seal	8,817	2.6%
Wood	130	0.0%
Total	334,974	100.0%

The data in the above table includes the Council's off carriageway cycle paths, which are dual facilities shared by pedestrians.

Footpaths are mainly located along streets and roads in Whanganui City and through reserves and other areas connecting cul-de-sac and other streets to enable connectivity.

Inventory details on paths are collected and stored in the Council's RAMM database. The type of surface used is dependant on life cycle cost considerations, pedestrian volumes and the amenity value of the location eg shopping and commercial areas.

Figure 6.5: Footpath Percentage by Area



The meanings of the material terms used in the above graph are:

- Asphaltic Concrete: Mix of graded aggregate and asphaltic binder laid in a 20 – 30mm layer
- Concrete: Unreinforced concrete laid in a 75mm layer on prepared base
- Interlocking Blocks: Brick size concrete or clay blocks (usually coloured), laid side by side on a formed and compacted base in an interlocking pattern.
- Metal: Graded crushed stone chips spread over compacted basecourse.
- Paving Slabs: Unreinforced concrete slabs laid individually to form pathway
- Chip Seal: Layer of sprayed bitumen with a fine grit spread over compacted basecourse
- Slurry Seal: Sand and emulsion mix screeded over prepared basecourse base
- Wood: treated timber fastened together to form continuous

The following table summarises asset valuation information for Footpaths and Cycleways

Table 6.16: Asset Information for Footpath

Asset Type	Length / Quantity	Unit	GRC (\$000)	ODRC (\$000)	AD (\$000)
Footpaths	334,974	m	30,363	9,481	686
Totals			30,363	9,481	686



Traffic Services

Overview

Traffic Services assets consist of road signs, sight/guard rails, road markings and traffic islands, which aid the safe and orderly movement of traffic, and indicate road use restrictions and other information. A good standard of traffic services can contribute significantly to a safer road network.

Asset Description

The traffic services asset consists of:

- Road Signs, Sight/Guard Rails
- Summarising regulatory instructions that road users are required to obey e.g. Speed limits;
- Marker posts to indicate the edge of the carriageway;
- Chevrons and sight rails to indicate abrupt changes in road direction;
- Warning of temporary or permanent hazards that may not be self-evident;
- Indicating directions and distances to destinations;
- Indicating road user services and tourist features/establishments

Road markings

Non intersection markings

Road centrelines and lane lines;

Edge lines and shoulder markings;

No overtaking lines/no passing lines;

Median markings;

Cycle lanes; and

Parking areas.

Intersection markings:

Intersection controls;

Centre lines/edge lines/continuity lines;

Lane arrows;

Limit lines

Cycle lanes.

Miscellaneous marking

Messages and symbols;

Pedestrian crossings;

Railway level crossings;

Fire hydrants; and

Raised reflective pavement markers ('cats eyes')

Traffic Signals

Poles and Gantries

Controllers

Detectors

Cabling

Traffic Islands

Median

Rotary

Splitter

Throat, and

Others

Road Signs

Whanganui District Council has 5,755 signs and 4,242 posts.

The information on signs and traffic islands is kept in the RAMM database. While the database is updated as signs are replaced or new signs installed, it is considered that the accuracy of this information is not complete in that not all signs were initially recorded when database was established.

Table 6.17: Summary of Road Signs

Sign Type	Number
Guide	1,486
Hazard Markings	347
Information General	460
Information Miscellaneous	5
Motorist Services	12
Permanent Warning	1,128
Regulatory General	1,871
Tourist	14
Warning Miscellaneous	432
Total	5,755



Most signs have a specially manufactured reflectorised surface laminated onto an aluminium plate, and are fixed to timber posts in rural areas and galvanised steel fluted poles in urban areas, which are bedded into the ground. They may also be fixed to existing power poles or similar. Yellow fingerboard signs are now made from aluminium.

Traffic Islands & Safety Barriers

Traffic islands consist of side islands, central islands, roundabouts and other similar devices. There are estimated to be 383 of these devices.

Table 6.18: Summary of Traffic Islands

Traffic Islands	Number
Median	104
Rotary	18
Speed Humps	62
Splitter	52
Throat	145
Other	2
Total	383

Table 6.19: Summary of Sight Guard/Rails

Sight/Guard Rails Type	Number
Barrier	4
Concrete	8
Guard rail	38
Hand rail	19
Sight rail	238
Steel Tube and Post barrier	69
Timber	46
Timber Post and Steel Tube	8
W Section Guard rail	56
Other	2
Total	488

Roadmarking

Road markings detail in RAMM is not complete and requires auditing to confirm accuracy and deficiencies. A schedule of road marking is included in the road marking contract documentation but the quantities in the schedules are estimated and based on historical remarking achievement submitted with progress claims.

Traffic Signals

There are a total of 12 traffic signals in Whanganui City. Two of these are State Highway signals and are controlled by NZTA. The remaining 10 signals are controlled by Whanganui District Council. Traffic signals include items such as poles, gantries, aspects, controllers, detectors and cabling that go to make up each set of traffic signals.

Table 6.20: Signalised Intersection Locations

Installation	Intersection	Authority
1	Grey Street / London Street	NZTA
2	Anzac Parade / City Bridge	NZTA
3	Victoria Avenue / Glasgow Street	WDC
4	Victoria Avenue / Dublin Street	WDC
5	Victoria Avenue / Ingestre Street	WDC
6	St Hill Street / Ingestre Street	WDC
7	St Hill Street / Guyton Street	WDC
8	Wilson Street / Guyton Street	WDC
9	Victoria Avenue / Guyton Street	WDC
10	Victoria Avenue / Taupo Quay	WDC
11	St Hill Street / Ridgeway Street	WDC
12	Wilson Street / Ingestre Street	WDC

Table 6.21: Financial Information for Traffic Services Assets

Asset Type	Length / Quantity	Unit	GRC (\$000)	ODRC (\$000)	AD (\$000)
Traffic Signs	5,755	Each	2,049	1,056	115
Roadmarking			288	144	130
Traffic Signals	10	Each	1,754	351	89
Traffic Control Devices	383	Each	2,085	840	58
Safety Barriers	12,484	m	1,937	880	39
Totals			8,113	3,271	431



Other Features and Activities

Riverbank Protection

Asset Description

These are river bank protection works to ensure that the rivers do not erode the road pavement. Since 1996 there have been extensive repair works carried out to protect the pavement from eroding into the river. These works were in Somme Parade in the vicinity of Kells / Quick Avenues and near the Dublin Street Bridge along the Whanganui River. Two other locations are McCains and Rush Flat along the Whangaehu River and more recently protection works on Landguard Road. All these works came into the category of Emergency Reinstatement or Preventive Maintenance work.

There is no formal process for maintaining these structures other than carrying out repairs as needed. It is planned to develop a formal inspection regime to ensure the integrity of these structures is retained.

The following table summarises financial information for Riverbank Protection assets.

Table 6.22: Financial Information for River Protection Assets

Asset Type	Length / Quantity	Unit	GRC (\$000)	ODRC (\$000)	AD (\$000)
River Protection			27,277	19,542	545
Total			27,277	19,542	545

Street Furniture

Asset Description

This consists of bus shelters (26), seats (163) and rubbish receptacles (104) and similar devices located within the road reserve.

Maintenance of these is within the Alliance Road Maintenance contract. Included also is the emptying and keeping clean of the street rubbish receptacles.



Any street furniture item will be replaced if they are damaged or have outlived their useful life. There is no specific programme of capital replacement.

The following table summarises financial information for Street Furniture assets.

Table 6.23: Financial Information for Street Furniture Assets

Asset Type	Length / Quantity	Unit	GRC (\$000)	ODRC (\$000)	AD (\$000)
Street Furniture			700	269	32
Total			700	269	32

Carparks

Asset Description

There are 10 off-street public carparks in the Central Business District. Nine of these parks are owned by the Council whereas the Firestone Car Park is privately owned but operated by the Council. The Radio Station carpark is owned by the Council but is leased out.

There are various ways charges are made for the carparks. Four carparks are 'Pay and Display', four are on a rental basis and two are 'free' parks. The kerbside parks in Victoria Avenue are Telkor multi bay meters whereas all other kerbside parking spaces are individual Duncan meters. Firestone carpark, previously owned by the Council, is now privately owned but parking is managed by Council enforcement Staff.

The 10 carparks have a total sealed area of 13,433 m² and provide 436 car parking spaces. These carparks typically provide long duration parking and are well utilised. There are a further 1580 controlled on-street carparks in the CBD.

The total Gross Replacement Cost for the Car parks is \$765,008. This is broken down by component in the figure that follows.

Table 6.24: : Financial Information for Carpark Assets

Asset Type	Length / Quantity	Unit	GRC (\$000)	ODRC (\$000)	AD (\$000)
Carparks			765	475	25
Total			765	475	25



07 Lifecycle Management



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Overview

Assets have a lifecycle as they move through from the initial concept to the final disposal. Depending on the type of asset, its lifecycle may vary from 10 years to over 100 years.

Life cycle management is a function of the following areas:

- Background Data including physical parameters, asset capacity / performance, asset condition, asset valuations and historical data.
- Routine Maintenance including maintenance, standards and specifications, summary of future costs.
- Capital replacement including replacement standards and summary of replacement costs.
- Creation / Acquisition / Augmentation including selection criteria, standards and specifications, and summary of future costs.

This section covers the following transportation asset groups:

Pavements – Sealed and Unsealed, Arterial, Collector and Local Roads

Structures – Bridges, Large Culverts, Retaining walls.

Drainage (includes Kerb and channels, road culverts, surface water channels and berms)

Streetlights

Traffic Services – Traffic Signals, Traffic Signs, Traffic Control devices and Safety Barriers

Footpaths & Cycleways

Other Features and Activities – Carparks, Street Furniture and Riverbank Protection.

Further analysis has been undertaken on sub groups of assets as required including:

Operations

Maintenance – Proactive & reactive

Renewal-replacement, rehabilitation

New capital, (growth), levels of service (improvements), and regulatory improvements

Asset Disposals

Retirement, demolition or sale of assets

Asset Condition

It is critical that Whanganui District Council has a clear knowledge of the condition of their assets and how they are performing to support a data-driven evidence based business case of investment. Condition data provides the foundation understanding of future expenditure patterns and management decisions regarding maintenance, replacement and renewals.

The development and continued use of condition assessment data will provide verifiable predictive decay curves for particular asset types and hence permit prediction of remaining life.

The Council undertakes robust Condition Surveys based on the risk of the asset (rate of change) to ensure the land transport assets are maintained, replaced or developed over the long term to meet required delivery standards and foreseeable future demands.

Condition Assessment & Results

Data on road condition is predominantly collected through the carrying out of High Speed Data collection and condition rating surveys.

Roughness surveys are undertaken annually on Arterial, Primary Collector and Secondary Collector roads and every second year on Access and Low Volume sealed roads. These are a measure of the quality of ride experienced by motorists when travelling on the road. The measurements are obtained using a vehicle mounted response meter which records the vertical displacement or roughness of each 100 metres of traffic lane. These measurements are then converted to NAASRA counts which are the standard measure of road roughness and stored on the RAMM database.

Condition rating surveys involve a visual assessment of pavement surface condition and are generally undertaken every second year on sealed roads. They involve a detailed walkover and identification of defects on the carriageway over the full length of all sealed roads.

The defects recorded include the number of potholes and the area or length of other defects such as rutting, shoving, flushing, scabbing, cracking, edge break and inadequate shoulders and surface water channels.

These surveys enable trends in the condition of the network to be determined, comparisons made between the condition of roads in different areas and assist in identifying sections of road that should undergo closer inspection for maintenance and renewal treatments. The trends in regard to roughness are a useful indicator of how effectively the pavement maintenance strategies are meeting the demands of increased traffic loadings and the network increasing in age.

It is important to note that road pavements are always in a state of decay and that as they age their condition deteriorates and the cost of maintenance increases. The rate of deterioration is a function of the initial pavement strength, traffic loading and the maintenance effort applied.



Road condition is monitored throughout the year by Council's network maintenance contractor by way of a Road Network Maintenance Alliance contract. Defects are identified and the required remedial work is programmed and undertaken in accordance with the Alliance Contract requirements. The amount and type of work undertaken is dependent on the needs of the network, maintenance strategies, maintenance intervention levels and available funding.

The condition, performance and risk assessment models presented in Table 7.1, Table 7.2 and Table 7.3 form the basis for WDC's asset condition ratings.

Asset condition and performance is summarised in Table 7.4.

Table 7.1: Condition Rating Model

Grade	Condition	Description of Condition
1	Very Good	Well maintained – no work required.
2	Good	Slight defects and deterioration – no significant effects
3	Fair	Minor defects – beginning to affect appearance
4	Poor	Significant defects – marked deterioration
5	Very Poor	Serious defects – unacceptable appearance or safety

Table 7.2: Performance Assessment

Grade	Performance	Criteria
1	Fully functional	Assess whether the asset is providing the service for which it was designed e.g. customer and technical levels of service – expectations, needs, and standards.
2	Functional (minor issues)	
3	Functional (increasing issues)	
4	Only partially functional	
5	Non-functional	

Table 7.3: Risk Assessment

Likelihood of failure	Short term (<10 yrs)	Medium term (10 - 20 yrs)	Long term (>20 yrs)
1	Very low	5 years plus	10 years plus
2	Low	Within 4 years	Within 7 to 9 years
			20 years plus
			Within 13 to 19 years

Likelihood of failure	Short term (<10 yrs)	Medium term (10 - 20 yrs)	Long term (>20 yrs)
3	Medium	Within 3 years	Within 5 to 6 years
4	High	Within 2 years	Within 3 to 4 years
5	Very high	Within 1 year	Within 2 years
			Within 3 years

Table 7.4: Asset Grading (average by Asset Type)

Asset Group	Asset Type	Average Condition
Pavements	Roads & Pavements	Fair
Structures	Bridges & Large Culverts	Fair
	Retaining Structures	Fair
Traffic Services	Traffic Facilities	Good
Drainage	Drainage	Fair
Street Lights	Street Lighting	Good
Footpaths and Cycleways	Footpaths	Fair
Other Features and Activities	Car parks	Fair

Service Delivery

Council maintains ownership and responsibility for managing the land transport activity and the associated infrastructure. In order to maximise efficiencies and long term value for money, the WDC roading network is managed with a holistic asset management focus. This means that all procurement is linked operationally, tactically and strategically, where the maintenance management system, the maintenance intervention strategy and the 10-year programme are linked.

The road maintenance and capital works contracts form the largest component of the WDC procurement of transportation services. For maximum effectiveness and efficiency WDC's whole road corridor maintenance contract is carried out by a single entity, the Whanganui Alliance. This entity model is a "pure alliance / shared risk (advanced) Public/Private Partnership delivery model, where the supplier selection method is quality based.



The contract includes (but is not limited to):

- All maintenance and operations (excluding street lighting, road marking and traffic signal maintenance).
- Unsealed road metalling.
- Sealed road surfacing.
- Drainage and Traffic Services renewal works (excluding street lighting, road marking and traffic signals).

Since the establishment of the Whanganui Road Maintenance Alliance, the network management and engineering services component has greatly reduced to primary specialist services such as structural and geotechnical engineering services and secondly engineering advice, peer reviews and engineering resource backup.

All work (subsidised and unsubsidised) is carried out using contracts let in accordance with competitive pricing procedures (CPP), in line with the Councils published document "Procurement Best Practice Principles". Current maintenance and renewal term contracts are listed in Table 7.5 below.

Table 7.5: Roading Maintenance & Renewal Term Contracts

Contract Number	Contract Name	Term (Years)	Commencement Date
1318	Road Reserve Corridor Maintenance Alliance Contract	1+1+3+3+2	1 July 2008
1533	Traffic Signal Maintenance 2013-18	3+1+1	1 July 2013
1721	Street Lighting and Improvements 2016-2019	3	1 July 2016



Work Category Definitions

Expenditure on transportation assets can be categorised into the three main areas.

Operations and Maintenance

Operations and maintenance expenditure is that required for the day-to-day operation of the network whilst maintaining the current levels of service.

Renewals

Renewal expenditure includes rehabilitation and replacement of assets to restore an asset to its original level of service, i.e. capacity or the required condition. Renewal expenditure forecasts cover the cost of asset replacement through its whole lifecycle through to disposal of the asset.

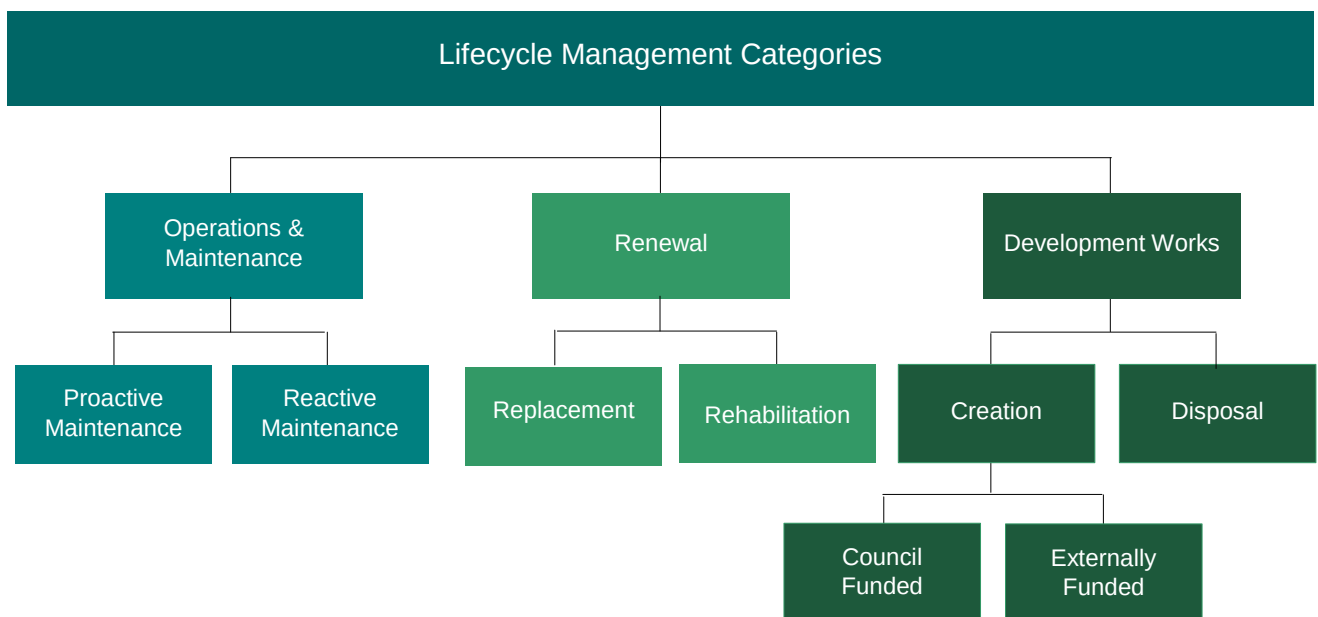
Capital Works

Capital works involves the creation of new assets, or works, which upgrade or improve an existing asset beyond its current capacity or performance in response to changes in usage or customer expectations. This may be due to growth or changes in the required LoS.

These categories are described in more detail in *Section 9: Projects and Financial Forecasts*.

Figure 1 below illustrates the following components of lifecycle management categories.

Figure 7.1: Transport Lifecycle Management Categories





Maintenance Intervention Strategy

WDC has developed and is refining its Maintenance Intervention Strategy (MIS) for asset renewals. The MIS is used to optimise maintenance activities against planned works by providing guidance on when to intervene with an appropriate treatment response, i.e. monitoring, maintenance, holding prior to renewal or capital works. A MIS is created once the forward works programme (FWP) has been established. Each treatment length or asset will have a nominated type or code, which will guide maintenance treatments prior to the implementation of the periodic treatments defined by the FWP.

The FWP is finalised and adopted at the beginning of each financial year. It provides a statement of the types of periodic treatments that are planned for each treatment length/asset and the proposed timeframe. The FWP guides and influences the MIS which indicates a cost effective maintenance treatment to repair defects given upcoming works. For example surface cracking on a road to be resealed in the current year will be repaired to a high standard as a pre-seal repair (repair the root cause), whereas a similar defect on a road to be rehabilitated will be repaired with a holding treatment (repair the symptom).

The robust development of monthly work programmes requires the compilation of several separate programmes into a combined programme that recognises the individual programme interdependencies to ensure correct sequencing and timing for completion.

The MIS will be further developed to align with the ONRC road classifications. It is expected that each road classification will have individual strategies that recognise different levels of service and corresponding performance measures (i.e. a Low Volume road may not have surface smoothing treatments undertaken as target levels of roughness for this road classification have a higher threshold level and to undertake such maintenance activity would be to over deliver or exceed target performance levels).

Operations and Maintenance

Maintenance is intended to maintain the agreed levels of service; mitigate risk and minimise costs by implementing a balanced programme of planned and reactive works. Proactive inspections are carried out to prevent asset failure.

Operations and Maintenance Goals

General maintenance work is classed as priority work where:

- The safety of road users may be compromised

- The required level of service has fallen below the prevailing level for the adjacent parts of that section of road
- It is likely that the area of distress may expand so that the road is incapable of providing the required level of service and capital work or upgrade will then be required
- The scope of repair work would change to become significantly more expensive, if left to deteriorate further
- Subsequent maintenance, renewal or new improvements work depends on the completion of the planned maintenance repair. A suitable level of preparedness for prompt and effective response to asset failures and emergencies is maintained by ensuring the availability of suitably trained and equipped staff and service delivery contractors. This is provided through specific requirements detailed in the roading maintenance contract.
- The initial, practical and objective response to asset failures is to restore service as quickly as possible by the most economic method available. This may mean having to make temporary repairs if major repairs or replacement works are required. The Council's operations and maintenance strategy is to implement the most cost effective maintenance options through:
 - Adequate monitoring the condition and performance of assets
 - Investigation and improvements of any system deficiencies
 - Identification of the most appropriate work required to correct defects.

To achieve this, assets are monitored through routine proactive inspections, testing, and analysis of customer complaints and condition reports. Service levels are managed by assessing the consequences of asset failure and assessing the levels of customer expectation. Asset ownership costs are minimised by identifying, evaluating and introducing new technologies, initiatives and equipment that may improve operational and management efficiencies.

Exposure to risk is managed by maintaining up to date fault detection systems and providing a prompt and effective response to system failures. This exposure is also minimised by maintaining insurance on key insurable assets, undertaking structural checks of key assets and controlling environmental impacts.

A partnering approach is sought and encouraged between the Council's staff, consultants and contractors; its aim is to provide make effective use of resources, systems and procedures by taking collective ownership of the transportation network, hence Council's commitment to Alliancing.



Maintenance Activities

Routine maintenance is that work required to keep the transportation assets in a safe and serviceable condition. The work undertaken ranges from planned work of a cyclic nature such as vegetation control or maintenance grading to unplanned work such as clearing of spillages or the clearing of blocked sump grates during rain events.

The work undertaken includes:

- pothole repairs
- pavement patching and repairs
- shoulder maintenance
- maintenance and repair of surface water channels and drainage structures
- grading of metal roads
- replacement of wearing and running course metal on unsealed metal roads
- control of roadside vegetation
- maintenance and repair of traffic signs, edge marker posts and pavement markings
- maintenance and repair of bridges
- litter collection
- removal and cleaning up of crash debris and spillages
- cleaning of channels and sumps
- emptying street rubbish receptacles

All the physical work carried out on the roading network is outsourced in accordance with NZTA's 'Competitive Pricing Procedures Manual'. The method of service delivery is being regularly reviewed so as to continue to improve the efficiency and effectiveness of the work undertaken.

The identification and carrying out of the work is primarily responsibility of Council's transportation network maintenance alliance partner. The amount and type of work undertaken is dependent on the needs of the network, maintenance strategies, maintenance standards, safety considerations and the available funding.

The initial response to asset failures is to restore service as quickly as possible using the most practical and economic method available. Temporary repairs will only be made if major repairs or renewal replacements are required. Response times for routine maintenance activities are listed in specific maintenance contracts.

Table 7.6: Types of Maintenance Activities

Type	Activities
Cyclic and Reactive	Pothole repair, edge-break (<5m), low shoulder (<5m), detritus removal, marker post renewal, RRPM replacement, sign cleaning / replacement, bridge cleaning, litter collection, culvert cleaning, incident response, temporary holding repairs.

Type	Activities
	These are completed as "Find and Fix".
3 Monthly Rolling / Monthly (Routine Planned Activities)	Crack sealing, scab sealing, second coat patch sealing, stabilisation, dig outs, edge-break (>5m), low shoulder (>5m), minor levelling, lined channel cleaning, sump cleaning, isolated kerb repairs.
Seasonal	Seasonal - Grass verge mowing, leaf collection, vegetation spraying, winter maintenance.

Maintenance Standards

The Council's standards and specifications for operational and maintenance activities reflect the best and most appropriate use of current technologies, in accordance with national standards and legislative requirements.

The inspection cycles, intervention levels and general maintenance response times for the network are generally in accordance with guidelines set out by the ONRC. The maintenance standards vary in accordance with the level of usage of the road.

The principal standards and specifications used by the WDC are those produced by the NZTA and Austroads. Specific standards and specifications are listed in the contract documentation pertaining to each work activity. All work is performed in accordance with the relevant rules, objectives and guidelines specified in the latest editions of Council policy documents.

Operations and Maintenance Delivery

The monthly programme uses the prioritisation methodology based on ONRC road classification shown in the Figure 2 below. This ensures tasks are completed in order of importance whilst being cognisant of:

- Network trends
- Maintenance strategies
- Task prioritisation
- Risks with alternative maintenance standards
- Summary of future costs
- Clustering efficiency

This may require multiple work crews to be deployed to address the required quantum of work within the month.

The cyclic patrollers monitor defects and perform temporary holding repairs while waiting for permanent repairs to maintain safety and compliance, if necessary.



Fault Identification

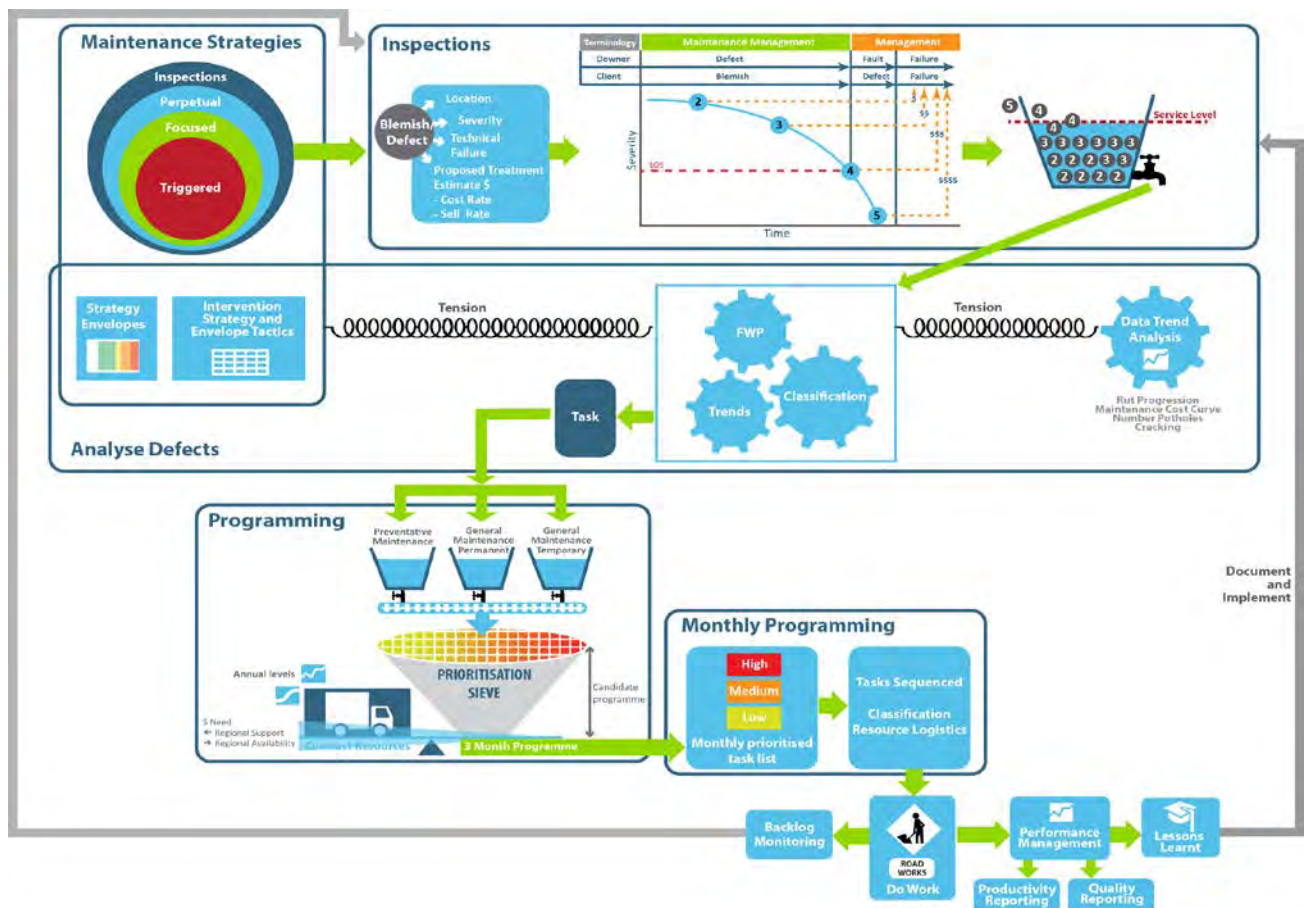
Faults and defects are identified by network inspectors and cyclic patrols. This process involves trained field operatives canvassing the network to identify all faults (and defects, across all assets) and then assigning each a severity level based on the LoS. The severity level is changed (rate of change tracked within recording system) as defects deteriorate and new defects are added with each inspection.

Network Inspectors use a visual assessment guide as a benchmark to assess a defect against the target LoS. Network Inspectors will record a defect Severity based on an assessment of each defect, dimensions of defect, a primary cause, and an initial proposed treatment.

The condition assessment prioritisation (Severity) guidelines from the National Asset Management Steering Committee (2011) have been adopted being:

- Very good condition - No fault is measured / recorded (monitor only).
- Minor fault - Identified fault is above the LoS but is recorded and is only being monitored, such as minor edge- break. The threshold for data capture is that it would be corrected as part of a pre-reseal repair.
- Moderate fault - Fault is safe and is below the LoS for the contract. However if a similar activity was programmed nearby these repairs would be considered for repairing.
- Requires intervention – Fault is now a Defect and is above the requirements of the LoS and requires intervention within the appropriate response time.
- Unsafe – Defect requires an immediate intervention through temporary repair or site management.

Figure 7.2: Maintenance Decision Making Process





Renewals

Assets are renewed when it is more cost effective in the long-term to replace rather than continue to maintain the asset. Longer term asset renewal needs are identified through analysis of condition assessments.

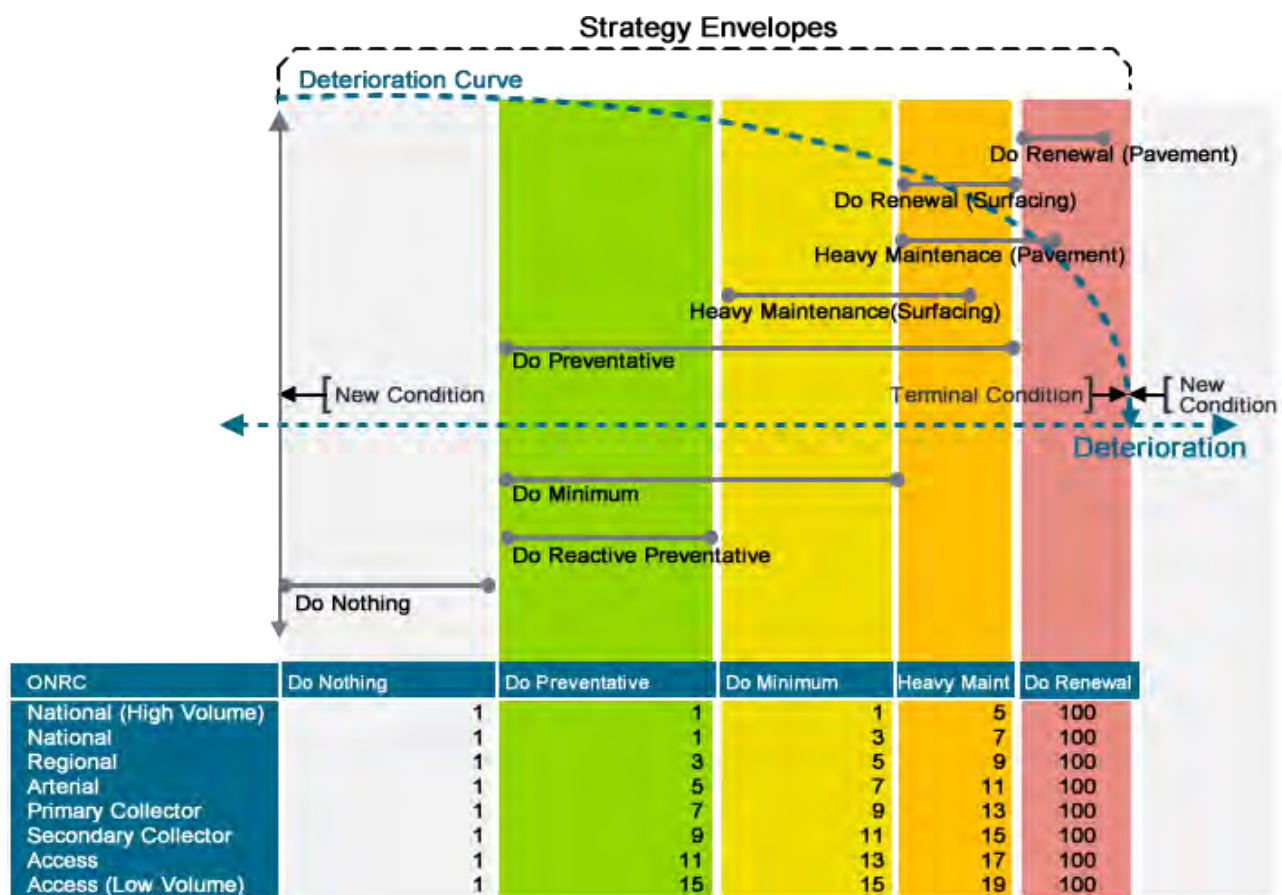
Creating a renewals programme is a complex undertaking with many processes required to ensure a robust forward works programme of renewals is developed.

- Data collection and preparation
- Data analysis and scenario modelling
- Field validation and model alignment

- Economic justification
- Outcome verification
- Final programme formulation

WDC use a set of strategy envelopes to help inform our treatment selection process, as shown in Figure 7.3. This helps create a first cut of possible treatment options based on the current and predicted condition of the asset.

Figure 7.3: Maintenance Activity Delivery Process





One Network Road Classification

Using the ONRC, Whanganui District places the customer at the heart of investment decision making. It also enables investment decision makers to direct investment where it is needed most, in the context of one national road network.

ONRC is new, and is a step towards ensuring equity and consistency for customers, across New Zealand.

Whanganui District Council's performance interpretation against the applicable ONRC measures is presented in the:

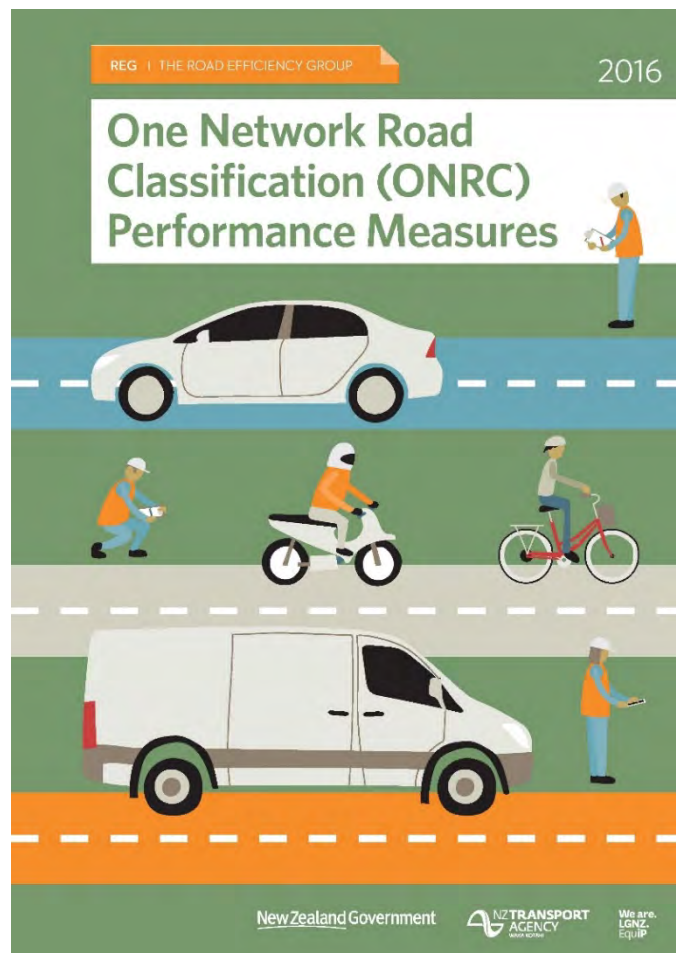
- Level of Service section of the AMP, for ONRC "Customer Service" measures
- Lifecycle Management section (this section) for "Technical Measures".

The peer group comparison used comprises a group of Regional Controlling Authorities (RCA) identified as "Provincial Centres" which include:

Buller District Council, Dunedin City Council, Gisborne District Council, Grey District Council, Hastings District Council, Hauraki District Council, Horowhenua District Council, Kaikoura District Council, Marlborough District Council, Matamata-Piako District Council, New Plymouth District Council, Otago District Council, Queenstown Lakes District Council, Rotorua District Council, South Waikato District Council, Tasman District Council, Taupo District Council, Thames Coromandel District Council, Timaru District Council, Waimakariri District Council, Waipa District Council, Western Bay of Plenty District Council, Westland District Council, Whakatane District Council, Whanganui District Council, Whangarei District Council.

Figure 7.4: ONRC Performance Measures

<https://www.nzta.govt.nz/roads-and-rail/road-efficiency-group/onrc/>





Pavements

The purpose of pavements is to provide a road network that is suitable for the effective movement of agricultural, commercial industrial goods, produce and people, has a safe suitable all-weather surface that is appropriate to its location and function in terms of skid resistance, noise reduction, smoothness, and has a structure suitable for legal loading requirements.

Pavement Asset Condition and Performance

Pavement performance is measured by how well it meets the requirement to provide safe, smooth, all weather access and does it have sufficient demand capacity for all the vehicles. Carriageways are typically strong enough for the loads they are expected to carry. Industrial and arterial roads are designed and constructed for heavy vehicles while residential roads carry much fewer heavy commercial vehicles (HCVs). High Productivity Motor Vehicles (HPMV) and 50MAX trucks are now using parts of the network and they are likely to grow in number. There is concern that the impact of this on the road pavements will be significant especially the additional demand generated but forestry related activities although this has yet to be verified in practice.

Condition and Monitoring

High Speed Data, Roughness and Condition Rating surveys enable trends in the condition of the network to be determined, comparisons made between the condition of roads in different areas and assist in identifying sections of road that should undergo closer inspection for maintenance and renewal treatments.

Roughness is a measure of the longitudinal profile of the road, and is measured using specialised equipment mounted in vehicles which travel the sealed network in both directions. The NAASRA count is the commonly used unit for the measurement of roughness. A higher NAASRA count indicates a rougher road.

Roughness

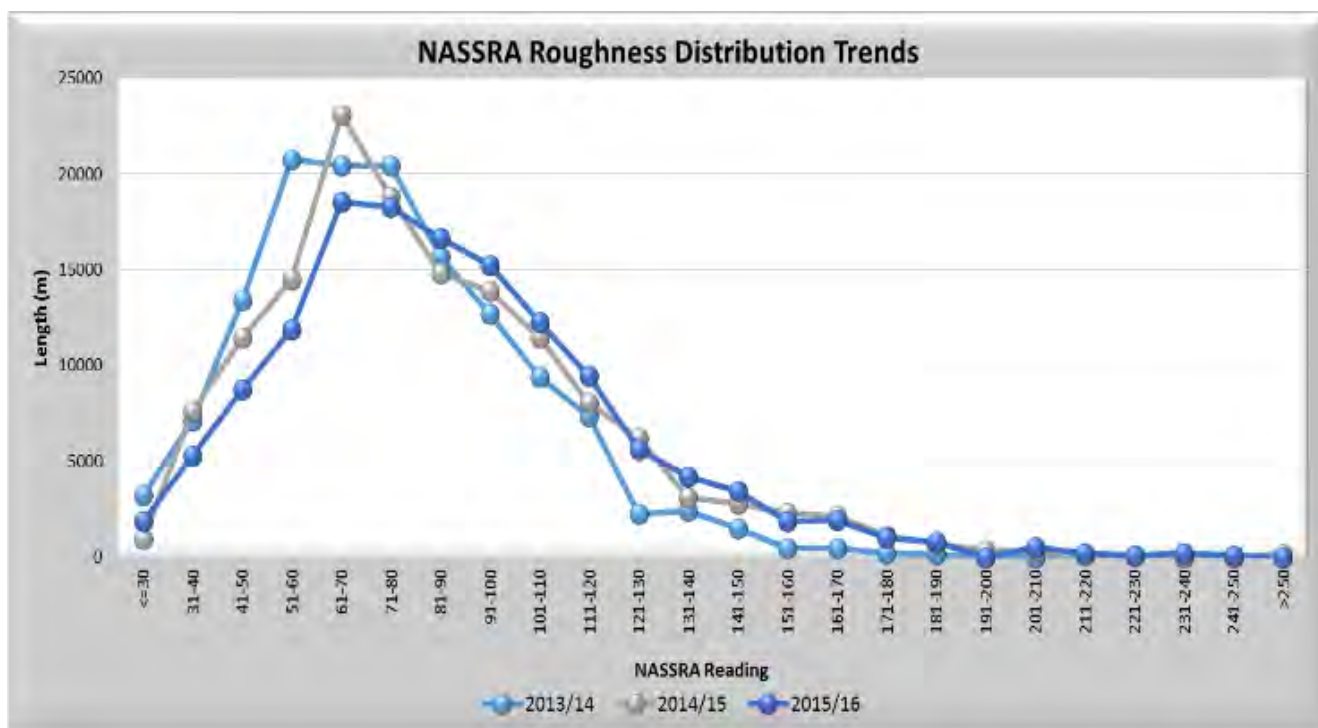
The trends in regard to roughness are a useful indicator of how effectively the pavement maintenance strategies are meeting the demands of increased traffic loadings and the network increasing in age. It is important to note that road pavements are always in a state of decay and that as they age their condition deteriorates and the cost of maintenance increases. The rate of deterioration is a function of the initial pavement strength, traffic loading and the maintenance effort applied.

Figure 7.4 shows the percentage of sealed roads within the network possessing that particular roughness. The highest percentage of roads exhibit a NRM of 61 – 70 (2015/2016). Currently the data trend is for Whanganui District roads to be getting progressively rougher.

Smooth Travel Exposure (STE)

The principal measure of sealed road performance in New Zealand is "Smooth Travel Exposure" which reports the traffic volumes using roads of different roughness levels. This means that if the roads which have the highest traffic volumes are the smoothest on the network then there will be a higher smooth travel exposure figure, than if the roads with the least traffic volumes are the smoothest.

Figure 7.5: Pavement Roughness Distribution





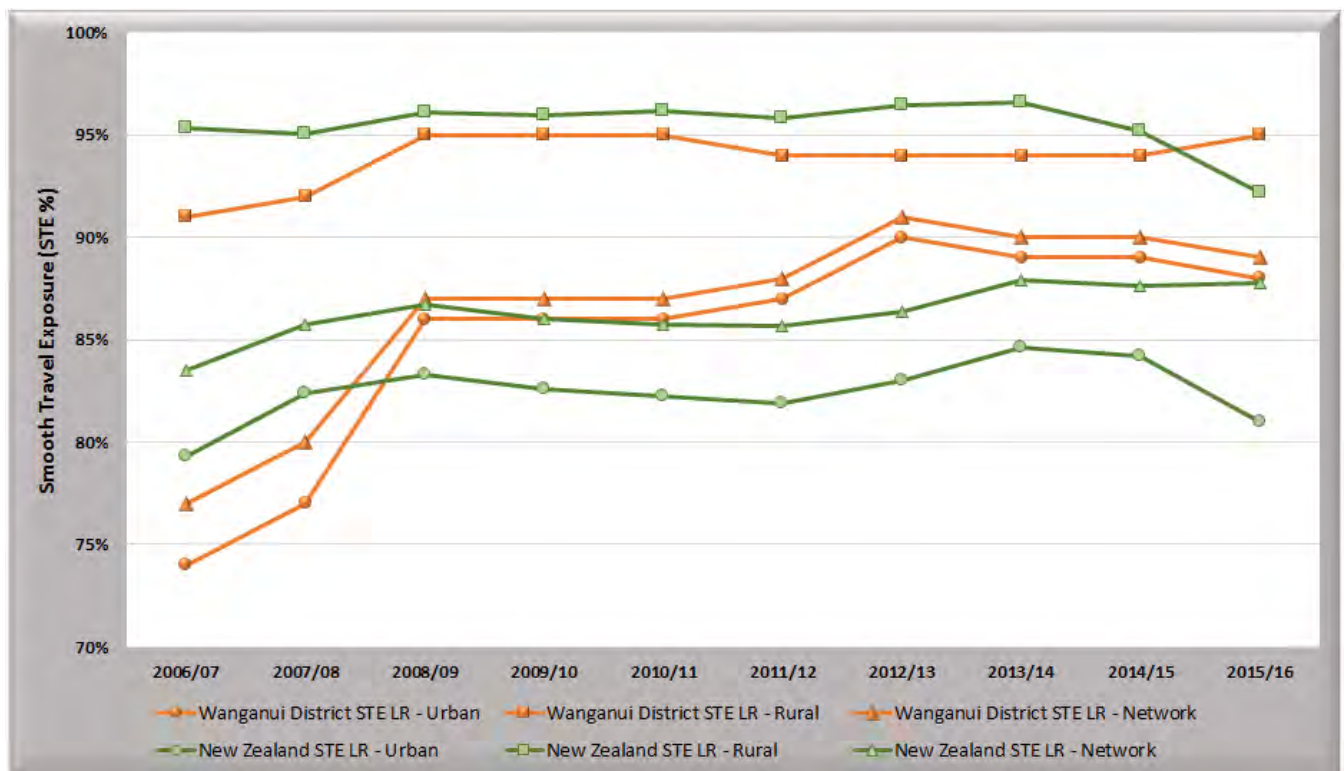
Smooth Travel Exposure is a combination of the above road roughness data and traffic loading. The ONRC reporting tool now enables Council to check network performance for individual ONRC classifications, peer groups and nationally. This measure is commonly used to compare networks across the country.

Figure 7.6 plots the percentage of Vehicle Kilometres Travelled (VKT) over smooth roads, where “smooth” is defined by the thresholds listed in the table following. The percentage of motorist who are exposed to rough roads in

Whanganui is on a par with the national average (Whanganui - 88% vs National Average 88%).

Currently 88.0% (2017) of all road users experience smooth travel within the Whanganui District. The graph highlights a stable trend in results over the last four years. The current value and trend in STE give a ‘snapshot’ in time. Substantially more information is needed to judge whether current maintenance practices, including the level of investment, are optimal.

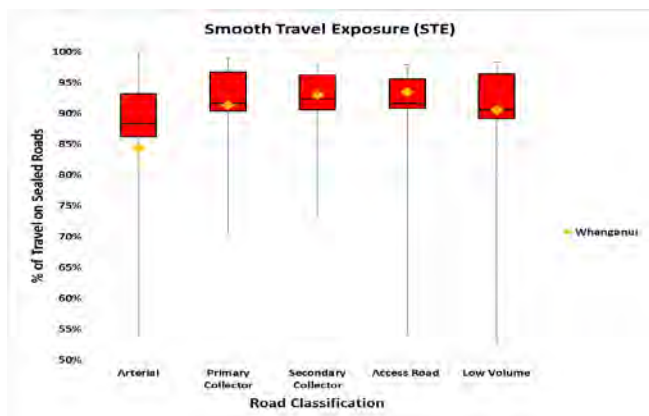
Figure 7.6: Smooth Travel Exposure for all Sealed Roads





When compared against ONRC classifications it is apparent the STE result for Arterials roads perform poorly compared to our peer group councils. These are also the roads that are most frequently used by our customers and therefore require further analysis to identify the worst performing road sections. .

Figure 7.7: Smooth Travel Exposure Comparison (Peer Group)



Condition Index (CI)

The CI is an index that describes the network sealed surface condition and allows easy comparison of historical and future surface conditions. A combination of alligator cracking, scabbing, pothole patches and flushing identified during condition rating surveys.

Condition rating involves a visual inspection where defects are measured and recorded in a standard and objective manner. Condition rating is undertaken on the road network with a 10% sample measured every 500m. This information is reported as a condition index, and is used to monitor trends in the network condition, and against the national average.

The CI is used to trigger resurfacing or reseal treatments. Figure 7.8 shows that the CI levels of the network continue to remain steady with slight annual variations.

Figure 7.8: Trend of Average Surface Condition Index

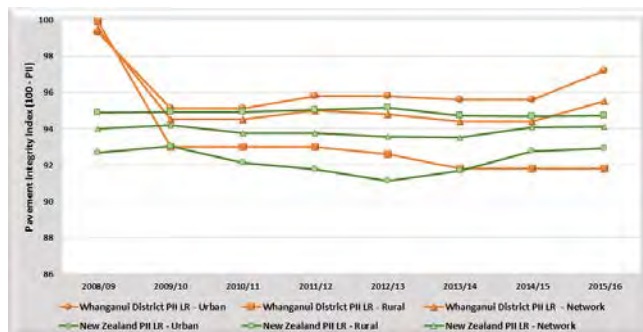


Note: Surface Condition Index is a "weighted sum" of the surface faults in the sealed road surfaces. The higher the number the better the network.

Pavement Integrity Index (PII)

The Pavement Integrity Index (PII) is a combined index of the pavement faults in sealed road surfaces. It is a 'weighted sum' of the pavement defects divided by the total lane length. PII combines surface faults with rutting and shoving. . This index combines the information gathered from the condition rating survey with the measurements recorded during the high speed data surveys.

Figure 7.9: Trend of Pavement Integrity Index



Note: Using 100 – PII ensures that the higher the number the greater the pavement integrity. The higher the number, the better the network.

Figure 7.9 shows a period of consolidation during which roading budgets have remained static. A deteriorating trend does not always indicate that corrective action should be taken, however future values should be monitored closely to ensure that this does not become a continuing trend.

Unsealed Roads

The condition of Whanganui District unsealed roads is highly variable throughout the year depending on weather. The District experiences an extreme range of weather conditions, and as such it is particularly challenging to provide unsealed roads which provide an appropriate level of service year round. Hot dry spells result in dust and corrugations, and rainfall conditions result in roads becoming wet and slippery. There is no unsealed material that will be perfect in all conditions.

The key objectives of the unsealed network are to:

- provide affordable access to property
- provide a fit-for-purpose pavement with materials selected to ensure whole of life performance
- maintain the running course to provide the adopted level of service
- provide a high level of maintenance for designated roads
- identify lengths for seal extension and progress these as funding becomes available
- ensure the development of the road network occurs at a variable rate.



Maintenance Intervention Strategy (MIS)

MIS Strategies and Definitions

The maintenance management of the network shall be implemented through ten primary strategies.

Each MIS strategy is represented as an alphabetic letter

- P, Pre-Reseal Strategy (Reseals Yr1)
- A, Priority Maintenance Strategy (Reseals Yr2)
- B, Proactive Maintenance Strategy (Reseals Yr3)
- C, General Maintenance
- D, Holding Strategy (AWPT Yr1)
- E, Selective Maintenance Strategy (AWPT Yr2)
- F, Selective Maintenance Strategy (AWPT Yr3)
- G, Selective Maintenance Strategy (AWPT Yr4+)
- H, Specified Strategy (sites requiring additional monitoring)
- S, Subsidence Zones (area subject to slippage)

Strategy (P) Pre-Reseal Strategy (Reseals Yr1)

- Definition:** This strategy is applied to treatment length sections that will be resurfaced within the current (Yr1) financial year.
- Objective:** To achieve a high standard of pavement maintenance prior to resealing and to ensure all pre-reseal improvements to drainage, shoulders, access ways and seal width are completed in time to allow their integrity to be tested before sealing commences.

Strategy (A) Priority Maintenance Strategy (Reseals Yr2)

- Definition:** This strategy represents reseal sites that are proposed in the next annual plan period (Yr2).
- Objective:** The same as category “P”, however it is important that any minor levelling and drainage improvements occur at least one year to resurfacing. Heavy pavement maintenance ideally should be as advanced as possible understanding any budgetary constraints.

Strategy (B) Proactive Maintenance Strategy (Reseals Yr3)

- Definition:** This strategy represents reseal sites that are proposed in the longer term programme (Yr3).
- Objective:** Reseal sections identified and pavement maintenance appropriate to reseal activity programmed. Extent of work completed usually dependant on budgetary constraints.

Strategy (C) General Maintenance

- Definition:** The day to day maintenance activity required to maintain a defined level of service specified for the various road groups.

- Objective:** To maintain the road section to the specified maintenance standards by programming and timely completion of cost effective repairs.

Strategy (D) Holding Strategy (AWPT Yr1)

- Definition:** This strategy is applied to treatment length sections that will be rehabilitated within the current (Yr1) financial year.

- Objective:** To limit maintenance inputs such that the costs associated with maintaining the section are minimised and that the safety of the network is not compromised.

Strategy (E) Selective Maintenance Strategy (AWPT Yr2)

- Definition:** This strategy represents AWPT sites that are proposed in the next annual plan period (Yr2).

- Objective:** Pavement maintenance inputs only undertaken where road user safety is compromised. Minimum acceptable level of service maintained. Where reactive maintenance is required a lower level of repair undertaken, designed to be serviceable until programmed AWPT.

Strategy (F) Selective Maintenance Strategy (AWT Yr3)

- Definition:** This strategy represents AWPT sites that are proposed in the longer term programme (Yr3).

- Objective:** The same as for category “E”.

Strategy (G) Selective Maintenance Strategy (AWT Yr4+)

- Definition:** This strategy represents AWPT sites that are proposed in the longer term programme (Yr4+).

- Objective:** The same as for category “E”.

Strategy (H) Specified Strategy (sites requiring additional monitoring)

- Definition:** This strategy represents sites on the roading network that have been identified as requiring a higher level of inputs due to various factors and influences. (Flooding, Accidents). Sections individually identified and specific maintenance strategy.

- Objective:** Implement appropriate level of maintenance intervention applying to specific road sections.

Strategy (S) Subsidence Zones (areas subjected to slippage)

- Definition:** Subsidence zones identified requiring increased monitoring and response due to frequency of movement and potential adverse effects.

- Objective:** To maintain the road section to the specified maintenance standards. Undertake appropriate initial response to ensure safety of the road user and mitigate against further slippage.



MIS Strategy by Treatment Length

Detail of the programmed maintenance intervention strategy which has been applied to the individual road treatment lengths are attached in the appendices. The MIS is reviewed annually following the update of the RAMM database with the physical achievements of the previous year and the inputs of road roughness, rating surveys and fault detection (all faults).

Predictive Modelling - dTIMS

Deighton's Total Infrastructure Management System (dTIMS) is an industry standard modelling tool in New Zealand. The dTIMS model predicts the rate of deterioration within surfacing and pavements over a 30 year period. Based on constraints and decision making criteria the model then provides estimates of the future maintenance and renewal investment required.

Whanganui District Council identified that predictive modelling was a necessary tool to confirm / or otherwise reject the assumption that additional loading origination from forestry harvest traffic would have a detrimental effect on the sealed road network condition over time.

The key objectives for undertaking dTIMS modelling on the Whanganui District road network was to:

- Undertake individual network analysis using the One Network Road Classification (ONRC) level of Service standards
- Establish at network level the consequences of increased traffic demand from forest harvest activities
- Determine the optimal maintenance expenditure/quantities in order to achieve the long term standards for the network with the ONRC standards
- Establish the consequences of various maintenance regimes on the long-term condition of the network.

A summary of the work undertaken as part of this task included:

- Cleaning of the data in preparation for the modelling
- Review of a previous study into wood availability and likely volumes of harvestable timber in the Whanganui District in the period 2018-2047.
- Building the model input files
- Establishing current budgets and treatment rates to be used
- Incorporating recent treatment interventions (triggers) aligned with the ONRC



- Establish increased network demand as a consequence of forestry and add to existing traffic volumes
- Running the models, optimising to various funding scenarios
- Summarising the findings aligned with the ONRC performance measures

The dTIMS forecasting and optimisation was completed for various investment and network demand profiles.

Scenario 1 – Current investment levels, current demand

Scenario 2 – Current investment levels, increased demand

Scenario 3 – Enhanced budget, increased demand

For the purposes of establishing a baseline network deterioration profile the LTP 2016/18 agreed funding allocation for sealed pavement maintenance and renewal activities was utilised. The purpose of the single budget level was to allow the model to determine the best use of the funds, given the overall benefit to the network, and aligned with the ONRC level of service performance targets for current network demand.

Scenario 2 used the same investment levels but additional forestry loading added to current estimates.

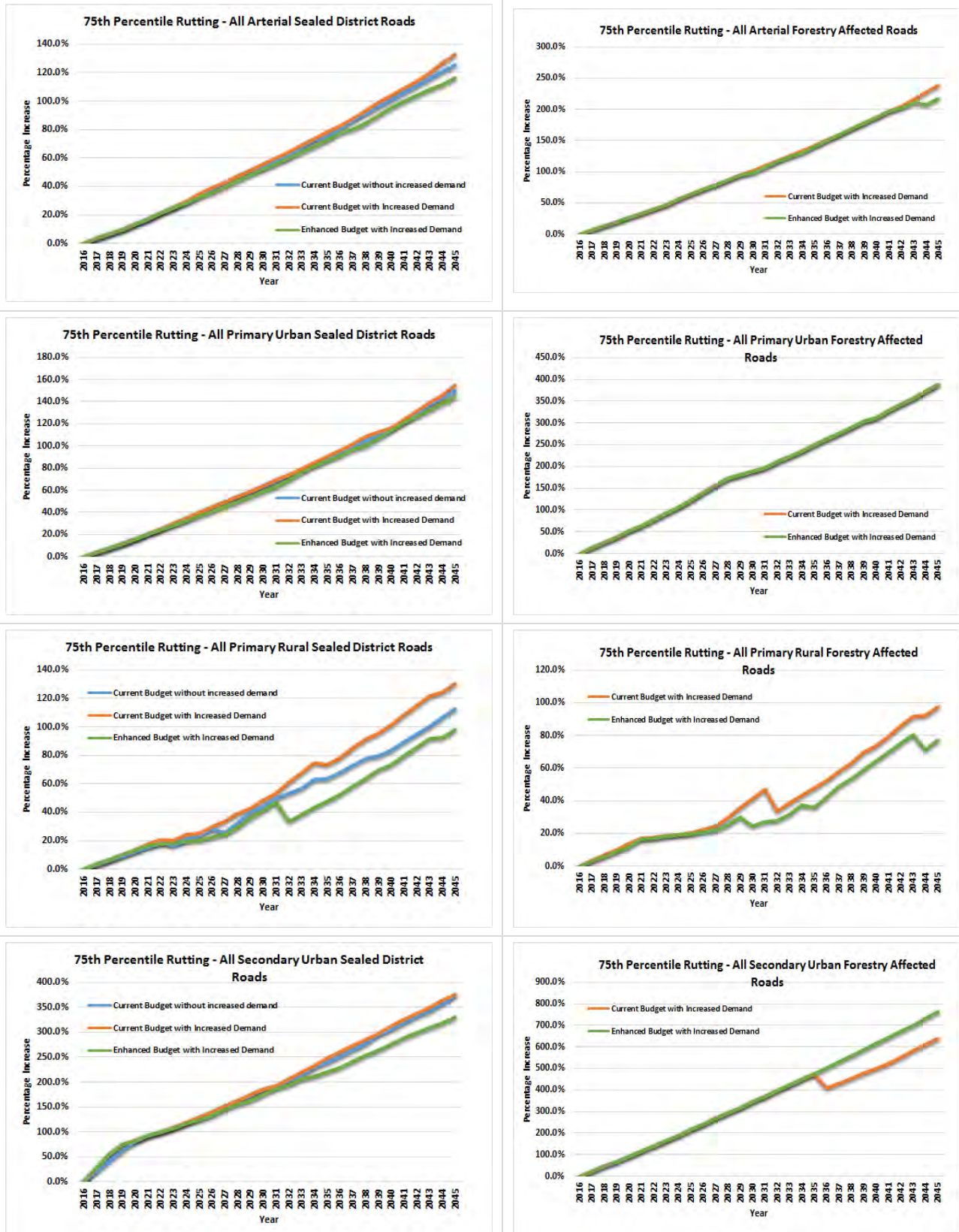
The enhanced budget scenario had no budgetary constraints with the purpose being to establish the level of investment required to maintain the road network within treatment intervention trigger tolerance.

We are able to establish from the forestry harvest report the route logging traffic will navigate from source to destination and graph the results as "Forestry Affected Roads"

The following figures provide a comparison of the sealed road network for pavement rutting for the various funding and network demand scenarios.

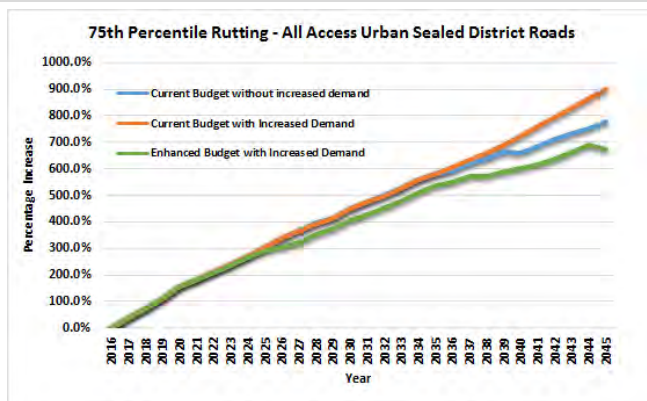
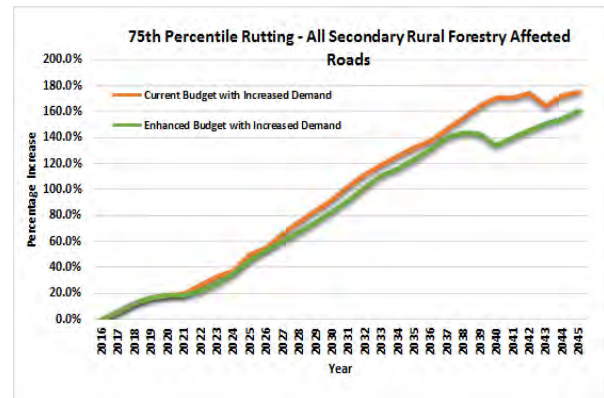
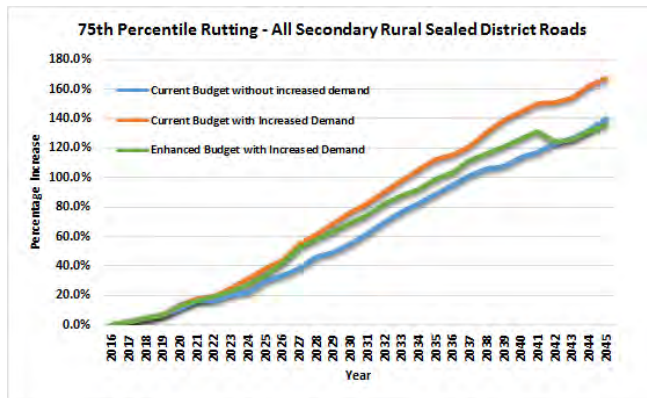


Figure 7.10: dTIMS 75th Percentile Rutting Profiles

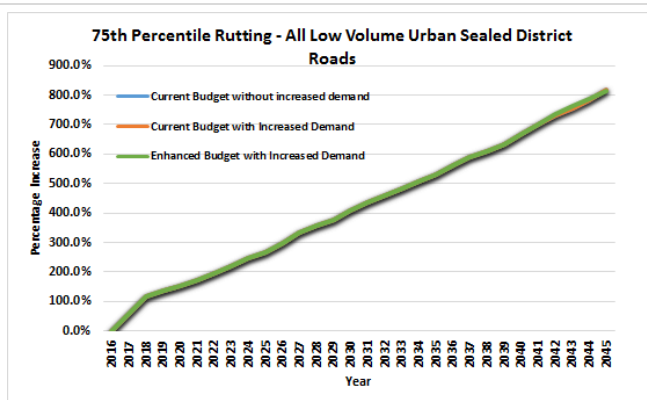
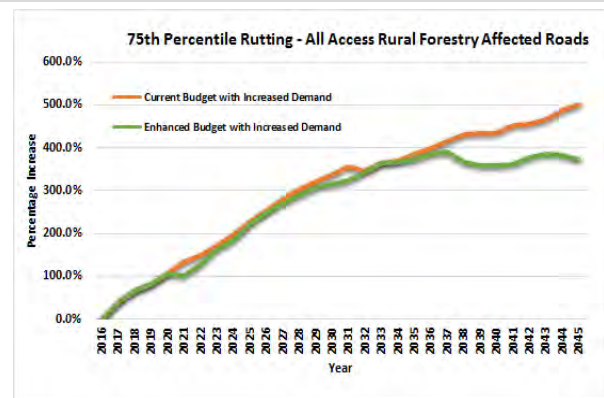
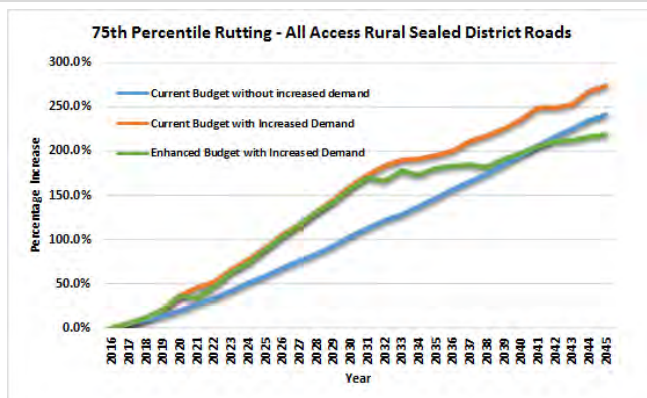




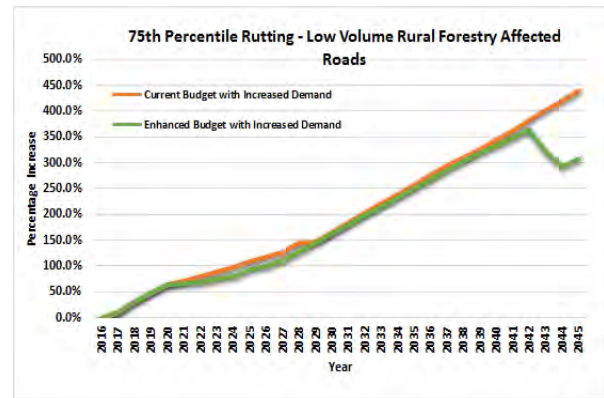
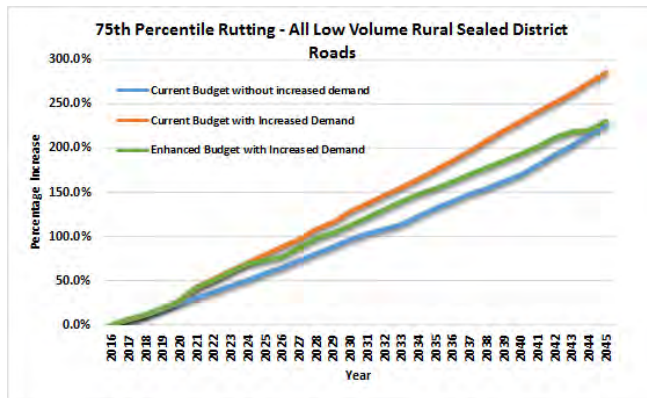
Lifecycle Management



Not enough data to calculate - only one (1) roads affected by forestry traffic



Not enough data to calculate - only two (2) roads affected by forestry traffic



Some key messages from the outputs for Rutting are:

- Average rutting trend for all ONRC classifications is for a steady increase over the 30 year analysis period from current low levels
- Access and Low Volume roads will have the most dramatic rutting increase. These have been identified as our critically at risk pavements with the subset “forestry roads only”, being particularly affected.
- There is a clear separation between current loading scenario and increased loading scenario rutting trends particularly for rural roads
- Roughness trends at network level are forecasted to remain under target ONRC levels except for “Primary Urban”

Each fault whether it be a pothole or pavement digout repair has a corresponding repair costs obtained from established contract unit rates. The sum of all faults identified is established for the entire roading network.

Cost of All Faults = (Unit area of the fault x unit rate).

Further each defect is assigned a priority, 1 to 5 with 1 - being new pavement assets with no defects and 5 - Safety related faults requiring immediate repair.

Severity Priority (SP) = (Unit area of the faults x unit rate x priority)

Network condition is established from the following formula

Condition = (SP/Unit area of the faults x unit rate)

Figure 7.11: Cost of Faults and Priorities

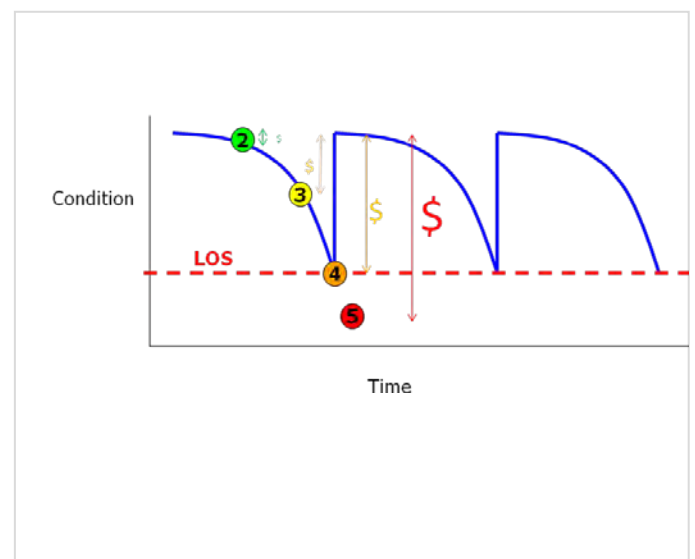
Sealed Pavement Maintenance and Operations

Pavement Fault Identification (All Faults)

In the past, machine collected data has been the mainstay for pavement analysis and performance measurement. The problem is that machine collected data doesn't portray the full picture as we are always looking at historical data – The measures therefore becoming 'lag' measures.

Council's road network maintenance alliance partner routinely inspects the road asset identifying faults and assigning severity priority levels as per agreed intervention levels. Logged faults are collected electronically utilising hand held data collectors. Faults data identified form the basis of forward programmes for prioritising maintenance activities. These identified real time faults provide a view of the changing performance of the network that has led to the development of new types of 'lead' indicator performance measures.

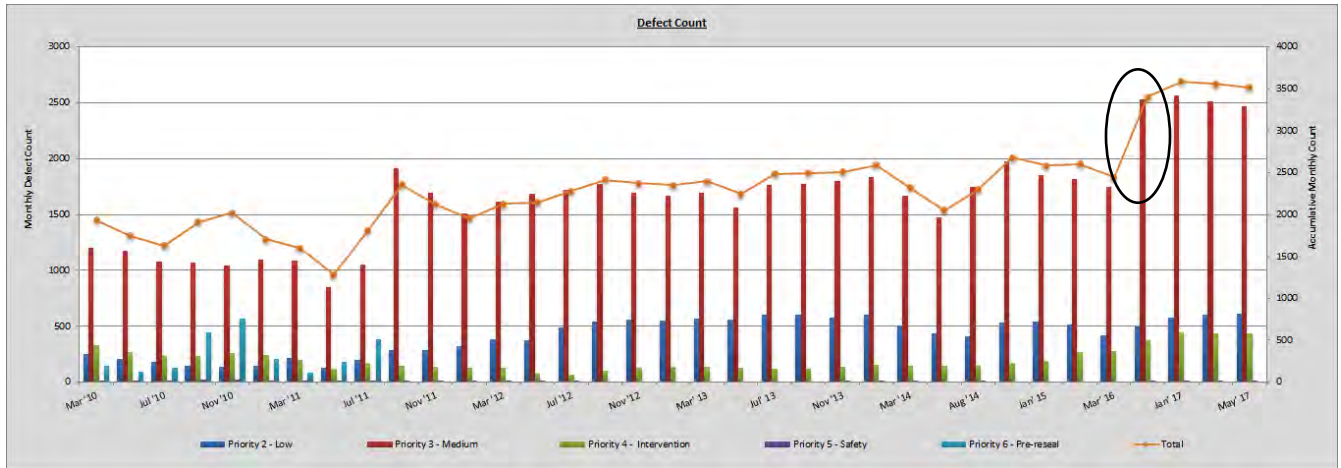
This enhanced visual condition rating system, known as 'All Faults' is a paradigm shift in how maintenance operations occur in most of New Zealand and shows that good infrastructure asset management practices are also good commercial management practices.





Lifecycle Management

Figure 7.12: Bi-monthly No. of defects



A significant spike in the number of defects on the road network is observed in the Aug 2016 quarter which coincides with the June 2015 flood event.

Table 7.7: Summary All Faults Data Results

Period (Ending)	Qty*rate	Severity Priority (SP) Qty*rate*priority	Condition SP/(Qty*rate)
Mar'10	\$2,925,208.00	\$10,645,268.63	3.64
Jul'10	\$2,602,229.75	\$9,306,439.99	3.58
Nov'10	\$2,746,768.25	\$10,534,600.43	3.84
Mar'11	\$2,136,372.78	\$7,252,451.65	3.39
Jul'11	\$2,050,180.76	\$6,976,841.75	3.40
Nov'11	\$2,226,348.90	\$6,653,361.91	2.99
Mar'12	\$2,327,083.84	\$6,800,594.10	2.92
Jul'12	\$2,548,386.95	\$7,264,893.13	2.85
Nov'12	\$2,813,001.33	\$8,270,339.77	2.94
Mar'13	\$1,913,335.49	\$5,639,087.82	2.95
Jul'13	\$1,663,886.66	\$4,884,807.52	2.94
Nov'13	\$1,770,573.22	\$5,272,221.31	2.98
Mar'14	\$1,874,154.68	\$5,628,462.50	3.00
Aug' 14	\$2,091,035.40	\$6,350,914.42	3.04
Jan' 15	\$1,990,819.96	\$6,042,654.75	3.04
Mar' 16	\$1,607,668.56	\$5,000,419.84	3.11
Jan' 17	\$3,240,459.13	\$10,534,358.62	3.25
May' 17	\$2,856,431.73	\$9,063,910.39	3.17



Lifecycle Management

Figure 7.4: Bi-monthly Value of Faults

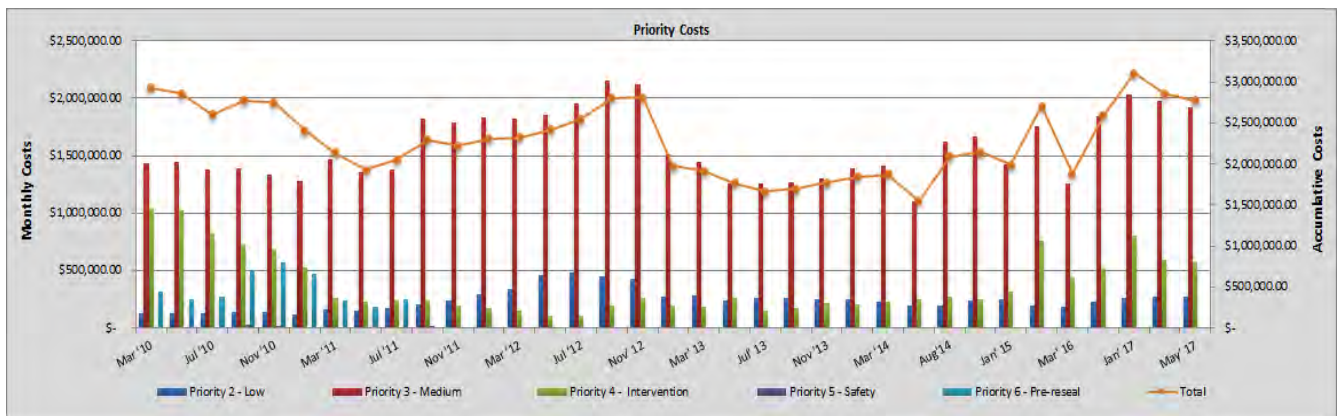
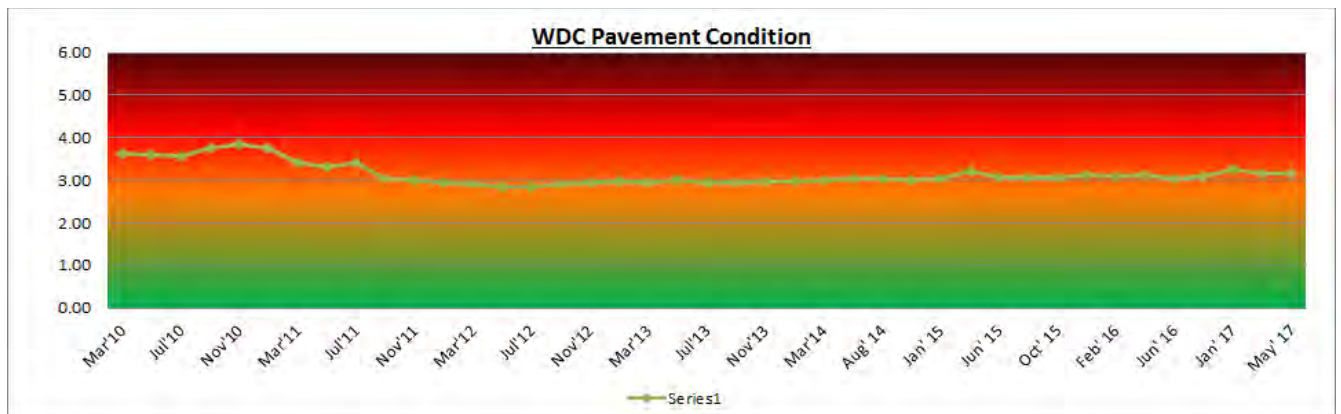


Figure 7.24: WDC Pavement Condition



At any point in time the cost of repairing all identified faults and the overall condition of the roading network can be established. This is a practical output in:

- Analysing whether the network is improving or deteriorating based on the total value of repairs identified.
- Assessing deferred maintenance needs.
- Highlighting budget deficiencies.
- A reality check to determine whether existing maintenance strategies are working, and
- Establishing network condition

The valuing of pavement faults in this manner indicates that pavement condition is currently stable.

Advanced Pre-Reseal Repair Treatments

Delivery of pre reseal preparatory repairs the year prior to resurfacing treatments is considered best practice in pavement operations and enables resurfacing to be done at the most optimal time of the year rather than being delayed. We have made allowance to move to this practice over time, bringing forward a portion of the following years preparatory repairs each year since the start of the Alliance. This should allow us to deliver this work type within current resources, whilst moving to more advanced delivery of our carriageway renewals. Currently we sit at around 60% ahead of the current year with a focus to hit a full year ahead on pre reseal repairs in the next financial year or two.

Historical Pavement Operating and Maintenance Expenditure

Table 7.7: Historical Pavement O&M Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Operations & Maintenance								
Maintenance (sealed)	1,718,593	1,832,553	2,041,739	2,104,538	2,291,908	1,312,042	2,264,786	2,200,000
Total	1,718,593	1,832,553	2,041,739	2,104,538	2,291,908	1,312,042	2,264,786	2,200,000



Unsealed Pavements

Unsealed roads in Whanganui District make up 31.9% of the road network and provide vital access to rural communities (residents, farming, forestry, tourism and recreational). These roads usually have relatively low traffic volumes, but the types of vehicle can range from bicycles, quad bikes, private cars, tour bus, farming tractors, construction vehicles, to forestry trucks. For economic reasons, unsealed roads are not surfaced with bituminous products and there have been some cases where previously sealed roads have been reverted to unsealed to maximise cost efficiency.

Unsealed roads service both light and heavy traffic, but the two traffic types create different maintenance needs.

For light vehicles, the main drivers are ride quality and safety. Unsealed roads also need to be accessible and adequately safe in all conditions (day, night, rain, low visibility, etc.) and this is especially important for tourists and visitors who will not be used to driving in these conditions. Defects such as corrugations, potholes, rutting, heaves and shoves, loose aggregate and large stone matrix usually have an impact on the ride quality. Safety is reduced due to the presence of loose aggregate, poor road geometry (vertical and horizontal alignments), inconsistent width and graded edge line, lack of delineation, and ponding water.

Heavy vehicle requirements are more about accessibility, width of road and ability to withstand the loads being carried. Typical issues are soft road surface or base, and roads which are too narrow to allow opposing traffic to pass by safely.

The key objectives of the unsealed network are to:

- provide affordable access to property
- provide a fit-for-purpose pavement with materials selected to ensure whole of life performance
- maintain the running course to provide the adopted level of service
- provide a high level of maintenance for designated roads
- identify lengths for seal extension and progress these as funding becomes available
- ensure the development of the road network occurs at a variable rate

Forestry harvesting has increased over the past few years which has had an upward trend on the percentage of heavy vehicles on unsealed roads. Many unsealed roads have not been designed to carry these loads, and maintenance needs will greatly increase under the heavier traction and braking actions and greater swept path demand of longer vehicles.

Maintenance & Operations

Maintenance of the unsealed roads is about keeping the asset functional and fit for purpose throughout the life cycle, allowing the asset to deteriorate until rehabilitation or renewal is needed.

Network classification informs the level of maintenance expected for each treatment length. Lower classification roads will have a higher tolerance of deteriorating condition, as the appetite for risk is higher due to the lower usage. Whereas high classification roads have a lower tolerance of risk and subsequently be maintained to a higher degree.

While a formal condition assessment or summary is not captured for unsealed roads the use of All Faults means the ability to highlight areas requiring maintenance or renewal activities and as such can ensure the expected levels of service are adhered to.

As a minimum, the following information is needed to describe the planned and reactive maintenance regime of the unsealed road:

- Faults and defects (potholes, corrugations, rutting, soft spots, drainage, etc.)
- Maintenance cost (per km, per ADT for HCV, per season, per aggregate type)
- Forward Works Programme and Annual Plan
- MIS codes

Inspections

The routine inspection focuses on unsealed pavement assets and the obvious drainage assets include:

- Safety, line of sight (sight distance, vegetation encroachment), vegetation control and its effectiveness, dust, customer requests
- Reactive maintenance (for example potholes, corrugations, flooding, loose aggregates, surface water runoff)
- Condition rating
- Visual check of known dropouts and slips.

The detailed inspection drives the Capital Works (metalling renewal programme) and assists in fine tuning the maintenance grading programme.

Post grading inspection includes:

- Drainage and HVA assets (water table, culverts, cutouts, soakpits, marker posts, etc.) and their effectiveness
- Visual check of known dropouts and slips.

A pre-grading inspection determines the scope and type of grading, and is usually carried out by the rural inspector.

Programming

Grading frequency is dependent on the following factors:

- Traffic conditions (AADT, HCV)
- Materials used on previous metalling programmes
- Climate and rainfall
- Road crossfalls and grades
- Road width
- Existing road condition and pavement strength



- Drainage
- Level of service and customer expectations (safety, defects and roughness)

Frequent inspections eliminates grading for the sake of it and is targeted at maintaining target customer Levels of Service.

Managing Dust

Dust is primarily the suspension of fine particles (less than 75µm) from the loosening and disturbance of the road surface by vehicles and wind. The presence of fines is generally due to a lack of binding moisture arising from dry and windy weather, typically during the summer months.

Managing dust is an important aspect of maintaining an unsealed road network. Dust is the loss of fines at the surface. Pavements lose their water shedding ability which in turn results in increased risk of pavement failure due to moisture penetration. The loss of fines also causes the

wearing layer to become coarse in time, which leads to aggregate loss and rougher surface texture and ride.

These contribute to higher maintenance costs, higher vehicle running costs, increased material replacement costs and customer complaint.

We ensure good maintenance practices utilising the appropriate materials:

- Using high Plasticity Index material (high clay content running/wearing course)
- Adequate aggregate moisture content at time of placing (natural or sprayed)
- Compaction of aggregate layer to form a hard surface crust (e.g. using a walk n' roll or similar)
- Avoid the use of pumice and alluvial aggregates in unsealed roads maintenance

Historical Pavement Operating and Maintenance Expenditure

Table 7.8: Historical Pavement O&M Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Operations & Maintenance								
Maintenance (unsealed)	255,296	232,131	271,832	175,645	243,802	201,222	230,000	230,000
Total	255,296	232,131	271,832	175,645	243,802	201,222	230,000	230,000



Pavement Renewals

Resurfacing Renewal Works

Resurfacing is undertaken periodically to retain the waterproofness of the sealed surface and good skid resistance. There are a number of defects that can result in a requirement to either reseal or repair the existing road surface.

- Cracking
- Potholes
- Loss of water p roofing
- Flushing
- Chip Loss (scabbing & ravelling)
- Loss of Texture / Skid Resistance

Historical Surfacing Renewal Works

Figure 7.15 shows the length of surfacing undertaken over the past 10 years with an average of 40.1 km of resurfacing undertaken during that period. The graph shows a decrease in resurfacing from 2007 which reflects a decision made at that time to reduce chip seal return periods.

In the last six years the average annual resurfacing achievement has been 34.0 km per annum. This equates to an average seal life of 14.3 years or 7% of the network annually.

The downside of pushing surfacing lives is that it creates a risk of expensive pavement repairs in the future and also creates a backlog of older sites. Minimizing the risk of pavement damage by correctly timing resurfacing is a key part of carriageway asset management.

Figure 7.17 indicates that a total of 196 km (171.9 km – 2014) or 32.7% (29.8% - 2014) of surfacing has reached and exceeded its predicted design lives.

As previously mentioned, resurfacing based on seal age alone can lead to a number of 'birthday seals', which may not necessarily be required. The backlog is due to surfacing lasting beyond their predicted life. It is important that inspections of those sections of road (highlighted as having reached their predicted design lives) are undertaken to ensure that the information within the RAMM database is a true reflection of the network and that resurfacing is undertaken as dictated by condition.

This is completed annually to refine the forward programme and make adjustment as may be required to maintain the integrity of the underlying pavement structures.

Figure 7.15: Historical Resurfacing Lengths

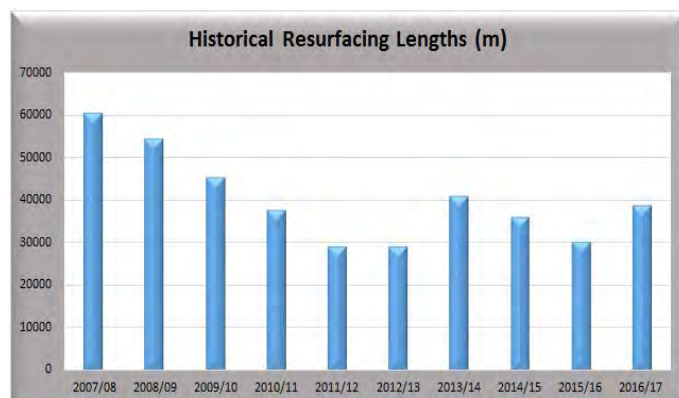


Figure 7.16: Average Surfacing Lives

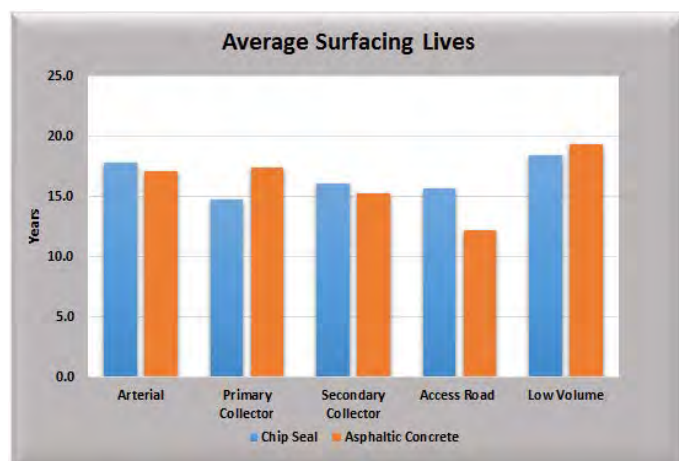
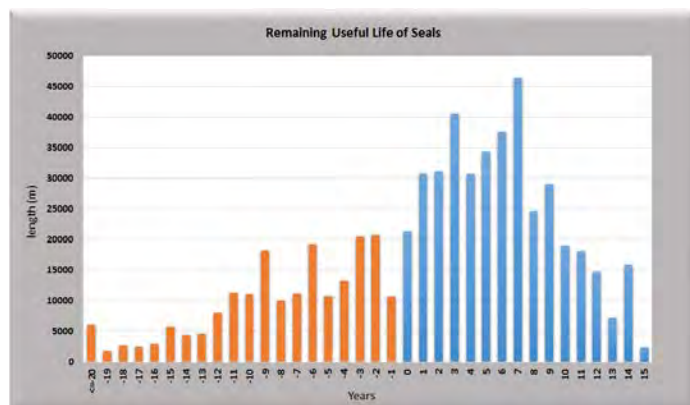


Figure 7.6: Remaining Useful Life of Seals





Lifecycle Management

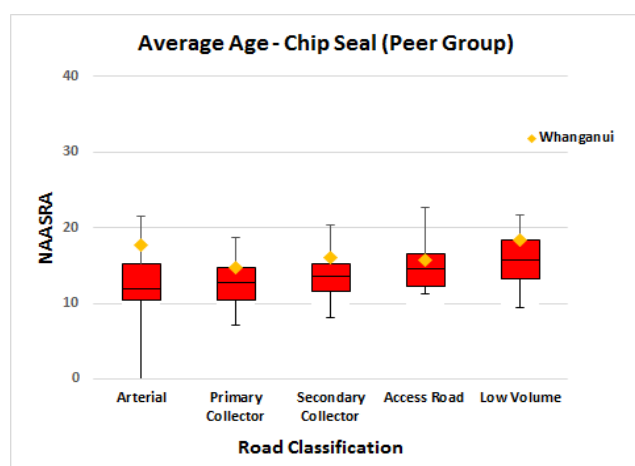
The expected life for different surfacing types and traffic conditions are summarised in Table 10 below. These

values are the default seal age values in RAMM and have not yet been modified to reflect Whanganui conditions.

Table 7.9: Surfacing Expected Lives

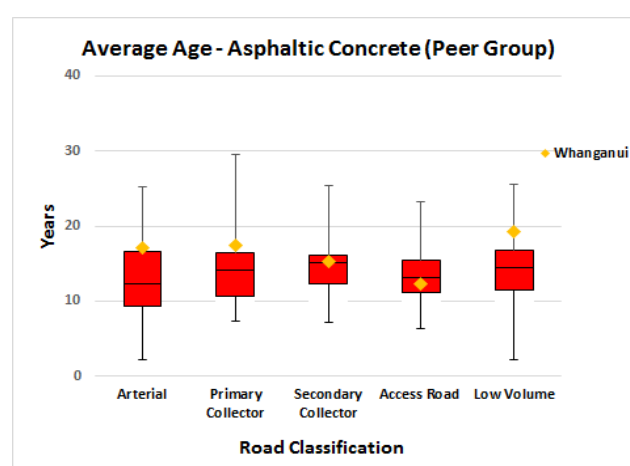
Surfacing Type	Traffic Volumes (AADT)					
	<100	100-500	500-2000	2000-4000	4000-10000	>10000
Asphaltic Concrete	12	11	10	9	8	7
Open graded porous asphalt & macadam	12	11	10	9	8	7
Slurry Seal	8	7	6	5	4	3
Reseal Grade 2	14	13	11	10	9	8
Reseal Grade 3	13	10	9	9	8	7
Reseal Grade 4	10	9	8	7	6	5
Reseal Grade 5	8	7	6	5	4	3
Reseal Grade 6	5	4	3	2	1	1
Multi Coat Reseals (2/4)	14	13	11	10	9	8
Multi Coat Reseals (3/5)	13	10	9	9	8	7
Multi Coat Reseals (4/6)	10	9	8	7	6	5
Single Coat First Coat	1	1	1	1	1	1
Two Coat First Coat	3	3	2	2	1	1

Figure 7.7: Average Seal Age Peer Group Comparison



Chip seal surfacings in Whanganui District are generally lasting longer between resurfacing cycles when compared against our peers.

A programme of treatments on Arterials is proposed in response to deterioration of other network statistics for this classification.



While the results indicate Whanganui is performing well against the peer group it is disappointing to note that generally asphaltic concrete are not meeting our expectations in terms of extended life.



Table 7.10: Historical Sealed Roads Resurfacing Renewal and Capital Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Renewal & Capital								
Sealed Roads Resurfacing	2,258,753	2,268,611	2,114,726	2,263,346	1,964,250	1,860,248	2,340,752	2,150,000
Total	2,258,753	2,268,611	2,114,726	2,263,346	1,964,250	1,860,248	2,340,752	2,150,000

Historical Sealed Roads Pavement Renewal and Capital Expenditure

Table 7.11 above summarises the historical pavement renewal and capital works expenditure for the period 2010/11 to 2017/18

Pavement Rehabilitation Renewal Works

Road pavement rehabilitation renewals are required where the pavement layers are reaching the end of their design life and are showing signs of deterioration. Renewal works, rather than resurfacing, then becomes the best option when considering the whole life costs of the pavement.

Historical Rehabilitation Renewal Works

Currently Council is rehabilitating 3 - 4 km of sealed roads each year which is less than 1% of the sealed roads in the network. Figure 18 show that in the year 2016/17 a considerably higher level of pavement renewals was achieved compared to the years proceeding. This anomaly can be linked to pavement reinstatement activities undertaken in conjunction with the June 2015 flood event.

In simple terms, based on a 573 km sealed network with a 100-year life cycle, the average annual renewal replacement demand is approximately 5.7 km. The amount of renewal work carried out being far less than this, could suggest that the condition of the network has not warranted such a level of expenditure or that the asset is being allowed to deteriorate. Indices would appear to suggest that the network is at a transition stage from a steady trend into a declining phase.

Based on the prediction of a "Wall of Wood" expected to emerge in the near future and the likely increase in the proportion of heavy traffic demand in the traffic stream, rural pavements are expected to come under increasing pressure to perform.

Studies commissioned by Council paint a gloomy picture in terms of the magnitude of increased demand on particular roads on the network.

Predictive Modelling - dTIMS

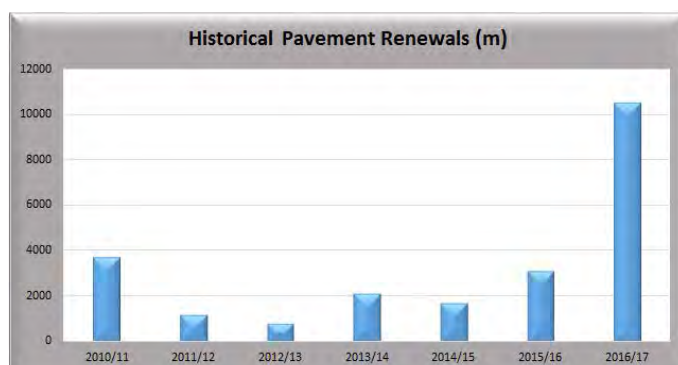
In response to the potential consequences of forestry related demand on the transportation network Council have instigated predictive modelling using Deighton's Total Infrastructure Management System (dTIMS) to ascertain at a strategic level the future pavement condition based on current funding investment levels.

The dTIMS model predicts the rate of deterioration within surfacing and pavements over a 30 year period. Based on constraints and decision making criteria the model then provides:

- estimates of the future renewal investment required to maintain a defined level of service
- Asset Condition data based on different funding scenarios
- Recommendation of proposed treatments.

Results and commentary on the dTIMS modelling outputs are discussed further in the Programme Business Case section of the AMP.

Figure 7.8: Historical Sealed Pavement Renewals





Decision Making Process

Potential candidates for renewal treatments are identified using All Faults data, dTIMS renewal forecasts, and engineering judgement. These sites are investigated in detail as part of our forward works development process.

We utilise our All Faults data along with the High Speed Data as inputs to our predictive modelling tools.

These models give us different perspectives on the future need for the carriageway asset in terms of renewals. Field validation and model alignment occurs once we have refined the model outputs in the office. A virtual drive over of treatment sites eliminates sites where there are obvious

benefits to delaying treatment, such as aligning with capital works or development programmes.

Rehabilitation sites are analysed in detail to determine if they can be justified according to the criteria in the Transport Agency's *Economic Evaluation Manual*. Sites are justified when the whole of life cost is lower for the renewal option than the do nothing or do minimum options.

Historical Pavement Rehabilitation Renewal and Capital Expenditure

Table 7.13 below summarises the historical pavement renewal and capital works expenditure for the period 2010/11 to 2017/18

Table 7.11: Decision Making Process

Model	Summary	Detail
Financial Model	Age and condition based replacement schedule	A renewal forecast using remaining useful life has been considered based on the asset valuation information. The valuation process using condition data to adjust asset age and remaining useful life which we have used to forecast the timing for renewal of the carriageway asset components.
New Zealand Roads (IDS) dTIMS Model	A long term condition optimisation model	The IDS empirical mechanistic model is highly sensitive to condition data and achieves best results with year on year data sets from a high speed data collection survey.

Table 7.12: Historical Pavement Rehabilitation Renewal and Capital Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Renewal & Capital								
Pavement Rehabilitation	460,752	792,430	277,992	449,753	545,657	736,091	744,980	730,651
Total	460,752	792,430	277,992	449,753	545,657	736,091	744,980	730,651



Unsealed Roads

The unsealed network is much more dynamic than the sealed network as it responds adversely to heavy rain, periods of dry weather, peak traffic flows and heavy loads.

Unsealed roads usually require pavement renewal for one of two reasons:

- Failure of the pavement structure in a similar manner to that which occurs on sealed pavements, and
- Insufficient renewal of the metal surface, resulting in traffic running on the pavement structural layers, eroding and damaging them.

Economic, social and legislative changes in recent years have all combined in impacting on the unsealed pavement network regarding its suitability for road users.

- Changing land-use - The decline of pastoral farming and increase in alternative uses, particularly forestry and dairying, has increased loadings on the network.
- Transport economics - Larger and heavier trucks have improved the economics of more remote properties and

industries creating road user demand for improved roads.

- Lifestyle blocks - Desire for rural lifestyles has increased commuter activity. Generally road users associated with lifestyle blocks drive conventional low riding rather than 'farm' type vehicles which increases demand for smoother riding roads.
- Legislative changes - Legislative changes has resulted in heavier and longer vehicles being able to be driven on any road without restriction and with no appreciable upgrading in the network.

Unsealed roads pavement metalling is identified through inspection, network knowledge and maintenance need. Environmental factors can also influence programmes.

Historical Pavement Unsealed Road Metalling Renewal and Capital Expenditure

Table 7.14 summarises the historical pavement renewal and capital works expenditure for the period 2010/11 to 2017/18

Table 7.14: Historical Pavement Unsealed Road Metalling Renewal and Capital Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Renewal & Capital								
Unsealed Road Metalling	434,146	496,436	441,018	482,623	479,840	299,919	520,081	480,000
Total	434,146	496,436	441,018	482,623	479,840	299,919	520,081	480,000



Pavements Capital Asset Development

New assets result from:

- The development of new portions of pavements when completing seal widening, seal extension works, and road realignments.
- New works ie new roads (green fields construction), and
- Pavements and other assets that are vested with Council as a result of subdivision development.

The development of the road network is undertaken in accordance with the District Plan, which indicates priorities for road widening and new construction.

Projects are justified and prioritised on the basis of a benefit / cost analysis which accounts for:

- The benefit to the road user for reducing delays in the time to travel along a given route.
- Vehicle operating cost savings.
- Safety benefits.
- Intangible benefits, including community dislocation, environmental issues (pollution, water quality, noise and vibrations) and other possible local, regional and national issues.

Safety Improvements

Each year Council makes provision for minor improvement works, which includes:

- Improvement projects
- Visibility improvements.
- Improved street lighting and rural flag lighting.
- Road curvature realignment.
- Signage, and
- Road widening.

The funding of which is outlined in NZTA's Planning, Programming and Funding Manual.

The projects to be undertaken will be identified from the results of crash reduction studies, safety audits and public feedback and prioritised on the basis of crash records and the degree of risk posed at each site. These projects are carried out when they can be shown to be economically justified and funding obtained from NZTA through the district transportation programme or in conjunction with other transportation works.

Seal Widening

Minimal seal widening has been carried out in recent years. Currently there are no seal widening projects that meet the NZTA criteria to attract financial assistance.

Roads will however, be considered for widening in conjunction with rehabilitation due to failing condition.

Seal Extension

Council undertakes sealing of unsealed roads when these projects are economically justified with priority being given to the unsealed roads receiving the highest degree of usage.

The benefits arising from the sealing of unsealed roads are a smoother ride for motorists, reduced vehicle operating costs and travel times, reduced maintenance costs, improved safety and capacity, a greater degree of security of access and the alleviation of the effects of dust on adjoining property owners and road users.

Council has in some instances collected a special rural rate where the residents have agreed to fund the local share of the improvements to the road network.

Capacity Improvements

The Council has adopted a District Plan functional road hierarchy. Following on from this the Council plans to encourage the use of Arterial and Collector roads by making these roads more suitable for their purpose. In turn there are some local roads that need to have some traffic calming measures to discourage their use by inter suburban traffic.

The Council has a Transportation Strategic Strategy that gives direction to the ongoing and ever-changing development of the transportation network.

Funding for New Capital Transportation Projects

Transportation improvements are funded from the transportation rate and financial assistance received from NZTA and in some instances loans. The costs associated with debt servicing and the repayment of transport loans are met through the transport rate.

Financial assistance from NZTA is available for the carrying out of transport improvement projects which can be shown to meet the criteria and a benefit cost ratio (BCR). The BCR is determined on the basis of the benefits and costs that will accrue over a 30 year period. The benefits included in the analysis include accident cost savings, travel time savings, vehicle operating cost savings and maintenance cost savings.

A block allocation is also provided for the carrying out of minor improvement projects with a cost of less than \$1,000,000. The size of the block allocation is determined from the size of the total transport programme as a percentage. Council have the option of either accepting or declining this funding source. WDC have traditionally accepted the full amount available to undertake improvement works.



Asset Disposal

Disposal as it relates to pavements is concerned with the removal of carriageway assets from the Council network. Pavement disposal involves the permanent removal of the services provided by the facility in that location.

Assets may become surplus to requirements for any of the following reasons:

- Under-utilisation
- Obsolescence
- Land has a more valuable alternative use
- Assets are replaced before their predicted economic life expires
- Upgrading or operating is uneconomic
- Policy changes
- Service is provided by other means (e.g. private sector involvement).

Disposal Strategy

Asset disposal processes will comply with Council's legal obligations under the Local Government Act 2002, which covers:

- Public notification procedures required prior to sale.
- Restrictions on the minimum value recovered, and
- Use of revenue received from asset disposal.

From time to time berm areas surplus to requirements, areas being informally occupied by adjoining landowners or areas of (unformed) legal road reserve will be identified for rationalisation.

Surplus areas of land may be sold in accordance with relevant legislation and Council policies to minimise future maintenance costs or other liabilities and to obtain a return on underutilised land assets, as well as to improve public access to reserves and rivers.

Both the Public Works Act and the Local Government Act refer to these processes. Areas of road reserve land occupied by private persons or organisations are formalised under a licence to occupy agreement.



Structures: Bridges, Large Culvert & Retaining Structures

The purpose of bridges and culvert structures is to provide continuous all-weather road access over rivers, streams and uneven terrain, supporting vehicles and ensuring the safety of road users.

Bridges, Large Culverts & Retaining Structures Asset Condition

Condition and Monitoring

Bridge structures are inspected in accordance with the current NZTA (Transit NZ) Bridge Inspection Policy (TNZ S6) Bridges and Large Culverts (Waterway area greater than 3.4m²) are to be inspected with the following frequency:

Table 7.15: Bridge structure inspection frequency

Inspection type	Inspection Frequency (Years)
General	2
Principal	6
Special	
Posted Bridges	1
Others	As required and generally occur following significant natural event

Superficial six monthly inspections are undertaken by the Contractor under the Road Maintenance Contract. These inspections are carried out as part of the normal inspection cycle for the roading network.

Maintenance schedules prioritising maintenance, repairs and further inspections are prepared annually.

Culvert structures are to be inspected in accordance with the current New Zealand Transport Agency (NZTA) Bridge Inspection Policy (TNZ S6) as applicable to culverts. Inspections are to be completed with the following frequency:

Table 7.16: Culvert structure inspection frequency

Structure Category	Inspection Frequency (Years)	
	General	Detailed
Large Culverts (>3.4m ²)	2	6
Major Culverts 1	5	10
Major Culvert 2	5	-
Large Culverts	Waterway area greater than 3.4m ² treated as a bridge	
Major Culverts 1	Culverts of 900mm diameter (or equivalent area) and greater, and less than 3.4m ²	
Major Culverts 2	Culverts of 600mm diameter (or equivalent area) and less than 900mm (or equivalent area)	

Culverts of less than 600mm diameter or equivalent area are inspected every 5 years by the network maintenance contractor and include a superficial inspection of inlets, waterway and barrels prior to winter for potential blockage.

Inspections are reported on an appropriate form. A Summary Report, and Maintenance Schedule prioritising maintenance, repairs and further inspections are prepared annually.

Retaining walls are scheduled for detailed inspections every 10 years. The inspection regime will identify maintenance requirements and over a full inspection cycle of 10 years a better assessment of condition, maintenance and renewal requirements can be made.

Bridges & Large Culverts Capacity / Performance

Weight Capacity

There are currently 12 Bridges posted in accordance with the Heavy Motor Vehicle Regulations 1974, Regulation 11 Protection of Bridges.

These limits which are advertised annually comprise gross weight and axle weight limits and speed limits for heavy motor vehicles. Nine of the bridges give access to a limited number of properties off a rural arterial or collector and typically would carry fewer than 10 vehicles per day. The posted restrictions reflect the fact that when these structures were built they were designed and built as part of a "Class 2" roading network which was limited to vehicles with lesser gross and axle weights than the current universal Class 1 limits. The Class 2 limit is 70% of Class 1.

Four of the bridges were designed and built to a lesser standard (60% Class 1) due to the reuse of existing major load carrying components (cables, anchorages, tower and foundations) from previous bridges on the sites. These bridges will be looked at for disposal by 2020 with the exceptions of Bridge 74 Wakefield Street, which will either





be replaced or removed by 2018, and Bridge 52 Mangamahu School (Kowhai Street Mangamahu).

A weight restriction was applied to Bridge 71 Dublin Street in 2000 to reduce the rate of deck deterioration. The extent of damage and frequency of maintenance had reached a stage that ultimate failure was inevitable unless there was some intervention. A review of the traffic count data and vehicle classification indicated that of the 15-17,000 vpd using the bridge, less than 1% had axle weights greater than 2-3000kg. It was also found that ultimate (failure) strains were generated by axles or groups of axles greater than 3500kg. At the time, to accommodate the existing bus service, an axle limit of 4,000kg was applied. This weight restriction was reviewed in 2014 with limits – Axles 3,500kg and Gross 6000kg imposed. This bridge is programmed for replacement by around 2028/30.

Traffic Capacity

All bridges on major roads are of sufficient size to accommodate anticipated traffic growth rates. The majority of these bridges are relatively modern and have two lanes.

Most single lane bridges are on low volume rural roads. Current and projected traffic demands show no significant issues that warrant bridge replacement or upgrading from one to two lanes, although from a safety perspective two lane bridges are preferable. Usually the additional cost in providing two lanes is not warranted on roads with low to very low traffic volumes typical in a rural environment. Single lane bridges have less traffic volume capacity and provide a lower level of service than bridges with two lanes. None of the existing single lane bridges are deficient in terms of the level of service they currently provide.

Generally the road width at culverts is the same as the adjacent road width. All rural bridges are single lane.

An increasing emphasis being placed on providing for other modes of transport, such as walking and cycling, particularly in urban areas, is highlighting potential safety problems with some bridges. The key example would be the lack of a safe provision for cycling across the City Bridge.

Structural Capacity

Bridges in the hill and high country areas are susceptible to increased traffic volumes and weights from the developments in these areas e.g. forestry. This could potentially have a flow through effect when forests reach maturity and are logged.

Apart from posted bridges there are no constraints on Class 1 compliant vehicles. The assessment of routes for High Productivity Motor Vehicles is to be undertaken. These routes will be typically determined by State Highway bypass routes (eg Maxwell Station/Handley/Rapanui Road), commercial and industrial development in areas served by structures (bridges and culverts).

Waterway Capacity

There are no significant problems with waterway capacity. Any minor problems are generally isolated to the smaller bridges. As with traffic capacity, any upgrading in waterway capacity warrants considering only when these bridges are replaced at the end of their serviceable lives.



In the hill and high country, river channels are well contained in gullies and other natural low points. Peak flows can arrive at some sites very quickly and at high velocity, dependent on the intensity and duration of the storm event in the contributing catchment area. This can put significant pressure on waterway protection works, abutments and piers which can result in damage or losses e.g. Mangawhero Bridge abutment loss in 2006 following the build-up of debris snagged on unauthorised equipment installed on the bridge. Debris build up at bridges can significantly reduce waterway capacity and cause turbulence and scouring around piers and abutments potentially resulting in undermining and instability of bridge and culvert structures. A proactive approach by the Regional Council is required to actively manage catchments, particularly the effects of logging and allowing the stockpiling of debris in potential flood plains.

In low land areas bridges and culverts generally have sufficient capacity to accommodate the flood flows in the formed channels they serve. During significant storm events overland surface flooding can cause disruption to the roading network but these are not usually attributed to just the performance of individual bridges and culverts.

Planting, development and occupation of overland flow paths (flood berms) restrict flow paths and causes significant level of service issues. eg Kaitoke Road. Another significant issue to be considered is “sensitive” catchments. These are typically catchments of which the upper reaches are in steep country with the stream flowing onto flat land with a consequent sudden change in stream gradient. This often results in significant flooding in the lower reaches which is difficult to manage.

Side Protection

Few existing bridges and culverts have side protection (guardrails and barriers) which would meet current design standards. Single lane bridges with wheel guards seem to perform well as the vehicle angle of attack tends to be low. There have been some retrofit works carried out on sites where crashes have occurred or were the consequence of a crash were considered serious eg Bridge 3 “Blueskin Road”. Many existing bridges are difficult to retrofit due to deck strength limitations eg River Road Bridges. However, the approaches could be treated to achieve a reduction in risk.

Assessment of side protection of all existing structures is recommended. New structures should be rationally designed in accordance with current standards as appropriate to the environment and geometric constraints.



Natural Hazards

Bridges, culverts and structures are at risk from natural hazard events such as earthquakes, floods and the failure of attached and adjacent services e.g. water mains. It is only in recent times that adequate earthquake resistance has been incorporated into bridge designs.

Scour

No scour risk assessment of the district bridges has been undertaken and this is considered to be a high priority risk item which should be included in the AMP Improvement Plan.

No scour risk assessment of the district bridges has been undertaken and this is considered to be a high priority risk item which should be included in the AMP Improvement Plan.

Whilst some assessment and scour protection works have been undertaken at Bridge 71 Dublin Street no similar assessment of other key bridges eg City Bridge, River Road, Mangamahu Road bridges has been undertaken.

A number of bridges constructed on the River Road for example have small diameter driven piles which are founded on papa and pass through highly erodible silt. Bridge 62 off SH 4 is founded on 1.5m - 2m into papa which may be expected to degrade over the economic life of the bridge. A simple lifelines type assessment is recommended to be completed by e.g. 2016.

Earthquake

The majority of bridges within the District were designed and constructed prior to 1980 when the first national guidelines for seismic design of bridges were published.

A seismic risk screening program should be based on network importance taking into account traffic volumes and alternative route availability. No earthquake risk assessment of the district bridges has been undertaken and this is considered to be a high priority risk item which should be included in the AMP Improvement Plan. A simple lifelines type assessment is recommended to be completed by e.g. 2019.



Operations and Maintenance Plan

Bridge Maintenance

General minor bridge and waterway maintenance and approaches maintenance is carried out as part of the Road Network Maintenance and Management Alliance Contracts. A close working relationship between consultant and contractor ensures priority works are identified and completed with due haste and that budgets are monitored.

Historical Structures Operating and Maintenance Expenditure

Historical Structures O&M Expenditure is outlined in Table 7.17 below.

Operations and Maintenance Goals

Under the Road Maintenance Contract routine visual inspections occur as part of the Contractor's general network inspection cycle. More detailed inspections are carried out during and after events that might threaten the safety or performance of bridges, such as floods, earthquakes or overloading.

Routine Surveillance inspections check to identify:

- Waterway scouring or bed aggregation.
- Debris in the waterway and around piles and piers.
- Damage or the deterioration of guard railings.
- Wearing or loose timber deck planks.
- Loose detritus on the deck.
- Blocked deck drains.
- Damaged signs and delineators.

Maintenance programmes are developed from the schedules of defects identified during the inspections by both the maintenance contractor and professional services consultant. Repair treatments and priorities are determined by considering the impact on:

- Public safety.
- Traffic movement and road hierarchy.
- Maintaining structural integrity and serviceability, and
- Future costs if the work is not done.

The works in the bridge maintenance programme are the most cost effective responses to the needs identified, except where a shorter term but lower cost remedies are selected when budget limitations apply and safety is not compromised. From an asset management perspective, the additional criteria are also required, and are applied to:

- Protect the investment in assets by extending the life of the structure.
- Minimise repair costs.

In addition to the work identified through the routine inspections discussed above other types of maintenance work can include:

- Repairing structural defects, e.g. concrete spalling, corroded fastenings, rotten timber, undermining of foundations.
- Repairing or replacing damaged components, e.g. wheel guards and handrails.
- Restoring protective coatings, e.g. painting.
- Restoring or cleaning deck expansion joints.
- Watercourse training.
- Repairing road approach and abutment settlements.
- Cleaning around bearings.

Maintenance Standards

- The NZTA Bridge Inspection and Maintenance Manual
- Relevant New Zealand and other standards for design, construction and Workmanship

Table 7.17: Historical Structures O&M Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Operations & Maintenance								
Structures Maintenance	346,909	105,179	225,187	111,023	131,673	207,446	102,250	102,250
Total	346,909	105,179	225,187	111,023	131,673	207,446	102,250	102,250



Renewal & Capital Works

Renewals

Renewal is undertaken when a structure, or significant component has reached the end of its useful economic life, i.e. it is more economical to replace or rehabilitate the structure or component than to continue maintaining it.

Renewal can include:

- Replacement of an entire structure.
- Replacement of individual structural components e.g. Bridge deck, bearings, handrails.
- Rehabilitation to restore the structural integrity of components, e.g. reinforcing repairs.

Reasons for renewal can include:

- Deterioration of the structure or component
- Damage to the structure or component via flood, earthquake or vehicle impact.

- The waterway's characteristics have altered to the extent that the bridge can no longer pass the design flood flows.

Renewal needs are:

- Identified through routine and detailed inspections
- Confirmed through detailed structural investigation
- Validated by economic justification of net present value option consideration

Renewal needs are identified, and priorities allocated, from inspections and in particular specific structural inspections. The economics of renewing these bridges are then reviewed, by looking at the net present value of the various options, including the "do minimum" option, for a 30-year analysis period

Historical Structures Renewal and Capital Expenditure

Table 12 summarises the historical bridge, large culvert and structures renewal and capital works expenditure for the period 2009/10 to 2017/18.

Table 7.18: Historical Structures Renewal and Capital Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Renewal and Capital								
Structures Components Replacements	157,919	542,584	188,180	118,603	186,099	336,463	196,320	362,476
Renewal Projects	0	0	0	89,584	1,705,781	4,313	0	0
Capital Replacements	0	0	0	0	0	0	0	0
Total	157,919	542,584	188,180	208,187	1,891,880	340,776	196,320	362,476



Uneconomic Bridges

The NZTA, has a general policy regarding bridges that it considers uneconomic. A bridge is considered uneconomic by the NZTA “where the ratio of the total cost of the work to be undertaken per AADT is greater than or equal to \$8,000 per vehicle”.

Economic assessment of bridges also requires the corresponding portion of road serving the bridge to be considered. The NZTA policy goes on to state: “On application, the [NZTA] will consider the eligibility of non-maintenance activities on uneconomic roading facilities for financial assistance on a case by case basis.”

The bridges that are likely to be considered “uneconomic” under these criteria are listed in Table 13. These are all typically high maintenance and some have been included in the 30 year renewals programme for renewal, but are unlikely to be receive NZTA funding assistance and may be considered for disposal.

Table 7.19: Uneconomic Bridges

Bridge No.	Name of Bridge	Name of Road
5	Wicksteed	Wicksteed Road
14	Wright's (McNab's)	Kauarapaoa Road
35	Holland's	No 3 Line
39	Cripps	Kaukatea Valley Road
49	Heao	Mangamahu Road
53	Collins (Garlands)	Garlands Road
54	Harris	Whangaehu Valley Road
55	Aranui	Whangaehu Valley Road
56	Polson	Polson Road
61	Aotea	(SH 4) (Upuk)
62	Mathews	(SH 4) (Upuk)
64	MacIntosh's	MacIntosh's Road
65	Burrells	Burrells Road
74	Wakefield St	Wakefield Street

Consideration of divestment or retention of these bridge and culvert assets needs to be formalised to provide future direction for asset management and forecast expenditure.

Bridge replacements are assessed on a “case by case” basis. Council is aware that ratepayers do not appreciate a bridge not being replaced, as it is deemed an unacceptable reduction in level of service. In rural areas, bridges in more

remote areas are used for moving stock and farm machinery along public roads, and are seen as vital for this purpose. In the case of moving stock, the use of fords or long detours is usually not an acceptable alternative.

Renewal Works Standards

Replacement bridges are built to modern engineering standards. They are usually of concrete construction, although steel beams and concrete decks may be considered.

Single lane bridges are replaced with new single lane structures. The adopted width for new single lane bridges is 4.2m, which allows any vehicle that will fit through a standard farm gate to fit over the bridge.

Two lane bridges are replaced with new structures with two 3.3m wide lanes and a footpath(s) where appropriate. When old bridges are replaced, the new structures are provided with protective railing or sight rails to current standards, regardless of the railings that were present on the previous structure. Bridges with spans of less than 5m or so are generally replaced with large culverts, as these are cheaper at these sizes; however, in some circumstances resource consent requirements may require construction of a bridge to avoid the impact on a waterway.

Renewal Works Programme

From the asset register and inspections, renewal replacement programs should be developed for the periods 0-10 years, 10-25 years, 25-50 years, 50-100 years. These programs should be reviewed 3 yearly and revised 10 yearly and should consider the need for new structures as part of network development and utilisation, and those structures which might be removed, or ownership and maintenance responsibilities be divested.

Capital Bridge and Culvert Works

New Improvement works fall into the following categories:

- Construction of new structures to allow land development or to achieve traffic efficiencies by providing links across significant features (waterways, grade separation – roads under and over, etc)
- Upgrading of existing structures to carry increased traffic or heavier loads than they were originally designed for
- Provision of new bridges as part of land developments. These are normally fully funded by the site developer

Development Strategy

Council will generally only consider constructing a significant new bridge if the project is subsidised by the NZTA.

The total benefits to road users and the land transport system, cost benefit ratios and first year rates of return are all calculated using the economic evaluation procedures found in the NZTA's Economic Evaluation Manual.

If prioritisation is required it will normally be by ranking projects in terms of the NZTA's funding criteria. The Council may contribute to the cost of a non-subsidised bridge on a public road if there are strong reasons why it should be built, and provided the cost to the Council does not exceed its



share if the bridge had been subsidised, though the Council may contribute less where there is reduced benefit to the wider public.

New bridges can also be funded through Development Contribution and Financial Contribution levies on new land development and subdivisions. These can be required in situations where a bridge is necessary to improve the roading connectivity between and within new and expanding development areas.

Disposal Plan

Asset disposal processes will comply with Council's legal obligations under the Local Government Act 2002, which covers:

- Public notification procedures required prior to sale.
- Restrictions on the minimum value recovered, and
- Use of revenue received from asset disposal.

Bridges on roads which service single properties may be reviewed for disposal. Council may decide that bridges identified in any review process for disposal will no longer be maintained by Council, but will be subject to a legally binding agreement with the adjacent property owner. Council could decide to either:

- Undertake routine inspections on these bridges, paid for by the adjacent property owner who will be responsible for all maintenance requirements identified, or:

- Decommissioned to reduce potential Council liability

All relevant costs of disposal will be considered when considering disposal options. These costs may include:

- Evaluation of options
- Consultation / advertising
- Obtaining resource consents
- Professional services, including engineering, planning, legal, survey
- Demolition, site clearing or the cost of making safe

The use of revenue arising from the sale of assets, or the source of funds required to dispose of assets, would be considered by Council at the time of its consideration of any asset disposal.

A bridge may be disposed of if it is uneconomic, unsafe or becoming so, and it is not in the public interest to maintain it in an appropriate safe condition. Disposal of bridges can be carried out in the following ways:

- Sale
- Gifted, or
- Demolition without replacement.

There are no bridge or retaining wall assets to be disposed of at this time, but this will need to be reviewed and reassessed during 2018/21.



Drainage

The purpose of this asset is to provide adequate drainage for water runoff from the carriageway, protect the road edge and substructure from stormwater intrusion and provide a protective barrier for pedestrians from passing traffic.

Drainage Asset Condition

At present, asset condition and performance is primarily based on the All Faults defect inspection regime. Asset defects are logged and assigned a priority based on the severity of the defect as per the Visual Assessment Guide. The matrix of inspection frequencies for the drainage assets is being updated to take into account the One Network Road Classification (ONRC).

Kerb & Channel Asset Condition

The extent of deterioration of kerb and channel depends on age, method of construction, the quality of materials and location (damage can be caused by tree roots, heavy traffic driving over kerb, etc.).

The main factor causing deterioration is predominantly age, with the bottom of the channel failing (in particular in the older dish channels), allowing water to soak into the sub-grade and the adjacent basecourse of the road pavement.

Kerb and channel assets are listed in the RAMM database by type and quantity. The main indicators that determine condition and performance are:

- The RAMM Condition Rating Surveys, and
- Routine network maintenance inspections (All Faults)

Surface Water Channel Asset Condition

Surface Water Channels generally maintain their shape well but require periodic maintenance to remove vegetation and detritus build-up from the channel invert to maintain flow and capacity.

Based on local knowledge, network inspections and RAMM condition assessment surveys, the current status of surface water channel assets is that they are generally in good condition, with no known recurring problems caused by inadequate maintenance.

Culverts Asset Condition

Culverts are long life assets that show little sign of deterioration until failure if they have been correctly installed. The exceptions can be:

- Armco (galvanised steel) culverts carry water, which is often quite acidic. In these circumstances, the acidity attacks the galvanising leaving an unprotected steel surface thus shortening the culvert's life. Abrasion of Armco inverts can occur from the impact and abrasion of stones and gravel impacting on the protective galvanised coating, accelerating corrosion.
- Older butt jointed concrete culverts that do not have the modern spigot and socket rubber-ring sealing system between the pipes. Butt jointed pipes can allow water to escape, eroding the surrounding foundations of the

culvert, which can, in turn, create subsidence of the carriageway or contribute to land slope failures.

Culverts are generally in a serviceable condition. This conclusion is reached from the most recent culvert inspection and condition survey undertaken in 2009.

Culverts are not specifically rated, but the visible elements are inspected regularly to ensure inlets and outlets are clear and that they remain serviceable. As a subsurface asset, any problems are not usually apparent until these manifest themselves indirectly. For example, a breakage under the carriageway may result in localised settlement or slumping of the road surface. Usually when this occurs, it is evidence of a fault or defect that has been developing over some time.

Sump Asset Condition

Sumps are generally in serviceable condition. They are not rated but are inspected and cleaned regularly to ensure that they remain functional.

Drainage Maintenance and Operations

Kerb & Channel Operations and Maintenance

To ensure that kerb and channelling operates efficiently and to maximum design capacity at all times, a regular programme of channel cleaning is undertaken predominantly by a mechanical sweeper. Channel cleaning is sometimes supplemented by manual cleaning in areas identified as requiring additional attention due to:

- Frequency of flooding during rainfall
- Leaf fall during autumn/winter, and
- In response to request/complaint.

Kerb and channel cleaning is an important activity and is not just done for aesthetic reasons to make the channels look tidier even though this is a consequence. This work is carried out as part of the overall Road Reserve Corridor Maintenance Alliance Contract, which specifies the frequency and standard of cleaning. There are periodically maintenance requirements that are not extensive enough to be classed as capital, and it is often necessary to programme and repair short lengths of broken or failed kerb and channel. These works are identified by the Contractor (all faults), Council staff, or from ratepayer concerns or complaints.

The road maintenance contractor reports any defects observed during routine inspection patrols and logs the fault into the all faults programme. Condition surveys are undertaken periodically as part of the contract with council's Professional Services provider.

Damaged and malfunctioning kerbs identified by the contractor or reported via CRM's are programmed for repair according to the following criteria:

- Public safety.
- Accelerated deterioration of the adjacent pavement is occurring, or is likely to occur.
- Inconvenience occurring to road users, pedestrians and/or property owners.



- Alignment and optimisation with other programmed work scheduling.
- Aesthetics.

Kerb & Channel Maintenance Standards

Maintenance repair work is carried out in accordance with good work practice using materials and profiles that conform to current council standards and specifications.

Channel cleaning, specifications are detailed in road maintenance contract and outline response times for the various road groups to achieve minimum standards for detritus depth over a specified length of channel.

Surface Water Channel Operations and Maintenance

All maintenance on earthen surface water channels is carried out as part of the Road Network Maintenance and Management Alliance Contract.

The road network maintenance contractor reports any defects observed during routine inspection patrols and logs any faults into the all faults programme.

RAMM rating condition surveys on the sealed roads provide an assessment of the surface water channel asset and an indication of the adequacy of maintenance practices being engaged.

Unplanned maintenance is generally in response to requests from the public via council's CRM system and usually relate to defective assets. A high level of responsiveness is required from the Contractor to prevent potential damage to other roading assets and adjoining properties.

Planned maintenance includes the programmed repair of damaged and malfunctioning assets identified by the Contractor, council staff or the public. Typical works include:

- Removal of high berm preventing the flow of stormwater from the pavement to the channel. This is usually undertaken on a cyclic basis in conjunction with pre-reseal repairs on sealed roads and remetalling and maintenance grading on unsealed roads.
- Spraying of channel inverts and inlet/outlets of stormwater receiving structures to control vegetation.
- Machine cleaning by mechanical diggers when the build-up of detritus is sufficient to impair performance.

Surface Water Channel Maintenance Standards

Currently there are no specified maintenance standards for shallow surface water channels, other than those in the maintenance contract. Work is carried out in accordance

with good work practice using materials and profiles that conform to the adjacent sections of channel.

Culvert Operations and Maintenance

Culvert maintenance is the work necessary to keep the waterway clear of debris throughout the length of the culvert, its approach and discharge channels. All drainage culverts crossing roads are maintained as roading assets. Culverts that cross private entranceways are not maintained by the Council. These are the responsibility of the property owner.

The maintenance specifications deem culverts to be clean if 90% of the waterway is clear of debris for the length of the culvert, and there are no obstructions to flow at the entrance to and exit from the pipes.

It is expected that the Contractor shall instigate a proactive approach to culvert maintenance, through regular inspections and appropriate maintenance.

Culverts are cleaned where possible in conjunction with each inspection. Debris, including all litter, rubbish, detritus, and vegetation is removed from culverts so that normal water flow is maintained and care is taken so that the culverts are not damaged during cleaning operations.

Culverts Maintenance Standards

Currently there are no specified maintenance standards for culvert maintenance outside the maintenance contract. Work is carried out in accordance with good work practice using materials and profiles that conform to the adjacent sections of channel but also comply with the relevant current standards and specifications.

The backlog of maintenance work is assessed at minimal to low.

Sumps Operations and Maintenance

Sump inverts, their gratings, covers, seats and outlet pipes are cleaned at regular intervals as identified from network inspections. Extra cleaning is necessary in the autumn months during leaf fall or following periods of high wind and heavy rainfall with debris accumulating on sump grates.

The street sweeper periodically removes debris from sump gratings on a predetermined routine whilst cleaning kerb and channel. The street sweeper is equipped with a vacuum hose which cleans sump barrels when these become full.

Maintenance crews undertake a roving role of removing material from sumps in problem areas known to require more frequent cleaning due to the regularity of surface flooding.



Historical Drainage Operating and Maintenance Expenditure

The table below set out the historical operational and maintenance expenditure for Drainage Assets.

Table 7.20: Historical Drainage O&M Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Operations & Maintenance								
Drainage Maintenance	633,355	670,808	648,049	688,386	759,000	761,206	807,206	
Total	633,355	670,808	648,049	688,386	759,000	761,206	807,206	

Drainage Renewal & Capital Works

Drainage Renewal Works

Kerb and channel renewals usually take place in conjunction with the upgrading or reconstruction of the adjacent pavement sections, footpaths and berms, usually as part of an integrated programme with other capital works including resurfacing, footpaths and street upgrade projects.

Culverts are renewed when they are unable to perform their functions safely and satisfactorily to the agreed level of service. This can occur through breakage, corrosion, blockage, change in run off characteristics requiring a greater waterway capacity, and lack of length (often caused by end breakage over the years).

Sumps are renewed when the kerb and channel they serve is renewed. Parts of the original sumps may be reused, e.g. barrels and the piped outlets depending on the condition, but this is done on a case by case basis.

Drainage Capital Works

New sections of kerb and channel are acquired when:

- New sections of kerb and channel are constructed in by the Council where there was no kerb and channel previously.
- New kerb and channel constructed by the Council as part of rural intersection improvements.
- New kerb and channel is vested in the Council after it has been constructed in new subdivisions by private developers.

Drainage Renewal Works Standards

NZS 4404:2010 Code of Practice for Urban Subdivision is normally followed when constructing kerb and channel infrastructure using appropriate engineering specifications and the council adopted cross sectional profiles.

When replacing kerb and channel the opportunity exists to optimise kerb alignment to meet current engineering and planning standards. This can result in the carriageway width being reduced in accordance with the road's hierarchy with resulting life cycle cost reductions. The consequence might also be that in some instances streets are widened to meet future traffic capacity requirements and road hierarchy.

A number of older streets have an area of grassed shoulder between the edge of the formed carriageway and the old

channel. Depending on the circumstances the replacement kerb and channel is likely to be positioned at the immediate edge of the carriageway and a new berm and footpath created behind it.

Aesthetically pleasing streetscapes are also considered during the design phase and prior to any replacement works are undertaken.

New culverts are designed in accordance with the current NZTA (Transit NZ) Bridge Manual as appropriate.

Kerb & Channel Capital Works

New sections of kerb and channel are acquired when:

- New sections of kerb and channel are constructed in by the Council where there was no kerb and channel previously.
- New kerb and channel constructed by the Council as part of rural intersection improvements.
- New kerb and channel is vested in the Council after it has been constructed in new subdivisions by private developers.

Criteria used for justifying new kerb and channel include:

- Evidence of ponding/flooding were having considered the available options new kerb and channel is determined as being the cost effective option
- Incompatibility with agreed urban standards
- High cost of maintaining existing stormwater control (open drains), and
- The need for carriageway edge definition and/or separation of footpath/pedestrian areas from a carriageway.

Priorities are allocated following evaluation of safety issues, pedestrian usage, stormwater control needs and the number of residential properties to be served. Council may also determine priorities for new installations arising from public requests, petitions submissions and lobbying to staff and elected representatives.

Kerb & Channel Capital Works Standards

The location of new kerb and channel in the carriageway cross section is determined largely by the road's hierarchy and the associated width standards.



As with renewals, NZS 4404:2010 Code of Practice for Urban Subdivision is adopted when new kerb and channel installations are created.

Kerb & Channel Development Programme

The timing of new subdivisions, and the amount of kerb and channel that is constructed in them, is dictated by respective private property developers and is strongly influenced by market forces. This work is not funded by the Council unless a roading upgrade contribution has been sought as part of a consented subdivision or a Council activity or project eventuates from the consent.

Council is not currently allocating funding for new kerb and channel improvements on existing urban streets where no kerb currently exists.

Culvert Capital Works

New culverts are typically created in conjunction with road upgrades and construction works. The need for other new culverts generally arises from the need to improve or resolve identified drainage issues. There is no formally identified or programmed need for new culverts that might be required to maintain the current agreed levels of service.

New drainage facilities are also created as a result of subdivisions and development being vested with Council and in conjunction with growth related capital works.

Surface Water Channels Capital Work

New surface water channels are formed if the adjacent section of rural carriageway is:

- Showing deterioration from the ingress of water into the pavement structure and currently no channel exist.
- Frequently subjected to ponding caused by the inability of stormwater to flow clear of the road pavement.
- Scoured by stormwater not being adequately controlled.

Priorities are allocated following consideration of costs, effects on pavement life, other programmed works, safety issues, property damage, stormwater control needs and the consequence of not undertaking the new work.

Surface Water Channels New Works Standards

The location of new surface water channels in the carriageway cross section is determined largely by the

road's hierarchy and topography. Council's Rural Roads Strategy states:

"Although a verge slope of 25% is specified for all rural roads in the Whanganui district, this figure is a guide only, and may require modification in certain locations generally due to topographical constraints. This should be determined on a case by case basis."

Where the existing roadside is maintained to a high standard by the adjacent property owner, the surface water channel shall be constructed to a profile that allows it to be mown.

Surface Water Channels Development Programme

The timing of new rural subdivisions, and thus the swales they contain, is under control of the respective property developers and is strongly influenced by market forces. This work is not normally funded by Council.

New culverts are typically created in conjunction with road upgrades and construction works. The need for other new culverts generally arises from the need to improve or resolve identified drainage issues. There is no formally identified or programmed need for new culverts that might be required to maintain the current agreed levels of service.

New drainage facilities are also created as a result of subdivisions and development being vested with Council and in conjunction with growth related capital works.

Sumps Capital Works

New sumps required to service new kerb and channel are included in the costs of those works whether they are to serve growth level of service changes or to meet existing level of service deficiencies.

Disposal Plan

There are currently no disposal plans for drainage assets.

Historical Drainage Renewals and Capital Expenditure

The table below set out the historical expenditure for Drainage Assets.

Table 7.21: Historical Drainage Renewal and Capital Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Renewal and Capital								
Drainage Renewals	1,251,974	1,402,080	988,672	801,416	1,131,117	1,073,172	1,087,860	913,391
Drainage Capital Replacements	0	0	0	0	0	0	0	0
Total	1,251,974	1,402,080	988,672	801,416	1,131,117	1,073,172	1,087,860	913,391



Street Lights

The purpose of street lighting is to provide agreed lighting levels in streets for the safe and efficient movement of vehicles, cyclists and pedestrians.

Street light Capacity / Performance

Street light capacity and performance issues relate to light intensity, colour, reliability, safety and the areas of the townships covered.

Performance of street lights can be assumed to be a simple go/no-go test, the light either works or it does not. However, this is a little too simplistic, as it does not consider the level of service provided by the individual lights and by the lighting system.

It is acknowledged that the majority of the older street light installations do not perform to the current adopted standard. All new urban installations, and in particular new installations vested in the Council by private developers, are required to meet current standards.

In the majority of cases the installation of lights on to existing utility poles, without the additional cost to install separate underground street light circuits and standalone poles, is very cost effective where it is an available option. The spacing of the utility poles may not achieve the desired standard, but any difference in lighting delivered is usually low.

LED (light emitting diode) road lighting offers a number of benefits compared to HPS (high pressure sodium) lighting, including reduced energy and maintenance costs, and better light quality leading to increased public safety. They also produce white light which provides better colour recognition and in turn means lower lighting levels are required, and they have a better light distribution meaning 'light spill' is much reduced.

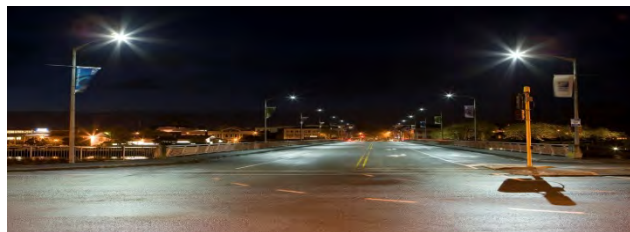
Street lighting Standards

Whanganui District Council has adopted AS/NZS 1158:2005 as the technical standard with V3 standard on roads designated arterial in the District Plan and P3 on other roads within 50km/h areas in Whanganui urban area. These set out requirements for lighting systems, primarily to provide a safe and comfortable visual environment for both vehicular and pedestrian movement at night.

The lighting categories are broadly defined as follows:

Category V lighting

- Lighting which is applicable to roads on which the visual requirements of motorists are dominant, eg traffic routes
- Subcategories range from V1 to V5
- Subcategory V3 is appropriate for Whanganui urban arterial roads because it has the following operating characteristics
- Mixed vehicle and pedestrian traffic
- Moderate to high vehicle volume



- High pedestrian volume
- Moderate to low vehicle speeds
- Stationary vehicles alongside the carriageway
- Through and local traffic
- Moderate traffic generation from abutting properties

Category P lighting

- Lighting which is applicable to roads on which the visual requirements of pedestrians are dominant
- Subcategories range from P1 to P12
- Subcategory P3 is appropriate for Whanganui urban collector and local roads that have basic operating characteristics of mixed vehicle and pedestrian traffic and has selection criteria for pedestrian / cycle activity, risk of crime and need to enhance prestige

Street lighting Upgrade Strategy 2008

A Street lighting Strategy was commissioned by WDC to review the existing street lighting system and to recommend an improvement programme over a 10 year period.

The strategy looked at the present system and identified areas that did not meet the Council's standards. It outlined improvements needed over a 10 year period to reduce the number of non-complying street lights, improve information systems and address funding shortfalls.

Recommendations of the strategy included:

That the existing streetlights be upgraded to the same standard as the requirements of the WDC Land Development and Subdivision Engineering standard, and more particularly to AS/NZS 1158:2005

That the detailed lighting standard for various streets in the 50 km/h speed zone are:

• Arterials	V3
• Collectors	P3
• CBD	V3
• Special Road	V3
• All Others	P3
• Mosston / Montgomery Roads	V3 (when widened)

In 2008 when the strategy was written, Light Emitting Diode (LED) street lighting technology was in its infancy and the strategy did not take into cognisance of this environmentally friendly and cost saving technology. Consequently the implementation of lamp replacements as recommended in the strategy did not occur because of the fast developing LED street lights.



Council approach to the deficiencies identified was that unless other renewal works are being undertaken that enable improvements at low costs, lighting installations will continue to remain as they exist with ongoing maintenance of bulbs and components replacement being undertaken as required and where it is financially justified to do so. Deficient installations will be progressively phased out as part of wider integrated works such as street upgrades when existing overhead services are placed underground, or when out-dated lights are programmed for replacement.

LED Technology

The Whanganui District Council made the decision in July 2014 that all luminaires on P category roads that are to be replaced through maintenance, will be replaced by an Auckland Transport approved LED luminaires. This methodology of replacement added to the “fruit salad” of colours and lighting levels on local roads which at the time was considered acceptable.

It is considered by organisations such as the Energy Efficiency and Conservation Authority (EECA) and the Transport Agency, that, based on the view of industry experts, LED lighting is now a proven and technically mature technology. The application of LED lighting is proving to be the lowest whole of life cost lighting option in almost all situations – both for new and renewal of existing installations.

Whanganui applied for and was successful in our funding application to upgrade all street lighting to LED. The programme for LED renewals will be completed by 2017/18.

Street lighting Operations and Maintenance

Streetlight Maintenance

All lights, brackets and poles are maintained under Contract 1721 Street Lighting and Improvements 2016-2019 by Strong Electrical Ltd. This includes the lights on state highways administered by the NZ Transport Agency (NZTA), for economy and efficiency reasons, as they are all essentially on the one network. The NZTA reimburses the Council with the cost of maintaining and operating these lights on its behalf.

Operations and maintenance activities and costs include:

- Power costs
- Planned maintenance inspections.
- Repairing/replacing damaged or unsound components, e.g. lanterns, control gear, poles
- Planned bulk bulb replacement and structural defects

The maintenance regime has been to replace bulbs at failure instead of a bulk replacement of similar bulbs in an area. The current replacement programme to LED lighting will see the number of bulb replacements reduced dramatically

The contractor is required to carry out a range of works and other functions including:

- Receiving and responding to complaints, either directly or via the Council's Service Request System.



- Maintaining the SLIM Database.
- Carrying out inspections and repairing faults and failures identified.
- Replacing lamps.
- Repairing and maintaining light fittings and poles.
- Straightening poles and support arms.
- Carrying out replacement programmes e.g. bulk changes of fluorescent lights, and
- Installing new lights

The street light network is inspected by the street lighting maintenance contractor for outages and damage at no less than 3 monthly intervals. Inspection from a vehicle often suffices in ensuring that each individual lantern is operating in accordance with the lantern specification and that no pole is in danger of collapse.

To ensure safety to the public and continued security of the lanterns and columns the contractor undertakes a close personal inspection once every 6 months to:

- Visually inspect each column.
- Visually check to ensure that covers for the control gear and/or housing at column bases are in place.
- Visually inspect the rigidity of column/base bolting/securing system.
- Visually check the ready readability of any column numbering.
- Check for any suspected vandalism

Once yearly checks of control and switching equipment is completed for electrical safety, including earthing of the installation equipment. The Contractor is required to attend to faults and inoperative lights within the response times specified in the contract specification.

Programming requirements for the street lighting contract includes providing:

- Details of routine inspections.
- Details of planned bulk replacement of lamps.
- Details of planned remedial or replacement work, and
- Allowances for unplanned remedial work to meet response time requirements



Faulty, accident damaged or vandalised lanterns, lamps, control gear columns and associated equipment will be repaired on demand and within the specified response timeframes.

The Streetlight Maintenance Contractor is not responsible for the supply of the electricity necessary to run the lights. All of the streetlight circuits are metered and payments are made monthly through Council's energy management consultant "Smart Power" depending on the read/estimated electricity use. NZTA is invoiced quarterly for the calculated energy use on the state highways.

The Council seeks to recover the cost of accident damage from those responsible, usually following Police advice. On average three street light poles are hit each year by vehicles.

Operations and Maintenance Goals

The street light maintenance contractor is required to:

- Provide an immediate response to hazards.
- Monitor asset condition by undertaking planned inspections in conjunction with bulk change or routine maintenance activities.
- Ensure no lights malfunction continuously and that there are no areas where continual intervention is necessary.

- Repair, on demand and within the specified response timeframes, faulty, accident damaged or vandalised lanterns, lamps, control gear, columns (poles) and associated equipment.
- Develop maintenance programmes from the schedules of defects identified during the inspections.
- When street lighting assets are renewed any components, that can be used as spare parts are retained in storage. Other surplus assets generally have no commercial value, and are disposed of by the contractor.

Maintenance Standards

All maintenance work must comply with:

- The Electricity Act 1993
- The Electricity Regulations 1993
- The Contract Specification, Contract No 848 Street Light Maintenance, and
- The relevant NZ and Australian Standards.

Historical Street lighting Operating and Maintenance Expenditure

The table below details the historical operational and maintenance expenditure for streetlights. The information shows that expenditure has increased steadily due to electricity cost from 2009/10 to 2016/17.

Table 7.22: Historical Street Lighting O&M Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Operations & Maintenance								
Streetlight Maintenance	186,553	188,607	249,763	311,696	290,243	305,793	281,871	200,000
Electricity	462,509	425,540	320,675	454,699	400,722	457,842	362,132	334,000
Total	649,062	614,147	570,438	766,395	690,965	763,635	644,003	534,000



Street Light Renewal & Capital Works

Street light Renewal Works

Asset renewal replacements are undertaken when a street light or a significant component of a light has reached the end of its economic life, e.g. lantern, brackets or pole. Renewals are reviewed regularly, with any deferred work re-prioritised alongside new renewal projects and a revised programme established where required.

Street light Capital Works Plan

Streetlights are typically acquired or upgraded in the following circumstances:

- When new lights are provided by the Council where no street lights previously existed.
- When the Council street lights are installed and vested in the Council as part of a new urban subdivision.
- Through work to meet the level of service arising from:
 1. Improvements in association with the street upgrading programme.
 2. Safety improvements, and
 3. Improvements in association with undergrounding of overhead utility reticulation.

Council does not have plans to improve the existing street lighting other than in conjunction with other safety works.

These works will be paid from the Minor Improvement Budget.

Street light Renewal Works Standards

When a number of adjacent lights are renewed at the same time, the installation is designed to the new lighting standards appropriate for that road. The new lanterns and poles are also required, where practicable, to be generally complementary in style and light colour with adjacent streets.

When individual light fittings are renewed, the new fitting is usually the most appropriate modern engineering equivalent of the failed fitting. Replacement poles will be lightweight galvanised sectional-steel poles (e.g. Octlite) of appropriate height. Exceptions to both of these practices occur when the adjacent poles are of a decorative type, in which case appropriate decorative poles and luminaries are used.

Disposal Plan

Disposal activity for street lights is limited to lanterns, controls and poles, which have been replaced with new components. Components, which can be used as spare parts, are retained in storage by the contractor. Other surplus assets have no commercial value, and are discarded.

Historical Street light Renewals and Capital Expenditure

The table below set out the historical expenditure for Street light Assets.

Table 7.23: Historical Street lighting Renewal and Capital Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Renewal and Capital								
Street light Renewals	17,662	19,662	121,220	15,693	18,513	103,457	31,559	30,000
LED Upgrade	0	0	0	0	0	410,778	615,419	640,303
Street light Capital Projects	0	0	0	0	0	0	0	0
Total	17,662	19,662	121,220	15,693	18,513	514,235	646,978	670,303



Traffic Services

Traffic Services aid the safe and orderly movement of vehicular and pedestrian traffic, and indicate road use restrictions and other information. A good standard of traffic services can contribute significantly to a safer road network.

Traffic Services Capacity / Performance

Performance issues for Traffic Services assets in the Whanganui District generally relate to the accuracy of placement, visibility, reflectivity and conformity with standards.

Traffic Services Standards

Council adopts the standards and specifications of NZTA's Manual of Traffic Signs and Markings (MOTSAM). Development is constantly taking place with retro-reflective traffic control materials and these are applied to new installations when justified.

Delineation standards for rural roads are described in the publication "Road and Traffic Standards 5 – Delineation for Rural Roads" (RTS 5). The publication is intended to reduce the disparity between rural state highways and local rural roads by ensuring that

motorists receive the appropriate visual guidance to achieve an improved level of safety.

The importance of the road routes and their traffic volumes are the main factors which should determine the level of road markings and delineation devices in rural areas.

RTS 5 provides a table of recommended delineation treatment type for various traffic volumes. Table 4.40 below, aligns the delineation treatments in RTS 5 to the NZTA road group categories adopted by the Whanganui District Council and referred to in this document. The road groups are further broken down into sub categories to better align with the RTS 5 tables and provide better representation of actual physical assets currently installed on the rural road network.

WDC currently undertakes to use the guidelines for new installations and road improvement works. A review of the current level of delineation on rural roads is required to confirm that the standard is being applied consistently and where deficiencies exist, develop a programme for establishing the appropriate standard.

The table below lists for convenient use treatment types applicable to roads by surface type and traffic volume.

Table 24: Rural Delineation treatments by Road Group

Road Group	AADT	Edge Marker Posts		RRPM	Centre lines	Edge Lines	Intersections
		Sealed Roads	Unsealed Roads	Sealed Roads	Sealed Roads	Sealed Roads	Sealed Roads
C	1000 - 5000						
C	>1000	Total Route	Total Route	Total Route	Total Route	Total Route	Solid Centre Lines Edge Lines Continuity Lines
D	200 - 1000						
D1	750 – 1000	Total Route	Total Route	Isolated Sections	Total Route	Total Route	Solid Centre Lines Edge Lines Continuity Lines
D2	500-750	Total Route	Total Route	Isolated Sections	Total Route	Isolated Sections	Solid Centre Lines Only
D3	250 – 500	Isolated Sections	None	None	Isolated Sections	Isolated Sections	Solid Centre Lines Only
D4	200 – 250	Isolated Sections	None	None	Isolated Sections	None	None
E	50 - 200						
E1	100 – 200	Isolated Sections	None	None	Isolated Sections	None	None
E2	50 – 100	None	None	None	None	None	None
F	< 50						
F	< 50	None	None	None	None	None	None



Operations and Maintenance

There is essentially no difference between the maintenance and renewal of road markings, and few differences with signs, the occasional need to clean some signs being the principal one. On this basis, the maintenance and renewal sections normally expected for a sub asset have been combined in this instance.

With the exception of road marking all traffic services maintenance is included in Contract No. 1318 Road Reserve Corridor Maintenance Alliance and also includes the maintenance of sight/guard rails and specifies:

- Minimum maintenance standards;
- Frequency of routine inspections; and
- Response times to correct defects.

Pavement Marking is carried out under Contract No. 1578 - Pavement Marking 2014-2017. The use of a separate contractor reflects this asset's more specialised needs, in terms of plant, materials and required operator skills.

Problems with signs are routinely reported by the public, staff and elected members. These are passed on to the Contractor for action via the CRM System.

Many sites and routes have had improvements to road markings, signage and railing over the last few years, which have been triggered by crash reduction studies, roading improvements and in response to public concerns and requests.

From a maintenance allocation perspective, funding for these assets is covered by the Traffic Services category under NZTA.

Traffic Signals

The maintenance strategy for traffic signals can be described as one of "scheduled preventive maintenance". Programmed inspections at 13/26/52 weekly cyclic intervals are undertaken by

Historical Operating and Maintenance Expenditure

the Contractor, following clearly defined checks of components and scheduled replacement of lamps. The Contractor is required to have on hand a ready supply and availability of consumable items.

A 24 hour, 7 day a week emergency repair and accident callout response is required of the Contractor. On-site attendance is within 1 hour of notification and temporary repair initiated with 24 hours.

The NZTA has installed Sydney Coordinated Adaptive Traffic System (SCATS) on both sets of NZTA traffic signals in Whanganui that communicate with the Joint Traffic Operations Centre (JTOC) in Wellington.

Maintenance and Renewal Standards

All signs are designed, located and maintained according to the following standards:

- Transit NZ "Manual of Traffic Signs and Markings - Part 1. Traffic Signs"
- TNZ Specification P/16: Road Markers
- TNZ Specification M/14 1991: Marker Posts
- TNZ Specification P/12: Paint Application- Signs.
- NZS 5414: 1977 "Specification for Construction of Traffic Signs

Additional and more detailed standards are specified in the various physical works contracts. All paints used for pavement marking shall meet the requirements of Transit specification TNZ M/7 and M/7 notes, and be according to Transit's Manual of Traffic Signs and Marking: Part II:

- Waterborne road marking paint is used in the Whanganui District.
- Raised pavement markers shall meet the requirements of Transit's specification M/12 and M/12 notes.

The table below details the historical and the projected operational and maintenance expenditure for Traffic Services Assets.

Table 7.25: Historical Traffic Services O&M Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Operations & Maintenance								
Signs Maintenance	5,710	1,887	6,055	10,565	\$9,945	\$7,878	\$4,542	6,000
Traffic Signals Maintenance	57,849	59,332	47,117	72,046	63,136	68,226	57,860	57,860
Total	63,559	61,219	53,172	82,611	73,081	76,104	62,402	63,860



Renewal & Capital Works

Signs

Signs are renewed on a corrective basis. This means that although renewals are not planned on a large scale, their renewal is carried out when they fail to meet the standards in the MIS. The term corrective is used to emphasize that we have sufficient mitigation strategies and response times to prevent this being a risk to public safety.

The triggers for renewal works include:

- Replacement of obsolete, damaged, sub-standard and non-conforming signs identified during routine inspections
- Renewals are undertaken according to the following priority:
 - Public safety
 - Traffic volumes
 - Convenience of road users
- The condition of the asset
- The economic/useful lives of the materials used.

Road marking

Road marking is refreshed to maintain condition and performance.

Due to the advancements in paint technology Council chose to undertake the district remarking at two yearly intervals.

Critical markings including Stop and Give Ways are marked annually as well as sites recently resurfaced.

Traffic Signals

Below is the process outlined in priority order for selection for renewal works on traffic signals.

Site Condition Rating

The Traffic Signal sites are visually checked every 6 months and condition rated every 12 months with the routine maintenance rounds.

Lanterns

Technology advances has meant that older incandescent and Quartz Halogen lanterns are now not available. Quartz and incandescent sites require regular changes of lamps to ensure failures are minimised.

Incandescent and Quartz sites are typically older and are condition rated accordingly but any sites with these lanterns should be programmed for renewals to LED so that maintenance and power cost benefits are achieved.

Associated Projects

If there are associated projects proposed then it is of benefit to included traffic signal renewal with it. I.e. if there are proposed integrated transport projects that intend to modify an existing intersection then incorporation of the traffic signals should be included. This could also mean the funding for potential upgrade work could come from capital budgets.

Reliability & Customer requests

Usually a component of a traffic signal can be replaced which may resolve a fault; however sometimes this is not the case and a technician may need to repeatedly visit a site to carry out repairs. These ongoing faults can cause repetitive customer requests/complaints. A renewal of either the controller or the entire site should be considered if this is the case.

Site Age

Many older sites have issues with cable condition and capacity (number of cores available) which can cause problems when modifying or changing traffic signal operation. Older controllers also limit some features when it comes to integration of SCATS. Many older sites also do not have chambers for access to ducts and cables. This is a significant issue should a cable fail as excavation of the footpath and road could be required.

Historical Traffic Services Renewals and Capital Expenditure

The table below details the historical and the projected expenditure for Traffic Services renewals.

Table 7.26: Historical Traffic Services Renewal and Capital Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Renewal and Capital								
Renewals	228,957	247,884	502,432	229,938	618,044	348,197	672,023	376,346
Total	228,957	247,884	502,432	229,938	618,044	348,197	672,023	376,346



Footpaths and Cycleways

The primary purpose of footpaths is to provide to provide safe access and walking opportunities for pedestrians in urban areas (including the physically disabled) access to their chosen destination. Some footpaths are designated as 'shared use' and are available for cyclists as well as pedestrians. As well as the footpath itself, other pedestrian facilities such as crossing points, both formal and informal, are an essential part of the pedestrian network.

Footpath Capacity / Performance

Whanganui's footpaths provide the key link between journey origins and destinations for all travel modes and provide a travel mode in their own right. They are an essential component of our transport network and help to deliver an effective and efficient transport system that enables for smarter transport choices.

Council committed in 2003/04 to increased funding for footpath maintenance and renewal as the performance of footpaths at the time were considered inadequate based on the general displeasure of users and the results of customer satisfaction surveys.

The biggest condition concerns are the tripping hazards (tree roots) and general damage. A targeted approach of routine maintenance and renewal is being developed to tackle these areas. This involves targeting high exposure footpath where pedestrian and mobility traffic is high (shopping centres, schools, around playgrounds and parks etc.). New footpaths are generally constructed with concrete. In theory these will have a longer life than asphalt surfaced footpaths. But concrete paths are more susceptible to tree root damage as the roots lift a slab creating a trip hazard which is expensive to repair. Asphalt footpaths can tolerate greater deformation before requiring intervention.

Footpath Standards

WDC have adopt the design standard NZS 4404:2010 Land Development and Subdivision Engineering, for all new footpaths. Their dimensions, strength, durability and finish shall be appropriate to their use and expected loadings. They shall normally be a minimum of 1.5m wide surfaced over their full width. Wider footpaths or areas of local widening will often be required where higher use or other needs dictate such widening.

Acceptable footpath surfacing are:

- Concrete
- Concrete/Clay Pavers
- Asphaltic Concrete

Location in the road formation is generally against the boundary, but this can be flexible depending on design constraints and local preferences. Footpaths are usually full-width (i.e. from boundary to kerb line) in commercial areas and areas identified as high use.

Footpath Asset Condition

The main deficiencies are:

- Surface irregularities (potholes, trees roots, cracks, depressions, etc.) decreasing pedestrian safety through increased likelihood of tripping.
- Substandard restoration of utilities causing defects.
- Substandard appearance resulting from patching, deterioration and in the case of metalled and chip seal surfaces colour and loose stones.
- Vehicle damage, particularly where driveway crossing points have not been properly constructed

The most recent footpath condition rating survey was undertaken in the 2014. This involved carrying out a visual inspection of each footpath section and counting defects. The number of defects, the weighting of the defects, the length and use category are taken into account to arrive at a score. The highest score denotes the worst condition footpath. The scores ranged from 0 to 322 points.

Table 7.27: Footpath Fault Weightings

Defect	Percentage weighting
Settlement	25%
Bump	35%
Depression	25%
Crack	5%
Scab	10%

Table 7.28: Footpath Rating Results 2014 vs Results of Previous Rating Surveys

Rating Survey Year	Settlement	Bumps	Depressions	Cracked	Scabbing	Total
1997 Rating	1,892	72	391	47,143	1,429	50,927
2001 Rating	1,091	9,741	4,777	38,206	2,106	55,921
2003 Rating	1,030	10,096	4,822	39,032	2,194	57,174
2009 Rating	4,011	3,426	642	21,571	2,454	32,104
2014 Rating	3,521	2,367	402	7,714	1,912	15,916



Table 7.29: Summary of Footpath Network Condition 2014

	2009 Rating		2014 Rating	
Defects score	Length (km)	Percentage of length	Length (km)	Percentage of length
>200	1.40	0.5%	0.01	0.0%
151 – 200	0.43	0.2%	0	0.0%
101 – 150	1.10	0.4%	0.714	0.2%
51 – 100	14.83	4.6%	7.272	2.2%
<50	308.44	94.6%	322.01	97.6%

The results indicate that overall, the footpaths are in reasonable condition with 97.8 % of footpaths scoring less than 50.

Currently 7.996 km or 2.4% of the footpath network has a score in excess of 50 compared to 17.76 km (5.4%) in 2009 and 59.7 km (18.6%) in 2003.

Operations and Maintenance

Footpath and Cycleway Maintenance

Footpath maintenance is carried out under Contract No 1318: Road Reserve Corridor Maintenance Alliance. The contract includes all footpath maintenance work including safety repairs or other minor repairs routinely required from inspections or originating from Customer Requests.

Specifically these repairs include:

- Pothole repairs
- Removal of tree roots
- Spraying and trimming grass edgings
- Cleaning
- Repair of surface defects.
- Filling depressions and slumps, and the reinstatement of utility trenches.

Maintenance needs are mainly identified during network inspection, rating surveys, customer requests and observations made by Council staff in the course of their duties. The consequence of inadequate maintenance is:

- Reduced safety
- Accelerated footpath deterioration, and
- Lower level of service (increased faults and complaints).

Footpath maintenance is prioritised using the following criteria:

- Available budget
- Optimisation of complimentary work scheduling
- Safety of pedestrians
- Footpath condition (number of faults and overall condition rating)
- Foot traffic usage
- Aesthetics (minor water ponding/untidy appearance)

Maintenance Standards

Technical and materials standards for maintenance works are generally those specified for pavement works. However, care is required to avoid creating nuisances caused by bitumen and emulsions that can track into shops and residences, and avoidance of loose chip on footpaths and cycleways with smooth surfaces such as concrete and asphaltic concrete.

Historical Operating and Maintenance Expenditure

The table below details the historical and projected operational and maintenance expenditure for footpaths & cycleways.

Table 7.30: Historical Footpath and Cycleway O&M Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Operations & Maintenance								
Footpath & Cycleway Maintenance	344,152	288,778	297,324	428,677	353,891	393,328	426,814	477,159
Cycle path Maintenance	3,807	557	270	398	193	83	1,800	200
Total	347,959	289,335	297,594	429,075	354,084	393,411	428,614	477,359



Renewal & Capital Works

Renewal Works Plan

Renewal work is required when a footpath has deteriorated to the extent that the required level of service is not being delivered or continued maintenance is not economic. Justification is also influenced by other works being undertaken in the vicinity of footpaths. Typical situations may include renewal work being undertaken in conjunction with programmed kerb and channel replacement, street upgrading or urban street reconstruction.

Renewal works are carried out to:

- Return paths to their original as new condition
- Provide for safe passage and ease of use for pedestrians and cyclists, as appropriate to the facility and
- Provide a surface that requires minimal maintenance.

Capital Works Plan

The most significant drivers to the acquisition of new footpath and cycleway assets include:

- Council shared pathway strategies (cycling and walking)
- New paths being constructed by the Council where no path previously existed
- New footpaths being vested in the Council from new urban subdivisions by private developers; or
- Upgrading to improve the level of service, particularly in relation to special or superior treatment from that that previously existed prior to upgrade.

Renewal and Capital Works Standards

Renewal and Capital works comply with the standards for new works using the Whanganui District Council engineering standards relating to shared pathways and footpaths.

Disposal Plan

Council has no plans to dispose of any footpaths at this time.

Historical Operating and Maintenance Expenditure

The table below details the historical and projected Renewal and Capital expenditure for footpaths & cycleways.

Table 7.31: Historical Footpath and Cycleways Renewal and Capital Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Renewals and Capital								
Footpath & Cycleway Renewals	351,053	375,758	475,320	363,565	516,892	367,493	483,531	341,000
Walking and Cycling						452,391	1,419,617	2,071,216
Total	351,053	375,758	475,320	363,565	516,892	819,884	1,903,148	2,412,216



Other Features and Activities

Environmental Maintenance

Environmental maintenance is defined as those activities that provide for the routine care and attention of the road corridor to maintain safety, aesthetics and environmental standards.

Examples of activities currently undertaken by the road maintenance contractor include:

- Vegetation Control (spraying, roadside mowing and vegetation control)
- Removal of minor slips, litter and other loose debris accumulating on roads
- Ice control (gritting), and
- Clearing vehicle accident debris and spillages

Slip and Debris Removal

Much of the Whanganui rural network is constructed in high relief topography which passes through steep sided cuttings subject to slips and soil fretting, with associated high maintenance.

A high proportion of the rural network has a high incidence of erosion due to proximity to meandering streams, rivers and ocean, steep and unstable cuttings, steep gradients, and overhanging trees.

The expense generated in maintaining safe travel for road users and ensuring drainage structures and water table drains are clear is significant and hard to forecast from one year to the next. This is a critical preventative activity that thwarts costly repairs to other transportation assets from uncontrolled water runoff.

Spraying

Roadside vegetation is undertaken on sealed and unsealed roads and specifically at bridges, culvert headwalls, sight rails, edge marker posts, kerb and channel and traffic signs. Vegetation around street features in Wanganui City and rural townships is also controlled by spraying.

The vegetation is sprayed using chemicals where it is:

- Obscuring abutments, headwalls, signs, etc;
- Affecting the functioning of the kerb and channel and sumps, etc; and



- Affecting the aesthetics of the streetscape.

Spraying is undertaken under the Road Network Maintenance and Management Alliance Contracts. Suitably qualified applicators are employed for this work.

Any growth noted during the inspection cycles is programmed for spraying and completed by the Contractor although programmed cyclic spraying of the network generally maintains vegetation within specification. Specifications and performance criteria are detailed in the relevant sections of contract documentation pertaining to this activity.

Roadside Mowing

Mowing is only carried out on rural roads (sealed and unsealed) for the purpose of maintaining lines of sight for road users and to control fire risk.

Mowing is done at least during the spring growth season, often from November, and depending on weather conditions may need to be done again in the autumn to meet specification.

Vegetation Control

The requirements for the control of overhanging vegetation are that no foliage shall encroach outside the specified vegetation envelope such that the passage of traffic is impeded, causes visibility problems or otherwise interferes with the safe use of a road.

Vegetation control is undertaken under the Road Network Maintenance and Management Alliance Contracts. The Alliance utilises boom mounted slashers to achieve the required specification.

Historical Expenditure

The tables below set out the historical and projected operational and maintenance expenditure for the environmental maintenance activity.

Table 32: Historical Environmental Maintenance Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Operations & Maintenance								
Environmental Maintenance	741,391	676,944	759,842	905,563	702,080	761,259	1,179,291	666,955
Environmental Renewals	0	0	0	0	0	0	0	0
Total	741,391	676,944	759,842	905,563	702,080	761,259	1,179,291	666,955



Emergency Works and Minor Events

Emergency Works

Emergency works normally arise from adverse weather events like storms that result in wind damage, surfacing flooding and slips. Work associated with these events is generally completed, even if this means that there is expenditure over the budget or other routine work is deferred to keep overall expenditure within budget. This is particularly relevant for safety related works and works that are needed to restore and reopen roads.

If the extent of an event becomes too severe, or the effects too significant, the Council can apply to NZTA for additional funding under Work Category 141 – Emergency Reinstatement under the categories of Immediate Response and Permanent Reinstatement.

The Wanganui District has more recently experienced significant storm damage to transportation assets in 2004 and 2006. Emergency reinstatement works adds considerable pressure to the resources.

Initial Response

Immediate Response covers the work necessary to open a road, where practicable, to at least a single lane facility for safe use by traffic or to minimise risk of further damage. This works may include:

- Slip clearance

- Construction of temporary detours
- Temporary reinstatement
- Restoration of roadside drainage

Under the road maintenance contract the Contractor is required to respond to emergency situations while these are in progress, patrolling, and erecting signage to warning motorists of potential hazards on the roads and where possible preventing damage to transportation assets, facilities and private property.

The follow up tasks of restoring assets to full or part service potential are completed under the initial response activity.

Permanent Reinstatement

Permanent Reinstatement involves work that is required to restore the road to its former or similar condition. As the work is of a long-term nature, it generally involves an engineering appraisal of options and may require design input. Permanent reinstatement works have included the design and construction of retaining structures, earthwork road retreats and culvert replacements. These features are added to the inventory upon completion and capitalised where appropriate.

The Table below details historical expenditure for the emergency works and management activity.

Table 7.33: Historical Emergency Works & Management Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Operations & Maintenance								
Emergency Works	3,702,000	3,340,127	370,963	2,203,870	2,469,561	14,364,414	8,984,554	2,853,921
Total	3,702,000	3,340,127	370,963	2,203,870	2,469,561	14,364,414	8,984,554	2,853,921

Minor Events

The Minor Event work category is funded from the local roads maintenance activity and applies to any works that would otherwise qualify as emergency works except that the total cost of the works is less than \$100,000 per event.

This work category was introduced for the 2015/18 NLTP and applies to the following including:

- removal of rocks and slip material from roads and cycleways
- repairs to road and cycleway surfaces
- reinstatement of network facilities damaged as a result of a minor event.

Table 7.34: Historical Minor Events Expenditure

Year	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Operations & Maintenance								
Minor Events						21,318	380,105	
Total						21,318	380,105	

A scenic view of a river with a boat and a willow tree. The boat is a small, white and yellow vessel with a red chimney and a green canopy. It is docked at a wooden pier. A large, green willow tree is in the foreground, its branches hanging over the water. The background shows a lush green hillside with trees and a small bridge in the distance. The sky is blue with some clouds.

08 Financial Forecasts



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Overview

Activity management planning translates the physical aspects of planned operational, maintenance, renewal and new works into financial terms.

Management and maintenance of the transportation network is funded from the transportation rate collected by Council and financial assistance received from the New Zealand Transport Agency from dedicated transport funding.

Funding assistance received from NZTA for the 2017/18 financial year is 62% of the cost for maintaining the transportation network and 62% of the cost for transportation improvements. The remainder being met by a Targeted Rate on the capital value of each rating unit.

A review of the Funding Assistance Rate (FAR) for Road Controlling Authorities was undertaken by NZTA in 2014/15. As a result of that review it was determined that the Whanganui District FAR rate should reduce from the original baseline rate of 65% at 1% per annum from 2015/16 to 2018/29, when it will be fixed at 61% for both road maintenance and improvements.

The first priority is to maintain, operate and protect the existing network at defined levels of service. Maintenance takes 53% of the block allocation provided for Maintenance and Renewal.

In order to get subsidy from NZTA the council must ensure that any project meets one or more of the objectives of the Land Transport Management Act (LTMA). The Council is required by schedule 1 clause 4 of the LTMA to describe in its Land Transport Programme (LTP) what the objectives are for each project and how it contributes to the purpose of the LTMA.

The One Network Road Classification (ONRC) system framework will be implemented by 2018/19 and as described in this AMP road users can expect subtle changes in road condition and delivery.

Expenditure Categories

Expenditure on transport assets can be categorised into four main areas:

- Operating expenses
- Maintenance,
- Capital acquisitions (Improvements), and
- Capital replacements (Renewals).

These are discussed below:

Operating Expenses

Operating expenditures are those costs where the benefits are used within one year. Operating expenditure can be funded by grants and subsidies, interest income and user charges. If these sources of revenue are available or if

insufficient then the default funding source for operating expenditure is rates.

Maintenance

Maintenance costs are generally subdivided into three groups, these are described in Table 1. Maintenance is included in total operating expenses.

Table 8.1: Maintenance Types

Maintenance Type	General Meaning
Routine	Day to day maintenance which is required on an ongoing basis and is budgeted for.
Proactive (Planned)	Non day-to-day maintenance is identified in advance and is incorporated into a maintenance budget for a certain time period.
Reactive	Maintenance that is unexpected and necessary to attend to immediately to continue operation of the service.

Capital Works

Capital expenditure arises when the benefits derived are for longer than the current year. People in future years will continue to receive the benefit of the expenditure and should pay towards that cost. This is achieved through capitalising the cost and therefore recognising it as an asset. The cost is then charged to current and future users through a depreciation charge. Capital expenditure is divided into acquisition and replacement / renewal expenditure.

Capital Acquisitions (Improvements)

Capital acquisitions involve the creation of new assets, or works, which upgrade or improve an existing asset beyond its current capacity or performance in response to changes in usage or customer expectations. New capital expenditure is funded by loans and an annual interest charge is allocated to operating expenditure.

Renewal Capital (Replacements)

Renewal expenditure includes rehabilitation and replacement of assets to restore an asset to its original level of service, i.e. capacity or the required condition. Renewals expenditure forecasts cover the cost of asset renewal through its whole lifecycle through to disposal of the asset. Renewal capital expenditure is funded from rate funds or loans with an annual interest charge allocated to operating expenditure.

Disposals

Disposal of assets refers to decommissioning, whether by sale, demolition or relocation. A key component of an asset management plan is the identification and disposal of surplus assets. Assets may become surplus to requirements due to obsolescence, under-utilisation, changes in policy etc.



Life Cycle Costing

The cost of ownership of an asset or service is incurred throughout its whole life and does not all occur only at the point of acquisition. The graph below gives an example of a spend profile showing how the costs vary with time. In some instance the disposal cost will be negative because the item will have a resale value whilst for other procurements the disposal, termination or replacement cost is extremely high and must be taken into account at the planning stage.

Life Cycle costing (LCC) is a process to determine the sum of all the costs associated with an asset or part thereof, including acquisition, installation, operation, maintenance, refurbishment disposal costs. It is therefore pivotal to the asset management process.

Asset Management Assumptions

Schedule 10 (section 11) of the Local Government Act 2002 contains provisions relating to 'significant forecasting assumptions'. The Act requires that Council identifies the significant forecasting assumptions and risks underlying the financial estimates.

Statutory financial reporting requires Council to revalue its fixed assets at least every five years. An asset valuation is to be used for activity management (calculating long-term asset renewal projections), identifying loss of service potential (depreciation) and for financial reporting purposes.

The following activity management assumptions have been made in preparing the 10-year expenditure forecasts:

- The base financial assistance rate used by NZTA will reduce from 64% in 2015/16 at 1% per annum from 2015/16 to 2018/19, when it will be fixed at 61% for both road maintenance and improvements.
- It is anticipated that the funding criteria and policy used by NZTA will remain relatively unchanged from 2018/19.
- The rate of deterioration of road pavements will increase as a consequence of increased demand.
- Forestry harvesting will have a major impact on road pavements.
- No allowance has been made for extraordinary natural events which could create the need for additional funding to restore the network to its original condition.
- Transitional changes in the management, programming and scheduling of work activities to align with new ONRC levels of service.

The LTP assumptions and associated risks are outlined at the end of this section.

Figure 8.1: Lifecycle Cost Expenditure Profile

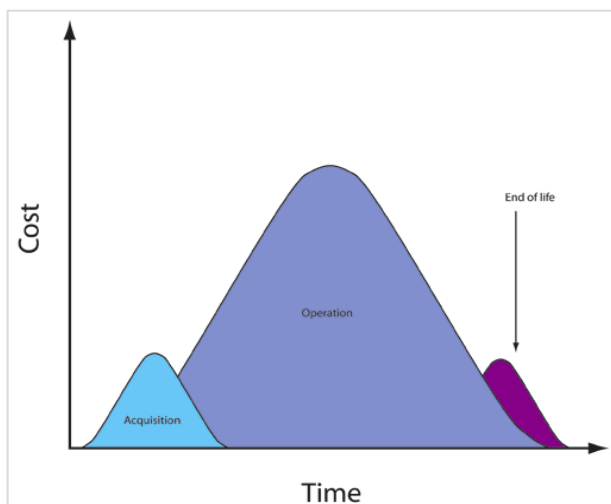
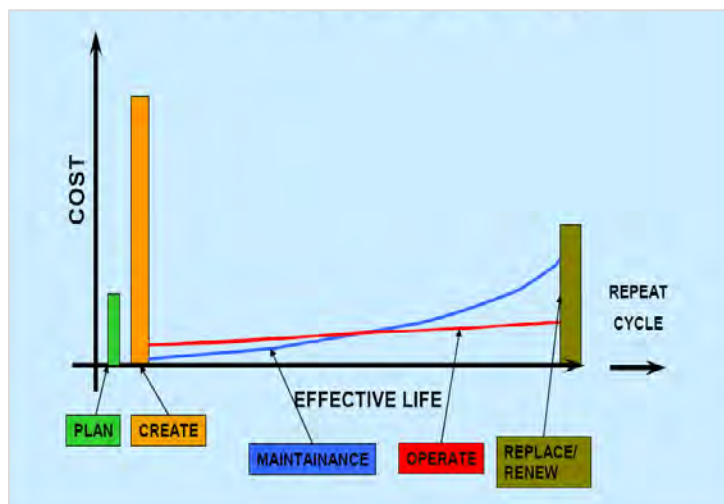


Figure 8.2: Costs in the lifecycle of an asset





Summary Financial Forecast

The tables below contains the Statement of Financial Performance, which incorporates the projected income and funding sources to fund operational, renewal and capital expenditure for the next 30 years.

Table 8.2: Cashflow Forecasts 2018/2019– 2047/2048

Forecast for the Financial Year ending June																														
Operating Statement	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031	2031/2032	2032/2033	2033/2034	2034/2035	2035/2036	2036/2037	2037/2038	2038/2039	2039/2040	2040/2041	2041/2042	2042/2043	2043/2044	2044/2045	2045/2046	2046/2047	2047/2048
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000
Income																														
Rates	7942.8	7921.7	6266.9	6283.9	6186.9	6090.5	6065.7	6091.6	6673.9	6463.8	7885.1	7876	7274.3	6916.5	9804.1	11868.9	7130	7133.6	7485.9	7416.4	7408.4	7766.9	7703.5	7701.4	8067.6	8011.5	8015.5	8344.6	8250.7	8215.2
Subsidies	9816.7	9593.8	7521.3	7579.5	6993.0	7335.1	9780.0	9399.4	10325.5	8953.7	11964.9	12134.4	9846.0	9601.9	14673.0	16786.6	7491.6	7430.0	7512.4	7576.4	7643.8	7728.6	7794.9	7864.6	7951.8	8020.5	8092.6	8180.2	8249.4	8321.9
Total Funding	17759.5	17515.5	13788.2	13863.4	13179.9	13425.6	15845.7	15491	16999.4	15417.5	19850	20010.4	17120.3	16518.4	24477.1	28655.5	14621.6	14563.6	14998.3	14992.8	15052.2	15495.5	15498.4	15566	16019.4	16032	16108.1	16524.8	16500.1	16537.1

Costs																														
Operating costs (includes Maintenance)	5905.5	5700.5	5610.7	5935.5	5846.9	5814.2	6140.9	6055.9	6028	6357.7	6276.5	6253.4	6587.6	6511.1	6493.1	6832.3	6760.9	6747.8	7091.8	7026.3	7020.5	7370.7	7311.2	7311.2	7668.8	7616.5	7622.4	7944.1	7855.1	7822.8
Council overhead	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0	441.0
Total Activity Costs	6346.5	6141.5	6051.7	6376.5	6287.9	6255.2	6581.9	6496.9	6469	6798.7	6717.5	6694.4	7028.6	6952.1	6934.1	7273.3	7201.9	7188.8	7532.8	7467.3	7461.5	7811.7	7752.2	7752.2	8109.8	8057.5	8063.4	8385.1	8296.1	8263.8
Capital Expenditure																														
Capital acquisitions		1,550.0		250.0																										
Capital replacements	11413.0	9,824.0	7736.5	7236.9	6892.0	7170.4	9263.8	8994.1	10530.4	8618.8	13132.5	13316.0	10091.7	9566.3	17543.0	21382.2	7419.7	7374.8	7465.5	7525.5	7590.7	7683.8	7746.2	7813.8	7909.6	7974.5	8044.7	8139.7	8204.0	8273.3
Total Capital Expenditure	11413.0	11,374.0	7736.5	7486.9	6892.0	7170.4	9263.8	8994.1	10530.4	8618.8	13132.5	13316.0	10091.7	9566.3	17543.0	21382.2	7419.7	7374.8	7465.5	7525.5	7590.7	7683.8	7746.2	7813.8	7909.6	7974.5	8044.7	8139.7	8204.0	8273.3
Total Funding Requirement	17759.5	17515.5	13788.2	13863.4	13179.9	13425.6	15845.7	15491	16999.4	15417.5	19850	20010.4	17120.3	16518.4	24477.1	28655.5	14621.6	14563.6	14998.3	14992.8	15052.2	15495.5	15498.4	15566	16019.4	16032	16108.1	16524.8	16500.1	16537.1
Net Surplus (Deficit)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Maintenance Planning

Maintenance Strategies

Maintenance strategies determine how the transportation assets will be operated and maintained on a day-to-day basis.

The following operations and maintenance strategies are applied to the transportation assets:

Operations

Council will manage the assets in a manner that minimises the long term overall total cost. Scheduled inspections will be undertaken as justified by the consequences of failure on levels of service, costs, public health, safety or corporate image. The inspection programme will be modified as appropriate in response to unplanned maintenance trends.

Asset monitoring processes include All-faults identification, condition rating of pavements, routine bridge inspections and periodic performance and condition assessments of specific assets. Customer enquiries and complaints are recorded on the "Customer Request Management (CRM)" database, summarising data on the date, time, details, responsibility and action taken.

Maintenance

Routine maintenance is the regular ongoing day-to-day work that is required to keep the road network in a safe and serviceable condition. The work undertaken ranges from work of a cyclic nature such as mowing or maintenance grading to unplanned work such as pothole repairs, the clearing of spillages or the clearing of blocked sump grates in storm conditions.

This work falls into two broad categories as follows:

Proactive (Planned)

Proactive inspection and maintenance works planned to prevent asset failure.

A programme of planned asset maintenance will be undertaken to minimise the risk of critical asset failure (e.g., bridges), or where justified when considering financial, safety and social impacts (e.g., pre-seal repairs, vegetation management). Major maintenance needs will be identified through the scheduled asset condition inspections and those generated from the investigation of customer complaints.

Reactive

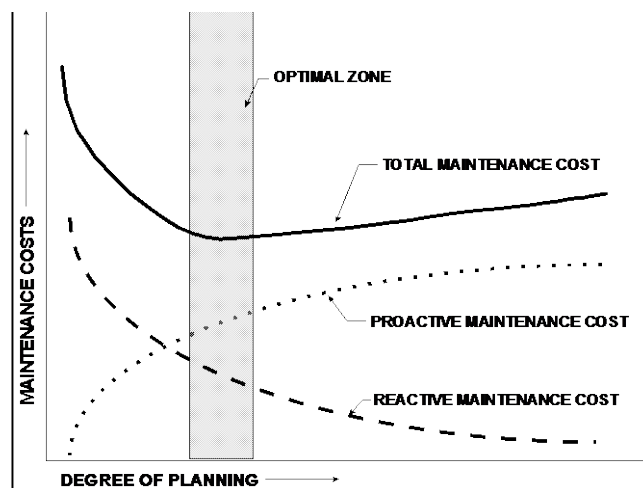
Reactive action to correct asset malfunctions and failures occur on an 'as required' basis. Repair of a pothole is an example of reactive maintenance.

A suitable level of preparedness for prompt and effective response to asset failures will be maintained by ensuring suitably trained and equipped staff to allow prompt repair of critical assets and mitigation of any hazards.

A key element of activity management planning is determining the most cost-effective blend of planned and unplanned maintenance as illustrated in **Error!**

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Figure 8.3: Balancing Proactive & Reactive Maintenance



Council will maintain assets in a manner that minimises the long term overall total cost. Competitive pricing will be ensured by using CPP contract structures, term contracts, and cross TLA boundary arrangements where applicable in accordance with the National Procurement Manual intent.

The short-term maintenance strategy is intended to maintain the current levels of service standards with gradual transition to those defined by the ONRC guidelines. The long-term maintenance strategy will be modified to reflect the following factors:

- Risk of failure - The risk associated with failure of critical assets
- Levels of service - Changes in the current or agreed level of service, ONRC
- Economic efficiency - Asset condition assessments
- Extend the life of the asset component - Asset improvements and development programme
- Legislative compliance – e.g. requirements of LGA 2002



Forecast Operating and Maintenance Costs

Table 8.3 below sets out the 10 year projected operational expenditure for the Land Transport activity.

Table 8.3: Transport Maintenance and Operations Forecast Expenditure 2018/19 – 2047/48

Operations	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031	2031/2032	2032/2033	2033/2034	2034/2035	2035/2036	2036/2037	2037/2038	2038/2039	2039/2040	2040/2041	2041/2042	2042/2043	2043/2044	2044/2045	2045/2046	2046/2047	2047/2048
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000
Expenditure																														
Pavements																														
Sealed Pavement Maintenance	1902.7	1902.7	1902.7	1921.7	1940.9	1960.3	1979.9	1999.7	2019.7	2039.9	2060.3	2080.9	2101.8	2122.8	2144.0	2165.4	2187.1	2209.0	2231.1	2253.4	2275.9	2298.7	2321.6	2344.9	2368.3	2392.0	2415.9	2440.1	2464.5	2489.1
Total	1902.7	1902.7	1902.7	1921.7	1940.9	1960.3	1979.9	1999.7	2019.7	2039.9	2060.3	2080.9	2101.8	2122.8	2144.0	2165.4	2187.1	2209.0	2231.1	2253.4	2275.9	2298.7	2321.6	2344.9	2368.3	2392.0	2415.9	2440.1	2464.5	2489.1
Unsealed Pavement Maintenance	231.9	231.9	231.9	234.3	236.6	239.0	241.4	243.8	246.2	248.7	251.2	253.7	256.2	258.8	261.4	264.0	266.6	269.3	272.0	274.7	277.4	280.2	283.0	285.8	288.7	291.6	294.5	297.5	300.4	303.4
Total	231.9	231.9	231.9	234.3	236.6	239.0	241.4	243.8	246.2	248.7	251.2	253.7	256.2	258.8	261.4	264.0	266.6	269.3	272.0	274.7	277.4	280.2	283.0	285.8	288.7	291.6	294.5	297.5	300.4	303.4
Bridges and Culverts																														
Bridge Maintenance	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3
Total	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3	357.9	102.3	102.3
Traffic Services incl. Street Lighting																														
Signs Maintenance	6.0	6.0	6.0	6.1	6.1	6.2	6.2	6.3	6.4	6.4	6.5	6.6	6.6	6.7	6.8	6.8	6.9	7.0	7.0	7.1	7.2	7.2	7.3	7.4	7.5	7.5	7.6	7.7	7.8	7.8
Street Lighting Maintenance	166.4	147.0	146.3	150.8	155.5	160.2	166.0	170.9	175.7	181.8	186.8	193.0	199.3	204.5	211.0	217.5	224.1	230.8	237.5	244.4	252.5	259.5	266.6	275.0	283.5	290.9	298.3	301.3	304.3	307.3
Electricity	250.0	220.0	231.0	243.0	255.0	267.0	281.0	295.0	310.0	325.0	341.0	358.0	376.0	395.0	415.0	436.0	457.0	480.0	504.0	529.0	556.0	584.0	613.0	644.0	676.0	710.0	746.0	746.0	746.0	746.0
Total	422.4	373.0	383.3	399.9	416.6	433.4	453.3	472.2	492.1	513.2	534.3	557.6	582.0	606.2	632.7	660.3	688.0	717.7	748.6	780.5	815.7	850.8	886.9	926.4	967.0	1008.4	1051.9	1055.0	1058.0	1061.2
Drainage																														
Routine Drainage Maintenance	311.2	311.2	311.2	314.3	317.5	320.6	323.8	327.1	330.3	333.7	337.0	340.4	343.8	347.2	350.7	354.2	357.7	361.3	364.9	368.6	372.2	376.0	379.7	383.5	387.4	391.2	395.1	399.1	403.1	407.1
Total	311.2	311.2	311.2	314.3	317.5	320.6	323.8	327.1	330.3	333.7	337.0	340.4	343.8	347.2	350.7	354.2	357.7	361.3	364.9	368.6	372.2	376.0	379.7	383.5	387.4	391.2	395.1	399.1	403.1	407.1
Kerb & Sump Cleaning	472.7	472.7	472.7	477.4	482.2	487.0	491.9	496.8	501.8	506.8	511.8	517.0	522.1	527.4	532.6	538.0	543.3	548.8	554.3	559.8	565.4	571.0	576.8	582.5	588.3	594.2	600.2	606.2	612.2	618.4
Total	472.7	472.7	472.7	477.4	482.2	487.0	491.9	496.8	501.8	506.8	511.8	517.0	522.1	527.4	532.6	538.0	543.3	548.8	554.3	559.8	565.4	571.0	576.8	582.5	588.3	594.2	600.2	606.2	612.2	618.4
Total Drainage	783.9	783.9	783.9	791.7	799.7	807.6	815.7	823.9	832.1	840.5	848.8	857.4	865.9	874.6	883.3	892.2	901	910.1	919.2	928.4	937.6	947	956.5	966	975.7	985.4	995.3	1005.3	1015.3	1025.5
Footpaths																														
Footpath Maintenance	482.7	482.7	482.7	487.5	492.4	497.3	502.3	507.3	512.4	517.5	522.7	527.9	533.2	538.6	543.9	549.4	554.9	560.4	566.0	571.7	577.4	583.2	589.0	594.9	600.8	606.9	612.9	619.1	625.2	631.5
Total Footpaths	482.7	482.7	482.7	487.5	492.4	497.3	502.3	507.3	512.4	517.5	522.7	527.9	533.2	538.6	543.9	549.4	554.9	560.4	566.0	571.7	577.4	583.2	589.0	594.9	600.8	606.9	612.9	619.1	625.2	631.5
Other Features and Activities																														



Operations	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031	2031/2032	2032/2033	2033/2034	2034/2035	2035/2036	2036/2037	2037/2038	2038/2039	2039/2040	2040/2041	2041/2042	2042/2043	2043/2044	2044/2045	2045/2046	2046/2047	2047/2048
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	
Expenditure																														
Environmental Maintenance	1093.3	1093.3	1093.3	1104.3	1115.3	1126.5	1137.7	1149.1	1160.6	1172.2	1183.9	1195.8	1207.7	1219.8	1232.0	1244.3	1256.8	1269.3	1282.0	1294.8	1307.8	1320.9	1334.1	1347.4	1360.9	1374.5	1388.2	1402.1	1416.1	1430.3
Total	1093.3	1093.3	1093.3	1104.3	1115.3	1126.5	1137.7	1149.1	1160.6	1172.2	1183.9	1195.8	1207.7	1219.8	1232.0	1244.3	1256.8	1269.3	1282.0	1294.8	1307.8	1320.9	1334.1	1347.4	1360.9	1374.5	1388.2	1402.1	1416.1	1430.3
Cycleway Maintenance	8.5	8.5	8.5	8.6	8.7	8.8	8.8	8.9	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	11.0	11.1
Total	8.5	8.5	8.5	8.6	8.7	8.8	8.8	8.9	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9	11.0	11.1
Level Crossing Warning Devices	60.0	60.0	60.0	60.6	61.2	61.8	62.4	63.1	63.7	64.3	65.0	65.6	66.3	66.9	67.6	68.3	69.0	69.7	70.4	71.1	71.8	72.5	73.2	73.9	74.7	75.4	76.2	76.9	77.7	78.5
Total	60.0	60.0	60.0	60.6	61.2	61.8	62.4	63.1	63.7	64.3	65.0	65.6	66.3	66.9	67.6	68.3	69.0	69.7	70.4	71.1	71.8	72.5	73.2	73.9	74.7	75.4	76.2	76.9	77.7	78.5
Operational Traffic Management	62.5	62.5	62.5	63.0	63.5	64.0	64.5	65.1	65.6	66.1	66.6	67.2	67.7	68.3	68.8	69.4	70.0	70.5	71.1	71.7	72.3	72.9	73.5	74.1	74.7	75.4	76.0	76.6	77.3	77.9
Total	62.5	62.5	62.5	63.0	63.5	64.0	64.5	65.1	65.6	66.1	66.6	67.2	67.7	68.3	68.8	69.4	70.0	70.5	71.1	71.7	72.3	72.9	73.5	74.1	74.7	75.4	76.0	76.6	77.3	77.9
Minor Events	350.0	350.0	350.0	353.5	357.0	360.6	364.2	367.9	371.5	375.2	379.0	382.8	386.6	390.5	394.4	398.3	402.3	406.3	410.4	414.5	418.7	422.8	427.1	431.3	435.7	440.0	444.4	448.9	453.3	457.9
Total	350.0	350.0	350.0	353.5	357.0	360.6	364.2	367.9	371.5	375.2	379.0	382.8	386.6	390.5	394.4	398.3	402.3	406.3	410.4	414.5	418.7	422.8	427.1	431.3	435.7	440.0	444.4	448.9	453.3	457.9
Network & Asset Management	590.6	690.6	590.6	593.6	693.6	593.7	593.8	693.8	593.9	593.9	694.0	594.0	594.1	694.1	594.2	594.2	694.3	594.4	594.4	694.5	594.5	594.6	694.6	594.7	594.8	694.8	594.9	595.0	695.0	595.1
Total	590.6	690.6	590.6	593.6	693.6	593.7	593.8	693.8	593.9	593.9	694.0	594.0	594.1	694.1	594.2	594.2	694.3	594.4	594.4	694.5	594.5	594.6	694.6	594.7	594.8	694.8	594.9	595.0	695.0	595.1
Operating & Maintenance Totals	6346.5	6141.4	6051.7	6376.6	6287.8	6255.3	6582.0	6496.9	6469.1	6798.6	6717.3	6694.4	7028.7	6952.2	6934.2	7273.4	7202.0	7188.8	7532.9	7467.5	7461.5	7811.6	7752.2	7752.3	8109.8	8057.4	8063.3	8385.1	8296.3	8263.7



Capital & Renewal Planning

Capital and renewal planning comprises the creation of new assets, or the upgrade or improvement of an existing asset beyond its existing capacity or performance in response to changes in usage or customer expectations. These works can be either Council or developer initiated.

While Whanganui District Council recognises that asset development and asset replacement can occur simultaneously, it is important to note that the purpose of asset replacement is to prevent a decline in the service potential of the assets.

Asset replacement is concerned with maintaining the condition of the assets and current service levels.

Asset development is concerned with the service improvements, measured by asset performance.

Table 8.4: Capital Work Drivers

Growth	Any asset development (council funded and development contributions) that is required as a result of growth
Levels of Service	Any asset development that is required as a result of a change in service levels
Legislative	Any asset developed out of legislative requirements

Investigations, strategies and studies are all considered capital.

Renewal Works

Renewal expenditure is work that restores an existing asset to its original level of service, i.e. capacity or the required condition. These broadly fit into the following work categories as follows:

Rehabilitation

Rehabilitation involves the repair of an existing asset, or asset component. Rehabilitation doesn't provide for a planned increase in the operating capacity or design loading. It is intended to enable the assets to continue to be operated to meet levels of service.

Replacement

Replacement does not provide for a planned increase to the operating capacity or design loading. Some minor increases in capacity may result from the process of replacement, but a substantial improvement is needed before asset development is considered to have occurred.



Removal of an existing section of pipe and laying a new pipe of the same size and capacity is an example of renewal in the Drainage work activity.

Renewal Strategy

Renewal strategies provide for the progressive replacement or rehabilitation of individual assets that have reached the end of their useful life. This is managed at a rate that maintains the standard and value of the assets as a whole. This programme must be maintained at adequate levels to maintain current levels of service and the overall quality of assets.

Failure to maintain an adequate cyclic replacement programme will be reflected in a decline in the overall standard of the network of assets.

Where the actual programme falls below the cumulative budget target, the shortfall will be reflected in depreciation of the overall value of the network, resulting in a lower Levels of Service and the need for reactive maintenance. The general strategy is to rehabilitate or replace assets when justified by:

Risk

The risk of failure and associated environmental, public health, financial or social impact justifies proactive action. Where such assets are identified (critical assets), proactive inspection is undertaken to determine asset condition at a frequency appropriate to the risk and rate of asset decay.

Asset Performance

An asset is renewed where it fails to meet the required level of service. Non-performing assets are identified by the monitoring of asset reliability, efficiency and quality during routine inspections and operational activity. Indicators of non-performing assets include repeated and/or premature asset failure, inefficient energy consumption, and inappropriate or obsolete components.

Economics

When it is no longer economic to continue repairing the asset (i.e. the annual cost of repairs exceeds the annualised cost of its renewal). An economic consideration is the co-ordination of renewal works with other planned works such as road reconstruction.



Efficiency

New technology and management practices relating to increased efficiencies and savings will be actively researched, evaluated and, where applicable, implemented.

Capital replacement needs for key asset groups will be identified through the scheduled asset condition inspections, the investigation of customer complaints and a practical knowledge of the network. Capital works will be prioritised and programmed in accordance with the following criteria, or in urgent cases undertaken immediately due to:

- Public safety risk
- Criticality of assets to network operation
- Criticality of assets to achievement of service standards and community outcomes
- Financial risk of deferring work
- Intensity of usage
- Environmental risk
- Cost and the ability to gain subsidies, and
- Political preference.

Lifecycle

The current lifecycle expectations for the transport assets are outlined later in this section under 'Asset Valuation'.

Capital works identified in accordance with the capital work strategies may be deferred if the cost is beyond the community's ability to fund it. This can occur when higher priority works are required on other infrastructure assets, there are short-term peaks in expenditure, or if an inadequate rating base exists. When capital works are deferred, the impact of the deferral on economic efficiencies and the asset's ability to achieve or contribute to the required service standards will be assessed. Although the deferral of some capital works may not impact significantly on the short-term operation of assets, repeated deferrals will create a liability in the longer term.

Renewal Works Summary

Replacement assets are identified through analysis of the Asset Register which takes into account factors such as age, condition and performance. Transport engineers then make an assessment of the analysis data and prioritise a replacement program taking into account risk and criticality.

Assets are renewed when it is determined to be more cost effective in the long term to replace rather than continue to maintain them. Longer term asset renewal needs are identified through analysis of condition assessments. More detailed, shorter term prioritised programmes are developed with reference to failure history, risk assessment (including consideration of financial, environmental and social implications of failure),

and, in the case of critical pipes and plant items, visual condition assessments and site inspection information.

The replacement (renewal) programme and expenditure projections for 2018/19- 2047/48 is summarised later in this section in Table 8.7.

Deferrals

Replacement works identified may be deferred if the cost is beyond the community's ability to pay. This can occur when higher priority works are required on other infrastructure assets, there are short-term peaks in expenditure or if an inadequate rating base exists.

When replacement works are deferred, the impact of the deferral on economic inefficiencies and the system's ability to achieve the required levels of service will be assessed. Although the deferral of some replacement works may not impact significantly on short-term operation of assets, repeated deferral will create a liability in the longer term.

It is believed that the deferred replacements in this AMP will not significantly lower service levels over the term of this plan. However, repeated deferral may create a greater requirement in terms of maintenance funding to retain levels of service.

No replacement deferrals are anticipated for the next ten years, but this is subject to NZTA approval for enhanced funding assistance.

New Works (Acquisition)

New works are the creation of new assets or works, which upgrade or improve an existing asset beyond its existing capacity or performance in response to changes in usage or customer expectations.

New works fall into separate categories as follows:

- Growth – Any capital works (council funded or externally funded) that are required as a result of growth
- Levels of Service – Any capital works required as a result of an increase in levels of service
- Legislative – Any asset developed to meet legislative requirements
- Vested Assets – Any assets vested to Council

As required by schedule 10 of the LGA 2002, with respect to Council funded development work, this plan also identifies and differentiates between requirements of additional asset capacity in terms of increased demand (e.g. growth) or increase in service levels and standards.

Selection Criteria

In setting the final programme of capital expenditure, projects were subject to Council deliberation as part of the LTP process. Asset maintenance and asset renewal projects were given highest priority so the Council can continue to maintain its existing service capacity.



Development works will be planned in response to identified service gaps, growth and demand issues, risk issues and economic considerations, including accelerated or enhanced development plans proposed by Council or Committees. When evaluating significant development proposals, the following issues will be considered:

- The contribution the new or improved assets will make to the current and anticipated future levels of service and community outcomes
- The risks and benefits anticipated to be made from the investment
- The risks faced by not proceeding with the development works. These could include safety risks, social risks and political risks
- Ability and willingness of the community to fund the works
- Future operating and maintenance cost implications

Significant development works will be prioritised and programmed with contributions from:

- Targeted user groups might include industry groups, tourism operators and adjacent residents
- The general community (through public consultation)
- Council staff, Alliance partners and Consultants that may be engaged to provide advice to the Council
- The LTP/Annual Plan process
- The elected Council and Committees (significant proposals are subject to Council decision and available funding)

Five yearly reviews of the state highway and local network are normally undertaken by NZTA. Some assets may be transferred to Council following these reviews.

Confidence in the major CAPEX estimates is assessed as follows in Table 8.5, with confidence grades defined as per Table 8.6.

Table 8.5: Capital Expenditure Confidence Levels

Major Projects	Confidence Level
Capital Acquisitions	
Transportation	
Heads Road / Beach Road Intersection	2
Footpath	
Cycle Path Construction	2
Capital Renewals	

Major Projects	Confidence Level
Pavements	
Sealed Roads resurfacing	2
Pavement Rehabilitation	2
Unsealed Road Metalling	2
Drainage	
Drainage Renewals	2
Bridges and Culverts	
Structural Component Replacement	2
Capital Replacement Br 74 – Wakefield St	2
Capital Replacement - Matarawa (Br 37)	4
Capital Replacement - Armco Culvert	4
Capital Replacement - Kauarapaoa Road (Br 15)	3
Capital Replacement - Dublin Street (Br 71)	4
Capital Replacement - Handley Road (Br 2)	4
Capital Replacement - Longacre No 1 (Br 41)	4
Capital Replacement - Longacre No 2 (Br 42)	4
Capital Replacement - Longacre No 3 (Br 43)	4
Capital Replacement - Longacre No 4 (Br 44)	4
Capital Replacement - Longacre No 5 (Br 45)	4
Capital Replacement - Kaimatira Road (Br 40)	4
Capital Replacement - Papaiti Rd (Br13)	4
Capital Replacement - Various Papa Drives	4



Major Projects	Confidence Level
Transportation	
Preventative Maintenance	3
Mosston Road Reconstruction	4
Montgomery Road Reconstruction	4
Fitzherbert Avenue Extension	3
Mill Road Extension	3
Studies and Strategies	3
Minor Improvements (Low Cost / Low Risk)	3
Footpath & Berms	
Infrastructure Renewals	2

Table 8.6: WDC Confidence Grading Definitions

Confidence Grade	Label	Description	Data Accuracy
1	Accurate	Data based on reliable documentation	+/- 5%
2	Minor inaccuracies	Minor inaccuracies – data based on supporting documentation	+/- 10%
3	50% of data estimated	50% data estimated – data based on some supporting information	+/- 20%
4	Significant data estimated	Significant data estimated – data based on local knowledge	+/- 30%
5	All data estimated	All data estimated – data based on best guess by experienced person	+/- 40%



Capital & Renewal Forecasts

Table 8.7 below sets out the 30 year projected capital expenditure for the Transport activity, representing growth, renewal and levels of service projects.

Table 8.7: Transport Capital and Renewal Projects Forecast Expenditure 2018/19 – 2047/48

Capital & Renewals	Category Totals			Forecast for the Financial Year Ending June																												Total for 30 Year Period		
	Growth	Renewal	LoS	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031	2031/2032	2032/2033	2033/2034	2034/2035	2035/2036	2036/2037	2037/2038	2038/2039	2039/2040	2040/2041	2041/2042	2042/2043	2043/2044	2044/2045	2045/2046		2046/2047	2047/2048
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	
Capital Acquisitions																																		
Transportation																																		
Whanganui Central Transportation Hub	250.0						250.0																										250.0	
Cycleways																																		
Cycleways	775.0		775.0		1550.0																												1550.0	
Total Acquisitions	1025.0		775.0		1550.0		250.0																										1800.0	
Renewals																																		
Pavements																																		
Sealed Roads Resurfacing				2200.0	2050.0	2050.0	2050.0	2050.0	2050.0	2564.7	2586.1	2607.6	2629.4	2219.9	2242.1	2264.5	2287.1	2310.0	2333.1	2050.0	2070.5	2091.2	2112.1	2133.2	2154.6	2176.1	2197.9	2219.9	2242.1	2264.5	2287.1	2310.0	2333.1	
Total		67136.6		2200.0	2050.0	2050.0	2050.0	2050.0	2050.0	2564.7	2586.1	2607.6	2629.4	2219.9	2242.1	2264.5	2287.1	2310.0	2333.1	2050.0	2070.5	2091.2	2112.1	2133.2	2154.6	2176.1	2197.9	2219.9	2242.1	2264.5	2287.1	2310.0	2333.1	67136.6
Pavement Rehabilitation				976.1	976.1	976.1	970.1	970.1	970.1	1834.3	1808.0	1787.3	1769.7	2177.0	2149.1	2124.4	2076.7	2057.4	2054.5	1069.1	1079.3	1089.6	1100.1	1110.6	1121.2	1131.9	1142.7	1153.7	1164.7	1175.9	1187.1	1198.5	1210.0	
Total		41611.5		976.1	976.1	976.1	970.1	970.1	970.1	1834.3	1808.0	1787.3	1769.7	2177.0	2149.1	2124.4	2076.7	2057.4	2054.5	1069.1	1079.3	1089.6	1100.1	1110.6	1121.2	1131.9	1142.7	1153.7	1164.7	1175.9	1187.1	1198.5	1210.0	41611.5
Unsealed Road Metalling				504.6	504.6	504.6	509.6	514.7	519.8	525.0	530.3	535.6	541.0	546.4	551.8	557.3	562.9	568.5	574.2	580.0	585.8	591.6	597.5	603.5	609.6	615.7	621.8	628.0	634.3	640.7	647.1	653.5	660.1	
Total		17,220.1		504.6	504.6	504.6	509.6	514.7	519.8	525.0	530.3	535.6	541.0	546.4	551.8	557.3	562.9	568.5	574.2	580.0	585.8	591.6	597.5	603.5	609.6	615.7	621.8	628.0	634.3	640.7	647.1	653.5	660.1	17,220.1
Drainage																																		
Drainage Renewals				952.8	952.8	952.8	962.3	972.0	981.7	991.5	1001.4	1011.4	1021.6	1031.8	1042.1	1052.5	1063.0	1073.7	1084.4	1095.2	1106.2	1117.3	1128.4	1139.7	1151.1	1162.6	1174.2	1186.0	1197.9	1209.8	1221.9	1234.1	1246.5	
Total		32518.9		952.8	952.8	952.8	962.3	972.0	981.7	991.5	1001.4	1011.4	1021.6	1031.8	1042.1	1052.5	1063.0	1073.7	1084.4	1095.2	1106.2	1117.3	1128.4	1139.7	1151.1	1162.6	1174.2	1186.0	1197.9	1209.8	1221.9	1234.1	1246.5	32518.9
Bridges & Culverts																																		
Structural Component Replacement				342.0	227.0	419.5	739.5	389.5	642.0	1162.0	812.0	762.0	419.5	832.0	919.5	382.0	519.5	839.5	432.0	412.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0		
Total		14307.5		342.0	227.0	419.5	739.5	389.5	642.0	1162.0	812.0	762.0	419.5	832.0	919.5	382.0	519.5	839.5	432.0	412.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	312.0	14307.5	
Traffic Services including Streetlights																																		



Capital & Renewals	Category Totals			Forecast for the Financial Year Ending June																														Total for 30 Year Period
	Growth	Renewal	LoS	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031	2031/2032	2032/2033	2033/2034	2034/2035	2035/2036	2036/2037	2037/2038	2038/2039	2039/2040	2040/2041	2041/2042	2042/2043	2043/2044	2044/2045	2045/2046	2046/2047	2047/2048	
	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000	\$000		
Traffic Services Renewals				402.0	402.0	402.0	406.0	410.0	414.1	418.3	422.5	426.7	431.0	435.3	439.6	444.0	448.5	452.9	457.5	462.0	466.7	471.3	476.0	480.8	485.6	490.5	495.4	500.3	505.3	510.4	515.5	520.6	525.9	
Total		13718.7		402.0	402.0	402.0	406.0	410.0	414.1	418.3	422.5	426.7	431.0	435.3	439.6	444.0	448.5	452.9	457.5	462.0	466.7	471.3	476.0	480.8	485.6	490.5	495.4	500.3	505.3	510.4	515.5	520.6	525.9	13718.7
Bridges & Culverts																																		
Bridge Replacement - Wakefield St (Br 74)		890.0	890.0	1780.0																													1780.0	
Bridge Replacement - Kauarapaoa Road (Br 15)		750		100.0	650.0																												750.0	
Bridge Replacement - Dublin Street (Br 71)		11350.0	11350.0											100.0	300.0	500.0	800.0	8400.0	12600														22700.0	
Transportation																																		
Study	33.3	33.3	33.3	100.0																													100.0	
Activity Management Plans		20.0	20.0	20.0	5.0	15.0																											40.0	
Cycle Education Programme			12399.1	356.5	418.0	370.5	371.0	386.5	372.0	372.0	387.0	372.0	387.0	390.9	394.8	398.7	402.7	406.7	410.8	414.9	419.1	423.3	427.5	431.8	436.1	440.4	444.8	449.3	453.8	458.3	462.9	467.5	472.2	12399.1
Mosston Road Reconstruction		4769.9	4769.9								80.0	1662.1		3929.7	3868.0																			9539.8
Montgomery Road Reconstruction		545	545										50.0	70.0		970.0																	1090.0	
Heads Road / Beach Road Intersection	465.9	465.9	465.9		1397.6																												1397.6	
Low Cost / Low Risk	16964.7		16858.5	3338.0	1900.0	1705.0	883.9	851.4	869.3	1041.1	1008.4	1003.6	1004.1	1030.4	1036.1	1021.5	1025.4	1050.0	1047.5	944.4	939.3	969.3	967.9	971.2	1001.7	1000.9	1004.7	1036.0	1035.8	1040.2	1068.8	1065.9	1067.5	33929.3
Footpath & Berms																																		
Infrastructure Renewals		5819.0	5819.0	341.0	341.0	341.0	344.4	347.9	351.3	354.8	358.4	362.0	365.6	369.3	372.9	376.7	380.4	384.2	388.1	392.0	395.9	399.8	403.8	407.9	412.0	416.1	420.2	424.4	428.7	433.0	437.3	441.7	446.1	11638.0
Total Renewals	17463.9	211156.4	53256.9	11413.0	9824.1	7736.5	7236.8	6892.1	7170.3	9263.7	8994.1	10530.3	8618.9	13132.7	13316	10091.6	9566.2	17542.9	21382.1	7419.6	7374.8	7465.4	7525.3	7590.7	7683.9	7746.2	7813.7	7909.6	7974.6	8044.8	8139.7	8203.8	8273.4	281876.8
Total Capital Acquisitions	1025		775		1550.0		250.0																										1800.0	



Disposals

As part of the whole life cycle management of assets, it is vital to consider the costs of asset disposal in the long-term financial forecasts for an asset. The cost of asset disposal is expected to be incorporated within the capital cost of new works, or asset renewals.

Disposal is the retirement or sale of assets whether surplus or superseded by new or improved systems. Assets may become surplus to requirements for any of the following reasons:

- Under utilisation
- Obsolescence
- Provision exceeds required level of service
- Assets replaced before their predicted economic life
- Uneconomic to upgrade or operate
- Policy changes that result, for example, in a reductions in levels of service
- Service provided by other means (e.g. private sector involvement)
- Potential risk of ownership (financial, environmental, legal, social, vandalism).

The development of asset management systems and asset condition data allows better planning for the disposal of assets through rationalisation of the asset stock or when assets become uneconomic to own and operate.

Asset disposal processes will comply with Council's legal obligations under the Local Government Act 2002, which covers:

- Public notification procedures required prior to sale
- Restrictions on the minimum value recovered
- Use of revenue received from asset disposal

From time to time berm areas surplus to requirements, areas being informally occupied by adjoining landowners or areas of (unformed) legal road reserve will be identified for rationalisation. Surplus areas of land may be sold in accordance with relevant legislation and Council policies to minimise future maintenance costs or other liabilities and to obtain a return on underutilised land assets, as well as to improve public access to reserves and rivers. Both the Public Works Act and the Local Government Act refer to these processes. Areas of road reserve land occupied by private persons or organisations are formalised under a licence to occupy agreement.

Bridges on roads which service single properties may be reviewed for disposal. Council may decide that bridges identified in any review process for disposal will no longer be maintained by Council, but will be subject to a legally binding agreement with the adjacent property owner. Council could decide to either:

- Undertake routine inspections on these bridges, paid for by the adjacent property owner who will be responsible for all maintenance requirements identified; or

- Decommissioned to reduce potential Council liability.

All relevant costs of disposal will be considered when considering disposal options. These costs may include:

- Evaluation of options
- Consultation / advertising
- Obtaining resource consents
- Professional services, including engineering, planning, legal, survey
- Demolition, site clearing or the cost of making safe.

The use of revenue arising from the sale of assets, or the source of funds required to dispose of assets, would be considered by Council at the time of its consideration of any asset disposal.

There are currently no plans to dispose of or cease to maintain any of the existing transportation network even though there is a number of existing roads which serve only one or two property owner(s) and essentially provide solely private access.

Asset Valuation

Introduction

Statutory financial reporting requires Whanganui District Council to revalue its fixed assets every three years. The Transportation assets are re-valued every year.

An asset valuation is to be used for asset management purposes (calculating long-term asset renewal projections), identifying loss of service potential (depreciation) and for financial reporting purposes.

Accounting Standards

New Zealand International Financial Reporting Standard (NZIAS16) applies to all Transport assets considered in the scope of this valuation for the general purpose of financial reports.

Valuation Terminology

Table 8.8: Asset Data – Valuation Terminology

Item	General Meaning
Gross Replacement cost (GRC)	The cost of constructing a new fixed asset using the present day technology, and maintaining the original service potential.
Optimised Replacement cost (ORC)	The cost of the modern equivalent asset that would be used to replicate the existing asset. The asset cost is 'optimised' down to allow for surplus capacity or technical obsolescence.
Optimised Depreciation Replacement Cost (ODRC)	The optimised replacement cost after deducting the wear of an asset to reflect the remaining useful life of the asset. Calculated on the gross replacement cost of modern equivalent assets (MEA).



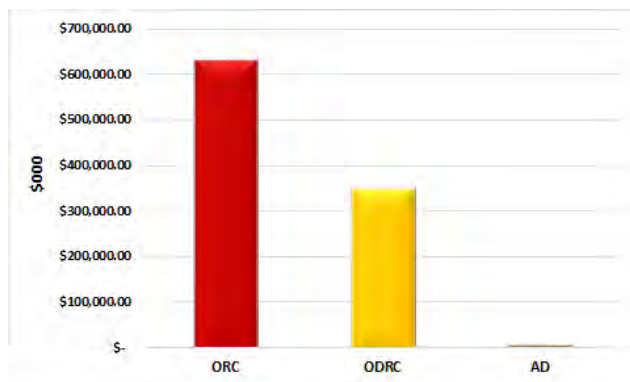
Valuation 2017

The most recent valuation of Council's Transportation assets occurred in 2017 to take account of:

- Changes in construction costs by reference to various published construction cost indices
- Transportation assets vested in WDC
- Minor changes in asset data

Figure 4 shows the 2017 Gross Replacement Cost (GRC), Optimised Depreciated Replacement Cost (ODRC), and the Annual Depreciation (AD) in graphical form.

Figure 8.4: 30 June 2017 Transportation Asset Valuation



Comparative transport asset valuations for the year ending 30 June 2009, 2010, 2011, 2014 and 2017 (as reported in the WDC Infrastructure Assets Valuation Reports) are shown in Table 8.9.

Table 8.9: Transportation Asset Valuation Summary Comparison

Valuation Date	GRC (\$'000)	ODRC (\$'000)	Annual Depreciation (\$'000)
30 June 2009	517,297	358,812	
30 June 2010	515,786	349,543	13,552
30 June 2011	528,598	358,409	14,132
30 June 2014	609,143	360,433	8,745
30 June 2017	632,943	350,708	8,884

Assets valued in the transport valuation include pavement layers, surface and formation, bridges and culverts, retaining walls, drainage, footpaths, street lighting, traffic signs and signals, road markings, traffic controls devices, street furniture, safety barriers, berms and off road parking.

Additional details of the 2017 transportation valuation may be found in *Section 7: Transportation Assets*.

Valuation Methodology

The valuation basis is depreciated replacement cost, which is in accordance with generally accepted accounting practice. Replacement cost is the cost of re-building the existing infrastructure using present day technology, but maintaining the originally designed level of service. Assuming present technology ensures that any additional costs of out dated and expensive methods of construction are not reflected in the valuation. Demolition and disposal costs have been included as required by NZIAS -16.

Asset Register

This valuation has been compiled from information extracted from RAMM (administered and maintained by Downer Limited, WDC Alliance Partner). Work to improve deficiencies identified in asset data from the previous valuation have commenced and is ongoing.

Use was made of the June 2014 valuation report to check for consistency in the overall quantum of assets and associated values.

Unit Costs

The unit costs have been obtained from a variety of sources, including the following:

- Established from first principles using plant, labour and materials used on the WDC Transportation Alliance Contract to calculate Target Cost Estimates maintenance activities
- Previous valuations
- Recent construction contract work for WDC
- Consultants

Council has assumed a "brown fields" construction environment with associated higher costs of consultation, consents, traffic management etc.

Depreciation Method

The basic approach adopted for this report has involved:

- Updating the RAMM database including imputing if new works completed since the last valuation and inventory updates as part of the continuous improvement process developed.
- Populating the RAMM valuation module with unit rates, overheads and other costs, (site establishment and professional fees etc.) base life and residual life values.
- Adjustment of asset quantities, materials and techniques to reflect an optimum (least cost) modern equivalent replacement that offers the same level of service as that currently provided.
- Calculation of Replacement Cost (RC) using the RAMM valuation analysis module.

Calculation of Depreciated Replacement Cost (DRC) is also an output of the RAMM valuation module. Where these are known construction dates are assigned to individual assets. Default construction dates are established for all others.



Financial Forecasts

The optimised depreciated replacement cost has been calculated by:

$$RC = (RC) (Life - Age) / Life$$

Specific actions through-out the year that contribute to valuation accuracy includes:

- Ongoing updating of RAMM inventories (quantities, sizes, types, materials, ages, componentisation etc.) to reflect repairs, renewals, disposals and acquisitions.
- Refinement of asset life expectancies to reflect increasing experience and knowledge of assets in respect of their condition, performance and risk assessments by the Asset Management Team, Council Engineering Managers and Downer's operations staff.

Useful Lives

Asset useful lives as assumed in the WDC 2014 Transportation Asset Management Plan and utilised in asset valuations are shown in Table 8.10

Remaining useful lives are calculated from the following formula:

$$RUL = \text{Assumed base life} - (2011 - \text{Installation date})$$

Effective lives have been determined based on a combination of manufacturer's recommendations, NAMS guidelines, industry standards, and council staff knowledge.

Allowance has been made to recognise a minimum remaining life that applies to all assets for the calculation of the minimum depreciated value. In all cases a minimum remaining life of 2 or 5 years has been adopted.

Table 8.10: Effective Base Lives

Asset Type	Asset Component	Assumed average useful life (yrs)	Assumed default life (yrs)
Pavement	Seal Surface	15	15
Pavement	Pavement Layers	80	80
Pavement	Pavement Formation	indefinite	indefinite
Bridges	Aluminium	100	100
Bridges	Concrete	100	100
Bridges	Earth	150	150
Bridges	Steel	75	75
Bridges	Timber	80	80
Retaining Walls	Brick	150	150
Retaining Walls	Concrete	100	100
Retaining Walls	Concrete masonry	100	100

Asset Type	Asset Component	Assumed average useful life (yrs)	Assumed default life (yrs)
Retaining Walls	Gabion	50	50
Retaining Walls	Geogrid	75	75
Retaining Walls	Rock	150	150
Retaining Walls	Shellrock	150	150
Retaining Walls	Steel	75	75
Retaining Walls	Timber	80	80
River Protection	Rock Revetment	50	50
River Protection	Rock Groynes	50	50
River Protection	Rock Gabions	50	50
Drainage Control	Culverts	80	80
Drainage Control	Flumes	50	50
Drainage Control	Dished Channel	80	80
Drainage Control	Kerb & Channel	80	80
Drainage Control	Water Tables	100	100
Drainage Control	Sumps	80	80
Drainage Control	Sump legs	80	80
Drainage Control	Subsoil Drains	50	50
Footpath	Concrete	50	50
Footpath	Interlocking Block	50	50
Footpath	Paving Slab	40	40
Footpath	Seal	15	15
Footpath	Slurry	8	8



Asset Type	Asset Component	Assumed average useful life (yrs)	Assumed default life (yrs)
Footpath	Asphalt Concrete	25	25
Footpath	Metal	Indefinite	Indefinite
Footpath	Wood	25	25
Street lights	Street lighting Components	30	30
Roadmarking	Painted Marking	1	1
Roadmarking	RRPMs	3	3
Roadmarking	Traffic Island Paint	2	2
Traffic Signals	Components	20	20
Traffic Controls	Traffic Islands	40	40
Safety Barriers	Barriers	50	50
Berms	Berms	indefinite	indefinite

Key Valuation Assumptions

A series of assumptions were made in compiling the asset valuations in 2017 are:

- Average life assigned to asset component meets industry expectations
- Asset database or register is complete
- Unit quantities are correct
- Market rates are current
- Life cycle information is accurate
- Component level data is sufficient to calculate depreciation separately for those assets having different useful lives
- Assumes the benefit of continuity of tenure and rights of existing use
- Any inaccuracies or incompleteness of the asset register will not materially affect the total valuation

Valuation Forecasts

The future value of the transport assets will depend on capital replacements, acquisitions and the apportioning of cost indices'. A composite index is used for inflation purposes. Indices used are the Capital Good Price Index

S2444, Producers Price Index SNC17 and the Labour Cost Index SE53Z9.

Council's intention is to move to an optimised replacement methodology as like replacement may not be sensible or feasible in the event of total destruction of an asset.

Future built asset valuations will be undertaken using the replacement cost valuation method, where effective lives are assessed using a combination of manufacturer's specifications, the NAMS guidelines, industry standards, and expert knowledge held by the relevant Council employees.

An appropriate allowance will be made to recognise a minimum remaining life that applies to all assets for the calculation of the minimum depreciated value. In all cases a minimum remaining life of 1 - 5 years will be adopted.

Financial Forecasting Assumptions

The assumptions that have been used in making the financial forecasts for the transport activity are as follows:

- Schedule 10 (section 11) of the Local Government Act 2002 contains provisions relating to 'significant forecasting assumptions'. The Act requires that Council identifies the significant forecasting assumptions and risks underlying the financial estimates.
- Statutory financial reporting requires Council to revalue its fixed assets every three years. An asset valuation is to be used for asset management (calculating long-term asset renewal projections), identifying loss of service potential (depreciation) and for financial reporting purposes.
- Appropriate weightings are applied to the composite inflation index, made up of the Capital Good Price Index S2444, Producers Price Index SNC17 and the Labour Cost Index SE53Z9.
- Useful asset life is recorded in asset management plans or based upon professional advice.
- All expenditure is stated in NZ dollar value.
- Maintenance costs are largely based on historical expenditure and assume that there are no significant changes in contract rates or deterioration in asset condition from that predicted.
- Depreciation is by the straight-line method.
- Asset replacements - Capital projects could be brought forward in the event of early expiration of assets affecting interest costs. The negative impacts would be at least partially offset by other assets lasting longer than estimated.
- Funding assistance received from NZTA presently (2014/15) averages 65%, with generally 62% received for the cost of maintaining the Transportation network and 72% for the cost of Transportation improvements. The remainder being met by a Targeted Rate on the capital value of each rating unit.



- A review of the FAR for Road Controlling Authorities has been recently undertaken by NZTA. The level of subsidy received by the WDC will reduce from 2015/16.
- The funding criteria and policy used by NZTA will be at a reducing flat line Financial Assistance Rate (FAR) from the current baseline of 65% at 1% per annum from 2015/16 to 2018/19, when it will be fixed at 61% for both road maintenance and improvements.
- That NZTA is unlikely to financially assist in the replacement of Br 74 Wakefield Street Bridge and Br 15 Kauarapaoa Road. Council will need to reconsider this renewal should NZTA decline to invest on these projects.
- The rate of deterioration of road pavements will remain relatively unchanged over that currently being experienced although significant unplanned interventions are expected as a result of increased network demand.
- That the difference between routine network pavement rehabilitation and the rehabilitation as a result of forestry harvest activity will receive NZTA enhanced funding assistance from Year 4, based on predictive modelling analysis.
- No allowance has been made for extraordinary natural events which could create the need for additional funding to restore the network to its original condition.

Funding Strategy

The management and maintenance of the transportation network is funded from the transportation rate collected by Council and financial assistance received from the New Zealand Transport Agency from dedicated transport funding.

The Government has established a dedicated National Transport Fund into which all revenue received from Road User Charges, part of Motor Vehicle Registration and Licensing fees and all of the fuel excise duty on petrol, LPG and CNG is paid. This fund is distributed by the New Zealand Transport Agency after considering requests from Road Controlling Authorities, Passenger Transport Authorities, the Police, Rail and Maritime Authorities.

Targeted rate received from general rates being that portion of the transportation budget not funded by NZTA investment. For Whanganui currently (2016/17) the unsubsidised portion is presently 38% of the cost of maintaining and renewing the transportation network.

The first priority is to maintain, operate and protect the existing network at the current levels of service. Maintenance takes approximately 53% of the block allocation provided for Operations, Maintenance and Renewal.

Funding for the management, maintenance renewal and improvements of the transportation network is provided from the transportation rate, financial assistance received from NZTA from the National Transport Fund, contributions from CBD Parking, River Control, Petroleum Tax and User fees.

Uneconomic assets requiring renewal will be reviewed in the 2018/21 period, with the transition to the ONRC system.

Mitigation of the effects of increased demand on the road network will be by:

- User pays (licences, rates, fees, etc)
- Designations (route, speed, season, etc)
- Reduction in Levels of Service (temporary, permanent, etc.)

Renewal of road pavements damaged by the effects of increased demand will only be renewed after the activity has completed.

In order to get subsidy from NZTA the council must ensure that any project meets one or more of the objectives of the Land Transport Management Act (LTMA). The Council is required by schedule 1 clause 4 of the LTMA to describe in its Land Transport Programme (LTP) what the objectives are for each project and how it contributes to the purpose of the LTMA. The five objectives of the LTMA are to:

- Assist economic development
- Assist safety and personal security
- Improve access and mobility
- Protect and promotes public health
- Ensure environmental sustainability

The purpose of the LTMA is to contribute to the aim of achieving an integrated, safe, responsive and sustainable land transport system.

In determining the projects to be undertaken the BCR is also an important criterion used with preference being given to projects which can be shown to be economically justified.

The carrying out of footpath maintenance and renewals is not eligible for financial assistance from NZTA and is wholly funded by Council from rates.

The carrying out of maintenance work on off-street carparks is not eligible for financial assistance from NZTA and is funded from Council's CBD Parking Activity.

Variations in Cashflow

No determination has been made at this point in time.

Forecasts of Depreciation

Depreciation is the allocation of the original cost (or valuation) of the asset over its useful life. Depreciation is calculated annually and as such must be funded for from the operational budget for the maintenance of the asset.

The future depreciated value of the transport activity assets will depend on capital replacements, acquisitions and the apportioning of cost indices'. A composite index is used for inflation purposes. Indices used are the Capital Good Price Index S2444, Producers Price Index SNC17 and the Labour Cost Index SE53Z9.



Policies

Whanganui District Council will adopt the following financial policies in the 2018/2021 LTP.

Table 8.11: Financial Policies

Policy	Description
Revenue and Financing Policy	The Council has undertaken a review of each individual activity with a view to determining an equitable funding policy. In doing so the Council considered the nature of the service and the benefits and beneficiaries for each service. As part of the consideration process and to form a sound basis for establishing any differential rates, the Council considered how the rates funded activities should be apportioned to different rating groups. The Council uses three generic rating groups for consideration of allocation. Those groups are commercial, farming and residential. As the step between residential and farming is so large the Council has determined that the transition is based on the size of the property and there is an even transition from full residential rate to farming. For the purposes of Council consideration, the residential group includes any property less than three hectares and the farming group any property not a commercial property greater than three hectares.
Funding Impact Statement	The Local Government Act 2002 (LGA) requires the Council to include a funding impact statement in its 10-Year Plan. The information required to be shown in the statement is set out in clause 10 of Schedule 10 of the LGA, together with sections 13 to 19 of the Local Government (Rating) Act 2002.
Liability Management Policy	Council exercises its borrowing powers in accordance with the Local Government Act 2002. Council is able to borrow through a variety of market mechanisms including the issue of stock and registered secured debentures, direct bank borrowing or through accessing the capital markets directly. Council may also use internal funds as a borrowing mechanism.
Investment Policy	This policy applies to any investment made by council with an expected financial return. While an investment may have other objectives that are being met, the distinction between it and other spending is that it will be expected to generate a future flow of funds at a market rate of return.
Development Contributions Policy	The purpose of the development contributions provisions in the Act is to enable territorial authorities to recover from those persons undertaking developments a fair, equitable, and proportionate portion of the total cost of capital expenditure necessary to service growth over the long term. The Local Government Act 2002 Amendment has introduced new policy requirements.
Significance and Engagement Policy	The Local Government Amendment Act 2002 Amendment Bill No.3 was passed on 29 July 2014. Section 90 of the Act was repealed and replaced with a new section 76AA requiring a Significance and Engagement Policy. The purpose of the policy is to build on the existing Significance policies and to provide clarity about how and when communities can expect to be engaged in decisions – depending on the degree of significance the Council and communities attach to those matters.
Policy on Partnerships between the Council and the Private Sector	This policy only applies to partnerships with the private sector. “Partnership with the private sector” is defined in the Local Government Act 2002 to mean any arrangement or agreement that is entered into between one or more local authorities and one or more persons engaged in business; but does not include: • arrangements or agreements to which the only parties are local authorities or one or more local authorities and one or more council organisations; or • a contract for the supply of goods or services to, or on behalf of, a local authority. (Section 107(2) of the LGA) As a consequence, this policy applies to: 1. Arrangements or agreements for provision of grants, loans, guarantees or investments between the Council and persons engaged in business; 2. Arrangements or agreements for a venture where the Council participates with a person engaged in business with some joint objective, whether or not that venture also involves the supply of goods or services by the joint venturer to or on behalf of the Council;



	3. Any agreement with a person engaged in business to form a Council organisation, or any agreement to sell shares in a Council organisation to a person engaged in business (this will be in addition to the requirements of section 56 of the LGA if applicable). But does NOT apply to: 1. Contracts between the Council and its ordinary suppliers of goods and services (for example of office supplies or legal services); 2. Contracts for the supply of goods and services between the Council and its agents for undertaking activities of the Council (such as building or maintaining roads); 3. Borrowing by the Council and the investment of Council funds purely for financial gain as these transactions will be addressed in the liability management and investment policies respectively; 4. Agreements with or grants to community organisations, charitable trusts and other community groups, government departments, not for-profit organisations, other local authorities and council controlled organisations.
Remissions and Postponement Policies	Postponement means a delay in the payment of rates. Remissions for rates are available for the following: • Financial hardship • properties affected by natural calamity • community, sporting and other organisations • penalties • uniform charges on non-contiguous rating units owned by the same owner • rates on properties protected for natural, historic or cultural
Policy on the Remission and Postponement of Rates on Māori Freehold Land	This policy aims to: 1. Ensure the fair and equitable collection of rates from all sectors of the community recognising that certain Māori owned lands have particular conditions, features, ownership structures, or other circumstances which make it appropriate to provide relief from rates. 2. Implement a policy for providing rate relief on Māori land pursuant to Section 108 of the Local Government Act 2002.

Risk to Significant Forecasting Assumptions

The table below outlines the risks to significant forecasting assumptions. Should these assumptions prove to be incorrect there could be a significant effect on the level of rates to be collected from the community. If this were to occur, WDC would re-evaluate the works programmes to determine if the expenditure is appropriate and rates altered accordingly or whether the scope of the proposed works could be scaled down.

Table 8.12: Risks to Significant Forecasting Assumptions

Assumption	Consequence Of Risk	Likelihood Of Risk	Degree Of Total Risk
	Low = 1 Low/Moderate = 2 Moderate = 3 Moderate/High = 4 High = 5	Likely = 3 Possible = 2 Unlikely = 1	Low = 1 – 5 Medium = 6 – 10 High = 11 – 15
Projected Growth Change Factors			
Growth Forecasting	Moderate	Possible	Medium
Potential Social Changes	Low	Unlikely	Low
Potential Climate Change Impacts	Low/Moderate	Possible	Low



Financial Forecasts

Assumption	Consequence Of Risk	Likelihood Of Risk	Degree Of Total Risk
	Low = 1 Low/Moderate = 2 Moderate = 3 Moderate/High = 4 High = 5	Likely = 3 Possible = 2 Unlikely = 1	Low = 1 – 5 Medium = 6 –10 High = 11 – 15
Rating Base			
Major Cost Components			
Borrowing And Expected Interest Rates	Moderate/High	Possible	Medium
Renewability or Otherwise Of External Funding	Moderate/High	Possible	Medium
Cost Factors	Moderate	Possible	Medium
Levels of Service	Low/Moderate	Possible	Low
Revaluation and Future Revaluation of Non-Current Assets	Low	Unlikely	Low
Depreciation Rates on Assets	Low	Unlikely	Low
Funding Growth Related Development	Moderate	Possible	Medium
Resource Consents / Designations	Low/Moderate	Possible	Low
Service Delivery Options	Low	Unlikely	Low
Failure of Contractor Services	Low	Unlikely	Low
Preliminary Cost Estimates	Low/Moderate	Possible	Low
Major Income Components			
Rates Charges	Low	Unlikely	Low
Alternative Funding Sources	Moderate	Possible	Medium
Divestment of Assets	Moderate	Possible	Medium
Statements of Fact			
Natural Hazards	Moderate	Possible	Medium
Fundamental Business Viability	Low	Unlikely	Low
Business Continuity	Low	Unlikely	Low
Estimates of Commitments and Contingencies	Low/Moderate	Possible	Low
Creation and Realisation of Investments, Reserves and Assets	Low/Moderate	Possible	Low
Governance	Low	Unlikely	Low



09 Risk Management



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Overview



This Transportation specific risk management planning for Whanganui District Council (WDC) will provide the basis for future risk analysis and improvement planning.

This section covers the risk management implemented by WDC and how it applies to current and future transportation activities. In addition, an overview of risk management theory and practice is provided along with suggested improvements to current practices.

Risk management is a process used to identify the specific business risks, together with any possible risks associated with the ownership and management of the transportation assets. This can be used to determine the direct and indirect costs associated with these risks, and form a priority-based action plan to address them.

The outcome of this evaluation is to be used to:

- Emphasise the importance of continuing to provide Council's transportation services and manage inherent risks
- Continually identify improvements required to Council transportation services to avoid risk events, or minimise their impact or to realise identified opportunities

A **Risk** is defined in AS/NZS ISO 31000:2009 – Risk management – Principles and guidelines, as:

“Effect of Uncertainty on Objectives”

Effect: Deviation from the expected – positive or negative.

Objectives: Can have different aspects (see Risk Types) and can apply at different levels (see Risk Hierarchy Levels).

Risks: Often characterized by reference to potential events and consequences, and is often expressed in terms of a combination of the consequences of an event and the associated likelihood.

Uncertainty: The state, even partial, of deficiency of information related to, understanding or knowledge of an event, its consequence, or likelihood.

Insurance of Transportation Assets

The cost of natural disasters in New Zealand has highlighted the importance of good risk management and the part insurance plays, for public assets. In many instances, councils can provide services in the

future only through the continuing use of their assets. Public entities have had to think carefully about how they are managing their risks and how they are using insurance. In response to recent events, in particular the Christchurch earthquakes, Local Authorities have had to reconsider the model(s) they use for insuring infrastructure assets in particular. Up until the Christchurch earthquakes Whanganui District Council was part of a Local Authority scheme called LAPP with a number of other Councils. Post Christchurch this scheme was decimated to the extent that it had no funds left and were having to rebuild the schemes funds. The Whanganui district council along with others in the region (via MWLASS) left the local authority scheme and started purchasing insurance cover from the London insurance market.

Council's insurers are AON Group Ltd (London) with a 40% proportion and central government covering the remaining 60%. This insurance is for above and below ground infrastructural assets and is for a period from 01/11/2016 to 01/11/2017.

Transportation assets are part of the Manawatu-Whanganui Local Authority Shared Services, which has Material Damage Natural Catastrophe Insurance which includes earthquake, natural landslip, flood, tsunami, tornado, windstorm, volcanic eruption as part of its cover.

The loss limit for each claim or series of claims arising out of any one original source or cause is \$125,000,000. The excess is set at \$500,000 non-flood related claims and \$1.5M for flood related claims for the Whanganui District.

Managing Risk to the Transportation Assets

Putting the Risks into Perspective

Risk Analysis is to comprehend the nature of the risk and to determine the level of risk. The level of risk or combination of risks is expressed in terms of the combination of their likelihood and consequence.

Council policy and operation cannot influence all the factors contributing to these events. However, actual deaths and injuries are occurring on the Transportation network. WDC has a responsibility to assess the risks in order to best manage the network with the resources available to avoid and mitigate the effects of any event.

In the following risk analysis, WDC has highlighted a number of key risk areas across the activity including:

- Inability to utilise funding options – Both internal and external, including failure to acquire external subsidies and people not applying for funding on time or not identifying potential areas where funding is required.
- Shift in central government policy
- Inability to form sustainable partnerships
- Inadequate road maintenance



- Bridge Collapse (excluding catastrophic events)
- Inadequate Guard Rails/Medians

These are discussed in further detail in the Risk Registers and the overall Action Plan contained in this risk section.

Level of Risk

The purpose of this risk plan is to identify the risks associated with the provision of Cultural Facilities. This requires the risks to be approached from many perspectives including financial, service, political/reputational, legal, environmental and health and safety.

These risks are pertinent to both a higher, corporate level, and to a more detailed asset –specific level, but do not substitute for more specific risk analysis at those levels (see Figure 1).

The next step beyond this risk analysis is to develop more detailed risk plans where the criticality of specific assets is assessed and an action plan developed as appropriate.

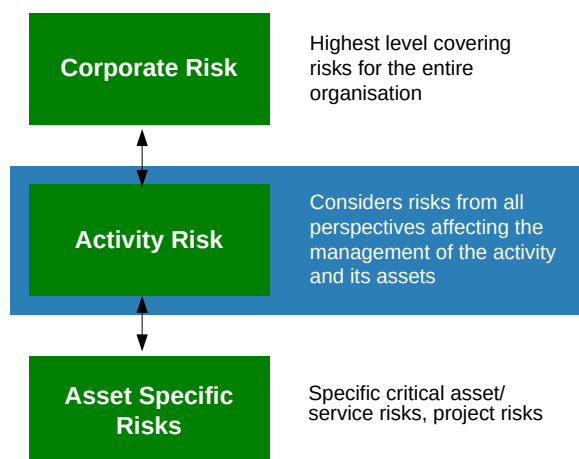
Current Situation

Corporate Policy

The Whanganui District Council (WDC) is committed to managing all its risks in a proactive, ongoing and positive manner to enable business objectives to be consistently met. This means that sound risk management principles and practices must become part of the normal management strategy for all departments.

To this end a corporate Risk Management Policy and Process was adopted by Council in 2016. The details of this framework have been integrated into this Asset Management Plan i.e. risk scoring tables and criteria.

Figure 9.1 - Risk Hierarchy Levels



Activity Risk Management

Activity risks are identified in Council's Activity Management Plans (AMPs). The risk management approach followed for this plan has aligned all AMPs with the Corporate Risk Policy. Activity risk considers asset and operational aspects of risk that may put the service at risk.

Asset Risk Management

Individual asset risk management tools and techniques are used appropriately and have been over a number of years at WDC. Critical assets have been identified and mitigation strategies in place and are reviewed on the basis of continuous improvement. An example is bridge structural and condition surveys that are carried out on a cyclical basis and traffic safety audits that provide improvement opportunity feedback to contractors, consultants and WDC staff.

Risk Types

Risks events will derive from, or impact in one or more of the following ways. These are identified against each risk as *risk categories* (Tables 7 to 11).

Legal/Statutory

A risk event that results in WDC either unknowingly or knowingly breaching statutes and regulations, or being exposed to liability.

Customer/Community

A risk that results in erosion of customer usage or community support for a facility or plan.

Economic/Financial

A risk that results in costs to Council.

Social/Cultural/Ethical

Risks occurring from a lack of social awareness, cultural insensitivity or unethical behaviour.

Environmental

A risk to the environment from use of the facilities

Reputation / Image / Profile

Risks that affect the way Whanganui, Council and staff are perceived:

- By the community
- By staff
- Nationwide and internationally
- By stakeholders
- By the media

Political/Governance

Risks arising from unclear political/governance roles

Operational Quality



Risks that affect the efficient operation of the service or facility and its ability to function effectively.

Health and Safety

A risk event with adverse impacts on the health and safety of the community and Council staff.

Asset/Facility

Risks from the asset of facility not being suitable for its intended use.

Identify Possible Activity Risks

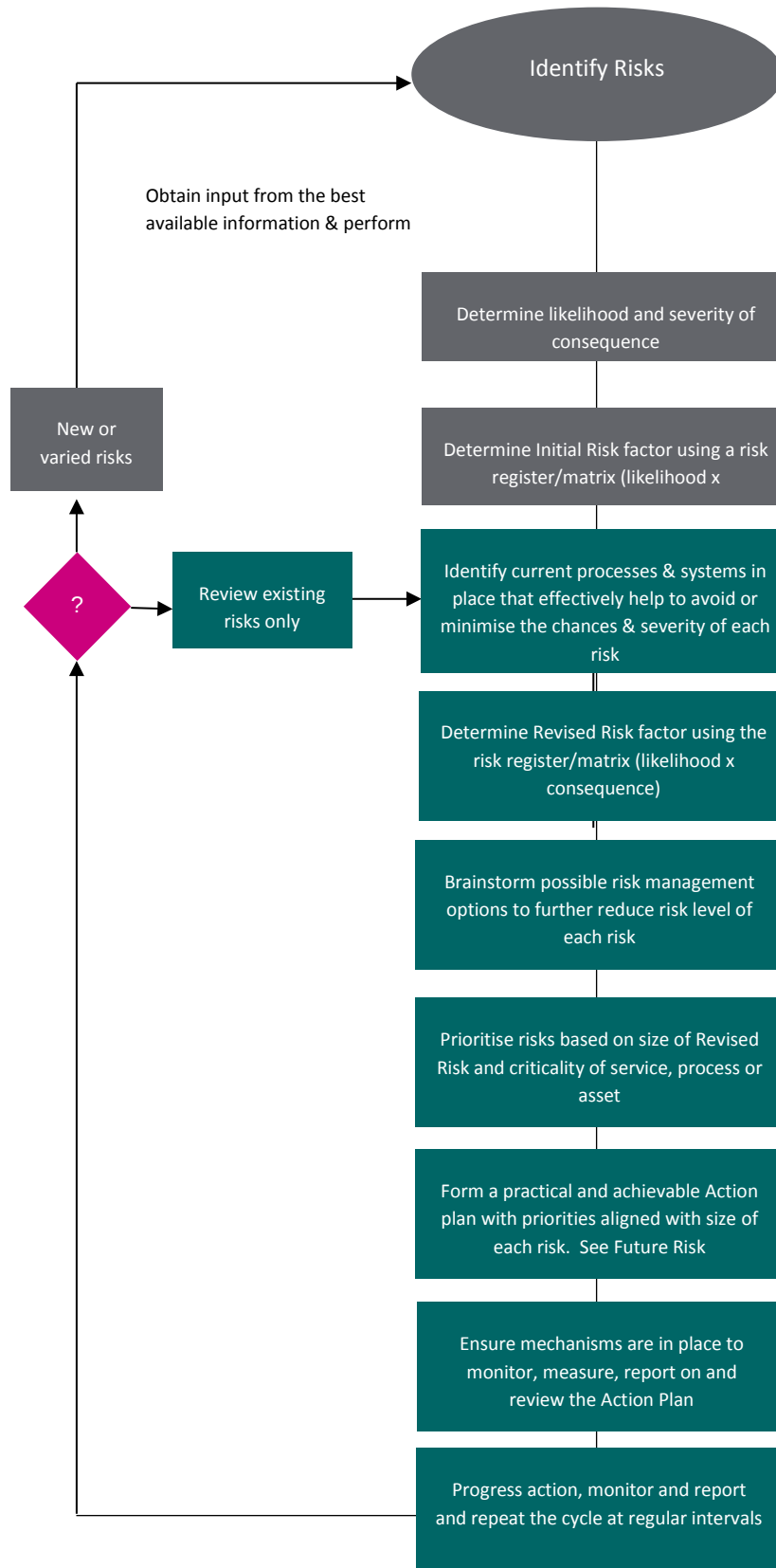
All possible risks affecting the asset activity need to be identified. Risks can include financial, environmental, social, operational and health and safety considerations. Once identified, risks are entered into the risk register. The register is used to record and summarise each risk and to outline current mitigation measures and potential future management options.



Risk Management Process

The following flowchart and text details the key elements of the Risk Management Process undertaken.

Figure 9.2: Risk Management Process



Approach from all possible applicable perspectives, e.g.

- Legal/Statutory
- Customer/Community
- Economic/Financial
- Social/Cultural/Ethical
- Environmental
- Reputation/Image/Profile
- Political/Governance
- Operational quality
- Health and Safety
- Asset/Facility



Determine Likelihood and Consequence for Initial Risk Factor

Likelihood

Likelihood is the chance of something happening. The likelihood scale identifies how likely, or often, a particular thing is expected to occur. The descriptions are not mandatory, but are presented as a guide to assist ranking the likelihood of occurrence in line with the nature of each risk. For example, a risk such as a wastewater overflow is considered to be 'rare' if it occurs once every ten years, whereas a tsunami occurring every ten years would be considered 'frequent'.

Qualitative Measures of Likelihood for the Council Risk Management process have been defined as:

Table 1 and Table 2 demonstrate the scales used to determine the likelihood and consequence levels, which are inputted to the risk calculation to evaluate a risk event.

The likelihood of occurrence and severity of consequences should be based on as much real data as possible; for example local knowledge or recorded events such as maintenance records, weather events etc. Some analysis may be required for verification.

Qualitative Measures of Likelihood for the Council Risk Management process have been defined as:

Table 9.1: Likelihood of Occurrence

Likelihood	Descriptor	Probability
Almost Certain	Is expected to occur nearly every year e.g. 80% chance within the next 12 months	5
Likely	Will probably occur often e.g. 25% chance within the next 12 months or once in 4 years	4
Possible	Might occur from time to time e.g. 10% chance within the next 12 months or once in 10 years	3
Unlikely	Could occur only very occasionally e.g. 4% chance within the next 12 months or once in 25 years	2
Rare	May occur in exceptional circumstances e.g. 1-2% chance within the next 12 months or once in 50+ years	1

Financial

Risks related to the financial management of WDC and the ability to fund Council activities and operations now, and into the future through unplanned costs or damages.

Service

Risks related to the meeting of levels of service to the community.

Community

Risks related to community support for plans.

Political/reputation

Risks related to the ability of elected official to govern the district and the council's reputation.

Legal

Risks related to the ability of management to effectively manage the council and comply with legal obligations. Relates also to the business processes and information used to effectively manage the council.

Environmental

Risks related to the environmental impacts of activities undertaken by the council. Potential or actual negative environmental or ecological impacts, regardless of whether these are reversible or irreversible in nature.

Health & safety

Risks related to the health and safety of employees and the general public when using council's services and facilities.

The following sections expand upon the risk management process identified in the flowchart (previous page). The risk assessment process has been generally based upon the Australian New Zealand Risk Management Standard 4360:2004 (superseded by ISO31000:2009) in order to establish a Risk Matrix as shown in Table 3. This matrix provides a tool to quantify a risk by identifying the likelihood of the risk occurring and the outcomes, or consequences should the risk occur. The first step in the process is to identify all possible risks.

Consequence Rating Assessment

Each of these areas is then assessed using the standard Consequence measures of:

- Very minor
- Minor
- Moderate
- Major
- Catastrophic

The consequence descriptors in Table 2 indicate the level of possible consequences for a risk.



Risk Management

Table 9.2: Consequence Descriptors

Consequence descriptors	1. Very Minor (unimportant)	2. Minor	3. Moderate	4. Major	5. Catastrophic
Financial	Cost to Council of [\$0-\$100k], a cost that can be worn by the current budget.	Cost to the Council of [\$100-\$500K] of the expenditure budget, resulting in very little loan raising, or some subtle rearranging of budget priorities to effect repairs.	Cost to the Council of [\$500k-\$4m] of the expenditure budget, resulting in very little loan raising to effect repairs.	Cost to the Council of [\$4m-\$8m] of the expenditure budget, resulting in loan raising to effect repairs.	Cost to the Council of [\$8m] + of the expenditure budget, resulting in substantial loan raising to effect repairs.
Service	Loss of service to [10–30] households for a period of no more than [8] hours. Loss of service to an industry for a period of less than [8] hours. Minimal loss of internal service capacity	Loss of service to [30–100] households for a period of [8-24] hours. Loss of service to an industry for a period of [8] hours. Some disruption of internal capacity 1-3 weeks	Loss of service to [100-300] households for a period of [24] hours. Loss of service to an industry for a period of [8-24] hours. Some disruption of internal capacity 4-6 weeks	Loss of service to [300] + households for a period of [24-72] hours. Loss of service to an industry for a period of [24-72] hours. Serious loss of internal capacity 1-3 weeks	Loss of service to [300] + households for a period of greater than [3] days. Loss of service to an industry for a period of greater than [3] days. Serious loss of internal capacity 4+ weeks
Community	No significant community issues	Local community concerns that can be dealt with	Significant community concerns causing delays and modifications to plans	Widespread community concerns causing significant delays and modifications to plans	Major community concerns causing major re-think or complete failure of plans
Political / Reputation	Letter of complaint to CEO. Dealt with at Officer level.	Letter of complaint to Mayor and/or CEO. Unwanted bad coverage in local media sources. Uncertainty in organisations ability to operate.	Unwanted bad coverage in national media sources (could include the likes of Fair Go). Loss of confidence in the organisation, or part of the organisation.	Widespread public outcry asking for resignations at political arm and senior management level. Government investigation into the running of Council.	Inability of the elected members to govern effectively.



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Legal	Very minor breach of information security and information loss, fixed within hours. Very minor administrative breach.	Minor audit qualification. Loss of access to information systems, fixed within [4] hours.	Breach of legislative obligations, with the possibility of legal action being taken. Loss of access to information systems, fixed within [24] hours.	Major audit qualification resulting in the necessity to change processes and controls. Breach of legislative obligations, resulting in legal action and conviction. Loss of access to information systems that causes major disruptions.	Government intervention into the running of the Council, resulting in the dismissal of personnel at both political and Senior Management levels of Council.
Environmental	Review of event [1] week after. Generally cleaned up with hours of event.	Event clean up within [1] week.	Serious event takes weeks even months to clean up.	Serious event, takes at least [12] months to clean up.	Significant event, affects noticeable [10] years + Generally an event that is ongoing for some time before being isolated / eliminated.
Health & Safety	Possibility of minor injury to employee or member of public, due to non-compliance to act. Work Practices would need to be looked at.	Minor injury to employee and/or member of public, due to non-compliance to act. Work Practices would need to be looked at.	Possibility of death, moderate injury to employee and/or member of the public due to non-compliance to act resulting in investigation by Dept of Labour. Major widespread illness, caused by employee (Hepatitis).	Deaths &/or majors injuries to employees and/or members of the public from the same source, resulting in investigation by Dept of Labour, with the possibility of prosecution & conviction.	Significant number of deaths and/or major injuries to employees resulting in the inability to deliver services, also prosecution & conviction. Significant number of deaths and/or major injuries to members of the public, resulting in prosecution & conviction.
	Consequence Severity				



Risk Management

After the likelihood and consequence factors have been determined, the level of risk is calculated by multiplying the Likelihood of Occurrence (Qualitative Measures of Likelihood for the Council Risk Management process have been defined as:

Table 1) and Consequence Rating (Table 2) together.

Risk = the likelihood of an event occurring X the consequence of such an event.

The final outcome is a risk rating. The risk rating enables definition between those risks that are significant and those that are of a lesser nature. Having established the comparative risk level applicable to individual risks, it is possible to rank those risks.

Five risk categories have been used: Extreme, High, Significant, Moderate, and Low (see Table 3 & Table 4)

Table 9.2: Risk Factor Assessment Matrix

Likelihood	Consequence				
	Very Minor (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Almost Certain (5)	Low	Moderate	Significant	High	Extreme
Likely (4)	Low	Moderate	Significant	High	Extreme
Possible (3)	Low	Moderate	Moderate	Significant	High
Unlikely (2)	Low	Low	Moderate	Moderate	Significant
Rare (1)	Low	Low	Low	Low	Moderate

Once the impact has been ranked according to the relative risk level it poses, it is then possible to target the treatment of the risk exposure, by beginning with the highest risks and identifying the potential mitigation measures.

Table 9.3: Comparative Levels of Risk-Initial Risk

Risk	Risk Score	Actions
Extreme	20.01-25	Immediate action required to reduce risk
High	15.01-20	Senior management attention to manage risk
Significant	10.01-15	Management responsibility must be specified and risk controls reviewed
Moderate	5.01-10	Managed by routine procedures
Low	0-5	Examine where un-needed action can be reduced

Table 9.4: Comparative Levels of Risk-Revised Risk

Risk	Risk Score	Actions
Extreme	18-22.5	Immediate action required to reduce risk
High	14-17.99	Senior management attention to manage risk
Significant	7 – 13.99	Management responsibility must be specified and risk controls revised
Moderate	3.6 – 6.99	Managed by routine procedures
Low	0 – 3.59	Examine where un-needed action can be reduced



The initial risk is calculated considering the likelihood and consequences as if there were no measures in place to prevent or mitigate the risk occurrence. Essentially, initial risk is an exercise to determine “What is the worst that could happen?” Once the initial risk is determined it is necessary to evaluate the effectiveness of current systems and processes to classify the Revised risk. An action plan then needs to be created to further reduce the likelihood or consequences of risks occurring.

Identify Current Systems & Processes, and their Effectiveness

Current systems and processes are identified and, as far as resources allow, their effectiveness measured. It is often practical to identify these processes and systems initially, and rank the effectiveness conservatively until the audits and actual practice prove otherwise. Audits can be identified as part of the improvement process.

The effectiveness of existing systems and processes is expressed in the following categories outlined in Table 6.:

of a risk evaluation is a prioritised list of risks that require further action.

Risk treatments include tolerate, treat, terminate or transfer. The outcome is a Revised Risk rating. The revised factors are input into the same risk matrix to obtain the Revised Risk Factor.

Risk Action Plan

A Risk Action Plan is compiled from the Risk Register and highlights the most significant risks faced as determined in the risk register. The main risks are listed in order of severity (primarily initial risk, and secondarily revised risk) as assigned in consultation with key Council officers.

Actions that are required to achieve the desired improvements are indicated along with how progress on these actions will be monitored and reported. Where applicable, action tasks will detail timeframes for achievement, and responsibility for these actions.

A priority order of issues to be addressed is obtained by sorting first the initial risk levels and then the revised risk levels, and identification of the biggest gaps and opportunities for improvement.

Table 9.5: Effectiveness of Risk Mitigation

Strong	Fulfills requirements thoroughly, very robust and positive measurable effects
Some strength	Fulfills requirements, robust and measurable, room for improvement
Satisfactory	Just fulfills requirements, effects hard to measure (or haven't been audited or measured), improvement required
Some weakness	Not fulfilling requirements, little measurement or effect on overall risk
Weak	Totally ineffective in avoiding or mitigating associated risk events

Determine Revised Risk

Risk evaluation involves comparing the level of risk found during the analysis process, considering the effectiveness of controls and deciding whether these risks require treatment. The result

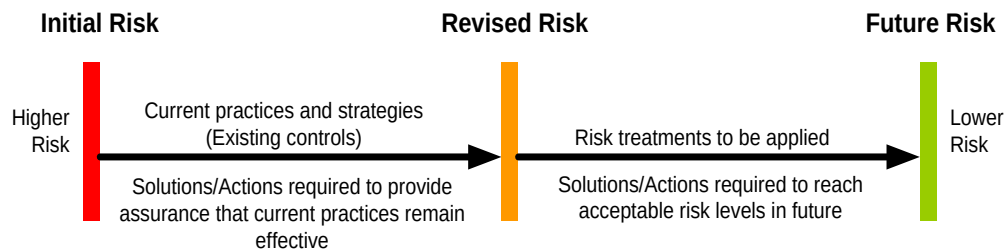
Gaps between initial and revised risk indicate the importance of effective current practices to prevent initial risk events. Accordingly, improvement actions should focus on the things that will further **assure** Council that current practices remain effective.

Table 9.7: Risk Rating

Effectiveness of controls	Initial risk rating				
	Very minor	Minor	Moderate	Major	Catastrophic
Weak	Moderate	Significant	High	Extreme	Extreme
Some weakness	Low	Moderate	Significant	High	Extreme
Satisfactory	Low	Low	Moderate	Significant	High
Some strength	Low	Low	Moderate	Moderate	Significant
Strong	Low	Low	Low	Low	Moderate



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Gaps between revised risk and an acceptable future risk require improvement actions that will reduce current risk levels

The most suitable risk reduction actions must be determined by considering options and resources available to the Council. Costs and benefits of these actions should be analysed to determine those actions yielding the greatest benefit (risk reduction) for the least cost. The best available techniques should be utilised to analyse the options e.g. optimised decision-making (ODM).

Application of ODM applies a 'value chain' to the proposed actions rather than just working from the highest risk down regardless of cost. For example:

A high risk may have to remain due to the prohibitive costs associated with avoidance or mitigation

A medium risk event could be easily and cost-effectively avoided within resources available

The options for mitigating risks considered to reduce the cause, probability or impact of failure, are typically:

Table 9.8: Mitigation Options

Tolerate Risk	Accept the risk, fund and resource and risk impacts (Risk has controls in place, nothing more can be done to decrease the risk or the cost far exceeds the benefit, so it is accepted at its current level)
Treat Risk	Mitigate, or manage the risk through strategic planning, organisational improvements, technical improvements or procedural changes.
Transfer Risk	Share the risk, buy insurance, contract services, improve contract terms
Terminate Risk	Eliminate the risk completely by selling the asset, closing the service etc



Link to Improvement Plans

Actions identified in this Risk Management analysis should be directly linked to actions identified in appropriate improvement plans where they exist e.g. Activity Management Improvement Plan, where resources should be identified, approval of resources noted, and a defined method provided for revisiting and reviewing progress against each action item. Where an equivalent action item is not listed in the Improvement Plan, it should be added.

In all cases, the appropriate risk reference number should be noted in the Improvement Plan, and the Improvement number should be noted in the Risk Action Plan.

Monitor, Measure, Report, Review Plan and Actions

Monitor and review is an essential step in the risk management process. Changing circumstances may alter risk priorities. Very few risks will remain static, therefore the risk management process needs to be regularly repeated so that new risks are captured in the process and effectively managed.

Management options listed in the risk tables have been refined into actions for each risk listed. These are the actions that are required to cost-effectively reduce the revised risk by increasing WDC's ability to minimise the chances of the risk event occurring, or minimising the consequences should it occur.

Actions should consider the overall management of Council, not just the minimisation of risk. If possible, proposed actions should align with other initiatives to:

- Reduce capital investment costs.
- Reduce operating and maintenance costs.
- Reduce business risk exposure (BRE).
- Increase effective asset life / value.
- Increase level of service.

The resulting action plan for risk treatment needs to be practical and achievable such that the necessary resources and time frames are realistically met. The actions also need to be able to be monitored and measured.

The monitoring/reporting column of the Risk Action Table specifies:

- **Responsibility:** Nominated person responsible for ensuring the risks are managed and that improvements are carried out in accordance with the programme;
- **Timeframe:** Achievable target date to be monitored and reported against; and



Method and Frequency of Monitoring:

This entire Action Table will be monitored by the Infrastructure Manager, but there will be certain actions that are being monitored and reported in other forums.

Risk owners are accountable and have authority to manage a risk. Progress will be reviewed six monthly by the Executive Leadership Team (ELT) through the Half Yearly Report.

The Executive Leadership Team will conduct a revised risk assessment on an annual basis. Risks that are Significant or greater will be highlighted to Council.

Operational and Asset risks identified by Activity Managers as part of the 10-Year Planning process shall be reviewed annually as part of the Annual Planning process

As necessary, this group will need to revise timeframes, responsibility, and even the appropriateness of continuing with the proposed action, or adding new actions.

As actions are complete, the revised risk should reduce in most cases. The risk tables will need to be reviewed against these and updated to reflect these improvements.

Review Risks

Most of the time, the risks identified will remain the same and reviews will occur in the context of these risks. However, it will be important to recognise when a new risk arises, or an existing risk changes in nature. In the latter case, the initial risk also needs to be re-evaluated.



Risk Register

The risk registers provided in the following tables for the Transportation activities of Whanganui District Council have been developed in consultation with key staff.

Table 9.9: Asset Management Risks –General Risks

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Category What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies – Existing Controls What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
OR32	Timely and correct information not able to be provided Caused by: - Inaccurate data due to: - Staff not using systems property or following procedures - Lack of rigour around capturing, storing, retrieving information (information may be there but not necessarily stored in one place and easily accessible) e.g. site features, property data - Staff storing information in inappropriate locations e.g. desktop files, physical cabinets, personal drives - Budget and staff resource constraints to dedicate to improvement - Information system failures (internal) Consequences: - Poor information to support decision-making - Duplication of effort leading to increased direct and indirect costs - Loss of revenue - Perceived loss of information from the lack of transparency - Delays for customers - Legal liability	Operational quality	Moderate	Possible	Moderate	- Information Services controls: - Minimising the complexity of the information architecture. - Maximising the value of information management investment. - Ensuring information is stored in one place only, while providing multiple views or viewing points, as appropriate. - Documenting the information taxonomy. - Increasing the resilience of all information system components (network, hardware, software). - Ensuring information redundancy and recovery in event of disaster. - Data monitoring by management or governance groups e.g. SMT and Promapp Governance Group. - Audit management report. - LGOIMA process established. - Digitisation project started. - Customer services FAQs software available. - CRM system - partially rolled out only. - Integration of subsidiaries and remote locations (eg Library) - Interplan data being utilised to link business planning with strategic plan and provide a central repository for corporate information and performance management. - Building accreditation programme. - Property and Rating being used for all property/land information. - GIS and Property and Rating synchronised. - New EDRMS - Hubble. - Project Information Management Group (PIMG) to prioritise resources. - Backup of computer records.	Some weakness	Moderate	Possible	Moderate	- Succession planning policy - Regular testing of backups - Complete Information Strategy - Undertake records management review - Update Sarjeant Gallery database - Identify areas where data is incomplete, inaccurate, unvalidated, unverified or not easily retrieved - Validate asset data (Wastewater and Stormwater data validation to be completed by end of March 2014) - Continue to develop and encourage the use of Interplan - Promapp Governance Group - Ongoing development of Asset Management Plans - Process mapping - Finalise FAQ content - Complete Digitisation project - Complete Hazard mapping and Site features project - Roll out CRM system to all areas	



Table 9.9: Asset Management Risks –General Risks

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Category What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies – Existing Controls What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
OR29	Poor employee performance Caused by: - Human resource appropriateness - Staff dissatisfaction and poor morale - Employing the wrong people - Poor performance management - Poor leadership - Lack of clarity of role and objectives / employee does not develop with organisational/position changes - Mismatch between organisation and individual goals - Poor recruitment practice - Poor promotion practices - Lack of training and development - Industrial action impacting on operational capability - Inability to agree on employment contract negotiations - Staff take action under the Health and Safety in Employment Act 1992 Consequences: - Inability to meet organisational and individual goals - Disruption to service/inability to meet service levels / work programmes not achieved - Personal grievances - Disharmony within teams/lack of team work - Poor communication - Dysfunctional organisation and poor staff morale - Need for restructure - Lose good employees - Damage to reputation and negative press - Breaches of safety and security - Theft - High turnover	Operational quality	Moderate	Possible	Moderate	- PES - Performance Evaluation System - Leadership Development Programme - Robust recruitment processes - Staff Climate surveys - Staff recognition - Position Descriptions and process for updating - Training and Development opportunities - Regular contact with unions - Health and Safety Officer - Health and Safety Committee - Staff Committee	Some weakness	Moderate	Possible	Moderate		- Review the leadership programme for the organisation - Effectively use the online performance evaluation system (PES) - Succession planning



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Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Category What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies – Existing Controls What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
OR22	Exposure to Council due to poor contract management process Caused by: - Fundamental non-compliance with legislation (Contract Act1982) - Lack of strong/clear procurement policy (including tender process) - Conflicts of interest under contract conditions/ management - Lack of clearly defined consultancy roles - Lack of contract management skills within organisation - Insufficient scope of projects and poor project management - Forcing timelines to meet unrealistic requirements Consequences: - Litigation and costs - Project outcomes not achieved - Delays in project completion - Risk to environment/public/project members - Loss of confidence to clients - Damage to Council reputation	Operational quality Economic/Financial Asset/Facility	Moderate	Possible	Moderate	- Experienced staff - Policy - Council are intelligent buyers - Tenders process including robust tender documentation - Experienced staff in contract management - Industry guidelines with defined frameworks - Every Council contract has an internal contract manager - All Council contract documents have KPI's in them - Finalise procurement policy IP no 5.1.2.12	Some weakness	Moderate	Possible	Moderate	Mark Hughes	- Develop process to ensure legal cross checks of contracts are completed - Improve documentation for contract management - Improve project management processes
OR24	Failure to deliver on major projects and programmes Caused by: - Major projects not included in ten year plan - Project performance management failures left undetected - Inability to stay focused on key projects to completion - Fundraising resources inadequate - Inadequate project management skills - Inadequate staff resources - Inadequate scoping of projects - No consequences to deadline slippage Consequences: - Key resource times coincide and lead to more staff overload - Other projects not started - Double handling/higher costs - External funding not achieved - Cost overruns/money wasted - Risk to activity - Reputational damage for district	Financial Reputational Community Legal Operational quality Asset/Facility	Major	Possible	Significant	- Whole of council project management, using expertise of qualified council staff - SMT key project management - Strengthened reporting of key projects to SMT - Regular updates to political arm - Strict adherence to revenue generation strategy - Accountability framework reflected in PPD process - Use of external expertise for project management when appropriate	Some weakness	Major	Possible	Significant		- All key projects scoped, agreed and included in ten year plan - Dedicated project management budget/staff member - Training for key project managers - Post project reviews - Review use of project management framework - Require use of project management framework - Accountability driven by SMT



Risk Management

Table 9.9: Asset Management Risks –General Risks

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable <i>What are the risks?</i>	Risk Category <i>What are the main types of impact resulting from this risk event?</i>	Initial Risk <i>What risk level do we face if we did nothing to prevent or minimise it?</i>			Current Practices/Strategies – Existing Controls <i>What are we doing to avoid the risk or reduce its effect?</i>		Revised Risk <i>Considering what we do, what is the current actual risk level we face?</i>			Risk Owner (Title) <i>Who has the responsibility and ability to follow through?</i>	Management Options Available <i>What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?</i>
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
OR23	Failure of any asset to meet level of service Caused by: - Old assets and aging assets - Poor asset management planning - Assets fail prior to expected end of life - Failure to identify risks to assets - Insufficient knowledge of assets - Deferred maintenance not assess for risk - Insufficient funding for asset maintenance Consequences - Services not available - Essential infrastructure services unavailable causing health and safety issues for the district - Negative publicity	Asset/Facility	Major	Possible	Significant	- Asset management team with good understanding of asset management principles - Coordinated legislative compliance system in place with timely corporate response - Data collected rating of assets system - Condition rating of asset system - Audit NZ review of asset management plans - Financial sustainability project	Some weakness	Major	Possible	Significant	Mark Hughes	- Migrate asset management data from spreadsheets to information system that will assist with strategic planning - Improve format of asset management plans to make them easier to uses and update - Improve staff compliance with data collection processes - Integrate a higher level of cultural/heritage and digital understanding into asset management plans - Advanced asset management planning to accurately determine Council wide deferred replacement and maintenacne to reduce to an acceptable level - Improve condition rating of assets information - Continue to improve the knowledge through training and ownership across Council on asset management
LTR01	Lack of Skilled Staff Resources Caused by: - Inability to attract key staff - Inability to retain skilled staff - Inability of external resources to provide Consequences: - Operational loss - Financial costs - Loss of service level - Poor (or no) decision making	Operational Financial / Economic Reputation / Image	Major	Likely	High	- Dedicated HR staff and policies e.g. Personal Development Programmes (training),Salary Benchmarking - Use of recruitment consultancy (as and when required) - Annual staff surveys to highlight issues - Personal Performance Appraisals (PPDP) - Suitable accommodation and work environment. - Use of consultants and contractors (and access to their wider network of non-Council resources) - Some Incorporation of Operations staff into major projects. - Structure reviews undertaken periodically. - Strategic Procurement – Alliance Contracts	Some strength	Moderate	Unlikely	Moderate	Infrastructure Manager	- Increase pollination of people across disciplines - Examine integration of people across locations. - Consider Cadetships - Opportunity to share resources through Local authority shared services - Implementation of training and sharing - Promote shared services - More focus on succession planning - District promotion (Work-life balance) - Reinforce CPEng and certification. (professional development) - Industry market rates
LTR02	Loss of knowledge (information) Caused by: - Permanent loss of strategic information through damage to information systems - Insufficient/inappropriate systems in place to manage data/information, especially regarding asset performance and condition, and consent compliance - Loss of institutional knowledge (staff turnover) - IT failure - Loss of knowledge and where to find information Consequences: - Operational loss - Financial costs - Failure to meet compliance requirements (e.g. asset inventory and condition information, unable to forecast renewals requirements)	Financial / Economic Operational Reputation/Image Legislative	Catastrophic	Almost certain	Extreme	- Asset Team implement changes/updates (Asset information system) – provided by staff, contractors, consultants and developers. - NZS 4404 and companion document. - Asset database (Asset information system) in place (off site) with backups - RAMM for all transportation assets– (offsite backup) - CAR system - TRIM – document management tool - Share point – Storage for Asset Plans, DAR's, and Attachments etc. - GIS – General view tool for asset data - Condition surveys (Transportation regular/ Other activities ad hoc) undertaken and some programmed - IT practices (central backup (excl outstations), virus, security etc.) - Plans scanned and microfilmed, filed electronically, but issues with searchability - Manager is responsible for handover reporting	Some strength	Minor	Possible	Moderate	Infrastructure Manager	- Development of document management system for project management and operations and maintenance activities. - Development of reference library. - Improvements to asset information processes - Standard operating procedures rollout review - Succession planning - Managed knowledge transfer - Operational archive retrieval system linked to RAMM



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			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR03	Failure to deliver on projects and programmes Caused By: • Inadequate project, programme and portfolio management • Lack of training or qualified staff • Lack of project planning or systems • Projects inadequately scoped, budgeted, managed, documented, and reviewed • Inadequate community consultation and management of expectations, Cultural effects on projects • Insufficient input to LTP (financial) • Public health and environmental consequences • Lack of resources • Lack of ownership, change of leadership • Cost escalations (e.g. price of materials, economic failures, exchange rates) Consequences: • Time & cost blowouts • Lack of quality outcomes • Loss of service level • Loss of image and credibility • Impact on staff morale • Over/under spending of budgets • Failure to deliver on commitments e.g. LTP • Deferring of projects • Hindering development	Operational Reputation/Image Financial / Economic Health and Safety Environmental Legislative	Catastrophic	Almost certain	Extreme	• Consultant manages consenting process at planning stage • Staff and consultants used in project management • Asset Management/Annual Plan/LTP Process defined • Key / strategic projects are reported to the SMT via Asset manager reports, but not formalised (more formal for Transportation – template) • Some informal Communication Planning – stakeholder and media management • Monitor consultants quality of work, reporting requirements written into some contracts • Transportation: Baldrige Criteria to measure delivery of the annual programme (KRAs / KPIs) • Quarterly meeting reporting against financial targets, and monthly financial reporting (transactions) • Costs monitored via contract management • Service coordination meetings quarterly	Satisfactory	Minor	Likely	Moderate	Transportation Manager	• Implement Project Management Training for key staff • Review and improve Corporate processes and systems in place • Implementing project management manual • Formalise monitoring consultants quality of work, reporting requirements written into some contracts • Further formalise Multi Criteria Analysis (MCA) section in key projects to meet government requirements • Formalise Post project de-briefs, Post implementation reviews • More external reviews and audits e.g. peer reviews – large projects • Implementation of risk management workshop • Designs signoff well ahead of programmed works
LTR04	Inadequate contract management (capital works, network maintenance and operations) Caused by: • Inadequate documents and procurement processes • Inadequate management of contractors i.e. communication, monitoring etc. • Selection, availability of subcontractors, skill level and abilities Consequences: • Poor contractor performance and outputs • Interruption to services • Loss of service levels • Health and environmental incidents • Failure to meet legislative requirements • Additional costs • Excessive deterioration of assets • Loss of public confidence	Operational Financial / Economic Reputation/ Image Health and Safety	Catastrophic	Almost certain	Extreme	• Service Level agreement (SLA) or operations and maintenance contract(s) in place • Contract Procedures Manual – proforma documentation with process map for any contract • Procurement strategy (approved by NZTA for Transportation) • Contracts managed by WDC or consultant • Contracts conditions (KPI's, penalties) in place • Contractor training and certification where applicable (e.g. STMS etc) • Public notification, public feedback (CRM) • Financial reporting by Asset Manager and through to SMT, who provides reporting to Council • Procedures for contractor to complete asset update requirements • Standard operating procedures and codes of practice (NZS 3910 etc.) • Poor contractors performance noted • Certified contractors for specific activities (pre-qualified) • Open book policy (used for Alliance contracts)	Satisfactory	Moderate	Possible	Moderate	Transportation Manager	• Review and improve contracts • Formalised contract management training e.g. engineer's reps • Review and improve auditing procedures • More formalised performance appraisals • Improved internal measures of contract performance • Project completion reporting • Works handover including As-built data details



Table 9.9: Asset Management Risks –General Risks

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Category What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies – Existing Controls What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR05	Inadequate asset management – not up to date, or insufficient quality of process and output. Caused by: - Lack of AM knowledge and practice - Lack of staff knowledge and training - Lack of resources - Inadequate communication of issues and strategic planning Consequences: - Loss of service level - decline in integrity and service capacity of assets - Suboptimal lifecycle cost - Insufficient depreciation funding - Inability to cater for growth - Failure to meet LTP commitments and service levels	Operational Legislative Financial / Economic	Major	Likely	High	- Asset Management processes and practices - Asset Information Systems (Asset information system / GIS) - LTP, Annual Plan processes - Asset Management Plan - Improvement Plan - On-going external review - On-going budget provision - On-going input from internal and external consultants - Asset Data Improvement Plan (ADIP) - Level of Service being met	Some Strength	Moderate	Possible	Moderate	Transportation Manager	- Implement actions from Asset Management Appropriate Practice Plan - dTims modelling and 30 year infrastructure strategic plan - Asset optimisation (and disposal) - Re-evaluate LOS as a consequence of ONRC
LTR06	Non-compliance with legislation and legal requirements Caused by: - Lack of awareness e.g. changes in legislation not identified - Lack of funding - Legislative changes increases statutory obligations to a level where they are unable to be met with existing resources (goalposts shift) - Disputes with regulatory authorities Consequences: - Compromised health, safety and environment - Legal action and resulting costs and consequences - Poor public image	Legislative Financial / Economic Reputation / Image Environmental Public Health	Catastrophic	Likely	Extreme	- Council policies and procedures in place - Compliance monitoring - Contract Conditions (including HSE Act., HAZNO) - Staff training and development (some certification) - Use of external advice/resources/consultants - Standard templates and written Council procedures - Auditing of works contracts (e.g. safety, OSH, environmental performance) - Management of resource consents	Some Strength	Minor	Unlikely	Low	Transportation Manager	- Monitoring of relevant legislation - Review of legislative and policy requirements - Further awareness and training in legislative requirements



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			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR07	Extreme Natural Hazards – (major earthquake/ volcanic) Inability to minimize effects Caused by: - Strategic information is inadequately protected - Internal and external risks not adequately identified - Possible impacts of disasters are not proactively minimised - Inadequate understanding of staff of disaster recovery procedures - Inadequate documentation to support recovery process - Civil Defence not adequately resourced Consequences: - Inability to respond to, or effectively manage and recover from disaster or emergency - Inability to operate business under normal conditions - Destruction of, or prolonged widespread damage to infrastructural assets - Hindering development - Negative image - Actual or high probability of loss of life	Environmental Public Health Operational Financial / Economic	Catastrophic	Rare	Moderate	- Dedicated Council Emergency Management Manager - Council Emergency Response Procedures in place - Training in civil defence scenarios quarterly - Infrastructure recovery and business continuity planning. Critical assets identified for networks, maintenance regime based around these. Emergency generators etc. - Infrastructure Civil Defence container, with key information and drawings - Duty engineer standard operating procedure in place - Civil Defence organisation in place. Civil Defence, actively involved in Lifelines - IT procedures for backup, storage - Customer (CRM) feedback – diverted to Civil Defence - Building code/standards - Insurance cover - Contractors resources available to be drawn upon	Some Strength	Major	Rare	Low	Infrastructure Manager	- Review and update Contingency Plans in procedures manual - BC plans of key consultants and contractors - Monitor levels of insurance cover - Resource register - Asset risk rating register
LTR08	Moderate Natural Hazards – (minor earthquake/landslips/ major storm event) Inability to minimize effects Caused By: - Strategic information is inadequately protected - Internal and external risks not adequately identified - Possible impacts of disasters are not proactively minimised - Inadequate understanding of staff of disaster recover procedures - Inadequate documentation to support recovery process - Civil Defence not adequately resourced Consequences: - Inability to respond to, or effectively manage and recover from disaster or emergency - Compromised ability to operate business under normal conditions - Damage to infrastructural assets, loss of service - Hindering development - Negative image - Potential loss of life	Environmental Public Health Operational Financial / Economic	Major	Likely	High	- Dedicated Council Emergency Management Manager - Council Emergency Response Procedures in place - Training in civil defence scenarios quarterly - Infrastructure recovery and business continuity planning. Critical assets identified for networks, maintenance regime based around these. Emergency generators etc. - Infrastructure Civil Defence container, with key information and drawings - Duty engineer standard operating procedure in place - Civil Defence organisation in place. Civil Defence, actively involved in Lifelines - IT procedures for backup, storage - Customer (CRM) feedback – diverted to Civil Defence - Building code/standards, WDC Engineering Code (NZS4404 and companion document) implemented - Insurance cover - Contractors resources available to be drawn upon	Some Strength	Moderate	Likely	Significant	Transportation Manager	- Review and update Contingency Plans in procedures manual - Monitor effectiveness of insurances



Risk Management

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Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Category What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies – Existing Controls What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR10	External Economic Influences Caused by: - Cost Escalations (e.g. due to oil price increases, economic failures). - Uncontrollable movements in economy e.g. exchange rates, prices of local products - Local loss of economy (e.g. Affco) Consequences: - Financial impact cost of services - Inability to provide services, maintain service levels or achieve community outcomes	Financial / Economic	Major	Possible	Significant	- Local government networking. - Track national and global trends. Monitor key economic developments and liaise with central government - Prioritisation of key projects - Demand reduction measures - Optimise efficiencies - Investigating alternative construction / maintenance options	Satisfactory	Moderate	Possible	Moderate	Infrastructure Manager	- Review LoS expectations - Smart procurement practices - Responding to national directives - Monitoring world events
LTR11	Inability to utilise funding options – Both internal and external, including failure to acquire external subsidies and people not applying for funding on time or not identifying potential areas where funding is required. Caused by: - Lack of staff training / resources - Lack of awareness of funding sources - Slow decision making - Organisational or process deficiencies Consequences: - Funding not realised - Loss of service levels	Operational Financial / Economic Reputation/ Image	Catastrophic	Likely	Extreme	- Asset management process, renewal funding - Prioritising projects/ LTP and Annual Plan process - Experienced staff managing development contributions, projecting costs, submitting any available external applications and reporting internally to Council. - Local industry contributions - NZTA Funding for Transportation - Use of external resources	Satisfactory	Moderate	Possible	Moderate	Transportation Manager	- Forecast likely scenarios regarding effects of budget changes including deferments - Look at targeted rates (e.g. forestry Transportation networks) - Look at new funding sources and opportunities – possibly establish a role to investigate and apply - Use of dTims modelling to substantiate necessity to funding different submissions and business cases - Stay up to date with NZTA funding requirements
LTR12	Diminishing Funding Allocation Caused by: - Decreased rates, charges, development contribution charges - Insufficient external funding secured Consequences: - Projects unable to proceed - Inability to provide services, maintain service levels or achieve community outcomes	Operational Financial / Economic	Major	Almost certain	High	- Development contributions policy and enforcement - Asset management process, replacement funding - Prioritising projects/ LTP process and Annual Plan process. Current practices and strategies for rates funding through LTP process (funding policy) - Experienced staff managing, projecting costs, submitting any available external applications and reporting internally to Council. - Staff knowledge and awareness	Some Strength	Major	Almost certain	High	Infrastructure Manager	- Forecast likely scenarios regarding effects of budget changes including deferments - Quantifying Levels of Service in LTP - Escalate issues to higher levels e.g. Lobbying Central Government - Network optimisation - Aligning council LOS with those imposed by NZTA as part of the ONRC
LTR13	Ineffective strategic planning (internal) Caused by: - Lack of integration between the different arms of Council pursuing objectives that are at odds with each other. Consequences: - Eventual loss of service levels - Funding loss	Operational Financial / Economic Reputation / Image	Major	Possible	Significant	- Good communication between Corporate Planning and Utilities. Consultation within organisation on long term planning - Some early consultation with prospective developers - LTP process - AMP process and updating - Rural Board and Councillors - Current organisation wide input to district plan review	Some Strength	Minor	Unlikely	Low	Infrastructure Manager	- Review level of integrated planning across departments - Council signoff of Asset Management Plans



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			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR14	Service Level Agreements or contracts not met or non-existent – between Utilities and other parties internal or external. Caused by: - lack of monitoring requirements - lack of SLA or contracts Consequences: - Affects timing and quality of delivery of services	Operational Financial / Economic	Major	Possible	Significant	- SLAs or contracts with other agencies (e.g. Horizons) - Regular meetings with other Council departments, relationship based - Road Opening agreement with other Utilities - Utilities Access Act	Some Strength	Minor	Unlikely	Low	Transportation Manager	Maintain operative SLA's (included MOU with other organisational groups e.g. Horizons, NZTA)
LTR15	Inadequate Communications and PR Management Caused by: - Poor communication e.g. provision of too much / not enough information to public - Inadequate strategic planning - Ineffective consultation - Historic perception of expectations Consequences: - Increased costs - Poor relations between council and community - Negative publicity and reputation - Lack of public support for works and new initiatives - Difficulty getting consents	Reputation/ Image Operational Financial / Economic	Moderate	Likely	Significant	- Dedicated corporate communications team, provide regular updates, report to the Exec-Team - Established customer driven culture across council - Communications plan for key projects - Timely communication to affected customers (public/ratepayers, councillors, staff, contractors) - Customer service interface (CRM) - Access to communications tools – Web (Facebook), Intranet, Newsletters, Community Link - Regular media releases	Satisfactory	Moderate	Unlikely	Moderate	Transportation Manager	Predetermine risk issues (eg Trees) for early consultation



Table 9.10: Transportation Asset Management Risks – Carriageway (Formation, Base and Surface)

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR16	Road accidents, resulting from alterations to, or the condition of the Transportation network Caused by: - Alterations to the Transportation network - Condition of the Transportation network Consequences: - Loss of life/ injury - Negative publicity - Compromised public safety - Insurance Liability	Health & Safety Reputation / Image Legislative Financial / Economic	Catastrophic	Almost certain	Extreme	- Electronic corridor access requests (CAR) - Approved traffic management plans - NZTA safety reports - Project safety audits – design and post construction - Public education programmes run by Horizons - Black-spot studies done informally in-house - Quarterly road safety action plan meetings with police, ACC, Horizons, NZTA, DHB on crash mitigation approaches - Safety management system – deficiency database - Budget for minor improvements used to the full (NZTA funded) – prioritised	Satisfactory	Major	Unlikely	Moderate	Traffic Safety Engineer	- More crash investigation studies - Ensure funding is sustained or increased - Examine further options for securing funding - Promote business case development for funding - Night-time safety inspections
LTR17	Inadequate road design Caused by: - Sub-standard geometry, surfaces, marking - Road pavement inadequately designed for ADT Consequences: - Inefficient or unsafe operating conditions - Loss of control accidents - Injury and death - Premature failure of pavement	Operational Health & Safety Financial / Economic Legislative	Catastrophic	Almost certain	Extreme	- Conformance with NZS 4404 and companion document, AUSTROADS, NZTA standards for both Council work and vested works - Peer review of designs (WDC and professional services provider) - Formal signoff of designs - CAS results analysed, Black-spot studies done informally in-house - Adequately qualified and experienced professional staff both external and in-house - Contract supervision and performance monitoring - WDC Planning enforcing development standards for new subdivision works - Robust formal project management framework in Transportation - SMS implemented, deficiency database - Police SCU reports done for fatal accidents - Safety audit	Some strength	Major	Unlikely	Moderate	Traffic Safety Engineer	- SMS improvements updating - Consider doing both design and post-construction phase reviews
LTR18	Inadequate road condition as a result of increasing network demand Caused by: - Inadequate response and interventions - Under resourcing - Lack of funding - Inadequate management - Inadequate contracts - Inadequate practices - Lack of maintenance / renewals Consequences: - Substandard surfaces - Higher long term costs - Inefficient or unsafe operating conditions - Loss of control accidents, potholing, stone loss etc. - Fatality or major injury accident - Loss of amenity and level of service	Operational Financial / Economic Health & Safety Reputation / Image	Catastrophic	Almost certain	Extreme	- Appropriate Asset maintenance and renewal strategies through proper lifecycle management tactics, renewal programme. AMPs, AP and 10 YEAR PLAN processes 10 yr Forward Works Programme, long term strategies, maintenance intervention strategies - Allocation of adequate funding through 10 YEAR PLAN including government subsidy - Conformance with best practice standards and specifications for maintenance, NZTA standards and monitoring - Alliance contract providing best value for money and resource pool for availability - Adequately qualified and experienced professional staff both external and in-house - Maintenance contract supervision and performance monitoring, OSH conformity. KRAs established - Corridor Access Request (CAR) monitoring reinstatement levels, CAR auditors - CRM system – requests generated through both internal and external parties - Network inspection – “All Faults” reporting, use of RAMM to record and value	Some strength	Moderate	Unlikely	High	Transportation Manager	- Prepare improved AMP and AM processes - Council funding over and above NZTA funding to meet AMP requirements, needs and community outcomes - Predictive modelling of the network to establish likely scenarios - Monitor frequently, especially RAMM ratings - Improve understanding of the costs and levels of service - Monitor and investigate new technologies and resource new initiatives - Review LOS to optimise outcomes



Table 9.10: Transportation Asset Management Risks – Carriageway (Formation, Base and Surface)

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR19	Inadequate traffic demand management Caused by: - Improper planning - Unavailability of alternative options - Conflicts with state highways Consequences: - Increased congestion and pollution - Unreliable travel times - Inability to provide balance between different Transportation modes - Accidents and injury - Road rage, stress, anger - Political fallout	Operational Reputation / Image	Minor	Likely	Moderate	- Monitor network performance, CBD pedestrian counts, traffic counts - Review growth and demand and implement Whanganui Urban Transport Strategy – considering parking, public transport, cycle ways, walking school buses multi-modal, landuse etc. - Phasing and staging of major road works, enforce traffic management plans, impact models undertaken, night works - Regional coordination and integration with other authorities – Regional Council, NZTA etc. - Quarterly service coordination meeting with Utilities	Satisfactory	Very Minor	Possible	Low	Traffic Safety Engineer	- Do more cycle data collection, develop strategy further to monitor effectiveness of Whanganui UTS - Renewal of Traffic Signals and Signal phasing
LTR20	Hazardous Materials Caused by: - Leakage from vehicle damaged in an accident - Leakage from vehicle with a slow leak - Leakage from lime stabilisation, bitumen spills, maintenance activity wastes, cement wash etc. - Dumping and storage of cars Consequences: - Environmental effects - Contamination - Reduced asset life	Operational Financial / Economic Environmental Reputation / Image	Major	Possible	Significant	- CRM feedback / report from public, police, services etc. Helpdesk feedback, advised by emergency services - Maintenance contractor responds to incidents - Spill control requirements and pollution prevention plans for contracts, training of staff - Other services assist cleanup - WDC Regulatory Pollution Prevention Officers - Road closures , emergency services get notified to others via fax/email - Bylaws and enforcement – determination of routes, managed by PS provider - Incident response plans	Some strength	Moderate	Possible	Moderate	Transportation Manager	Further training and exercises to test processes
LTR21	Low lying road inundated by floods or heavy rainfall events Caused by: - Location and design - Increased runoff from development over time - Changing weather patterns Consequences: - Loss of service / access, disruption to road users - Accidents - Asset and Property Damage	Operational Financial / Economic Health & Safety Reputation / Image	Major	Almost certain	High	- Identification of low lying assets, recorded on GIS - Maintenance contractor awareness of hotspots, inspection and maintenance regime - Improved drainage undertaken during upgrading if aware of issues - Use of temporary signage - Helpdesk, CRM and maintenance contract in place - Pre-weather event notification and inspections of prone areas - Reliance on geology to drain quickly (sand) - Understanding of current situation by residents - Horizons manage river control	Satisfactory	Moderate	Almost certain	Significant	Transportation Manager	- Record low lying assets on appropriate systems e.g. GIS - Input into catchment management planning. Mitigation options – retention ponds, overland flowpaths - Use of rain gardens and detention devices to improve network capacity and mitigate flooding



Table 9.10: Transportation Asset Management Risks – Carriageway (Formation, Base and Surface)

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR22	Unsatisfactory working relationships with utilities and third parties Caused by: - Lack of co-ordination of forward work programmes e.g. Power, Telecom, WDC water and waste etc. - Lack of forward work programmes Consequences: - Delay to projects - Cost and impact of deferred works - Loss of service levels - Unnecessary costs through repetitive works (also a bad look) - Asset damage and premature deterioration - Placement of hazardous objects in road reserves	Operational Financial / Economic Health & Safety	Moderate	Almost certain	Significant	- Enforced CAR application procedures, monitor compliance with conditions - Quarterly service coordination meetings with Utilities, WDC etc. to discuss FWP and policies - Transportation tends to drive other's programmes in many case - Publish forward works programmes through 10 YEAR PLAN - Cost share agreements with utilities - Asset management planning process - National code of practice for utilities working in road corridor	Satisfactory	Minor	Likely	Moderate	Transportation Manager	Improve communication and coordination with other utilities
LTR23	Availability and cost of road construction materials Caused by: - External economic conditions - Scarcity of suitable material (pavement and surfacing aggregates) Consequences: - Inability to maintain or develop assets - Economic viability and sustainability of the region and asset networks	Operational Financial / Economic	Minor	Likely	Moderate	- Materials source mainly within the Region, matches FWP requirements - KPI around innovation of construction techniques including recycling - Pavement stabilisation using lime and cement - Contract for bitumen allowing flexibility in purchasing	Satisfactory	Minor	Possible	Moderate	Transportation Manager	- Monitor availability and cost - Strategies to use different aggregates and modified materials - Recycling materials – potential for entire roads (green roads) - Innovative and alternative materials and solutions e.g. foam bitumen stabilisation, using by-products (steel slag, crushed concrete and RAP) - Investigate alternative sources for the supply of materials
LTR24	Conflict in road corridor usage (cars, pedestrians, cyclists, public transport, rail) Caused by: - Inadequate planning and design - Inadequate space - Behaviour of road users Consequences: - Accidents causing damage, injury and death - Road rage, stress, anger - Negative image - Alternative modes of transport discouraged	Operational Health & Safety Reputation / Image Financial / Economic	Major	Almost certain	High	- Use of NZS 4404 and companion document and best practice guidelines for design - District Plan, Whanganui Urban Transport Strategy - Formal signoff of designs and peer reviews - Appropriate signage, demarcation and restrictions - Strategic land purchase when required - Shared pathways being implemented - Input into HPMV routes – national study - Consultation through the WUTS, Parking Strategy, Cycling Strategy - WUTS link to land use and transport	Some strength	Minor	Likely	Moderate	Traffic Safety Engineer	- Further implementation of WUTS - Travel behaviour change initiatives - Mobility scooter assessment - CAS investigations - Look at other sources of information regarding incidents (e.g. ACC records cyclist/pedestrian) - Issues arising from conflict with motor vehicles



Table 9.11: Transportation Asset Management Risks – Bridges, Culverts, Retaining Walls and Structures

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR25	Retaining Wall failure Caused by: - natural hazard (e.g. landslide, undermining) - deterioration - lack of maintenance - vehicle impact Consequences: - Loss of services, accessibility - Injury - Image - Cost	Operational Health & Safety Reputation / Image Financial/Economic	Minor	Likely	Moderate	- Compliance with building code/subdivisional standards/codes/design and engineering - Renewals and operation maintenance programme and contractors in place - Expert advice used when required - Helpdesk/ complaints (CRMs) - Ongoing inspection programming and monitoring - Life cycle management planning - Annual Plan, AMP and 10 YEAR PLAN processes - Asset information data being collected in 10 year cycle	Some Strength	Minor	Unlikely	Low	Transportation Manager	- Asset information into RAMM - Update / capture inventory detail on a Five year cycle until inventory is complete - Review material selection and environmental impact
LTR26	Ownership of structures – Council owned bridges and retaining walls on private property, vice versa and unknown ownership and reliance on private structures. Caused by: - Historic placement of road reserves and asset Consequences: - Control and use of assets limited - Costs to resolve legal issues - Placement of structures impacting on road reserve - Consequence of wall failure affecting private property	Operational Financial / Economic Health & Safety Reputation / Image Legislative Environmental	Minor	Possible	Moderate	- Reactive and solutions on a case by case basis - Inspections completed on 10 year cycle - Structures entered into RAMM - Expert advice used when required - Helpdesk/ complaints (CRMs)	Satisfactory	Minor	Unlikely	Low	Transportation Manager	- Continue to monitor and review current practices - Structure/ retaining wall ownership process developed. Land purchase options, establishing liability etc. - Maintenance and Construction Encumbrance put in place for private structures on road reserve (WDC Regulatory)
LTR27	Bridge Collapse (excluding catastrophic events). Caused by: - Impact damage / deterioration / erosion / blockage - Poorly maintained bridges - Overload / Oversize - Design fault Consequences: - Loss of access - Injury - Costs - Image - Loss of water, electricity, telecommunications etc.	Operational Financial / Economic Health & Safety Reputation / Image	Catastrophic	Almost certain	Extreme	- General inspections bi-annually - Detailed inspections 6 yearly - Special inspections as required ie weight restricted bridges annually - Bridge renewal programme - Loading restrictions - Bridge overweight / oversize permits and supervision by Opus - All new bridges designed in accordance with NZTA (Transit) bridge manual standards and WDC requirements (NZS 4404 and companion document) - Routine general maintenance programmed, - Maintenance inspection regime implemented by Contractor - Compliance with Building Act	Some Strength	Catastrophic	Unlikely	Significant	Transportation Manager	- Undertake review of bridges requiring seismic measuring and scouring - Review and monitor current practices - Continue to undertake risk assessment of critical bridges - Review and monitor lifeline project outcomes - Continue to monitor and review current capacity of bridges, overweight permit process and communication of requirements - Formalise communication with transport industry regarding routes and loadings - Review Council insurances

**Table 9.11: Transportation Asset Management Risks – Bridges, Culverts, Retaining Walls and Structures**

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR28	Vehicle, pedestrians or objects fall, or thrown, from bridge Caused by: - Accidents - Vandals / Malicious acts - Component failure Consequences: - Injury - Public image - Cost	Health & Safety Reputation / Image Financial / Economic	Moderate	Possible	Moderate	- Conformance with design standards - Safety measures – sight rails, guard rails, handrail, signage, fences and delineation - Structures inspection programme – general, detailed and special - Maintenance inspection regime implemented by Contractor	Satisfactory	Moderate	Rare	Low	Transportation Manager	- Continue to monitor high risk locations - Pedestrian protection prioritising plan

Table 9.12: Transportation Asset Management Risks – Signs and Markings

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR29	Inadequate Signage Caused by: - Accident - Vandalism - Non-compliant to standards - Poor design - Missing - Deterioration Consequences: - Poor levels of service (e.g. safety, accessibility, navigability)	Operational Health & Safety Reputation / Image Financial / Economic	Catastrophic	Almost certain	Extreme	- Road signs implemented in line with MOTSAM, NZTA and WDC standards, bylaws, traffic restrictions, LTMA - Sign programme as per maintenance contract with response times - CRM/ complaints "All Faults" system, routine inspections - RAMM updated – process established, RAMM contract in place - Lifecycle planning - 10 YEAR PLAN, Annual Plan and AMP processes - Minor safety works, route treatments - Temporary traffic management, CAR system	Some strength	Moderate	Unlikely	Moderate	Traffic Safety Engineer	Develop more intuitive signage, or reduce need for signage "Self Explaining Streets"
LTR30	Inadequate Guard Rails/Medians Caused by: - Accident - Vandalism - Non-compliant to standards - Poor design - Missing - Deterioration Consequences: - Poor levels of service (e.g. safety, accessibility, navigability)	Operational Health & Safety Reputation / Image Financial / Economic	Major	Almost certain	High	- No. of guard rails restricted by budget - Road signs implemented in line with MOTSAM, NZTA and WDC standards, bylaws, traffic restrictions, LTMA - Sign programme as per maintenance contract with response times - CRM/ complaints "All Faults" system, routine inspections - RAMM updated – process established, RAMM contract in place - Lifecycle planning - 10 YEAR PLAN, Annual Plan and AMP processes - Minor safety works, route treatments - Temporary traffic management, CAR system	Some Weakness	Major	Possible	Significant	Traffic Safety Engineer	- Bridge approaches / side approaches - Increased funding for guardrails - Use deficiency database to programme upgrades / retrofit - Implement inspection regimeImproved sight rails - Guard rail river's edge



Table 9.12: Transportation Asset Management Risks – Signs and Markings

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR31	Inadequate Road Marking Caused by: - Inadequate lane separation - Redundant or inappropriate markings - Lack of marking definition - Inadequately deleted markings Consequences: - Loss of service levels (e.g. safety, accessibility, navigability)	Operational Health & Safety Reputation / Image Financial / Economic	Catastrophic	Almost certain	Extreme	- Road marking programme as per contracts - Road markings implemented in line with MOTSAM, NZTA and traffic restrictions, LTMA written into road marking contract. - CRM/ complaints “All Faults” system, routine inspections - RAMM updated – process established, RAMM contract in place - Lifecycle planning - 10 YEAR PLAN, Annual Plan and AMP processes - Minor safety works, route treatments - Temporary traffic management, CAR system	Some strength	Major	Unlikely	Moderate	Traffic Safety Engineer	- Consider different types of markings, paints, surfaces, colours, rumble strips etc. - Separation in arterials and collectors - Alternative treatments for certain areas, thresholding e.g. schools - ONRC - Review of standards - Night time inspections



Table 9.13: Transportation Asset Management Risks – Street Lighting

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR32	Inadequate Street Lighting (Carriageway) Caused by: - Existing network installed to historical standards - Inefficient fittings Consequences: - Poor levels of service - Crime - Perception of security - Accidents (e.g. tripping and falling)	Operational Health & Safety Reputation / Image	Major	Almost certain	High	- NZS 4404 and companion document, NZS/AS1158 dictating requirements for lighting. Match luminaire levels to appropriate areas. City currently not meeting levels - Renewals / upgrades restricted by funds, combine into Transportation upgrade projects - Development/ subdivision/ building consent control - Upgrade/ renewals programme over period of time - RAMM system incorporating SLIMS - In-house design of streetlighting - Maintenance contractor – response to issues - Helpdesk (CRM), complaints - Condition rating and assessments – entered into RAMM / SLIMS - Continued assessment of lighting solutions	Strength	Minor	Possible	Moderate	Traffic Safety Engineer	- Increased funding - Identify and prioritise high-risk streets / areas - Investigate innovative street lighting solutions (LED, compact fluorescent etc.) - Adequate tree maintenance - Condition rating of lighting output - Tree management plan
LTR33	Inadequate street lighting at intersections/crossings Caused by: - Existing locations installed to historical standards - Poor design - Lighting not maintained Consequences: - Crashes and injury	Operational Health & Safety Reputation / Image	Catastrophic	Almost certain	Extreme	- NZS 4404 and companion document, NZS/AS1158 dictating requirements for lighting. Match and prioritise luminaire levels to appropriate areas, higher classification roads etc. City currently not meeting levels - Renewals / upgrades restricted by funds, combine into Transportation upgrade projects - Development/ subdivision/ building consent control - Upgrade/ renewals programme over period of time - RAMM system incorporating SLIMS - In-house design of streetlighting - Maintenance contractor – response to issues - Helpdesk (CRM), complaints - Condition rating and assessments – entered into RAMM / SLIMS - Continued assessment of lighting solutions - Crash reduction studies	Some Strength	Major	Unlikely	Moderate	Traffic Safety Engineer	- Identify high-risk intersections / crossings - Increased funding - Identify and prioritise high-risk streets / areas - Investigate innovative street lighting solutions (LED, compact fluorescent etc.) - Adequate tree maintenance - Street tree selection and planting policy - Condition rating of lighting output
LTR34	Damage to streetlights Caused by: - Vandalism - Accidents - Severe weather - Poles at inappropriate locations Consequences: - Loss of services - Replacement costs - Injury	Operational Health & Safety Reputation / Image	Moderate	Possible	Moderate	- Helpdesk (CRM) complaints - Inspections / monitoring - Maintenance contractor - Accident reporting and response times	Some Strength	Moderate	Possible	Moderate	Traffic Safety Engineer	- Continue to review and monitor design and placement of streetlights - Street tree maintenance



Table 9.13: Transportation Asset Management Risks – Street Lighting												
Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR35	Power supply failure to streetlights Caused by: - Supply failure due to weather, overloading, system failure Consequences: - Loss of lighting services - Inadequate lighting causing accidents, crime etc.	Operational Health & Safety Service	Moderate	Likely	Significant	- Liaise with power network owner - Helpdesk (CRM) reporting and processes	Satisfactory	Moderate	Likely	Significant	Infrastructure Manager	- Monitor and review current practices - Guarantee power supply with timely maintenance renewals - Programme and risk mitigation to reduce outages



Table 9.14: Transportation Asset Management Risks – Footpaths & Shared Pathways

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR36	Inadequate footpath/shared pathway quality Caused by: - Poor design, construction, materials - Lack of funding - Poor utilities reinstatements etc. - Vehicles parked, driving along footpaths/shared pathways Consequences: - Walkers/cyclists injury - Inaccessibility - Loss of amenity	Operational Health & Safety Reputation / Image	Minor	Almost certain	Moderate	- Maintenance and renewal contracts in place to rectify poor quality and damaged footpaths - Condition assessment of all footpaths/shared pathways – 3 yearly cycle 10 year Plan, AP, AMP processes - Renewal and maintenance programmes. Interlink with other projects - Helpdesk (CRM) monitors complaints - NZS 4404 and companion document, construction standards - Development/ subdivision/ building consent control by WDC - Bylaws affecting footpaths e.g. trading, cafes etc. - CAR required by utilities - Bylaws and tree policy gives process for the removal of identified vegetation / trees - Permit to work around trees	Some Strength	Minor	Likely	Moderate	Transportation Manager	- Tree planting and selection policy - Ongoing commitment to network footpath condition assessments - Review footpath policy - Tree maintenance review affecting footpath assets - Education for users of shared pathways - Prioritise premier footpaths ahead of others
LTR37	Inadequate Accessibility – for physically and visually challenged persons/ wheelchairs/ strollers/ walkers/ prams/ mobility scooters. Including lack of footpaths limiting accessibility. Caused by: - Lack of planning - Poor design - Not enforcing policies e.g. street trading Consequences: - Loss of service level - Public image - Accidents and injury	Operational Health & Safety Reputation / Image	Minor	Almost certain	Moderate	- Use of NZS 4404 and companion document and other best practice guidelines for design of footpaths - NZTA pedestrian planning and design guidelines - New footpath programme published through the 5 YEAR PLAN and AMP - Helpdesk (CRM) monitors complaints - Development/ subdivision/ building consent control by WDC Regulatory - Bylaws affecting footpaths e.g. trading, cafes etc. - CAR required by utilities - Accessibility issues addressed in contract documents and supervision - Footpath policy	Some Weakness	Minor	Likely	Moderate	Traffic Safety Engineer	- New footpath programme published through the 10 YEAR PLAN and AMP - Tree planting and selection policy - Ongoing commitment to network footpath condition assessments - Review footpath policy - Tree maintenance review affecting footpath assets - Focus on Premier footpath in the first instance - Pram crossing continuous improvement - Strategy to install tactile devices for the visually impaired



Table 9.15: Transportation Asset Management Risks – Vegetation and Berms (including Street Furniture, Guard Rails and Signs)

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR38	Roadside vegetation compromising safety, amenity and utility services Caused by: - Lack of pruning, trimming or removal - Inappropriate placement or species of trees - Spread of noxious weeds and debris (within the road reserve) - Debris blocking stormwater catchpits - Difficulty of process Consequences: - Accidents causing death and/or injury - Negative public image, public annoyance - Property and asset / utility damage - Crime - Interference with adequate street lighting	Operational Health & Safety Reputation / Image Financial / Economic Legislative	Moderate	Almost certain	Significant	- Helpdesk (CRM) and staff feedback - Maintenance Contracts – Rural areas (weed spraying programme, tree trimming and mowing) - Urban areas, trimming. Spraying etc. responsibility of WDC Parks, who are limited in their budget - Transportation responsible for costs of leaf fall and removal of trees associated with renewal works e.g. kerb and channel - WDC responsible for any damage if tree is in the Transportation envelope and is hit by vehicle (traffic regulations) - Bylaws and tree policy gives process for the removal of identified vegetation / trees - Use of berm to comply with NZS 4404 and companion document requirements, however trees currently compromise the standards of the assets - CAR system for any new trees - Permit to work around trees	Some weakness	Moderate	Likely	Significant	Transportation Manager	- Inspection and monitoring of vegetation envelope - Define and implement tree removal process - Tree selection and planting policy - Monitor effects and costs of trees on utilities etc. - More funds towards urban envelope trimming - Ensure available budgets are spent - Adherence to traffic regulations
LTR39	Lack of Quality Bus Shelters <i>Note: Horizons funds the capital cost only of bus shelters</i> Caused by: - Lack of funding - Lack of maintenance and renewal - Vandalism - Changing bus routes Consequences: - Reduced patronage, - Exposure to elements - Loss of image	Operational Health & Safety Reputation / Image Financial / Economic	Very Minor	Almost certain	Low	- Programmes developed and funding secured for shelters with Horizons Regional Council - Helpdesk (CRM) and staff feedback - Maintenance contractors in place with set response times - Use of graffiti resistant surfaces, toughened glass, vandal-proof design - Security in design CPTED	Some weakness	Very Minor	Likely	Low	Traffic Safety Engineer	- Lifecycle planning - 10 YEAR PLAN, Annual Plan and Asset Management Processes documented - Interaction with Regional Council to assess future needs to secure additional funding for renewal and capital projects. - Investigate other funding sources
LTR40	Inadequate Street Furniture Quality Caused by: - Poor design, construction, materials - Lack of funding - Utilities reinstatements etc - Vandalism Consequences: - Public image of Council - Injury to users - Inaccessibility	Operational Health & Safety Reputation / Image Financial / Economic	Minor	Almost certain	Moderate	- Maintenance contracts - Mainstreet maintains CBD assets - Helpdesk (CRM) and staff feedback - NZS 4404 and companion document - Bylaws affecting footpaths e.g. trading, cafes etc.	Some weakness	Minor	Likely	Moderate	Traffic Safety Engineer	- Formalise condition assessments regime - Street furniture replacement/ renewal programme - Development/ subdivision/ building consent control by WDC Regulatory - Lifecycle planning - 10 YEAR PLAN, AMP and AP process - Standardisation of street furniture - Clarification as to asset responsibility



Table 9.16: Transportation Asset Management Risks – Drainage Facilities

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR41	Inadequate maintenance of catch pits, streams and stormwater structures Caused by: - Inadequate maintenance - Lack of funding Consequences: - Localised flooding - Loss of operational capacity, disruption to road users - Poor public image - Environmental impacts - Increased costs - Poor storm water quality - Hazards for road users e.g. cyclists	Operational Financial / Economic Health & Safety Reputation / Image Environmental	Moderate	Almost certain	Significant	- Robust Transportation maintenance contracts, inspection and maintenance regime - Identification of hotspot catchpits - Asset Management system - Auditing of contractors - Network Audits - Proactive contract management - Upgrades of catchpits to reduce blockages - Culvert design and maintenance - Road design standards - Annual funding allocations - Helpdesk (CRM) and staff feedback	Some Strengths	Moderate	Possible	Moderate	Transportation Manager	- Monitor frequently and compliance - Review hotspots - Effective separation (Stormwater / Wastewater)
LTR42	Flooding affecting roads Caused by: - Under capacity drainage - Poorly located, or blocked drainage assets - Poor design - Lack of maintenance - Inadequate funding Consequences: - Inaccessibility - Unsafe driving conditions - Asset damage - Poor public image	Operational Financial / Economic Health & Safety Reputation / Image	Moderate	Almost certain	Significant	- Maintenance contractor, cleaning programme of catchpits and drainage - Council Stormwater managing overall stormwater network. - NZS 4404 and companion document sets standards for design on new and renewed infrastructure - Helpdesk (CRM) and staff feedback - Renewal programmes - Improving asset knowledge, data collection and condition performance assessment. - Critical and at-risk assets have been identified, and frequency of maintenance is determined.	Some Strength	Moderate	Possible	Moderate	Transportation Manager	- Monitor and review current practices - Review Levels of Service in problem areas and in accordance with seasonal changes and appropriate maintenance regime (leaf dropping) - Additional funding - Regular meetings between Transportation & stormwater departments
LTR43	Surface water contamination during normal operation of the network Caused by: - Lack of environmental controls - Increased impermeable areas Consequences: - Environmental pollution	Environmental Legislative Reputation / Image	Minor	Likely	Moderate	- Silt control for physical works contracts and development, controlled via WDC Regulatory. - Resource consent requirements for discharges, controlled by Horizons - Maintenance contractor, cleaning programme - Council Stormwater managing overall stormwater network. - NZS 4404 and companion document sets standards for design on new infrastructure - Helpdesk (CRM) and staff feedback	Some Strengths	Minor	Possible	Moderate	Transportation Manager	Regular meetings between Transportation & stormwater departments

**Table 9.17: Transportation Asset Management Risks – Public On-Street Car Parking**

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable What are the risks?	Risk Type What are the main types of impact resulting from this risk event?	Initial Risk What risk level do we face if we did nothing to prevent or minimise it?			Current Practices/Strategies What are we doing to avoid the risk or reduce its effect?		Revised Risk Considering what we do, what is the current actual risk level we face?			Risk Owner (Name and Title) Who has the responsibility and ability to follow through?	Management Options Available What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR44	Inappropriate number of car parking facilities on-street. Caused by: - Inadequate Planning - Rapid growth - Lack of funding Consequences: - Loss of service levels (e.g. accessibility) - Public image - Economic (loss of business etc.)	Operational Financial / Economic Reputation / Image	Moderate	Almost certain	Significant	- Review of planning and design practices for public parking. - Complaints are reviewed on a case by case basis. - Parking restrictions and enforcement. - Bylaws in place and content reviewed periodically - Parking controls e.g. Pay & Display, invisible officer - Pay and display income and usage monitored and reported - Lease parking - Allocations for motorcycle/disability/loading parking - WUTS - Parking Management Plan	Some Weakness	Minor	Possible	Moderate	Traffic Safety Engineer	- Review of parking allocations and requirements e.g. taxi stands, restrictions, loading zones. - Implement Parking Management Plan

Table 9.18: Transportation Asset Management Risks – Traffic Control Equipment

Risk Reference	Risk Descriptor – details the main component and provides an example of a risk(s) that may be attributable	Risk Type	Initial Risk (No effective measures in place)			Current Practice/Strategy (Avoidance and mitigation measures)		Revised Risk (Considering measures in place)			Person(s) Responsible	Management Options
			Consequence	Likelihood	Factor	Description	Effectiveness	Consequence	Likelihood	Factor		
LTR45	Signals Inoperative Temporarily Caused by: - Accidents - Power Outage - Upgrading - Servicing Consequences: - Crashes and injury - Public image	Operational Public Health & Safety Reputation / Public Image	Major	Almost certain	High	- Maintenance Contracts, performance based with response times. - Traffic Signal Maintenance Contract managed by Consultant - Helpdesk (CRM) and staff feedback 10 YEAR PLAN, AMP and Annual Plan process – funding. - CAR required by utilities - Design standards and specifications – AUSTROADS, NZTA etc. - Temporary traffic management,	Satisfactory	Minor	Likely	Moderate	Traffic Safety Engineer	- Monitor and Improve current practice and response times - Review of standards (AUSTROADS, NZTA specs etc), and audit of controls and control works. - Ongoing Crash reduction studies (in conjunction with police, NZTA) - Condition assessment - Monitor new technology - Upgrade to LED
LTR46	Inadequate Signal Design & Operations Caused by: - Lack of Maintenance - Poor Design Consequences: - Crashes and injury - Public image - Delays - Road User Confusion - Accidents	Operational Public Health & Safety Reputation / Public Image	Major	Almost certain	High	- Crash Reduction Studies 10 YEAR PLAN, AMP and Annual Plan process – funding. - Design standards and specifications – AUSTROADS, NZTA etc.	Satisfactory	Moderate	Likely	Significant	Traffic Safety Engineer	- Monitor and Improve current practice - Review of standards (AUSTROADS, NZTA specs etc), and audit of controls and control works. - Ongoing Crash reduction studies (in conjunction with police, NZTA) - SCATS system, network modelling - Upgrade phasing of traffic signals - Up[grade standard of componetry



Risk Action Plan

Table 18Table 19: is compiled from the Risk Register and highlights the most significant Revised Risks faced by the Transportation activity.

The main risks are listed in order of severity (Initial and then Revised risk) as assigned in consultation with key Council officers.

Actions that are required to achieve the desired improvements are indicated along with how progress on these actions will be monitored and reported. Where applicable, action tasks will detail timeframes for achievement, and responsibility for these actions.

Table 9.19: Asset Management Risk Action Plan – Transportation

Risk Reference	Risk Descriptor	Nature of Risk <i>What are the main types of impact resulting from this risk event?</i>	Revised Risk	Initial Risk	Management Options Available <i>What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?</i>	Risk Owner (Name and Title) <i>Who has the responsibility and ability to follow through?</i>	Risk Appetite <i>Accept or Prioritise</i> Accept = Current Practice, P1 = Urgent, P2 = Routine	Pinpoint Management Actions <i>Defined actions to be programmed and resourced under the direction of the risk owner</i>	Monitoring / Reporting <i>Which forums and systems will monitor the action and receive progress reports (reference improvement plan/ project numbers)</i>	Timeframe <i>Define programme for action completion/ implementation</i>	Costs / Resources <i>Where possible, allocate \$ amounts and staff time required for action</i>	Future Risk <i>What Revised risk score could be achieved if actions are implemented?</i>
LTR12	Diminishing Funding Allocation	Operational Financial / Economic	H	H	- Forecast likely scenarios regarding effects of budget changes including deferrals - Quantifying Levels of Service in LTP - Escalate issues to higher levels e.g. Lobbying Central Government - Network optimisation dTIMS - Aligning council LOS with those imposed by NZTA as part of the ONRC	Infrastructure Manager	P1	- Reassess LOS in 10 Year Plan - dTIMS for longer term strategies - Lobbying Central Government	- CRMs - Community Views surveys - Network condition surveys - RAMM / All-faults	- Annual – 2017/18 - Yearly - Ongoing - Ongoing	Within existing budget allocation	S
LTR18	Inadequate road condition as a result of increasing network demand	Operational Financial / Economic Health & Safety Reputation / Image	H	E	- Prepare improved AMP and AM processes - Council funding over and above NZTA funding to meet AMP requirements, needs and community outcomes - Predictive modelling of the network to establish likely scenarios - Monitor frequently, especially RAMM ratings - Improve understanding of the costs and levels of service - Monitor and investigate new technologies and resource new initiatives - Review LOS to optimise outcomes	Transportation Manager	P1	- ONRC intergration LOS - dTIMS for longer term strategies - Review MIS - Investment in data collection	- Network Condition indices - ONRC reporting tools - Network surveys - High speed data collection	- Annual – 2017/18 - Yearly	Enhanced budget requirement for data collection/analysis	S
LTR27	Bridge Collapse (excluding catastrophic events)	Operational Financial / Economic Health & Safety Reputation / Image	S	E	- Undertake review of bridges requiring seismic measuring - Review and monitor current practices - Continue to undertake risk assessment of critical bridges - Review and monitor lifeline project outcomes - Continue to monitor and review current capacity of bridges, overweight permit process and communication of requirements - Formalise communication with transport industry regarding routes and loadings - Review Council insurances	Transportation Manager	P2	- Undertake review of bridges requiring seismic measuring - Bridge Scour protection - Structural capacity evaluation 50 max permitting - Review Council insurances of uneconomic bridges	- Periodic inspection reporting - Detailed assessment reports - Permitting reports	- Ongoing 50 year inspection stragey - Annual - 2017/18	Within existing budget allocation	M
LTR08	Moderate Natural Hazards – (minor earthquake/landslips/ major storm event) Inability to minimise effects	Environmental Public Health Operational Financial / Economic	S	H	- Forecast likely scenarios regarding effects of budget changes including deferrals - Quantifying Levels of Service in LTP - Escalate issues to higher levels e.g. Lobbying Central Government - Network optimisation - Aligning council LOS with those imposed by NZTA as part of the ONRC	Transportation Manager	Accept	- Identify key areas prone to effects of moderate natural disaster and instigate resilience projects - Review Maintenance Intervention Strategy (MIS) categories	- Forward works programmes - Minor improvement programmes - Alignment with ONRC LOS	- Annual – 2017/18 - Yearly 10 year planning	Within existing budget allocation	S



Risk Management

Risk Reference	Risk Descriptor	Nature of Risk <i>What are the main types of impact resulting from this risk event?</i>	Revised Risk	Initial Risk	Management Options Available <i>What can we possibly do (brainstorm) to further reduce the risk level or provide assurance that current practices remain effective?</i>	Risk Owner <i>(Name and Title) Who has the responsibility and ability to follow through?</i>	Risk Appetite <i>Accept or Prioritise Accept = Current Practice, P1 = Urgent, P2 = Routine</i>	Pinpoint Management Actions <i>Defined actions to be programmed and resourced under the direction of the risk owner</i>	Monitoring / Reporting <i>Which forums and systems will monitor the action and receive progress reports (reference improvement plan/ project numbers)</i>	Timeframe <i>Define programme for action completion/ implementation</i>	Costs / Resources <i>Where possible, allocate \$ amounts and staff time required for action</i>	Future Risk <i>What Revised risk score could be achieved if actions are implemented?</i>
LTR21	Low lying road inundated by floods or heavy rainfall events	Operational Financial / Economic Health & Safety Reputation / Image	S	H	- Record low lying assets on appropriate systems e.g. GIS - Input into catchment management planning. Mitigation options – retention ponds, overland flowpaths - Use of rain gardens and detention devices to improve network capacity and mitigate flooding	Transportation Manager	P2	- Align replacement programmes with improved coordination - Reassess LOS for flooding in the network function	Identified in MIS (RAMM)	10 year planning	Within existing budget allocation	S
LTR30	Inadequate Guard Rails/Medians	Operational Health & Safety Reputation / Image Financial / Economic	S	H	- Bridge approaches / side protection - Increased funding for guardrails - Use deficiency database to programme upgrades / retrofit - Implement inspection regimeImproved sight rails - Guard rail river's edge	Traffic Safety Engineer	P2	Deficiency database	Generate programmes of work	- Annual – 2017/18 10 year planning	Within existing budget allocation	M
LTR46	Inadequate Signal Design & Operations	Operational Public Health & Safety Reputation / Public Image	S	H	- Monitor and Improve current practice - Review of standards (AUSTROADS, NZTA specs etc), and audit of controls and control works. - Ongoing Crash reduction studies (in conjunction with police, NZTA) - SCATS system, network modelling - Upgrade phasing of traffic signals - Up[grade standard of componetry	Traffic Safety Engineer	P1	Prioritisation of improvement to traffic signals	Annual achievement report via Council committee	1 traffic signal set upgraded per annum	Within existing budget allocation	M
LTR35	Power supply failure to streetlights	Operational Health & Safety Service	S	S	- Monitor and review current practices - Guarantee power supply with timely maintenance renewals - Programme and risk mitigation to reduce outages	Infrastructure Manager	Accept					S
LTR38	Roadside vegetation compromising safety, amenity and utility services	Operational Health & Safety Reputation / Image Financial / Economic Legislative	S	S	- Inspection and monitoring of vegetation envelope - Define and implement tree removal process - Tree selection and planting policy - Monitor effects and costs of trees on utilities etc. - More funds towards urban envelope trimming - Ensure available budgets are spent - Adherence to traffic regulations	Transportation Manager	P2	- Management Strategy - Tree policy under review	- CRMs - All faults - Footpath condition surveys - Compliance with tree policy	- On-going - On-going - Three yearly - On-going	Within existing budget allocation	M



10 Business Processes



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Overview

An asset management system is a combination of processes, data and software applied to provide the essential outputs for effective asset management. The transportation activity utilise a number of these aspects for the effective management of their assets.

Whanganui District Council uses the RAMM system to obtain information on the assets.



The RAMM system contains a schedule of all roads in the network and information on carriageway widths, surfacing types and ages, pavement composition, traffic volumes and loadings and road condition data. Information on structures such as drainage facilities,

footpaths, bridges, streetlights and signs is also stored on the RAMM system.

Information contained in this plan will be used in the preparation of the LTP and subsequent Annual Plan's, as well as in the preparation of insurance schedules and valuations.

Information obtained from public consultation on levels of service, updated construction rates and data reflecting the changing of condition or performance will be used to keep this plan current.

Advanced asset management techniques such as optimised decision making, will be further integrated into the system as asset management in the transportation activity evolves.

Specific detail is provided on the following aspects:

Accounting/Financial Systems – details the computer software systems used to manage accounting and finance functions at WDC

Asset Management Systems – describes the computer software systems used to aid in asset management decision making processes.

Business Continuity Plan – which details Whanganui District's ability to function and respond to any crises.

Health and Safety – which details Whanganui District's approach to Health and Safety.

Internal Service Level Agreements – sets out the various service level agreements between Council departments for the provision of services between Council departments.

Business Systems – tabulates all of the business support systems used by WDC in its day to day activities.

Continuous Process Improvements – describes the processes to be adopted to improve the standards of asset management at WDC.

Plan Review & Monitoring – provides guidance on the long-term sustainability of this document.

Compliance with LGA 2002 Schedule 10 requirements –

Key elements within schedule 10 that directly relate to the AMP have been assessed and the relevant sections of the plan have been referenced. This provides Whanganui District with the confidence that the requirements have been covered.

Advanced AMP & OAG Criteria – Tables are provided that assesses the current AMP against the Office of the Auditor General criteria. This provides Whanganui District with a snapshot of the current status of the AMP.

Accounting / Financial Systems

Council's financial accounting system is delivered via a software package entitled Finance One. Accounts are compiled in accordance with GAAP standards to meet Local Government Act regulations. The RAMM database holds all pertinent financial information relating to an asset on an asset-by-asset basis. Financial information includes: purchase or commissioning date, asset value, and depreciation charged. The financial information held in the register allows financial transactions such as depreciation to be calculated. The register also reflects changes to existing assets that occur over their life, such as revaluations and disposals. The register also holds non-financial information for the management of the assets.

Accounting Standards & Guidelines

For financial reporting purposes, the Transportation activity combines with the overall Whanganui District Council requirements to comply with International Accounting Standards, (IAS) in accordance with s11 of the Local Government Act 2002.

Asset Management Systems

There is a need to record detailed asset management and maintenance information to support the asset lifecycle process.

An asset management system is a combination of processes, data and software applied to provide the essential outputs for effective asset management. Whanganui District Council utilise a number of these aspects for the effective management of their assets.

Types of data



Information on age, condition, risk factors, material, cost, and location is captured within the RAMM system for all assets.

The NAMS guidelines, Rawlinsons construction cost manual and manufacturers specifications and maintenance schedules are utilised for AM decision making. Spatial representation of the transportation network is located within Councils GIS system which allows for spatial analysis.

The Council's prime inventory system for its transportation assets is the RAMM (Road Assessment and Maintenance



Management System) database. First introduced in the late 1980s as a tool for recording asset inventory information on local authority and roads and the state highway system it, or a system like it, became a pre-requisite for Government financial assistance (subsidy) in the mid 1990s. RAMM has provided a uniform national inventory system and is also used by the NZ Transport Agency to obtain consistent data and condition reporting over the country's Transportation network.

Street light data is held within RAMM in the SLIM database. Since 2000 the Council has spent on average \$50,000 per annum of professional fees directly on its transportation assets inventory and condition rating systems.

Data quality

Information quality forms a cornerstone of effective asset management. Confidence in the accuracy of asset information impacts the degree of which that information contributes as an enabler for fact-based decision-making.

For information that is known to be available and accessible, an understanding of the quality is needed. This process is referred to as profiling which is the systematic analysis of information to gather actionable and measurable results about its quality. The results gathered from profiling activities are used to assess the overall health of the information and determine the direction of quality initiatives.

Profiling employs a number of different methods for assessing the quality of the information. These are categorised below:

- **Clarity** – data interpretation is unambiguous
- **Completeness** – a complete set of data is available for each record once and only once
- **Consistency** – data is the same in its definition, business rules, format and value at any time or place
- **Correctness** – all data held is verified as accurate and up-to-date
- **Integrity** – the structure of data and relationships among entities and attributes are maintained consistently
- **Uniqueness** – all keys should be unique with no duplication of data given the issues it causes with being able to provide one version of the truth

Data is externally valued on a 3-yearly cycle. The valuation conducted for the assets contained within this plan was undertaken in 2017 with the conclusion that "valuations have been completed in compliance with generally accepted accounting standard NZ IAS 16 and with New Zealand local authority asset management practice". Confidence ratings on the data used in this plan has been assessed to be 2.2 out of 5, with 5 being the lowest score. Further comments were that "the processes in place for updating asset information are very good. Inventories have a high level of confirmation. The confidence ratings take into account the Council's activity management and maintenance management practices".

Asset Management Processes

The Council first started implementing RAMM in 1991. The database is annually updated to enable forward work programmes to be developed, both short term via the Treatment Selection process, and longer term using the predictive monitoring software dTIMS. These programmes provide analysis, prediction and costing of major pavement capital works such as reseals and sealed road pavement rehabilitations, in addition to other works such as kerb and channel and footpaths.

Whanganui District Council uses a number of models for decision making and long-term planning, this includes

- Pavement deterioration model
- RAMM Treatment selection process
- Financial Modelling

Pavement deterioration modelling

WDC has carried out deterioration modelling of its sealed pavements using NZ dTIMS CT software. This software is accepted by the NZTA as being suitable for this purpose. Other procedures based on condition rating surveys have been developed to access the condition of footpaths, kerb and channel and street lights. dTIMS provides outputs ranking optimised projects at a network level for incorporation into a forward works programme.

The pavement deterioration model for the transportation network makes an assessment of the future condition of the network under different funding scenarios. Significant resource in terms of time and investment has been injected into developing the dTIMS model for Whanganui District to a stage where outputs are referred to in the AMP.

RAMM Treatment Selection Process

Whanganui District Council uses performance modelling through the RAMM treatment selection process as one tool for establishing pavement renewal programmes. This includes the use of historical data when identifying possible sites for resurfacing. As such an emphasis is sometimes placed upon seal age and remaining life, resulting in a number of what is known as "Birthday Seals". Although seal age should be an input to the selection process it should not necessarily drive the resurfacing priorities. Decisions should be made that focus on the immediate need to ensure that the required level of service is maintained.

RAMM Financial Modelling

The Council uses the Asset Valuation Module in RAMM to calculate the replacement cost, depreciated replacement cost and annual depreciation costs of its transportation assets. Before WDC was able to use this feature in RAMM for asset valuation, an Asset Data Improvement Plan was required to update / collect vital information which was missing on key asset types.



Real time Operational Control

Traffic Data Collection

An annual traffic counting programme is in place to monitor traffic volumes on the network and to ensure that the information held on the RAMM database is accurate.

Council operate 10 traffic counters with priority given the counts being undertaken on proposed resurfacing and pavement rehabilitation sites in the first instance and other roads requiring updated traffic composition for reporting and analysis purposes.

Classified traffic counts also identify the composition of the traffic carried, which is necessary for pavement and resurfacing design purposes. These counts are also used to monitor the speed of vehicles.

Operations and Maintenance Programmes

Operations: Customer Service Requests

Customer service requests are handled by the Administration section of WDC Infrastructure Group. Requests are entered into a Proclaim based system that records the details of the call. This information is then forwarded in the real time to the Contractors.

The Contractors provide progress reports on each request received. These are recorded against the CRM until the job is completed and closed off. This information allows for the monitoring of the response times and work standard of the Contractor which is logged against Key Performance Indicators (KPI) as set in the physical work contracts.

Up to 100 calls are logged each month. Weather conditions influence the number of calls received. In rural areas the majority of the service requests relate to road condition, road drainage or vegetation issues. Urban area requests typically involve blocked sumps, streetlights not operating, pavement issues and street cleaning.

Maintenance

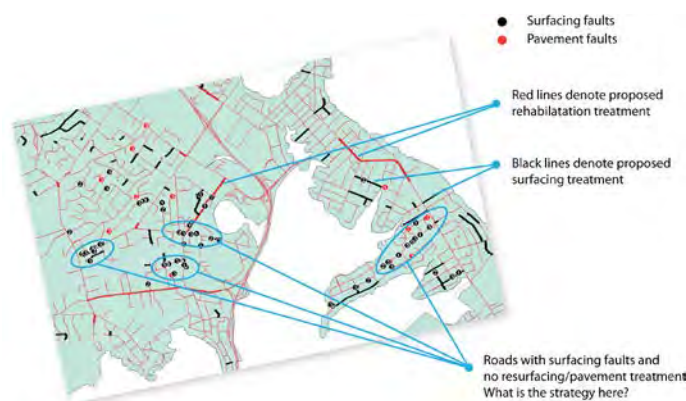
Council's road network maintenance alliance partner has significant experience in pavement fault data collection and analysis utilising the RAMM Contractor/RAMM and Pocket RAMM suite of tools.

All faults identified during routine inspections are assigned a severity priority level as per agreed intervention levels defined in the Maintenance Intervention Strategy (MIS). Different faults and priorities can be shown in a variety of colours and symbols.

The visual representation of information in this format is ideal for quickly:

- Establishing high cost maintenance road sections
- Confirming suitability of recommended treatments generated from other asset management tools. ie treatment selection outputs, and
- Identifying "red flagging" problem issues/sites prior to sinking maintenance monies into non-performing assets.

Figure 10.1: Visual representation of faults across the network



Business Continuity Plan

A Business Continuity Plan (BCP) is a documented set of procedures and information that enables critical services or products to be continually delivered to clients. Rather than focusing on resuming a business after critical operations have ceased or are in recovery mode after a disaster, a business continuity plan endeavours to ensure that critical operations can continue to be available.

The purpose of the Whanganui District Council's BCP is to "ensure that the Whanganui District Council continues to effectively manage its business operations in the event of a crisis affecting either the Council's work places or the Wanganui area as a whole".

In the Council's BCP:

- Essential services are identified,
- Roles and responsibilities are clarified,
- Alternate sources of supplies,
- Resources and locations are identified and
- Key operations when activating the BCP are explained.

In short, the BCP ensures the right people take the right action at the right time.

Council's transportation Network Alliance Partner, Downer has also prepared a BCP to deal with all types of emergency situations and incidents that might impact on the Whanganui District.

The Downer Alliance's arrangements for Incident Management (IM) form part of its framework for Business Continuity Management. The arrangements deal with major emergencies caused by earthquake, flood, fire or other disasters. The objectives are to reduce the potential for human, physical and consequential losses, ensure that as much as possible is undamaged or salvaged, and hasten the return to normal working.



Emergency Management

Emergency works normally arise from adverse weather events that result in wind damage, surfacing flooding and slips. Work associated with these events is actioned by Contractors, even if this means that there is expenditure over the budget or other routine work is deferred to keep overall expenditure within budget. This is particularly relevant for safety related works and works that are needed to restore and reopen roads.

If the extent of an event becomes too severe, or the effects too significant, the Council can apply to NZTA for additional funding under Work Category 141 – Emergency Reinstatement under the categories of Immediate Response and Permanent Reinstatement.

The Whanganui District has recently experienced significant storm damage to transportation assets. Emergency reinstatement works adds considerable pressure to resources available to the network from both professional services provision through to the availability of contractors.

Initial Response

Immediate Response covers the work necessary to open a road, where practicable, to at least a single lane facility for safe use by traffic or to minimise risk of further damage. This works may include:

- Slip clearance
- Construction of temporary detours
- Temporary reinstatement
- Restoration of roadside drainage

Under the road maintenance contract the Contractor is required to respond to emergency situations while these are in progress, patrolling, and erecting signage to warning motorists of potential hazards on the roads and where possible preventing damage to transportation assets, facilities and private property.

Health and Safety

Whanganui District Council is committed to providing the safest working environment possible for all Elected Members, Employees, Contractors and Visitors while they are engaged in Council business and/or visiting council buildings or property.

Through its Health and Safety Management Manual, WDC provides a number of policies and guidelines to ensure that staff are provided with a safe working environment

While Health and Safety is primarily the responsibility of the Employer, it is also the responsibility of every individual. Managers remain responsible for ensuring that management practices with regard to Health and Safety are both put in place and undertaken.

Internal Service Level Agreements

Finance

Corporate Services provides management accountants who are responsible for financial reports, forecasts, and budgets and provide support and advice to the land transport team.

Human Resources (HR)

Provides recruitment and selection services for the Council. HR has also implemented a performance development programme (PDP) and online performance evaluation system, (PES) to ensure that individual employees contribute towards achievement of the organisations objectives. A comprehensive training and development programme is in place to assist employees to perform their roles.

Information Services (IS)

IS manages the computers and software used by the Land Transport team. They provide support and training programmes to council staff for the software applications.

Whanganui District Council has a daily backup-to-tape schedule in place. This backs-up all the critical data onto tapes that are stored off-site.

Business Systems

From the initial decision to proceed with asset management through to the final operational phases, Council needs systems to support a management decision-making structure with accurate asset information. The information systems necessary to support this type of program are often based around information technology (IT) systems. It is critical that the IT system is accurately specified to meet the asset management requirements. The needs analysis to accomplish this involves understanding:

- The full ramifications of lifecycle asset management on the Council
- The benefits to be derived
- What is required from the IT systems.

The resources required will include project management, implementation and ongoing support staff, software, hardware, data collection, and system operation and maintenance. The cost can represent a substantial business investment, and this warrants a dedicated project management team to ensure satisfactory implementation and completion.

Information systems of this magnitude should be driven from the bottom-up; if the information meets the requirements at the workforce level, then the systems will have a high level of ownership and will produce data that is valid and up to date. By aggregating this data, the information can be fed upwards to provide accurate and critical information to the management of the unit, and Council as a whole.

Whanganui District Council has developed its IT



infrastructure around a number of key products that provide a platform for all IT applications. The table below sets out

Council's cornerstone IT applications used by the Land Transport group.

Table 10.1: Cornerstone Applications

Function	Product	Group Responsible	Primary users
Word, spreadsheets, email, project, access	Microsoft	Information Service Group	All employees
Financial accounting and reporting including project planning	Finance 1 CI upgrade	Information Service Group	Finance & employees who spend or approve budget
Complaints, works orders	Proclaim One	Information Service Group	All Departments
Remote access and integration		Information Service Group	
Individual Performance management System	PES	HR	All employees
Internal web based system for staff providing a variety of tools and utilities including vehicle booking system, Knowledge base	Intranet	Information Service Group	All employees
Risk Management	Interplan	Corporate Strategy and Development	Executive Leadership Team
GIS	IntraMaps	Strategy Group	All employees
Strategic and business planning and organisational performance management system	Interplan	Strategy Group	All employees
Records Management	Hubble	Information Service Group	All employees

Data Maintenance

As asset changes are made within the transportation activity, information is collected and entered into the asset register. Information in the asset register will be updated and verified annually as a minimum.

Table 10.2: Data Maintenance Responsibilities

Activity	Responsibility
Update and maintain inventory of network assets (except complex assets)	Asset Management Team, Alliance Group
Update and maintain complex assets	Asset Management Team, Infrastructure Operators
Ensure that asset data from Council's capital contracts meets Council's standards	Infrastructure Operators, Asset Management Team
Ensure that asset data from new developments meets Council's standards	Environmental Services, Asset Management Team
Capture asset inventory, maintenance and condition data in accordance with Council's and industry standards	Data providers (contractors, operators and consultants)
Ensure that maintenance and condition data meets Council's standards	Infrastructure Operators, Asset Management Team



New Zealand Transport Agency

As part of the New Zealand Transport Agency's (NZTA) quality processes they carry out a number of audits within New Zealand across all Road Controlling Authorities. These audits are intended to check compliance with NZTA's procedures and policies. They also check processes systems and personnel are in place to support analysis and good asset management decision making. These audits form a significant part of the business processes that determine how well the Council's assets are performing and how well they are being managed, maintained and renewed.

Procedural Audits

Procedural audits are carried out in terms of section 69(1) (k) of the Land Transport Management Act 2003. A procedural audit of each approved organisation is carried out every two to four years. The objectives of the audits are generally as follows:

- To review any issues arising from previous procedural audit(s)
- To review final claims for the period being audited
- To assess the audit trail of transactions for financially assisted works
- To assess compliance with Land Transport NZ's approved procurement procedures
- To review contract management procedures
- To review Council's professional services provider/network manager/business unit for compliance with Land Transport NZ's requirements
- To recommend measures for improved practice if appropriate

Technical Reviews

- Technical audits are carried out on at least a four-year cycle. Factors that determine the frequency include the size of Land Transport NZ's financial contribution, the complexity of each organisation's programme, network condition (pavement and safety) and the outcome of previous audits. Each approved organisation will be advised at least a month in advance of the audit commencing. The objectives of the audits are generally as follows:
- To review any issues arising from previous technical audit(s)
- To assess whether the level and quality of Transportation maintenance being carried out by the Council is realistic and acceptable
- To determine the extent to which Council's structural and corridor maintenance programme is meeting (not exceeding) maintenance needs
- To determine the extent to which Councils RAMM database is able to provide reliable reports and treatment selections
- To determine in light of the answers to the above, that there is progress towards achieving a least cost, long-term, maintenance programme

Reporting Tools

The NZ Transport Agency's transport data website publishes a range of financial and non-financial information related to the performance of its transport investments. This data is collected as part of a statutory annual achievement return process and is published as part of the agency's commitment to open government data. These tools were developed several years ago and are currently maintained with data updates only. The transport agency keeps them under review and will remove any tools if they are no longer required. Most of the metrics reported are not the same as the ONRC measures.

The Road Efficiency Group Performance Measures Reporting Tool is specifically reporting the One Network Road Classification measures and is useful for approved organisation to view their performance and compare performance against other AO's. The tool is developed specifically for this purpose.

Road infrastructure Safety Assessment (RISA)

The Road Infrastructure Safety Assessment (RISA) programme is a safety focused technical review of several sample sections of a road network, to identify areas that could be improved.

The RISA is based on international best practice guidelines. The audit is carried out in advance of a Technical Review and the results are included in the technical review report. The recommendations are typically used to prioritise safety improvements, which Councils can then include in their next Land Transport Programme.

Theme Audits

Theme Audits each address a specific topic that is common to / affects many approved organisations. The topics may vary considerably. The choice of topic is made by limited survey involving NZTA auditors as well as representatives from approved organizations.

Between 1 and 4 theme audits are carried out each year. The results are published in individual theme audit reports for the purposes of:

- informing approved organisations about issues that have been encountered, current good practice and future direction
- feeding into policy development by the NZ Transport Agency or others in the sector such as Ministry of Transport, Local Government NZ, or the RCA Forum.

AMP Review & Monitoring

This plan is a living document, which is relevant and integral to daily activity. To ensure the plan remains useful and relevant the following on-going process of AMP monitoring and review activity will be undertaken:

- Formal adoption of the AMP by the Council
- Review and formal adoption of levels of service to comply with community outcomes (options vs. costs): Whanganui District Council will undertake a service level review periodically to determine an accurate



Business Processes

understanding of both the current and future needs and expectations of customers

- Revise the AMP annually to incorporate and document changes to works programmes, outcome of service level reviews and new knowledge resulting from the AMP improvement programme
- Undertake quality assurance audits of AM information to ensure the integrity and cost effectiveness of data collected

- Peer review and external audits will be undertaken to assess the effectiveness with which this plan meets corporate objectives. Periodic internal audits will be undertaken to assess the adequacy of Asset Management processes, systems and data and external audits will be undertaken to measure Asset Management performance against 'best practice' by Audit NZ and External Consultants

Table 10.3 outlines the procedures and timetables adopted to achieve these objectives and community outcomes.

Table 10.3: AMP Review and Monitoring Processes

Activity	Action	Milestones
AMP Development	• Complete draft revision of AMP • Completed AMP • Adoption of the AMP by Council	August 2017 September 2017 November 2017
AMP Review	• Annual review of plan content by Asset Management Team and the Transportation Manager - Check AM plan content for consistency with adopted council programmes and plans - Compliance with agreed AM improvement programmes - Effectiveness and adequacy of AMP processes, systems and data • Adoption of the AMP by the Council • External review of AM plan information by Audit New Zealand • External peer review	To be reviewed annually in time for Annual Plan deliberations. Three Yearly Plan to be sent to Audit NZ Three yearly
Asset Management Data	• Confirm data collection and data standards, specifications, and quality assurance. • Undertake quality audits on data integrity and report results. • Review data collection, data flows and entry standards and quality assurance processes • Desktop asset data review • External review of RAMM system	As soon as possible Ongoing Ongoing Ongoing Three yearly
Level of Service	• Review current levels of service (LoS options vs costs), confirm customer values, and set key customer and technical performance indicators (KPIs) (Including public consultation process.) • Measure levels of service delivered and reporting process in Annual Report. • Review and implement community consultation process. • Adopt LoS through LTP	Planned consultation process. Annually as part of Annual Reporting cycle As part of Annual Plan process each year February 2018



Compliance with LGA 2002 Schedule 10 Requirements

The Review of the AMP in consideration of the Local Government Act 2002, Schedule 10 Requirements has been covered in the following sections. Table 10.4 below indicates information related to each group of activities that is required to be included in the Council's LTP and where it is covered in this Activity Management Plan.

Table 10.4: Local Government - Schedule 10 Requirements

LGA 2002 Schedule 10 Requirement	LGA 2002 References	Section Covered
Describe, to the extent required by the local authority, the community outcomes for the local authority's district or region.	LGA 2002 Schedule 10 – 1	Strategic Case
Identify the activities within the group of activities.	LGA 2002 Schedule 10 – 2 (1) (a)	Lifecycle Management
Identify the rationale for delivery of the group of activities (including the Council outcomes to which the group of activities primarily contributes)	LGA 2002 Schedule 10 – 2 (1) (b)	Strategic Case
Outline any significant negative effects that any activity within the group of activities may have on social, economic, environmental or cultural well-being of the local community	LGA 2002 Schedule 10 – 2 (1) (c)	Environmental Stewardship
Include, i) in detail for each of the first 3 financial years covered by the plan; and ii) in outline for each of the subsequent financial years covered by the plan; for each group of activities a statement of the intended levels of service that specifies a) any performance measures made under section 261B for a group of activities and b) the performance measures that the local authority considers will enable the public to assess the level of service for major aspects of groups of activities for which performance levels have not been established under a); and c) the performance target or targets set by the local authority for each performance measure; and d) any intended changes to the level of service that was provided in the year before the first year covered by the plan; and e) the reason for any material change to the cost of a service.	LGA 2002 Schedule 10 – 2 (1) (d), and 10 – 2 (4) (a – e)	Levels of Service
For each group of activities, include a statement of the amount of capital expenditure that the authority has budgeted to a) meet additional demand for the activity; and b) improve the level of service; and c) replace existing assets	LGA 2002 Schedule 10 – 3 (1) (a-c)	Growth & Demand Projects & Financial Forecasts
For each group of activities include a funding impact statement that identifies (a) the sources of funding to be used by the local authority; and (b) the amount of funds expected to be produced from each source; and (c) how the funds are to be expended.	LGA 2002 Schedule 10 – 5 (2) (a-c)	Projects & Financial Forecasts
Steps the local authority intends to take to foster the development of Maori capacity to contribute to the decision – making processes of the local authority over the period covered by the plan.	LGA 2002 Schedule 10 – 8	Community Consultation
Clearly identify – (a) all of the significant forecasting assumptions and risks underlying the financial estimates: (b) Without limiting the generality of paragraph (a), the following assumptions on which the financial estimates are based: (i) the assumptions of the local authority concerning the useful life of significant assets; and (ii) the assumptions of the local authority concerning sources of funds for the future replacement of significant assets: (c) in any case where significant forecasting assumptions involve a high level of uncertainty; and (ii) an estimate of the potential effects of that uncertainty on the financial estimates provided.	LGA 2002 Schedule 10 – 17	Projects & Financial Forecasts



Progress Towards Achieving Advanced AMP against the Officer Auditor General (OAG) Criteria

Whanganui District Council is working towards achieving appropriate advanced asset management. Although the WDC is achieving good results in some areas, a review of compliance with criteria for advanced asset management as developed by the OAG on the way asset management is undertaken and the way in which the Transportation activity is delivered across the District, has been completed. This asset management plan is currently considered to be at an advanced level.

The OAG criteria provides Council with a clear understanding of the status and, with reference to the Improvement Plan, the WDC is able to map out the tasks ahead to achieve improved Asset Management. Asset Management is constantly changing and WDC is now in a better position to plan for, assess and react to changes as they occur. Table 10.5 below provides the assessment of the AMP against the OAG criteria. The Office of the Auditor General (OAG) has established a set of criteria as the basis for acceptable AMP's for infrastructural assets.

Table 10.5: AMP Review Measured against Criteria for Core and Advanced Asset Management

Key AMP Criteria	Key points for achieving "Core" Criteria	Key points for achieving "Advanced" Criteria	Covered In AMP Section	In Development	Basic	Intermediate	Advanced	Comments
Levels of Service	Asset Management Planning (AMP) should define the level of service or performance required of the asset, linked to the strategic/community outcomes of the organisation. The significant services (for which service levels should be subject to consultation and agreement) should be stated.	Council outcomes linked to LoS and customer and technical performance measures	LoS					Level of services statements are clearly linked to Council outcomes. Customer and Technical performance measures and targets are clearly documented.
		Evaluating LoS Options & Costs for: - Department of Internal Affairs - ONRC	LoS, LCM					The existing LoS were reviewed and determined as part of the 10-Year Plan 2018-2028 development process. Establish processes for integrating ONRC into Council reporting.
		For each of the significant services; Undertaking consultation with the community and other relevant stakeholders, using consultation processes which meet industry recognised standards	LoS, Community Consultation					Consultation processes are thorough and well documented. They follow NAMS manual recommendations.



Key AMP Criteria	Key points for achieving "Core" Criteria	Key points for achieving "Advanced" Criteria	Covered In AMP Section	In Development	Basic	Intermediate	Advanced	Comments
		Adoption by the Council or governing body of the levels of service and standards after consultation has taken place	LoS, Community Consultation					Implied through LoS being developed through LTP process but not specifically articulated in the AMP
		Public communications of the levels of service and standards in a 'Customer Charter' or equivalent public document	LoS, Community Consultation					Public opinion surveys are undertaken to assess levels of satisfaction. The results of surveys are communicated via the Annual Report and Councils website.
		Regular monitoring and public reporting of the organisations adherence to agreed levels of services and standards	LoS					Adherence to agreed LoS are monitored via several processes including contract reporting, NZTA reporting (ONRC) and Annual Report.
		Ensuring the AM plans of each significant service reflect and are based on the agreed levels of service, including technical performance targets and measures which underpin the customer-agreed levels of service and standards.	LoS					The AM Plan is clearly driven by the LoS.
Description of Assets	An adequate description of the asset, both physically and in financial terms, with the ability to aggregate and disaggregate information. State the remaining useful lives of assets.	A reliable physical inventory of assets at both an individual asset level and at a network level. This would include: Physical attributes such as location, material, age etc.	Transportation Assets LCM					An industry standard asset management system is used. It is kept current by day to day input by contractor.
		Systematic monitoring and analysis of physical condition.	LCM					Industry standard condition assessment is used.



Key AMP Criteria	Key points for achieving "Core" Criteria	Key points for achieving "Advanced" Criteria	Covered In AMP Section	In Development	Basic	Intermediate	Advanced	Comments
	A financial description of the assets that is linked to the physical description and meets the requirements of: - Financial Reporting Standards - Valuation Standards augmented by the NZ Depreciation and Valuation Guidelines - A financial description of the assets that is linked to the physical description and meets the requirements of NZIAS 16. Augmented by the NZ Depreciation and Valuation Guidelines	Systematic measurement of asset performance (including utilisation / capacity).	LCM, Growth and demand					Asset performance is measured in accordance with NZTA's criteria. KPIs are analysed in the AMP and annual performance reported to NZTA and in Annual Plan.
Financial Forecasts / Recognise Depreciation (Loss of Service Potential)	AMP should translate the physical aspects of planned maintenance, renewal and new work into financial terms for at least the ensuing 10 years and in a manner that is fair, consistent and transparent. The forecasts should include sufficient information to enable decline in service potential (depreciation) of an asset to be measured. Guidance on depreciation is included in the NZ Valuation and Depreciation Guidelines.	The AMP should translate the physical aspects of planned operational, maintenance, renewal and new works into financial terms: Generally over the timeframe in which the asset network must deliver services.	LCM Projects and Financial Forecasts					Financial costs in terms of operational, renewal and new capital are provided. The term they cover is the 30 year period as required.
		In more specific terms, over the period for which the organisation has a strategic plan.	Projects and Financial Forecasts					30 years provided.
		The assumptions underpinning financial forecasts should be disclosed in the organisations strategic plans and AM plans.	Projects and Financial Forecasts					A good description of assumptions as well as risk assessment is provided (but yet to be completed).



Key AMP Criteria	Key points for achieving "Core" Criteria	Key points for achieving "Advanced" Criteria	Covered In AMP Section	In Development	Basic	Intermediate	Advanced	Comments
		The compilation of financial forecasts should be consistent, reliable and provable.	Projects and Financial Forecasts					Financial forecasts are formatted in accordance with NZTA work categories where they are relevant. The financial system structure matches those categories.
Planning Assumptions & Confidence Levels	AMP should: - List all assumptions and provisos under which the plan and financial forecasts are prepared. - Indicate the degree of confidence of the reliability of data underpinning the AMP, particularly: - Data on asset condition - Data on asset performance - Accuracy of asset inventory - Demand/growth forecasts - On the basis of the preceding assumptions and confidence of underlying data, provide a level of precision or confidence on the expenditure forecasts for the asset network	As for 'core' plus: List all the assumptions and provisos in the AMP, and note key assumptions regarding the AMP in the organisations strategic plans.	Introduction, Projects and Financials					A good description of assumptions as well as risk assessment is provided in the Financial forecasts (but yet to be completed in document) and introduction.
		Have degrees of confidence on the reliability of data as follows: Inventory data - Grade 1 (critical assets) - Grade 2 (non critical assets)	Transportation Assets, LCM					Asset inventory data reliability provided. Does not have degrees of confidence separated by critical/non-critical assets but this is complex issue for Transportation and managed on other ways.
		Condition data - Grade 1 or 2 (critical assets) - Grade 1, 2 or 3 (non critical assets)	Transportation Assets, LCM					Asset condition and asset inventory data reliability provided. Does not have degrees of confidence separated by critical/non-critical assets but this is complex issue for Transportation and managed on other ways.



Key AMP Criteria	Key points for achieving "Core" Criteria	Key points for achieving "Advanced" Criteria	Covered In AMP Section	In Development	Basic	Intermediate	Advanced	Comments
		Performance data - Grade 1 or 2 (critical assets) - Grade 1, 2 or 3 (non critical assets)	LCM					Asset performance extensively analysed and reported using Transportation industry standard techniques. Does not have degrees of confidence separated by critical/non-critical assets but this is complex issue for Transportation and managed on other ways.
Outline Improvement Programmes	- The AMP should state what needs to be done to improve AMP processes and techniques - Improvement programmes should outline: - The weak areas and how these will be addressed - The timeframe over which the improvements will occur and - The resources (human and financial) needed	As for 'core' plus: Improvement programmes should outline key performance indicators (KPIs) for monitoring AMP improvement.	Business processes & Improvement Plan					Improvement tasks have been identified and discussed throughout the document. Tasks identified in the improvement plan align well with the identified gaps in the plan. It does lack timing and allocation of responsibilities.
		The improvement plan should comment generally on achievements against the previous plan, and formally report against KPIs.	Improvement Plan					
		As for 'core' AMP criteria.	Improvement Plan					
Planning by Qualified Persons	The AMP must be undertaken by a suitably qualified person. A suitable qualification would be a Level 6 (Tactical) or Level 7 (Strategic) National Diploma in Asset Management or equivalent skill level.	As for 'core' AMP criteria.	Team Page					AMP completed by suitably experienced staff very familiar with the assets and the services.



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Key AMP Criteria	Key points for achieving "Core" Criteria	Key points for achieving "Advanced" Criteria	Covered In AMP Section	In Development	Basic	Intermediate	Advanced	Comments
	If plans are prepared by persons not suitably qualified, the plans should be independently assessed by a qualified person.	As for 'core' AMP criteria.	Team Page					Rui Leitaio (Roading Manager, Whanganui District Council) Kevin Hartley (Whanganui Alliance)
	The planning process should be peer reviewed.	As for 'core' AMP criteria.	Team Page					Peer Reviewed by: - Infrastructure Manager - Alliance Leadership Team - NZTA
Commitment	The AMP must be approved and adopted by the governing body, Board or Council. This includes approval of the improvement element of the plan.	As for 'core' AMP criteria.	Team Page, Improvement Plan					This AMP will be adopted by council in time to underpin the development of the 10-Year Plan
	The AMP must be seen as the key planning tool for infrastructure assets and/or significant physical assets which provide the inputs for Council's strategic plans (LTP).	As for 'core' plus: The organisation must demonstrate that AM plan requirements are being implemented through operational plans and formally report discrepancies	Executive Summary, Strategic Case, PBC, LCM					AM fundamental to driving the LTP. Operational and renewal strategies given in the LCM section. Levels of Service and KPI's extensive, well documented and reported.
Updating	The AMP must be regularly updated to reflect the most current future plans for the assets (it is expected that 'core' AMP will be significantly revised in the light of action under improvement programme. In	The AMP is seen as a constantly evolving process, with underpinning asset management systems constantly providing better information.						Strong awareness and ownership that is an ongoing process, working towards the improvements documented in this plan



Key AMP Criteria	Key points for achieving "Core" Criteria	Key points for achieving "Advanced" Criteria	Covered In AMP Section	In Development	Basic	Intermediate	Advanced	Comments
	the first few years annual revisions of the AMP are likely).	It is expected that formal asset management plans and overarching asset management strategies will be formally revised every three years, with the timing of revisions linked to the organisation's strategic planning cycles.						This plan is a three yearly review. Asset management team monitors and updates plan inputs regularly.
Risk Management	Risk management to identify critical assets and associated risks and risk management strategies.	Management of assets must include recognition and application of the principles of integrated risk management. Specifically; Risk management should be consistent with AS/NZS4360, and industry good practice such as the NZ Local Government Handbook for risk management.	Risk Management					The risk assessment process has been generally based upon the AS/NZS4360:2004 (superseded by ISO31000:2009). The risk management approach followed for this plan has aligned all AMPs with the Corporate Risk Policy. Critical assets have been identified and mitigation strategies in place and are reviewed on the basis of continuous improvement (stated in plan) Maintenance strategies discussed in the risk identification plan.
		Risk management for assets should be integrated with other corporate risk management processes. .	Risk Management					Actions listed reported, monitored and reviewed regularly at the Risk Management Steering Group and various Group forums



Key AMP Criteria	Key points for achieving "Core" Criteria	Key points for achieving "Advanced" Criteria	Covered In AMP Section	In Development	Basic	Intermediate	Advanced	Comments
		Asset risk management should encompass: Identification and risk management strategies for critical assets	Risk Management					Infrastructure recovery and business continuity planning. Critical assets identified for networks, maintenance regime based around these.
		The link to maintenance and replacement strategies.	PBC, LCM					Critical assets identified for networks, maintenance regime based around these
		Engineering lifelines based risk assessments and mitigation plans including reference to the organisations disaster recovery and business continuity plans	Risk Management, Business Processes					Civil Defence organisation in place. Civil Defence, actively involved in Lifelines
Lifecycle (Optimised) Decision-Making	- Identify gaps between current service capability and the required service capability to meet future demand and target service levels and reflect these gaps in an asset development programme. - Evaluation and ranking based on suitable criteria of options for significant capital investment decisions.	The ability to predict robust and defensible options for asset treatments that can assist in achieving optimal costs over the life cycle of the asset or network including: Applying appropriate economic evaluation tools (or other organisation endorsed prioritisation systems) in developing short term project lists.	LCM, PBC					Treatment options are developed using industry standard tools, tested against financial analysis and confirmed by field verification.
		Using predictive modelling techniques to provide defensible long term financial forecasts.	PBC, Growth & Demand					dTIMS predictive modelling used implemented.
Managing Growth	Demand forecasts for each network or facility for a 10 year period are based on latest growth forecasts.	Demand forecasts include analysis of the different factors that comprise demand.	PBC, Growth & Demand					The impact on Transportation is considered for each element of demand growth-positive or negative.



Key AMP Criteria	Key points for achieving “Core” Criteria	Key points for achieving “Advanced” Criteria	Covered In AMP Section	In Development	Basic	Intermediate	Advanced	Comments
	Demand management strategies and demand drivers are understood and documented	The sensitivity of asset development (capital works) programmes to demand changes is understood.	PBC, Growth & Demand					The sensitivity of asset development (capital works) programmes to demand changes is recognised.



11 Community Consultation



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Overview

The Local Government Act Amendment Bill 2014 provided councils with greater freedom on how and when to engage with the community. It required councils to adopt a Significance and Engagement Policy and introduced the requirement for a Consultation Document as the new basis of consultation with the community on the 10-Year Plan.

The following section provides details of the consultation, engagement and research undertaken by Whanganui District Council to establish how the community perceives the services provided and therefore how Council may enhance its service delivery and Levels of Service (LOS).

Consultation Methods

Council has continued to engage with communities and has consulted using a variety of approaches to seek both public opinion and information, and to communicate its decisions and programmes to the residents and ratepayers of the District

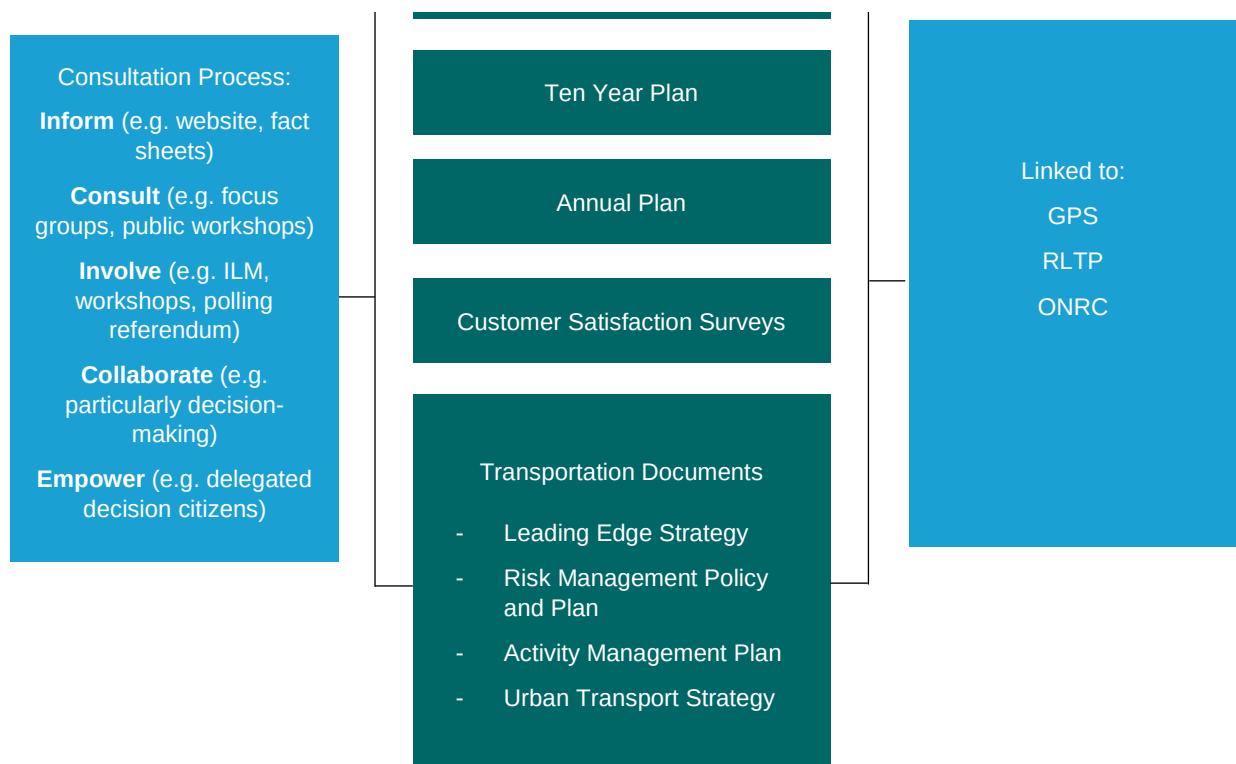
The consultation processes related to the Transportation activity are as follows:

- Community Views Survey
- National Perceptions Survey
- Consultations carried out as part of the 10-Year Plan process
- Consultations carried out as part of the Annual Plan process
- Meetings with key agencies / stakeholders
- Hui
- Rural Community Board Feedback

Consultation and Engagement Links

Consultation and engagement processes undertaken with the community help to underpin the overall direction and goals that Council will follow as well as to get feedback on proposals. Figure 11.1 below shows the ways in which the Whanganui District's communities have been involved regarding the District's services over the last five years and how this consultation links into outcomes developed as part of this Asset Management Plan.

Figure 11.1: Consultation with the Whanganui District Council Community





Significance and Engagement Policy

Purpose

Under section 76AA the Council must adopt a Significance and Engagement Policy. This policy is to enable the local authority and its communities to identify the degree of significance attached to particular issues, proposals, assets, decisions, and activities and to provide clarity about how and when communities can expect to be engaged in decisions about different issues.

Context

Council is committed to community consultation and engagement processes. These are grounded in Council's core values and encourage meaningful participation in the decision-making process by local people and other stakeholders. This assists the Council to respond to the needs and aspirations of the Whanganui community in significant and proactive ways.

The Council is required to meet specific obligations in the Local Government Act 2002 in deciding when to consult.

Council's core values are:

- **Leadership** – to provide leadership for the community and to advocate on its behalf
- **Community stewardship** – to effectively and efficiently manage community facilities and resources
- **Participatory democracy** – to consult with the community to identify needs and determine priorities for allocating resources
- **Regional cooperation** – to work with our regional partners
- **Accountability to ratepayers** – to balance the provision of services with the community's ability to pay.

Objectives

Engagement is defined as a process of dialogue prior to decision-making which is focussed on decision-making or problem solving and builds relationships. It is expected to fulfil the following principles:

- That there is reasonable access to relevant information
- People are encouraged to present their views
- People are provided with reasonable opportunity to present their views in a manner or format appropriate to their preference
- People have access to relevant information and decisions
- Processes are in place for consulting with Maori

Levels of Engagement:

Strategic Engagement

While there will be overlap, policy, planning and key project decisions generally influence the commitment of resources required to pursue desired community outcomes. An example of strategic engagement is pre-engagement prior to commencing the 10-Year Plan process followed by various consultation techniques using the Consultation Document as the primary tool.

Implementation Engagement

Implementation decisions follow from policy decisions and are about how resources committed to an outcome may be best deployed. Consultation is working with the relevant geographic community or communities of interest, and with assisting implementation through the flow of relevant information. Fine-tuning may be achieved through targeted surveys, or through reference groups who may represent themselves or communities of interest. An example of implementation engagement is working with key stakeholders to progress the development and roll-out of strategies.

Operational Engagement

Engagement for **service delivery** purposes involves the everyday interaction of service and information providers through the Council's "businesses". The quality of service delivery experienced by the community influences the capacity of the Council to engage effectively for strategic and implementation purposes.

Responsibilities for Engagement

Strategic Engagement rests mainly with councillors (especially hearing submissions), the CE (advising councillors), and the Strategy and Policy area (depending on the issue). The Infrastructure area will also engage in formal, strategic methods of consultation for asset planning and development purposes.

Implementation Engagement will be used to inform the development of policies, plans and strategies that make progress towards the achievement of overarching strategic objectives. This will usually be left to the area responsible for implementation, with input received from councillors and senior managers as appropriate.

Engagement for monitoring, fine tuning reviewing, assessing and planning service delivery is primarily the responsibility of the activity that delivers the relevant service. This monitoring may incorporate key indicators, strategies and consents.



Community Consultation

Figure 11.2: Whanganui District Council Framework for Community Engagement

Community Engagement Involving local people and businesses to influence and shape decisions which affect them
Levels of Engagement • Inform • Consult • Involve • Collaborate • Empower
Objectives • Adequate information • Sufficient time • Choice of participation methods • Open and transparent • Effectiveness • Positive relationships • Legal compliance • Improved decision-making
Engagement Decision Path • Decide whether we will consult • Decide what method of consultation will be used • Decide what stage to consult
Special Consultative Procedure • Prepare Statement of Proposal and Summary • Public Notice • Receive Submissions • Deliberate in Public • Make Decisions
Other Methods • Prepare information for Consultation • Carry out Consultation • Analyse Feedback • Consider and Make Decisions • Advise Parties

Outline of the Special Consultative Procedure (Local Government Act 2002, Section 83)

The special consultative procedure consists of the following steps:

Figure 11.3: Outline of the Special Consultative Procedure (Local Government Act 2002, Section 83)

Step 1	Preparation of Statement The Council must prepare and adopt a statement of proposal, and if the Council considers on reasonable grounds that it is necessary to enable public understanding of the proposal, a summary of the information contained in the statement of proposal. A summary of the information contained in a statement of proposal must be a fair representation of the major matters in the statement of proposal. It should also be in a form determined by the local authority; indicate where the statement of proposal is available and state the period within which persons interested in the proposal may present their views to the local authority.
Step 2	Public Consultation The Council must ensure that the statement of proposal is made publically available. This includes a description of how persons interested in the proposal will have an opportunity to present their views to Council and within what period being not less than one month from the date the statement was issued. The Statement of Proposal must be made as widely available as is reasonably practicable as a basis for consultation.
Step 3	Presenting of Views to Council The Council must provide an opportunity for persons to present their views to the local authority in a manner that enables spoken (or New Zealand sign language) interaction between the person and the local authority, or any representatives to whom an appropriate delegation has been made in accordance with Schedule 7; and ensure that any person who wishes to present his or her views to the local authority or its representatives is given a reasonable opportunity to do so; and is informed about how and when he or she may take up that opportunity.
Step 4	Deliberate in Public Council's decision on the proposal must be made in accordance with sections 77-82 of the Local Government Act 2002. This involves identification of all reasonably practicable options; assessment of options including benefit and costs; impacts of options; relationship with Maori on certain decisions; any community views.



Consultation with Maori

Whanganui has a different ethnic mix when compared to the rest of New Zealand. Maori comprise a considerably larger proportion of Whanganui's residents when compared nationally: 23% in Whanganui versus 15.8% nationwide. Only 2.6% of residents identified themselves as Pacific and 2.7% Asian, less than that recorded nationally (7% and 11.1%). Council recognises its obligations under the Local Government Act 2002 (part 6, section 81) to establish and maintain processes to provide opportunities for Maori to contribute to its decision-making processes and make information available to them. Council formally meets regularly with iwi.

Under the Resource Management Act 1991 Council has specific obligations in relation to the Treaty of Waitangi and Maori interests, and consults with a number of iwi organisations to this end.

Consultation with Iwi is done to engage with Tangata Whenua, those who hold Mana Whenua in an area. Tangata Whenua are those who have an ancestral connection, authority, and responsibility with and for an area or rohe.

Other methods of Whanganui District Council consultation are through the council's two formal Iwi Working Groups. Items are placed on the agenda of Tamaupoko Link or the Tupoho Working Party, or both. This can include getting advice on consultation itself. Iwi may wish to be inherently involved in policy development on a partnership basis, rather than being consulted as an interested party.

Appropriate Iwi people can be approached directly. The difficulty is in finding out who might be appropriate to approach. The Council Cultural Advisor is available to provide advice.

Building of relationships is important for the current issue and the future. Consultation should involve face to face discussion if at all possible. Iwi venues are preferable as it is more comfortable for Iwi.

Any consultation with Iwi should be considered as preliminary, as Iwi usually need to refer back to others to obtain a consensus.

In order to recognise and respect the Crown's responsibility to take appropriate account of the principles of the Treaty of Waitangi and to maintain and improve opportunities for Maori to contribute to local government decision making processes, Section 4 of the Local Government Act and parts 2 and 6 provide the principles and requirements for local authorities that are intended to facilitate participation by Maori in local authority decision-making processes

Community Views Survey

The Community Views Survey is the Council's primary means of assessing how well the Council is meeting specific performance targets, particularly for public satisfaction. It also gauges general quality of life perceptions, community engagement and wellbeing.

The survey is conducted annually. In addition, Council also delivers a Community Outcomes Survey and a series of in-house surveys canvassing satisfaction with specific activities.

Referenda are held on an occasional basis where the Council wishes to formally record the views of its ratepayers about certain important issues. These referenda complement the 10-year planning process.

The results of the Community Views Survey are published in the Annual Report and on the Council's website. The data also informs service improvement programmes, contributes to the development and measurement of strategies and policies, tracks trends through our internal database of indicators and helps determine appropriate levels of service.



This survey uses a mixed method approach utilising both telephone methodology and on-line interviewing. The survey is undertaken by external consultants who recruit a

random sample of around 500 respondents from the local adult population. It utilises a stratified sample to ensure a representative cross-section of the community, this means that it reflects the suburbs of Whanganui proportionately. To guarantee the sample proportions are achieved, quotas are applied to specific suburbs. Age and gender weightings are also applied to the final data set. These weightings make sure that specific demographic groups are not under or over-represented and that each group is represented as it would be in the population. As a result, weighting provides greater confidence that the final results are reflective of the Whanganui population overall and are not skewed by a particular demographic group.

Although specific percentages may vary between years, the following table is representative of the general spread:

Table 11.1: Demographics

Age	Sample Size (2016)
18 - 39	30%
40 - 59	36%
60 +	34%
Refused	0%
Male	47%
Female	53%
Suburb	Sample size (2015)



Community Consultation

Aramoho	9%
Whanganui East	15%
Bastia Hill / Durie Hill	13%
Whanganui Central	9%
Springvale	11%
Castlecliff	10%
Gonville	18%
Blueskin-Maxwell	7.5%
Marybank	7.5%

Transportation Assets Surveyed – April 2015

Perceptive, research with Versus Research, carried out the 2015 Community Views Survey to ascertain the level of customer satisfaction with the various services provided by Council. These surveys are undertaken by a large number of local authorities in New Zealand and therefore allows direct comparison to be made with other similar organisations.

The transportation services included as part of the Community Views Survey included:

- Footpath Surfaces
- Roding Network
- Parking Services

Findings from the survey are summarised below.

The April 2015 survey indicated that 15% of residents in Whanganui were dissatisfied with the provision of roading in Whanganui District. That level of dissatisfaction has improved from the previous survey 17% (2014).

In respect of footpaths and berms the percentage dissatisfaction from 2014 to 2015 increased from 18% to 23%.

The main reasons given for residents not being satisfied were potholes, unevenness, rough, poor condition, lack of maintenance and upgrading needed. In some instances the complaints about roads were levelled at State Highways.

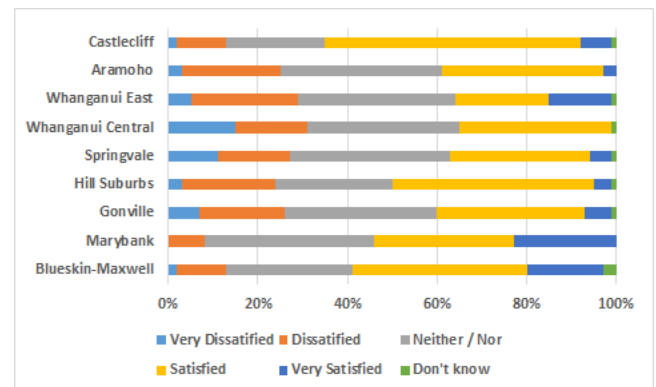
Footpath Surfaces

Overall, 44% of residents are satisfied (35%) or very satisfied (9%) with footpath surfaces. Marybank and Blueskin-Maxwell residents are more likely to say that they are very satisfied with the footpath surfaces (23% and 17% respectively) while Whanganui East residents are more likely to say that they are dissatisfied (24%) and residents of Whanganui Central are more likely to say that they are very dissatisfied (15%).

Table 11.2: Satisfaction with Service Provided (Footpaths)

2015	2014	2013	2012	2011	2010
44%	43%	46%	42%	47%	51%

Figure 11.2: Satisfaction with Footpath Surfaces (2015)



"The footpaths out here are all up and down, I've just about fallen over a few times. I was thinking of going and seeing them about it. On Plymouth Street and further up towards the river there is a lot of litter on the ground that doesn't get cleaned up."

"Footpaths, I have issues with it on both sides of the avenues, especially from Dublin Street to Glasgow Street. On the crossings from one side to the other, there is no smoothness when accessing it with a mobility chair; I find that it jars me."

"Some of the footpaths are terrible, mainly all the way up to Springvale."

"Footpaths with grass on either side and I feel like there are too many weeds and it is horrible down our street, it is disgusting."

"Look at the footpaths, there is a lot of footpaths that need fixing up."

"The condition of some of the footpaths, in general, is bad and uneven, and there is overhanging plantation on the footpaths."

"They need to fix up a lot of footpaths and they need to maintain the gutters because when it rains it floods."

Roads

Overall, 60% of residents are satisfied (52%) or very satisfied (8%) with the road network. Blueskin / Maxwell residents are more likely to say that they are very satisfied with the road network (19%) while Whanganui Central residents are more likely to say they are very dissatisfied (11%).



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Table 11.3: Satisfaction with Service Provided (Roads)

2015	2014	2013	2012	2011	2010
60%	48%	53%	54%	59%	48%

"Only that we have an issue with our road. We're going to do a petition to slow cars down, we had a car crash into our fence."

"My big concern is roading work, it's not up to standard."

"There is pothole along Puriri Street that needs to be taken care of."

"They need to fix the Wakefield Street Bridge."

"Basically roading needs attention."

Parking Services

Overall, 48% of residents are satisfied (37%) or very satisfied (11%) with parking services. Marybank residents are more likely to say that they are dissatisfied with parking services (16%) while Whanganui Central residents are more likely to say that they are very dissatisfied (11%).

Table 11.4: Satisfaction with Service Provided (Parking)

2015	2014	2013	2012	2011	2010
48%	45%	51%	52%	53%	44%

"We don't have enough parks available; they're trying to close everything. Other towns have lovely parks with bush walks, ours are all terrible. There is nothing natural about Wanganui."

"I think about people who come to town for work should get cheaper parking rates or free parking spaces."

Figure 11.5: Satisfaction with Transportation Network (2015)

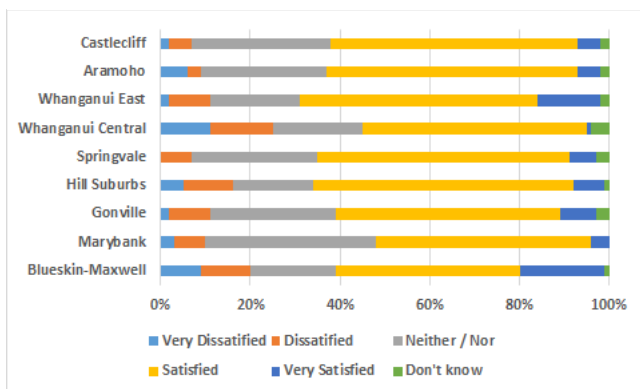
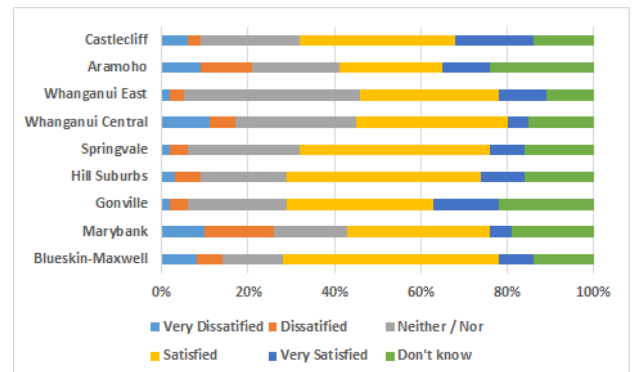


Figure 11.3: Satisfaction with Parking Services (2015)





Customer Service Requests and Complaints

Whanganui operates a customer calls register on the Customer Request Management system. The system allows for detailed information on customer service requests to be collated, trends to be analysed and a clear understanding gained of opportunities for improvement.

The customer call centre directs the request to those who are best suited to respond. As a level of service measure, council measures the time taken to respond to requests received as a % of complaints that are responded to with five working days. The level of compliance is discussed in the Level of Service section of the AMP.

The total number of CRMs received in relation to transportation assets for the reporting period 1 July 2015 to 31 June 2016 was 1014. The greatest number was received on the month of May 2016 (129), following a rainfall event.

One way for Council to measure community expectations and satisfaction is by the analysis of types of service requests that are received by the customer call centre. In each category the customer request is assigned a description which further provides detail for analysis and reporting.

Figure 11.7: Transportation CRMs (1 July 2015 / 31 June

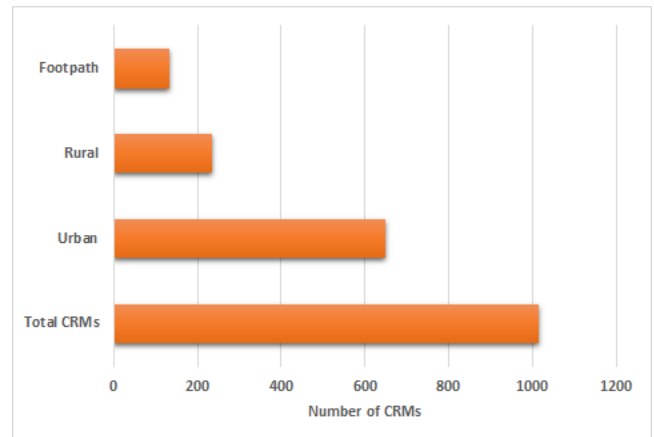


Figure 11.8: Urban CRMs (01 July 2015 / 30 June 2016)

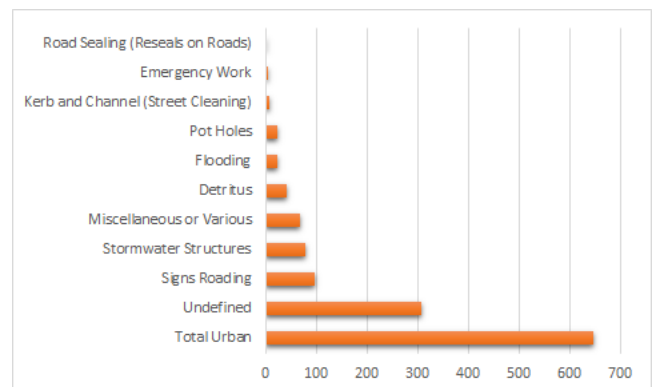
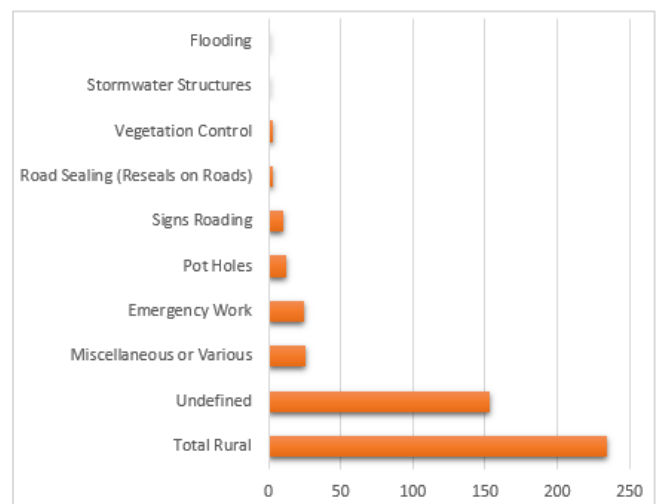


Figure 11.9: Rural CRMS (01 July 2015/30 June 2016)





Current and Future Stakeholder Consultation

Consultation Record

Table 11.5: Historical Consultation Record

Date	Issue	Consultation Approach Taken
2015	10 Year Plan	A formal consultation was carried out on the Council's financial and policy planning approach for the year's 2015/2025.
2016	Annual Plan	A formal consultation process was carried out on the Council's financial and policy planning approach for the 2016/2017 year.
2017	Annual Plan	A formal consultation process was carried out on the Council's financial and policy planning approach for the 2017/2018 year.
Ongoing	Infrastructure and Special projects Committee	Roading and footpaths Water supply, stormwater and wastewater matters Waterways and Whanganui River management

Proposed Future Consultation

Table 11.6: Future Proposed Consultation

Year	Issue	Proposed Consultation Approach
Annual – except in 10-Year Plan year	Annual Plan	Call for public submissions; promotion of consultation on the website, at libraries etc.; engagement of submitters through Facebook and online panel; engagement of stakeholders e.g. Youth Committee, Rural Community Board, Positive Aging Forum etc.
Every three years	10-Year Plan	Call for public submissions; distribution of consultation document; promotion of consultation on the website, at libraries etc.; engagement of submitters through Facebook and online panel; attendance at public events and meeting places (e.g. River Traders Market); engagement of stakeholders e.g. Youth Committee, Rural Community Board, Positive Aging Forum etc.
2010-2017	District Plan (Phase 1-4)	Public meetings; feedback sought via website; questionnaire distributed; interactive public workshops; attendance at public events and meeting places (e.g. River Traders Market). Phase 1 (CBD) is now complete and hearings have been held for Phases 2 (residential) and 3 (heritage). Phases 4 (rural) and 5 (archaeology) are at the policy drafting stage and Phase 6 (river valley) has had preliminary consultation only and has been put on hold due to funding constraints. Phase 8 (industrial / manufacturing) was planned to have been initiated during the 2012/13 year but was delayed.
Every two years	National Perceptions Survey	Two-yearly nationwide telephone survey targeting approximately 750 respondents.
Annual	Community Views Survey	Annual survey with a representative sample of Whanganui (approximately 500 residents)
Every three years	In-house surveys	Annual surveys canvassing satisfaction with various customer-based Council services
Ongoing	Wanganui Rural Community Board	Ongoing formal consultation with rural community representatives



12 Environmental Stewardship



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12 Environmental Stewardship

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Overview

This section describes the environmental legislative obligations that Council has in undertaking the Transportation activity including requirements specified as conditions of resource consents. It also demonstrates Whanganui District Council's commitment to environmental stewardship through the inclusion of environmental impact mitigation in relevant Council strategies.

Environmental sustainability, protection of heritage values and the enhancement/protection of amenity are very important to the community. Maintaining these values is essential to tourism, economic viability, and the social and cultural health of the Whanganui district communities. This section pulls together the many elements that contribute to good environmental management as relevant to the Whanganui District Council.

Environmental Drivers

There are a number of mechanisms aimed at avoidance or mitigation of the potential adverse environmental effects associated with the management of the transportation activity. These are set at national, regional and local level.

National Legislation

Statutory requirements have been outlined in the Business Overview section; however, specific requirements relating to environmental stewardship are covered in more detail in the following sub sections.

The role of Central Government is one of setting policy for activity management across New Zealand. This is achieved through the following key statutes.

Resource Management Act 1991

Under the Resource Management Act 1991, Council has a statutory obligation to avoid, remedy or mitigate any adverse effects on the environment through sustainable management. In this context, resource consents are one way, in which Council regulates the effects of activities such as building roads or bridges. Innovative design and use of Best Appropriate Practice in accordance with Councils Engineering Standards and Guidelines are also beneficial in taking into account and managing the effects an activity may have on the environment.

Local Government Act 2002

Specific to environmental stewardship the Local Government Act (LGA) includes the principles of making itself aware of community views; providing opportunities for Maori to participate in decision-making processes; collaborating and cooperating with other local authorities as appropriate; ensuring prudent stewardship of resources; and taking a sustainable development approach.

The LGA outlines the responsibilities of local authorities and the decision making process for activities undertaken on behalf of their community, primarily through the

requirement to adopt a 10-Year Plan (LTP). Councils are encouraged by the LGA to identify overall long-term priorities and to plan for the future.

Land Transport Management Act 2003

The purpose of the Land Transport Management Act 2003 (LTMA) is to:

- Provide a integrated approach to land transport funding and management
- Improve social and environmental responsibility in funding, planning and management of land transport
- Improve long term planning and investment in land transport
- Ensure land transport funding is cost effective
- Improve flexibility of funding including enabling land transport infrastructure to be built on a tolled or public/private partnership basis or combination of these.
- The LTMA also requires the Council to consult with a wide range of parties when developing the annual land transport programme and requires that the programme is consistent with the Regional Land Transport Strategy (RLTS).

Government Policy Statement

The Government Policy Statement on Land Transport Funding (GPS) sets out the government's priorities for expenditure from the National Land Transport Fund over the next 10 years.

It sets out how funding is allocated between activities such as road safety policing, state highways, local roads and public transport.

Hazardous Substances and New Organisms Act 1996 (HSNO)

The HSNO Act and regulations control the import, manufacture or use (including disposal) of hazardous substances. Council administers the HSNO Act through enforcement officers, with a focus on facilities and activities that use, store, transport or dispose of hazardous substances, rather than on the substances themselves.

Regional Plans

The Horizons Regional Council is responsible under the RMA for ensuring that the natural and physical resources of the region (such as the land, air, water and coastal resources) are managed in a sustainable manner.

Horizons Regional Plan: One Plan

The One Plan defines how the natural and physical resources of the Region, including fresh water, air, productive land and natural ecosystems, will be cared for and managed by the Regional Council in partnership with Territorial Authorities and the community.



The One Plan identifies natural values of the regions resources and policies for protecting them. It identifies specific management areas related certain streams, lakes, wetlands, aquifers and air quality areas. It also identifies rules that specify whether an activity is permitted or whether resource consent is needed.

Local Planning

District Plan

The District Plan provides zoning throughout the district. Certain activities that are permitted in one zone may not be permitted in another. The different types of resource consents are:

- Land use
- Subdivision

Activities that need resource consent are classified as controlled restricted discretionary, discretionary and non-complying.

Land Transport Management Act 2003 Plans

Draft Regional Land Transport Strategy

The Horizons Regional Land Transport Strategy (RLTS) sets the strategic direction for transport in the Region by describing the vision, objectives and outcomes that will guide the development of the Region's Transportation network over the next 30 years. The Strategy covers all forms of land transport, including public transport, local roads, state highways, walking and cycling.

The RLTS vision is for

“A safe, sustainable and resilient transport system that supports economic development and lifestyle choices, with strong connections to national corridors.”

Section 175(2)(h) of the Land Transport Act as amended by the LTMA 2003, states that every regional land transport strategy must give early and full consideration to land transport options and alternatives in a way that avoids, to the extent reasonable in the circumstances, adverse effects on the environment. The following adverse effects (but not limited to) were considered in the Draft RLTS:

- Traffic congestion (including impacts on air quality)
- Vehicle emissions
- Carbon dioxide predictions
- Transport noise
- Vehicle growth rate
- Percentage of commuting trips by public transport, cycling and pedestrian modes
- Fuel usage
- Use of efficient energy modes
- Impacts on urban amenity



It is important to note that the RLTS is a strategic document and does not cover detail at a micro level (i.e. project design). The Strategy however, raises awareness and provides direction for future projects.

Submissions have been received on the RLTS and a decision was to be made in April 2007 with regards to the plans formal adoption however no decision has been made at this time. This will need to be reviewed with the next AMP update.

National Land Transport Programme (NLTP)

Under the GPS, the NLTP contains all the land transport activities, such as public transport services and road construction and maintenance, which are expected to receive funding from the NZ Transport Agency. The NZTA is responsible for allocating funding to land transport. The NLTP targets investments that will help to address the important challenges facing land transport through:

- Improving the efficiency of key transport routes
- Improving public transport
- Easing severe congestion in key urban areas
- Upgrading important freight and tourism routes
- Improving safety
- Improving access to markets, employment and areas that contribute to economic growth.

Resource Consents

If the construction of an asset does not meet the development controls outlined in the District Plan or relates to an activity that has the potential to result in adverse effects on the environment, beyond those contemplated by the District Plan provisions, resource consent may be required.

An Assessment of Environmental Effects (AEE) is required to support any resource consent applications to the respective Councils when seeking approval to construct, alter or vary the use of a facility or building, which is not permitted by the relevant plan.

The AEE process involves the identification and assessment of both the potential and the perceived



physical, social and cultural impacts that the proposed works may have on the existing environment, and includes the examination and comparison of options and alternatives for mitigating any identified adverse effects, and the confirmation and recommendations on the preferred options and methodology to carry out the works.

The critical environmental factors requiring consideration may include geological and geotechnical effects of land movement (cut and fill), the ecological and biological effects of vegetation removal or earthworks, and the cultural, archaeological and social effects on the environment of the development. These, together with noise, traffic, and visual effects, may require specialist inputs and consultation with the local communities.

The AEE process involves:

- The effects of the proposal on other person(s), e.g. neighbours affected by dust or noise

- The effects of the proposal on the natural environment e.g. increase in the amount of dust or the disturbance of waterways due to earthworks
- The visual impact of the proposed activity
- Proposed methods of how you plan to minimise any identified adverse effects

The critical environmental factors requiring consideration include:

- Ecosystems and their constituent parts, including people and communities
- All natural and physical resources
- Amenity values
- The social, economic, aesthetic, and cultural conditions which affect the matters stated in the paragraphs above

Table 12.1: Resource Consents

Consent name	Consent number	Purpose	Status	Expiry date
There are currently no WDC Transportation Activity Resource Consents				

Significant Negative Effects of the Transportation Activity

Schedule 10 of the Local Government Act 2002 covers the information required to be included in the Council Community Plan. Part 2 (1) (c) states that a CCP must, in relation to each group of activities of the local authority must "Outline any significant negative effects that any activity within the group of activities may have on the social, economic, environmental, or cultural wellbeing of the local community".

This sub-section provides information in accordance with this legislative requirement. The purpose of identifying significant negative effects is to ensure that Council activities are conducted in accordance with the principles of sustainability and environmental stewardship. The Transportation activity has the potential to have negative effects on community wellbeing.

The possible negative effects are outlined in Table 2.

Table 12.2: Significant Negative Effects

Significant Negative Effect	Cultural	Social	Economic	Environmental	Mitigation of Negative Effects
People killed or injured on roads	✓	✓	✓		NZTA monitors and records the CAS % all road related deaths and injuries Undertake crash reduction studies and strategies Road safety collaboration with other TLA's and focus groups in the region Maximise funding for safety improvement works
Excessive noise from busy roads		✓	✓	✓	Investigate noise reduction measures and consider options at design phase to mitigate the noise effects



Significant Negative Effect	Cultural	Social	Economic	Environmental	Mitigation of Negative Effects
Air quality affected by vehicle emissions		✓	✓	✓	Promotion of alternatives to motor vehicles Ongoing financial complementation to Cyclist and Pedestrian initiatives from strategy
Sedimentation and changes to natural waterway flow patterns from road maintenance and construction	✓	✓		✓	Consider effects in conjunction at design phase.
The use of natural resources and the disposal of road construction materials			✓	✓	Review Disposal policies, procedures and activities Liaise with authorities regarding establishment and management of disposal sites.
Effects on significant cultural and historical heritage features	✓	✓			Consultation with effected parties through Council communities and liaison.
Visual impact of Transportation on the landscape		✓		✓	Consider low impact design options at design phase Undertake consultation with affected parties
Effects on ecological resources from road construction	✓	✓		✓	Compliance with Resource Consents issued for construction works. Proactive development of a comprehensive Environmental Management Plan when scheduling works Consider environmental control options when designing drainage systems. To be considered both during construction and throughout ongoing life of assets
Environmental effects of dust and volatile materials used in road maintenance and construction		✓		✓	Develop dust minimisation strategies and procedures Monitor number of complaints received
Vibration effects on people and buildings from road maintenance and construction activities		✓		✓	Proactive notification of activities to be undertaken Consider methodology to reduce vibration
Land use and planning restrictions	✓	✓	✓	✓	Ensure compliance with council policies and procedures

Monitoring and Compliance

Historically the majority of resource consents obtained by the WDC are related to construction activities for emergency work reinstatements. The monitoring and compliance of resource consent conditions is a function of the council staff responsible for the transportation activity for which the consent applies.

Designations

The purpose of a designation is to:

- Inform the community about the route and operation of existing and future transportation networks
- Protects future routes from inappropriate development and can assist in strategic planning
- Allows land to be purchased for transportation purposes

- Needs to be implemented within a specific time frame
- May be 'rolled over' by the designating authority into a new plan

Once the designation is put in place, the requiring authority may do anything in accordance with the designation, and the usual provisions of the district plan do not apply to the designated site.

Although resource consent is not required for works on a designated site that are in accordance with the purpose and conditions of the designation, an Outline Plan is required instead.

An Outline Plan is a plan or description of works that a requiring authority submits to the council when it intends to carry out works on the designated site. Outline Plans often contain details that were not available at the time the site was first designated in the district plan.



The District Plan contains 48 designations that relate to the transportation activity are: These are listed in Table 3.

Table 12.3: Designations

Designation No	Plan Ref	Purpose
D75	U21	Proposed Service Lane - St Hill Street Opera House
D76	U21	Proposed Service Lane - Location: Watt Street & Drews Avenue
D77	U21	Proposed Service Lane - St Hill Street Grand Hotel/Whanganui Club
D78	U21	Service Lane Extension - St Hill Street Westpac
D79	U21	Proposed Service Lane - Wicksteed Street Trinity Church
D80	U21	Proposed Service Lane - Cooks Street Telecom/Gas
D81	U21	Proposed Service Lane - Churton Street "Knife cut"
D82	U22	Proposed Service Lane - Ridgway Street/Drews Avenue
D83	U21	WDC Carpark - St Hill Street
D84	U21	WDC Carpark - Ingestre Street
D85	U21	WDC Carpark - Ingestre Street
D86	U22	WDC Carpark - Ridgway Street/Drews Avenue
D87	U21	WDC Carpark - St Hill Street
D88	U21	WDC Carpark - St Hill Street
D89	U21	WDC Carpark - St Hill Street
D90	U21	WDC Carpark - Cameron Terrace
D155	U5	Road Widening - Brunswick Road
D157	U21	Road Widening - Cnr Victoria Ave and Dublin St
D158	U21	Road Widening - St Hill Street WDC Site
D159	U21	Road Widening - 193 St Hill Street

Designation No	Plan Ref	Purpose
D160	U21	Corner Splay, Road Widening (2) - Wilson Street/Ingestre St cnrs
D162	U19	Road Widening - 95-111 Mosston Road
D163	U19	Road Widening - 147 Mosston Road
D164	U19	Road Widening - 151 Mosston Road
D165	U19	Road Widening - 153 Mosston Road
D168	U19	Road Widening - 157 Mosston Road
D169	U19	Road Widening - 159 Mosston Road
D170	U19	Road Widening - 161 Mosston Road
D171	U19	Road Widening - 163 Mosston Road
D172	U19, U13	Road Widening - 165 Mosston Road
D173	U13	Road Widening - 169 Mosston Road
D174	U14	Road Widening - 170 Mosston Road
D175	U13	Road Widening - 173 Mosston Road
D176	U14	Road Widening - 174 Mosston Road
D177	U134	Road Widening - 175 Mosston Road
D178	U14	Road Widening - 178 Mosston Road
D179	U14	Road Widening - 182 Mosston Road
D181	U13, U14	Road Widening - 199 Mosston Road
D182	U14	Road Widening - Mosston Road
D183	U14	Road Widening - 207 Mosston Road



Designation No	Plan Ref	Purpose
D184	U14	Road Widening - 211 Mosston Road
D185	U14	Road Widening - 213 Mosston Road
D186	U26	Road Widening - Heads Road, Guyton St to Liffiton St

Potential Environmental Issues

There are a number of adverse environmental effects that can occur in the process of undertaking Transportation related development, particularly major construction projects. The potential effects of the Transportation activity can be generated during both the construction phase and the operational use of the network. The information provided below outlines some of these issues and associated mitigation measures that could be employed.

Dust

Dust can affect vegetation health along the edge of the earthworks area, can be a nuisance to the surrounding public, and can contribute to sediment loads by being deposited in areas without sediment control measures. Sediments deposited on sealed public roads can also result in a dust nuisance. Similarly, unsealed roads can present a dust nuisance during periods of prolonged drought.

Mitigation Measures

The following mitigation measures may be considered in the control of dust emissions:

- Wheel washing for trucks leaving development sites
- Spraying down areas (with water) to control dust emissions
- Monitoring at site boundaries
- Use of dust suppressants

Sediment Runoff

Sediment runoff from development works is generally controlled via sediment control techniques and administered by the Regional Council. Sediment from exposed areas of land can enter waterways, streams and rivers, potentially causing adverse effects to fauna and flora.

Mitigation Measures

The following mitigation measures may be considered in the control of sediment runoff:

- Effective sediment control techniques such as cut-off drains, silt ponds, and silt fences retain sediment and prevent it from entering water systems

- Compliance with an approved sediment and erosion control plan.

Noise

Noise is a factor to be considered during construction projects. The District Plan contains the standards for noise and the restrictions imposed on construction such as hours of operation and the decibel limits to be adhered to. Monitoring typically takes place to establish background noise levels against which construction and traffic noise can be measured against. The documents that Council shall have regard to include:

- NZS 6806: 2010 Road Traffic Sound.
- "Guidelines for the Management of Road Traffic Noise" – State Highway Improvements" by NZ Transport Agency 2016.

Mitigation Measures

The following mitigation measures may be considered in the control of noise emissions:

- Hours of permitted work
- Monitoring at site boundaries
- Compliance with standards
- Community consultation

Landscape Values

The Whanganui River is an outstanding landscape feature in the district and conservation of landscape value is to be taken into account with any proposed developments.

Mitigation Measures

The following mitigation measures can be considered when taking into account landscape values:

- Review District Plan maps
- Community consultation

Cultural Heritage

Places of particular cultural heritage value have been scheduled and identified on the District planning maps so that location is known and can be taken into account when





considering development and applying for resource consents. The scheduled sites are those that are registered under the Historic Places Act 1993, or those requested to be scheduled following consultation with iwi. Not all sites are recorded and for major developments it is important that consultation be undertaken with tangata whenua, registered archaeologists, NZ Historic Places Trust and the Regional Council. Protocols can be developed in the event of discovery.

Mitigation Measures

The following mitigation measures may be considered when taking into account cultural heritage values or sites:

- Consultation with key stakeholders
- Development of protocols
- Due diligence prior to development
- Heritage Authority Applications

Stormwater Discharges

Stormwater discharges need to be managed to prevent pollutants from entering waterways. Roads provide a number of potential contaminants such as metals (from vehicles), hydrocarbons, gross pollutants (litter) and herbicides (from vegetation control). These can cause adverse effects for flora and fauna in receiving waters.

In addition, stormwater pipes/culvert outlets can cause scour during large flows.

Mitigation Measures

The following mitigation measures may be considered in the control of stormwater discharges:

- Retention dams, swales, and outfall structures to dissipate flows. Any number of options can be evaluated prior to consent approvals.
- Evaluate receiving waters to determine background water quality
- Monitoring of the mixing zone

Climate Change

New Zealand's climate varies significantly from year to year and from decade to decade. Human-induced long term trends will be superimposed on these natural variations and it is this combination that will provide the future climate extremes to which New Zealand society will be exposed.

The Ministry for the Environment has produced a document entitled "Climate Change and Long Term Council Community Planning" which advises that,

"Projections of New Zealand's future climate indicate:

- Temperatures increase on average by 1 deg C. by 2040 and 2 deg C by 2090.
- Rainfall has a pattern of increases in the west (up to 5 percent by 2040 and 10% by 2090) and decreases in the east and north (exceeding 5 percent in places by

2090). There is marked seasonality in the rainfall distribution pattern changes.

- Seal levels will rise
- Decreased frosts
- Increased frequency of high temperatures
- Increased frequency of extreme daily rainfalls
- Higher snow lines and possible reduced snow coverage
- Possible increase in strong winds
- Wetter in the west and south, drier in the north and east
- Increase in frequency and severity of extreme events (e.g. heavy rainfall, storm surges, drought and very high temperatures)

The document also states 'Key principles for responding to climate change – local government is required to operate under a range of principles that are set out in law or have evolved through good practice and case law. The principles should also be kept in mind when adapting to the effects of climate change. The key principles are:

- Sustainability
- Consideration of the foreseeable needs of future generations
- Avoidance, remedy or mitigation of adverse effects
- Adoption of a precautionary approach
- The ethic of stewardship/kaitiakianga
- Consultation and participation
- Financial responsibility
- Liability
- Resilient communities

Mitigation Measures

The following mitigation measures may be considered when taking into account climate change:

- Have regard to projections during planning phases
- Cognisance of areas located as being potential hazard zones
- Specialist advice

Hazards

Whanganui District and the surrounding region are exposed to a number of natural hazards. From an activity point of view hazards have the potential to cause major disruption and need to be taken into account.

Site Features

Council is continuing with a special site features project that intends to provide one council wide system which records site features information which is: current, comprehensive, centrally accessible, validated, maintained, and 'owned' by nominated resources in Council.



Site features currently being considered as part of this project include natural hazards, archaeological sites, contaminated sites, encroachments, heritage sites, swimming pools, protected trees and earthquake prone buildings.

Once all site features are accurately recorded and verified, the data will be used to inform Council during its land use and building consent function, as well as being publically disseminated through Councils websites and Land Information Memorandum requests.

Coastal Erosion/Inundation

Coastal erosion is a process resulting in the loss of land as the shore retreats inland. Wave, wind and tidal action over a number of years can contribute to the long-term erosion of the shoreline, however storm events can have acute effects and be very damaging.

The area in and around the Whanganui River and river mouth is the area most at risk during storm events and from the effects of storm tides. Riverbank protection is usually the responsibility of Horizons Regional Council unless the erosion threatens roads. At risk roads are made safe by WDC using Preventative Maintenance or Emergency Works funding depending on the severity and urgency of repair.

Flooding

Flooding is a commonly occurring major natural hazard that results when the natural and modified drainage systems fail in a particular rainfall event. The risk of flooding is influenced by a number of factors such as:

- Weather systems
- Hydrological factors (catchment size, rainfall intensity and infiltration)
- Hydraulic factors
- Soil type
- Land use
- Ground saturation

Storm events and the resulting flooding can result in significant adverse effects on both residents and the environment. These effects may include:

- Personal injury or loss of life, property and possessions or livelihood
- Disruption of utilities and Transportation networks
- Impacts on the environment may include vegetation and habitat loss, erosion and sedimentation in waterways, and soil and water contamination.

Steep terrain and erodible soils make the Whanganui District particularly susceptible to the effects of heavy and prolonged rain events affecting roads. The district can expect to receive flooding to various degrees of intensity during any particular year.

Landslides

Landslides are generally caused by slope saturation and can include mudslides, debris flow or avalanches, rock falls and rock slides. Increased ground saturation can be caused by intense rainfall, changes in groundwater and water level changes in rivers, earth dam's lake banks and the coastline. Generally flooding and landslide events are closely linked as they both result from heavy rainfall, stormwater runoff and ground saturation.

The risk of flooding is influenced by a number of factors such as:

- Underlying geology;
- Proximity to rivers, lakes and the coast;
- Past and present land use including vegetation changes;
- Infrastructure development.

Landslides can result in significant adverse effects on both residents and the environment. These effects may include:

- Personal injury or loss of life, property and possessions or livelihood;
- Disruption of utilities and Transportation networks;
- Impacts on the environment may include vegetation and habitat loss, erosion and sedimentation in waterways.

Earthquakes

New Zealand is considered amongst the most seismically active places on earth, as it is located on an active boundary of two tectonic plates.

Whanganui is located in an area with the highest seismic activity in the country. The Whanganui District has a 1 in 10 chance in any 15 year period of experiencing a 7 to 8.2 magnitude earthquake (150yr sized event).

Council has adopted a policy regarding the upgrading of earthquake prone buildings. Requirements for an initial evaluation of seismic strength vary on the degree of importance of the building.

Transportation throughout the district would be disrupted. State Highway 3 and 4, the Whanganui River Road, the New Plymouth to Whanganui railway and some of the secondary roads could all be affected by seismic movement to varying degrees.



Tsunami

A Tsunami is usually created by a sudden movement or rupture of the ocean floor, such as earthquakes, underwater landslides and underwater volcanic eruptions.

Tsunami can cause:

- Personal injury or loss of life, property and possessions or livelihood
- Disruption of utilities and transportation networks
- Impacts on the environment may include vegetation and habitat loss, erosion and sedimentation, soil and water contamination and salination of land.

The damage from tsunamis can occur as a result of inundation (flooding roads, buildings and land), the impact of

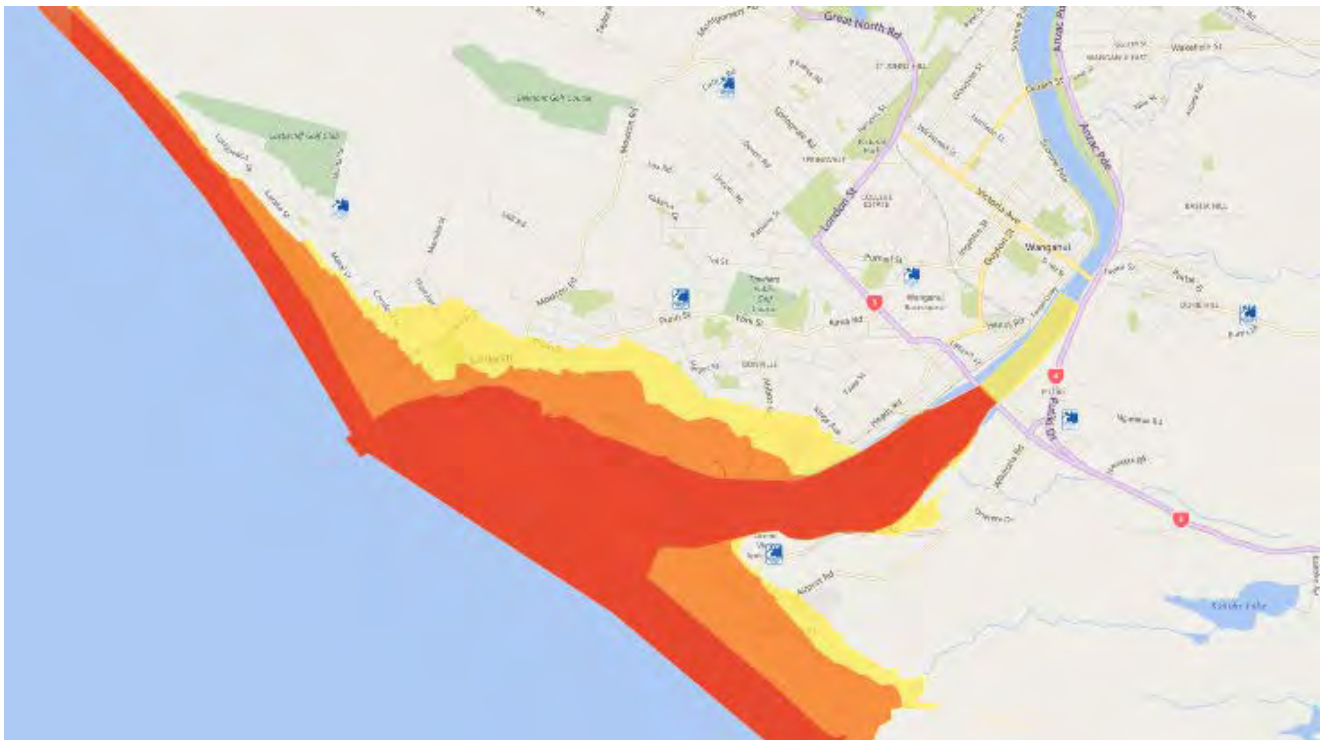
the moving water (erosion, structural damage) and debris flow (debris carried by the wave moving inland and receding).

Beach front areas, situated on the low lying areas adjacent to the Whanganui River mouth are at greatest risk from a Tsunami.

Future Requirements

The main item that needs to be addressed from an Environmental Stewardship perspective is the tracking of resource consents and the conditions that they may contain. Tracking legislation will also need to occur, specifically in relation to Climate Change and the impacts this might have on the transportation network. In addition to this, a constant monitoring of natural hazards and their impacts will need to be ongoing.

Figure 12.1: Tsunami at-risk areas





13 Improvement Plan



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Continuous Improvement

WDC is adopting a strategic management approach to improvement planning, and implementing improvement processes and practices. This Improvement Plan is integral to that approach, quantifying current business practice and measuring progress toward an identified future position.

Improvement Cycle

The purpose of the Improvement Plan is to identify, prioritise and implement specific projects and tasks which will increase the level of maturity over time.

Current Practice Assessment

The first step of asset management improvement planning is to understand the current and future “**appropriate practices**”. To do this in a systematic way the following elements will be assessed:

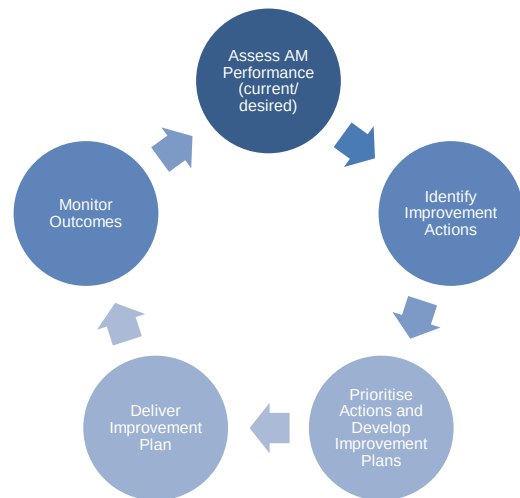
- Asset Management Policy Development
- Levels of Service and Performance Management
- Demand Forecasting
- Asset Register Data
- Asset Condition
- Risk Management
- Decision Making
- Operational Planning
- Maintenance Planning
- Capital Works Planning
- Financial and Funding Strategies
- Asset Management Teams
- Asset Management Plans
- Information Systems
- Service Delivery Mechanisms
- Quality Management
- Improvement Planning

These key elements are critical to achieving sustained performance of the organisation at the lowest life cycle cost and to form a clear picture of how well it is performing in each of these elements and where the weaknesses lie. Each of the elements “adds value” to the raw business processes which leads to good asset management practice.

Identify Improvement Actions

A clear understanding of the gap between current and appropriate practice will help drive identification of improvement actions. However identifying improvements

Figure 13.1: Continuous Improvement Cycle



should also be an on-going activity, not just a “one-off” gap assessment process.

Improvement actions need to be clearly scoped and defined. Failure to recognise the full costs associated with improvements may see the projects inadequately resourced and potentially not meeting the desired outcomes.

Develop Improvement Plan & Prioritise Actions

The Improvement Plan will be developed to identify the high priorities requiring action to focus the organisation on the most important areas. Utilising a simple improvement framework that has a clear relationship to the assessment elements will help people understand how the actions relate to the appropriate level of asset management required.

Deliver the Improvement Plan

The Improvement Plan needs to be strongly led, properly resourced and regularly monitored and reported by a steering group. Clear targets must be well defined with well specified deliverables that help focus on what is required.

Monitor the Outcomes

Organisations are under pressure to show the quantifiable benefits from improving asset management outcomes and this is a real challenge across local government. Regular asset management assessments using the frameworks in this section are currently the best way to demonstrate on-going improvement to asset management practices. Assessments should be undertaken over a number of years to track progress.

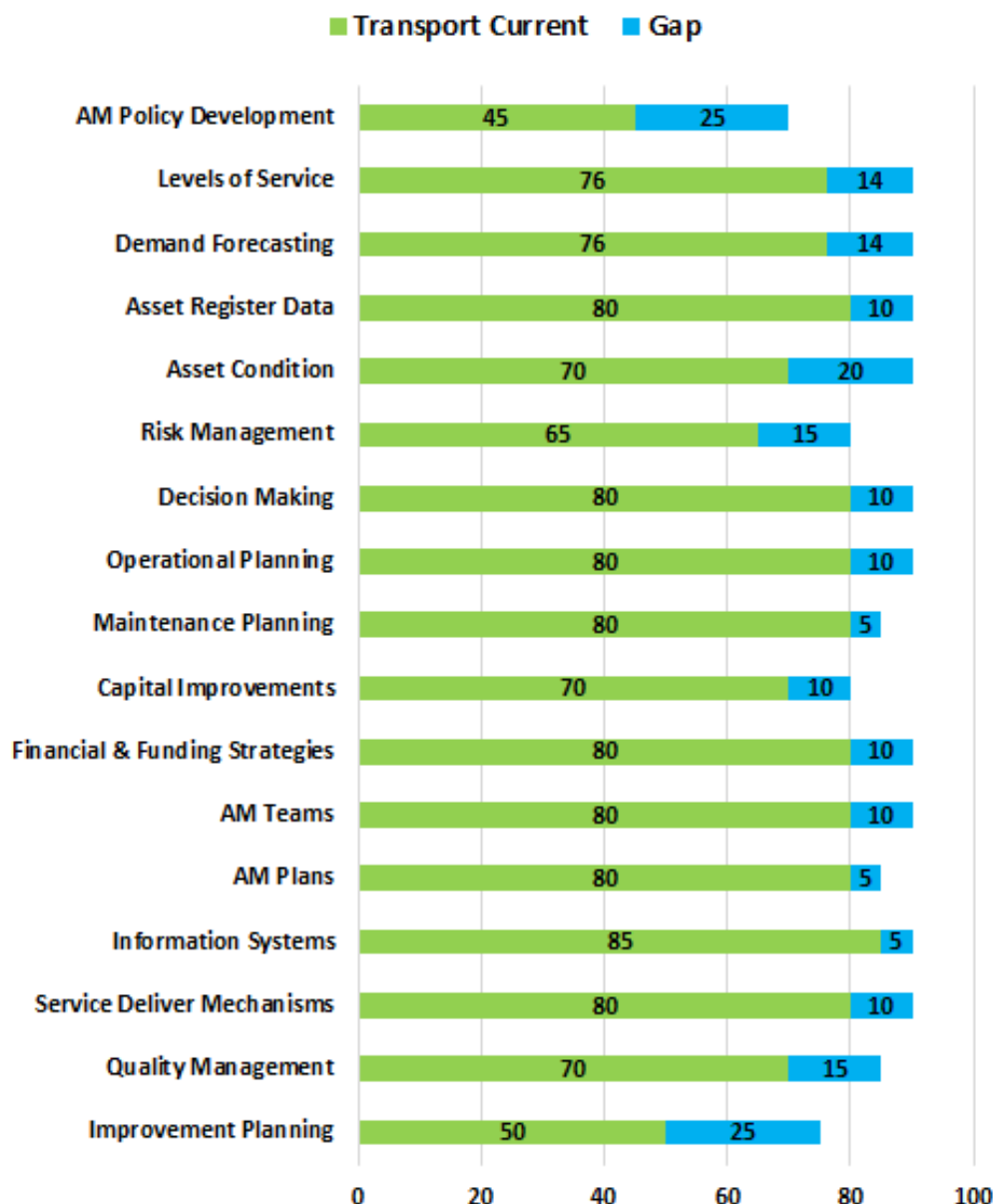


Current Practice Assessment

As part of the improvement planning process, WDC assessed the current maturity for the transportation activity across 17 key asset management elements. The framework used to assess the maturity levels of each AM element is from the International Infrastructure Management Manual (IIMM), and is outlined in Table 1 (overleaf). These elements have also been utilised to develop strategies for improving asset management practices over the next three years later in the section.

The results for the transportation activity have been graphed figure 13.2 to provide a picture of where the activity sits currently, and where it is targeted to improve.

Figure 13.1: Transportation Activity Asset Management Maturity Current Assessment and Gaps



The transportation activity has a high level of maturity across most elements. The largest gaps between current and target are found in AM Policy Development and Improvement Planning.



Strategies for Improving Asset Management

Setting Priorities

A thorough asset management review process will often identify more improvements that an organisation is able to realistically deliver within a short timeframe. Therefore there is a need to prioritise these actions so they are realistic and affordable.

The projects/tasks are prioritised based on the gap between the current maturity and what is the appropriate target for the business unit, versus the cost. Table 13.1 below provides a general meaning ranging from Priority A (very high priority) to Priority E (very low priority).

Table 13.1: Prioritisation General Meaning

Priority		Explanation
A	Very High priority	These improvement tasks provide very high value for money and should be implemented in the short term (i.e. in the next year). The improvement tasks identified will provide the most benefit (e.g. overall improvement towards the appropriate target) for the least cost (less than \$10,000) Typically the higher benefit ones improve legislative compliance, greatly enhance operational efficiency, provide significant cost savings or mitigate major risk
B	High Priority	These improvement tasks provide high value for money and should be implemented in the short to medium term
C	Medium Priority	These improvement tasks provide a medium level of value for money and should be considered for implementation in the longer term
D	Low Priority	These improvements provide relatively low value for money, and should only be implemented after higher priority improvement tasks
E	Very Low Priority	These improvement tasks provide the least benefit for the highest cost, and should only be implemented if they are a pre-requisite for another task, or there are no other higher priority tasks.

Three-Year Improvements

The tables that follow contain the improvement projects/tasks to be undertaken over the next 3 years across the organisation (in green text) and specific improvements to be undertaken by the transportation activity. The table includes levels of resources, funding and priorities (based on the above matrix) for each identified improvement task.



AM Policy Development

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
1 AM Policy Development	Corporate expectations expressed informally and simply, e.g. "all departments must update AM Plans every three years".	Defined policy statements for all significant activities. Clear linkage to corporate goals. Policy supported by high-level action plans with defined responsibilities for delivery.	AM Policy and Strategy reviewed and adopted by Executive Team each year Expectations of each activity area defined with detailed action plans, resources, responsibilities and timeframes.	AM Policy and Strategy fully integrated into the organisations business processes and subject to defined audit, review and updating procedures

WDC Average Current Status:	Core – 43			Describe current status:	- Draft Policy developed but not yet approved by Executive Team - Went through AMP process to set expectations but need to go further					
WDC 3 year Target:	Intermediate – 70			Describe Future Status	Policy adopted and implemented					
Improvement Tasks Required to Achieve Target					Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
						Q1 - 4	Year			
Task 1.1	Adoption of AM Policy by Executive Team				30 hours		2018	Robin Mackie, AMTL	Internal	A
Task 1.2										



Level of Service and Performance Management

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100				
2 Levels of Service and Performance Management	Asset contribution to organisations objectives and some basic levels of service have been defined.	Customer Groups defined and requirements informally understood. Levels of service and performance measures in place covering a range of service attributes. Annual reporting against performance targets.	Customer Group needs analysed. Costs to deliver alternate key levels of service are assessed. Customers are consulted on significant service levels and options.	Levels of service consultation strategy developed and implemented. Technical and customer levels of service are integral to decision making and business planning.				
Transportation activity Current Status:		Advanced – 76	Describe current status:	- WDC have developed levels of service statements and measures and aligned to the Strategic Case - Customer groups are defined - Annual reporting against performance targets is in place. - Stakeholder groups are set up, but need some process improvement				
Transportation activity 3 year Target:		Advanced – 90	Describe Future Status	- Further consultation with focus groups - Flexible model to allow assessment of value to the community - Gap analysis to capture KPIs that will improve knowledge and decision making				
Improvement Tasks Required to Achieve Target			Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
				Q1 - 4	Year			
Task 2.1	Carry out a gap analysis to assess areas needing work to capture One Network Road Classification (ONRC) customer needs. The aim is to ensure customers are consulted on significant service levels.		80 hours		2018	Rui Leitao, Senior Roading Engineer	Internal	A



Demand Forecasting

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
3 Demand Forecasting	Demand forecasts based on experienced staff predictions, with consideration of known past demand trends and likely future growth patterns.	Demand forecasts based on robust projection of a primary demand factor (e.g. population growth) and extrapolation of historic trends. Risk associated with demand change broadly understood and documented.	Demand forecasts based on mathematical analysis of past trends and primary demand factors. A range of demand scenarios is developed (e.g. high/medium/low).	As for 'intermediate' plus risk assessment of different demand scenarios with mitigation actions identified.

Transportation activity Current Status:		Advanced – 76	Describe current status:		- Maturity varies between activities - Population trends, changing demographics are assessed - Past trends are known - Forecast using dTIMS modelling of the sealed road network			
Transportation activity 3 year Target:		Advanced – 90	Describe Future Status		Aiming for a continued advanced level of maturity where a range of demand scenarios assessed. Population growth is minimal, but other factors are important e.g. impact of forestry on local roads needs to be continually re-assessed.			
Improvement Tasks Required to Achieve Target			Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
				Q1 - 4	Year			
Task 3.1	Implement the process to assess the impact of a range of demand scenarios (e.g. dTIMS)		160 hours		2018	Rui Leitao, Senior Roading Engineer	Internal/Alliance	B
Task 3.2	Dublin St Bridge lifecycle assessment		\$100k		2018	Rui Leitao, Senior Roading Engineer	External	B



Improvement Plan

Task 3.3	Review of effects of Forestry, this is done in 2017 but will need to be reviewed for the next AMP cycle	\$50k		2020	Rui Leita, Senior Rooding Engineer	External/Internal	B
Task 3.4	ONRC Performance Measures - Review	\$30k		2018	Rui Leita, Senior Rooding Engineer	Internal/Alliance	B
Task 3.5	Crash Reduction Study – depending on network safety trends	\$50k		2019	Rui Leita, Senior Rooding Engineer	Internal External	C

Asset Register Data

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
4 Asset Register Data	Basic physical information recorded in a spreadsheet or similar (e.g. location, size, type) but may be based on broad assumptions or not complete.	Sufficient information to complete asset valuation – as for 'minimum' plus replacement cost and asset age/life. Asset hierarchy, asset identification and asset attribute systems documented.	A reliable register of physical and financial attributes recorded in an information system with data analysis and reporting functionality. Systematic and documented data collection process in place. High level of confidence in critical asset data.	Information on work history type and cost, condition, performance, etc. recorded as asset component level. Systematic and fully optimised data collection programme. Complete data base for critical assets; minimal assumptions for non-critical assets.



Improvement Plan

Transportation activity Current Status:		Advanced – 80	Describe current status:	- Maturity varies between activities - Some reliance on institutional knowledge - National data quality reporting toll now available				
Transportation activity 3 year Target:		Advanced – 90	Describe Future Status	- Target will improve with dTIMS. - Minor data improvement				
Improvement Tasks Required to Achieve Target			Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
				Q1 - 4	Year			
Task 4.1	Carriageway segmentation of the road network		160 hours		2018	Rui Leitao, Senior Rooding Engineer	Internal/Alliance	B
Task 4.2	Ensure Street lighting asset register is 100% complete and accurate in RAMM		Over 3 years		2019	Rui Leitao, Senior Rooding Engineer	Internal/External	B
Task 4.3	Formulate data collection strategy		40 hours		2018	Rui Leitao, Senior Rooding Engineer	Internal/External	B
Task 4.4	Use national data quality tool to prioritise data improvement areas		40 hours		2018	Rui Leitao, Senior Rooding Engineer	Internal/External	B



Asset Condition

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
5 Asset Condition	Condition assessment at asset group level (top down). Supports minimum requirements for managing critical assets and statutory requirements (e.g. safety)	Condition assessment programme in place of major asset types, prioritised based on asset risk. Data supports asset life assessment. Data management standards and processes documented. Programme for data improvement developed.	Condition assessment programme derived from benefit cost analysis of options. A good range of condition data for all asset types (may be sampling based). Data management processes fully integrated into business processes. Data validation process in place.	The quality and completeness of condition information supports risk management, lifecycle decision making and financial/performance reporting. Periodic reviews of programme suitability carried out.

Transportation activity Current Status:		Intermediate – 70	Describe current status:		- Roads has reliable asset condition information - Use All-faults reporting tools - Use High Speed Data every 3 years					
Transportation activity 3 year Target:		Advanced – 90	Describe Future Status		A more formalised process of condition information assessment is needed for structures					
Improvement Tasks Required to Achieve Target					Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
						Q1 - 4	Year			
Task 5.1	Review critical assets based on a risk assessment which considers multiple risk factors.		25 hours			2019	Rui Leitao, Senior Rooding Engineer	Internal/Alliance	B	
Task 5.2	Develop and implement Structures, Large Culverts and Retaining Wall condition rating by individual components		100 hours			2019	Rui Leitao, Senior Rooding Engineer	Internal/Alliance	B	
Task 5.3	Review formal programme of asset condition on minor assets		With programmed inspections			2018	Rui Leitao, Senior Rooding Engineer	Internal/Alliance	D	



Risk Management

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
6 Risk Management	Critical assets understood by staff involved in maintenance/renewal decisions.	Risk framework developed. Critical assets and high risks identified. Documented risk management strategies for critical assets and high risks.	Systematic risk analysis to asset key decision-making. Risk register regularly monitored and reported. Risk managed consistently across the organisation.	Formal risk management policy in place. Risk is quantified & mitigation options evaluated. Risk integrated into all aspects of decision making.

Transportation activity Current Status:		Intermediate – 65	Describe current status:		- For some activities risk management is not part of day-to day business. There have been instances where assets have been replaced earlier than required without considering risks - Risk management is documented - Risk management matrix tool available for strategic risks only			
Transportation activity 3 year Target:		Advanced – 80	Describe Future Status		Framework and process for reporting of risks required			
Improvement Tasks Required to Achieve Target			Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
				Q1 - 4	Year			
Task 6.1	Formalise process for reporting of risk		80 hours		2018	Rui Leitao, Senior Roading Engineer	Internal/Alliance	A
Task 6.2								



Decision Making

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
7 Decision Making	AM decisions based largely on staff judgement and agreed corporate priorities.	Formal decision making techniques (MCA/BCA) are applied to major projects and programmes.	Formal decision making and prioritisation techniques are applied to all operational and capital asset programmes within each main budget category. Critical assumptions and estimates are tested for sensitivity to results.	As for 'intermediate' plus.... The framework enables projects and programmes to be optimised across all activity areas. Formal risk based sensitivity analysis is carried out.

Transportation activity Current Status:		Advanced - 80	Describe current status:		- Final decisions through Council 10-Year/Annual Plan cycle - dTIMS modelling - FWD survey , core asset data capture					
Transportation activity 3 year Target:		Advanced - 90	Describe Future Status		Strategic decision making via AM tools improvement					
Improvement Tasks Required to Achieve Target					Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
						Q1 - 4	Year			
Task 7.1	Use dTIMS to validate decision making processes				80 hours		2018	Rui Leitao, Senior Rooding Engineer	Internal/Alliance	B
Task 7.2	Increase FWD data capture to improve dTIMS outputs confidence				\$50k		2019	Rui Leitao, Senior Rooding Engineer	Internal/Alliance	B



Operational Planning

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
8 Operational Planning	Operational responses are understood by key staff, but plans may not be well documented, mainly reactive in nature. Asset utilisation is measured for some key assets but is not routinely analysed.	Emergency response plan is developed. Demand management is considered in major asset planning. Asset utilisation is measured for critical asset groups and is routinely analysed.	Emergency response plans and business continuity plans are routinely developed and tested. Demand management is a component of all operational decision making. Asset utilisation is measured and analysed for most asset groups.	Operational plans routinely analysed, tested and improved. Formal debriefs occur after incidents. Asset utilisation measured real-time and effectiveness analysed across all asset groups. Operational programmes are optimised using benefit-cost and risk analysis.

Transportation activity Current Status:		Advanced – 80	Describe current status:		- Emergency response plans and business continuity plans are in place. - Demand management is a component of all operational decision making. - Asset utilisation is measured and analysed for most asset groups.			
Transportation activity 3 year Target:		Advanced – 90	Describe Future Status		- Emergency response plans and business continuity plans are routinely developed and tested - MIS that aligns with ONRC			
Improvement Tasks Required to Achieve Target			Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
				Q1 - 4	Year			
Task 8.1	Periodic review of operational, emergency response and business continuity plans		ongoing		ongoing	Rui Leitao, Senior Rooding Engineer	Internal/Alliance	D
Task 8.2	Review of Maintenance Intervention Strategy (MIS) with better alignment to ONRC		ongoing		2018	Rui Leitao, Senior Rooding Engineer	Internal/Alliance	A



Maintenance and Renewals Planning

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
9 Maintenance Planning	Organisational objectives and how asset functions support these are understood. Compliant with legislation and regulations. Maintenance records maintained.	Asset criticality considered in response processes. Fault tracing and closure process. Strategy for prescriptive versus performance-based maintenance developed. Key maintenance objectives established and measures.	Contingency plans for all maintenance activities. Asset failure modes understood. Frequency of major preventative maintenance optimised using benefit-cost analysis. Maintenance management software implemented.	Forensic root cause analysis for major faults. Optimisation of all reactive and planning programmes alongside renewal planning. Procurement models fully explored.

Transportation activity Current Status:		Advanced – 80	Describe current status:		Transportation activity maintenance is >90% planned			
Transportation activity 3 year Target:		Advanced – 85	Describe Future Status		All activities understand the failure modes and can balance reactive and planned maintenance optimally.			
Improvement Tasks Required to Achieve Target			Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
				Q1 - 4	Year			
Task 9.1	Improve coordination opportunities with other utilities and other Council activities		ongoing		ongoing	Rui Leitao, Senior Rooding Engineer	Internal/Alliance	D
Task 9.2	Implement ONRC audit programme		ongoing		ongoing	Rui Leitao, Senior Rooding Engineer	Internal/Alliance	A



Capital Improvement Planning

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
10 Capital Works Planning	There is a schedule of proposed capital projects and associated costs, based on staff judgement of future requirements.	Projects have been collated from a wide range of sources such as hydraulic models, operational staff and risk processes. Capital projects for the next three years are fully scoped and estimated.	As for “core” plus formal options analysis and business case development has been completed for major projects in the 3-5 year period. Major capital projects for the next 10-20 are conceptually identified and broad cost estimates are available.	Long term capital investment programmes are developed using advanced decision techniques such as predictive renewal modelling (refer section 3.1)

Transportation activity Current Status:		Intermediate – 70	Describe current status:		- Some project scoping is on a yearly basis only 30-Year Strategic Plan			
Transportation activity 3 year Target:		Advanced – 80	Describe Future Status		- Project business cases with formal option analysis developed for the 3-5 year period. - Options on long term decisions analysed			
Improvement Tasks Required to Achieve Target			Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
				Q1 - 4	Year			
Task 10.1	Improve processes for project business case development to assess risks and options.		8 hours		Starting 2018	Rui Leitao, Senior Rooding Engineer	Internal/Alliance	B
Task 10.2								



Financial and Funding Strategies

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
11 Financial and Funding Strategies	Financial forecasts are based on extrapolation of past trends and broad assumptions about the future. Assets are re-valued in accordance with International Financial Reporting Standards (IFRS).	Ten year+ financial forecasts based on current AMP outputs. The quality of forecasts meets IFRS requirements. Significant assumptions are specific and well-reasoned. Expenditure captured at a level useful for AM analysis.	Ten year+ financial forecasts are based on current and comprehensive AMPs with detailed supporting assumptions / reliability factors. Asset expenditure information is linked with asset performance information.	The business unit publishes reliable ten year+ financial forecasts based on comprehensive, advanced AMPs with detailed underlying assumptions and high confidence in accuracy. Advanced financial modelling provides sensitivity analysis, evidence-based whole of life costs and cost analysis for level of service options.

Transportation activity Current Status:		Advanced – 80	Describe current status:		- Budgets based on LoS and asset condition - Use of dTIMS modelling - Use of Business Case Approach in financial assessments			
Transportation activity 3 year Target:		Advanced – 90	Describe Future Status		Divestment of asset needs to be investigated / considered			
Improvement Tasks Required to Achieve Target			Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
				Q1 - 4	Year			
Task 11.1	Continue to use a whole of life cost requirement for capital project business cases to include all consequential operating costs resulting from a capital investment.		40 hours		ongoing	Rui Leitao, Senior Roothing Engineer	Internal/Alliance	B
Task 11.2	Develop process for identification and consideration of divestment of assets				2018	Rui Leitao, Senior Roothing Engineer	Internal/Alliance	B



Asset Management Teams

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
12 AM Teams	AM allocated primarily to one or two people who have AM experience.	Cross-Council coordination occurs through a Steering Group or Committee, AM training occurs for primary staff. The executive team have considered options for AM functions and structures.	All staff in the organisation understands their role in AM, it is defined in their job descriptions, and they receive supporting training aligned to that role. A person on the Executive Team has responsibility for delivery the AM Policy/Strategy.	A formal AM capability building programme is in place and routinely monitored. The AM structure has been formally reviewed with consideration of the benefits and cost of options.

Transportation activity Current Status:		Advanced – 80	Describe current status:		- Good understanding of AM principles - Whole team involved in AMP 2018			
Transportation activity 3 year Target:		Advanced – 90	Describe Future Status		Succession planning requirement			
Improvement Tasks Required to Achieve Target			Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
				Q1 - 4	Year			
Task 12.1	Continuing improvements in understanding of strategic AM		40 hours		ongoing	Rui Leitao, Senior Roothing Engineer	Internal/Alliance	D
Task 12.2	Develop at succession plan for AM		20 hours		2019	Rui Leitao, Senior Roothing Engineer	Internal/Alliance	B



Asset Management Plans

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
13 AM Plans	Plan contains basic information on assets, service levels, planned works and financial forecasts (5-10 years) and future improvements.	As for 'Minimum' plus executive summary, description of services and key/critical assets, top down condition and performance description, future demand forecasts, description of supporting AM processes, 10 year financial forecasts, 3 year AM improvement plan.	As for 'Core' plus analysis of asset condition and performance trends (past/future), effective customer engagement in setting LoS, ODM/risk techniques applied to major programmes.	As for 'Intermediate' plus evidence of programmes driven by comprehensive ODM techniques, risk management programmes and level of service/cost trade-off analysis. Improvement programmes largely complete with focus on ongoing maintenance of current practice.

Transportation activity Current Status:		Advanced – 80	Describe current status:		AMP is at a mature level containing information on assets, service levels, executive summary, description of services and key/critical assets and performance description, future demand forecasts, description of supporting AM processes, 30 year financial forecasts.					
Transportation activity 3 year Target:		Advanced – 85	Describe Future Status		Deliver improvement plan					
Improvement Tasks Required to Achieve Target					Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
						Q1 - 4	Year			
Task 13.1	Investigate appropriate optimisation and risk techniques				30 hours		2018	Rui Leitao, Senior Roothing Engineer	Internal / Alliance	C
Task 13.2	Monitor progress as part of Alliance Management Team meeting / agenda item				30 hours		2018	Rui Leitao, Senior Roothing Engineer	Internal / Alliance	B



Information Systems

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
14 Information Systems	Asset register can record core asset attributes – size, material, etc. Asset information reports can be manually generated for AMP input.	Asset register enables hierarchical reporting (at component to facility level). Customer request tracing and planned maintenance functionality enabled. System enables manual reports to be generated for valuation, renewal forecasting.	More automated analysis reporting on a wider range of information. Key operations, unplanned maintenance and condition and performance information held.	Financial, asset and customer service systems are integrated and all advanced AM functions are enabled.

Transportation activity Current Status:		Advanced – 85	Describe current status:		• RAMM has a high degree of functionality. • ONRC reporting tool • Data quality outputs • dTIMS for network and financial modelling				
Transportation activity 3 year Target:		Advanced – 90	Describe Future Status		• dTIMS development of model				
Improvement Tasks Required to Achieve Target				Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
					Q1 - 4	Year			
Task 14.1	Increased knowledge of RAMM functionality					ongoing	Rui Leitao, Senior Roothing Engineer	Internal/Alliance	C
Task 14.2	Increase dTIMS output confidence levels					ongoing	Rui Leitao, Senior Roothing Engineer	Internal/Alliance	A



Service Delivery Mechanisms

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
15 Service Delivery Mechanisms	Service delivery roles clearly allocated (internal and external), generally following historic approaches.	Contracts in place for external service provision. Core functions defined.	Internal service level agreements in place with internal service providers. Contracting approaches reviewed to identify best delivery mechanism. Tendering/contracting policy in place. Competitive tendering practices applied.	All potential service delivery mechanisms reviewed and formal analysis carried out. Risks, benefits and costs of various outsourcing options are considered.

Transportation activity Current Status:		Advanced – 80	Describe current status:		- The Transportation procurement policy was adopted - Contracts are in place for external service provision - Competitive tendering processes are in place			
Transportation activity 3 year Target:		Advanced – 90	Describe Future Status		Continue to use Council and NZTA procurement policies.			
Improvement Tasks Required to Achieve Target			Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
				Q1 - 4	Year			
Task 15.1	Update Transportation Procurement Strategy (for NZTA purposes)		20 hours		2018	Rui Leitao, Senior Roothing Engineer	Internal	B
Task 15.2	Incorporate ONRC into procurement outputs and outcomes		20 hours		Oct 2017	Rui Leitao, Senior Roothing Engineer	Internal	A



Improvement Plan

Task 15.3	Review Section 17a of Local Government Act	20 hours		Sept 2017	Rui Leita, Senior Roading Engineer	Internal	A

Quality Management

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
16 Quality Management	Simple process documentation in place for service-critical activities.	Defined quality policy and basic Quality Management System. All critical activity processes documented.	Process documentation implemented in accordance with the Quality Management System plan. All processes documented to appropriate level of details.	ISO 9001 certification achieved and surveillance audits demonstrate the satisfactory operation of the Quality Management System.

Transportation activity Current Status:		Intermediate – 70	Describe current status:		- Critical processes are documented - Transportation is ISO 9001 certified via Alliance					
Transportation activity 3 year Target:		Intermediate – 85	Describe Future Status		- Process documentation developed for all key processes to appropriate level of detail. - Capture ONRC gaps in achievement reporting					
Improvement Tasks Required to Achieve Target					Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
						Q1 - 4	Year			
Task 16.1	Identify and develop process documentation for all key processes				75 hours		2018	Rui Leita, Senior Roading Engineer	Internal /Alliance	B
Task 16.2	Performance management review to capture ONRC and Opportunities for Improvement (OFI)				75 hours		2018	G Dyhrberg, Performance Manager	Internal /Alliance	A



Improvement Planning

Element	Minimum 0 – 25	Core 26 – 50	Intermediate 51 – 75	Advanced 76 – 100
17 Improvement Planning	Improvement actions identified and allocated to appropriate staff.	Current and future AM performance assessed and gaps used to drive the improvement actions. Improvement plans identify objectives, timeframes, deliverables, resource requirements and responsibilities.	Formal monitoring and reporting on the improvement programme to Executive Team. Project briefs developed for all key improvement actions.	Improvement plans specify key performance indicators (KPIs) for monitoring AM improvement and these are routinely reported.

Transportation activity Current Status:		Core – 50	Describe current status:		- This process is the first cross-activity improvement plan developed.					
Transportation activity 3 year Target:		Intermediate – 75	Describe Future Status		- Improvement Plan will be taken to Alliance ALT - Carry out Audit NZ recommendation for streamlining of CRM system and process - Review process in place - Project briefs developed for all key improvement actions					
Improvement Tasks Required to Achieve Target					Estimated Cost	Indicative Timing		Person Responsible	Resource Required	Priority
						Q1 - 4	Year			
Task 17.1	Develop project briefs for all key improvement actions				50 hours		2018	Robin Mackie, AMTL	Internal	A
Task 17.2	Streamline CRM processes for timely and cost efficient delivery as per Audit NZ recommendation						2018	Rui Leitaο, Senior Roading Engineer	Internal	B