2021-24

Roading Activity Management Plan

for the Waimate District Council

Waimate District Council

Version 6 – May 2021

Roading Activity Management Plan

for the Waimate District Council

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UPDATE REGISTER

Number	Date	Description of Update	Updated by
Version 2	September 2007	Revision of first AMP produced by Waimate District Council	Opus International Consultants
Version 3	28 November 2011	Update following AMP Compliance Status Report completed by Waugh Infrastructure Management Ltd, April 2011	Opus International Consultants
Version 4	24 December 2014	Updates throughout document Waimate DC and Waugh Infrastructure Management Ltd	Robert Moffat Grant Holland
	18 June 2015	Budget reduction adjustment	R Moffat
Version 5	12 December 2017	Updates throughout document Waimate DC and Waugh Infrastructure Management Ltd	Robert Moffat Grant Holland
	20 June 2018	NZTA Indicative investment of maintenance and renewal programme added Financial Assistance Rate (FAR) increase from 57% to 60%. Footpath maintenance as now being eligible for NLTF funding.	R Moffat
Version 6	18 September 2020 Draft 11 December 2020 DRAFT 2	Updates throughout document Waimate DC and Waugh Infrastructure Management Ltd Budget Updates	Robert Moffat Grant Holland
	26 March 2021	Executive Summary Updated Updates throughout document	Andy Bartlett
	25 May 2021	Budget Internal Charges added, assumptions updated, Service Delivery Review added.	Robert Moffat
	26 May	Table 1.4,1.5 corrected	Robert Moffat

The following terms and acronyms (in brackets) are used in this Plan.

ACCRUAL ACCOUNTING
The recognition of revenues as they are earned and expenses as they are incurred.

ANNUAL PLAN
A document produced annually by an organisation to inform stakeholders of its objectives, intended activities, performance, income and expenditure required for a period of one financial year. It may also indicate anticipated future short-term income and expenditure

APPROPRIATE ASSET MANAGEMENT PRACTICE
The level of AM practice development (minimum to advanced) which is considered optimal for the specific organisation.

ASSET
A physical component of a facility, which has value, enables services to be provided and has an economic life of greater than 12 months. Dynamic assets have some moving parts, while passive assets have none.

ASSET MANAGEMENT (AM)
The systematic and coordinated activities and practices of an organisation to optimally and sustainably deliver on its objectives through the cost-effective lifecycle management of assets.

ACTIVITY MANAGEMENT PLAN
Long term plans (usually 10-20 years or more for infrastructure assets) that outline the asset activities and programmes for each service area and resources applied to provide a defined level of service in the most cost effective way.

ASSET MANAGEMENT STRATEGY
A strategy for asset management covering the development and implementation of plans and programmes for asset creation, operation, maintenance, rehabilitation/ replacement, disposal and performance monitoring to ensure that the desired levels of service and other operational objectives are achieved at optimum cost.

ASSET REGISTER
A record of asset information considered worthy of separate identification including inventory, historical, financial, condition, construction, technical and financial information about each.

BENEFIT-COST RATIO (BCR)
The sum of the present values of all benefits (including residual value, if any) over a specified period, or the lifecycle, of the asset or facility, divided by the sum of the present value of all cost.

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 asset stock.

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.

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.

CUSTOMER PERFORMANCE MEASURE
Specific indicators that are used to demonstrate how the organisation is doing in relation to delivering levels of service. Customer performance measures the service the customer receives. Customer measures are generally those that would be used in public documents.

DEFERRED APPROACH
The shortfall in rehabilitation work required to maintain the service potential of an asset.
DEPRECIATED REPLACEMENT COST (DRC)
The replacement cost of an existing asset less an allowance for wear or consumption having regard for the remaining economic life of the existing 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 by the allocation of the cost (or

revalued amount) of the asset less its residual value over its useful life.

DETERIORATION RATE
The rate at which an asset approaches failure.

DISPOSAL
Activities necessary to dispose of decommissioned assets.

ECONOMIC LIFE
The period from the acquisition of the asset to the time when the asset, while physically able to provide a service, ceases to be the lowest cost alternative to satisfy a particular level of service. The economic life is at the maximum when equal to the physical life; however, obsolescence will often ensure that the economic life is less than the physical life.

FACILITY
A complex comprising many assets (e.g. a hospital, water treatment plant, recreation complex, etc.) which represents a single management unit for financial, operational, maintenance or other purposes.

FINANCIAL STATEMENTS
Balance sheets, profit and loss accounts, statements of changes in financial position, notes another statements which collectively are intended to give a true and fair view of the state of affairs and profit or loss for an entity for a defined period.

GAP ANALYSIS
A method of assessing the gap between a business's current asset management practices and the future desirable asset management practices. Also called needs analysis or improvement planning.

INFRASTRUCTURE ASSETS
Stationary systems forming a network and serving whole communities, where the system as a whole is intended to be maintained indefinitely at a particular level of service potential by the continuing replacement and refurbishment of its components. The network may include normally recognised ordinary assets as components.

LEVELS OF SERVICE
LOS are outputs a customer receives from the organisation. They describe what the organisation is intending to deliver. Service levels relate to service attributes such as quality, reliability, responsiveness, sustainability, timeliness, accessibility and cost. Levels of service describe attributes of the service from a customer point of view.

LIFE
A measure of the anticipated life of an asset or component; such as time, number of cycles, distance intervals etc.

LIFECYCLE
The cycle of activities that an asset (or facility) goes through while it retains an identity as a particular asset i.e. from planning and design to decommissioning or disposal.

LIFECYCLE COST
The total cost of an asset throughout its life including planning, design, construction, acquisition, operation, maintenance, rehabilitation and disposal costs.

LIFECYCLE COST ANALYSIS
Any technique which allows assessment of a given solution, or choice from among alternative solution, on the basis of all relevant economic consequences over the service life of the asses

MAINTENANCE
All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal. Fixed interval maintenance is used to express the maximum interval between maintenance tasks. On-condition maintenance is where the maintenance action depends upon the item reaching some predetermined condition.

MAINTENANCE PLAN
Collated information policies and procedures for the optimum maintenance of an asset or group of assets.

MAINTENANCE STANDARDS
The standards set for the maintenance service, usually contained in preventive maintenance schedules, operation and maintenance manuals,

codes of practise, estimating criteria, statutory regulations and mandatory requirements, in accordance with maintenance quality objectives.

OPERATION
The active process of utilising an asset, which will consume resources such as manpower, energy, chemicals and materials. Operation costs are part of the lifecycle costs of an asset.

OPTIMISED DEPRECIATED REPLACEMENT COST (ODRC)
The optimised replacement cost after deducting an allowance for wear or consumption to reflect the remaining economic or service life of an existing asset. ODRC is the surrogate for valuing assets in use where there are no competitive markets for assets, or for their services or outputs.

PERFORMANCE MONITORING
Continuous or periodic quantitative and qualitative assessments of the actual performance compared with specific objectives, targets or standards.

PLANNED MAINTENANCE
Planned maintenance activities fall into three categories:

- **i) Periodic – necessary to ensure the reliability or to sustain the design life of an asset.**
- **ii) Predictive – condition-monitoring activities used to predict failure.**
- **iii) Preventive – maintenance that can be initiated without routine or continuous checking (e.g. using information contained in maintenance manuals or manufacturers' recommendations) and is not condition based.**

REHABILITATION
Works to rebuild or replace parts or components or an asset, to restore it to a required functional condition and extend its life, which may incorporate some modification. Generally, involves repairing the asset to deliver its original level of service (i.e. heavy patching of roads, slip-lining of sewer mains, etc.) without resorting to significant upgrading or renewal, using available techniques and standards.

RENEWAL
Works to upgrade refurbish or replace existing facilities with facilities of equivalent capacity or performance capability.

REMAINING ECONOMIC LIFE
The time remaining until an asset ceases to provide the required service level or economic usefulness.

REPAIR
Action to restore an item to its previous condition after failure or damage.

REPLACEMENT
The complete replacement of an asset that has reached the end of its life, so as to provide a similar or agreed alternative, level of service.

REPLACEMENT COST
The cost of replacing an existing asset with a substantially identical new asset.

RESIDUAL VALUE
The net market or recoverable value that would be realised from disposal of an asset or facility at the end of its life.

RISK MANAGEMENT
The application of a formal process to the range of possible values relating to key factors associated with a risk in order to determine the resultant ranges of outcomes and their probability of occurrence.

ROAD ASSESSMENT MAINTENANCE MANAGEMENT SYSTEM (RAMM)
The computerised road maintenance management software system developed by Transit New Zealand for use nationally by all New Zealand road asset managers.

ROUTINE MAINTENANCE
Day-to-day operational activities to keep the asset operating (replacement of light bulbs, cleaning of drains, repairing leaks, etc.) and which form part of the nual operating budget, including preventive maintenance.

SERVICE POTENTIAL

The total future service capacity of an asset. It is normally determined by reference to the operating capacity and economic life of an asset.

STATEMENT OF FINANCIAL PERFORMANCE
A report on the net surplus/deficit, and its components, arising from activities or events during a given period, that is significant for the assessment of both past and future financial performance.

STRATEGIC PLAN
A plan containing the long-term goals and strategies of an organisation. Strategic plans have a strong external focus, cover major portions of the organisation and identify major targets, actions and resource allocations relating to the long-term survival, value and growth of the organisation.

TECHNICAL PERFORMANCE MEASURE
Specific indicators that are used to demonstrate how the organisation is doing in relation to delivering levels of service. Technical performance measures how effectively the organisation provides the service. These measures support customer measures and tend to be used internally to measure performance against service levels.

UNPLANNED MAINTENANCE
Corrective work required in the short-term to restore an asset to working condition so it can continue to deliver the required service or to maintain its level of security and integrity.

USEFUL LIFE
May be expressed as either:

- **a) The period over which a depreciable asset is expected to be used, or**
- **b) The number of production or similar units (i.e. intervals, cycles) that is expected to be obtained from the asset.**

VALUATION
Assessed asset value, which may depend on the purpose for which the valuation is required, i.e. replacement value for determining maintenance levels, market value for lifecycle costing and optimised deprival value for tariff setting.

1. EXECUTIVE SUMMARY

1.1 PURPOSE OF ROADING ASSET MANAGEMENT PLANNING

This Activity Management Plan for Roading 2021-24 (AMP) has been developed to provide the Waimate District Council (WDC) with a long-term management tool for roading activities. It documents management, planning, financial, engineering, and technical best-practices to ensure that the level of service required by customers is provided cost-effectively to the current and future community. The plan is intended to demonstrate to customers that Council is managing their assets responsibly, and that they will be regularly consulted over the trade-offs between the costs of roading activities and Council's service delivery.

1.2 PLAN LEVEL

Council has undertaken a structured assessment of the appropriate level of asset management practice for the Roading assets (Section 2.1.1). This has been adopted by Council through the Asset Management Policy Statement. **Analysis of factors suggests that asset management practice should be at a 'Core' level for Roading**. This AMP has previously been reviewed and updated to move towards "Core" level Asset Management. The following principles will be used by Council to guide asset management planning and decision making:

- Effective consultation to determine appropriate Levels of Service
- Ensuring service delivery needs form the basis of asset management
- Integration of asset management with corporate, financial, business and budgetary planning using Asset Management Plans and Council's Long Term Plan to demonstrate this
- Collaboration with neighbouring authorities and other agencies including Waka Kotahi NZTA and Environment Canterbury.
- Transparent and accountable asset management decision making
- Informed decision making, taking a lifecycle management and inter-generational approach to asset planning
- Sustainable management providing for present needs whilst sustaining resources for future generations

1.3 ASSETS INCLUDED IN THIS PLAN

The transport asset includes all Council-owned and maintained roads, streets, bridges, footpaths and related infrastructure within the District, as shown in Table 1.1. **There is currently just under 1,350 kilometres of maintained roading. 52% of the network is unsealed.**

Table 1.2 summarises the Waimate District Council 2020 valuation of the Roading assets, **assessed as having a replacement value of $496 million**. A value for land under roads is provided, based on an assessment of the area of road reserve within the District, which has formed (or partially-formed) and maintained roads. Unformed roads (sometimes referred to as 'paper roads') are not included. Annual depreciation - or **decline in service potential has been valued at $3 million per annum, is used to determine an affordable programme of work necessary to maintain the network** within pre-determined financial constraints. This represents a $0.3 million annual increase from 2017.

Table 1.1 – Roading assets included in this plan

Asset	Number	Length
Length of Road		1339 km
Sealed Road		646 km
Unsealed Road		693 km
Bridges	182	3364 m
Culverts	3482	36485 m
Concrete Fords	85	1696 m
Kerb & Channel		48462 m
Signs	Over 5000 individual signs	
Street Lights	495	
Footpaths		63 km

Table 1.2 - Waimate District Council Road Asset Valuation Summary 2020

Asset	Optimised Replacement Cost	Optimised Depreciated Replacement Cost	Annual Depreciation
Land	$81,285,250	$81,285,250	$0
Formation	$168,271,591	$168,271,591	$0
Unsealed Pavement Structure	$40,921,210	$40,921,210	$0
Seal Pavement Structure	$118,194,370	$66,007,099	$934,831
Sealed Pavement Surface	$18,233,189	$9,679,797	$1,052,707
Bridges	$28,080,257	$13,610,689	$293,111
Drainage	$17,156,987	$7,650,472	$171,887
Drain Fords	$2,760,930	$725,150	$61,799
Footpaths	$7,313,312	$2,426,139	$248,072
Signs	$601,565	$421,096	$35,752
Street Lighting	$419,922	$100,532	$13,206
Surface Water Channels	$12,571,669	$5,261,931	$130,309
Traffic Facilities	$80,246	$38,329	$2,687
Total Road Assets	**$495,890,498**	**$396,399,285**	**$2,944,361**

All data is taken from Waimate District Council's RAMM database for roading assets.

Waimate District Council has identified **the key challenges faced by the Organisation in continuing to deliver roading services that meet the level of service required by customers in the most cost-effective way**, at an asset activity management level. These are detailed in Table 1.3, and form the strategic context of this AMP for the Council:

Table 1.3 - Waimate District Council Roading Problem Statements and Benefits

Problem Statement	Impacts on the Network	Benefits to Customer	Management Benefits
The operating environment, and climate change predictions, require the existing network management strategies in Waimate to adapt	• Limited strength for pavements • Drainage important • Flood damage • Pavement damage • Road user safety	• Low costs of damage • Levels of service and expectations met • Safer roads	• Meeting levels of service • Providing safer network • Minimising storm disruptions to network • *Progressive climate change adaptation* • Effect of the soils on the network are understood and appropriate solutions developed.
The existing network and driver behaviour contribute to an unacceptable number of serious injuries and fatalities in Waimate	• Infrastructure improvements and speed management required • Regional approaches to informing road user choices and system management	• Improved road safety • 'Road to Zero' objectives progressively achieved	• Contribution to 'Road to Zero' infrastructure achievements • Contribution to 'Road to Zero' regional initiatives
There are a diverse range of road users in Waimate, whose needs inform provision of a fit-for-purpose network	• *Suitability for different users (including pedestrians and cyclists)* • *Larger and oversized vehicles*	• *All users considered and safety improvements for pedestrians and cyclists given greater priority*	• *Meeting levels of service* • *Providing safer network*
We operate a 'Budget' network which is challenged by changes in demand. • minimal widths • limited pavement depth • 1963-73 rapid construction (Seal extension 30km per year)	• Performance • 'Gaps' becoming evident No longer fit for purpose across all of network • cheap to maintain metrics good	• Low costs to date • Levels of service and expectations met	• Rates and NZTA investment has been minimised • Changing levels of service and expectations will be met • Efficiencies sought through ONRC based differentiation
• Intensive land use – more heavies Intensive land use – reshaping of watercourses	• Pavement strength challenged • Natural water courses lost, surface flooding	• Changing levels of service and expectations will be met • Pavement strength challenged	
• Irrigation – higher water tables and moisture in pavement subgrades • Vehicle types – large • Vehicle types – heavier • Vehicle types - more	• Width of pavements & bridges • Pavement strength challenged	• Efficiency for Operators	• Bridge capacity prioritisation (ONRC)

1.4 KEY STAKEHOLDERS AND CUSTOMERS

Key Stakeholders

The Council is the ultimate owner of assets, as the designated Road Controlling Authority. The Crown entity established to manage Roading activities is Waka Kotahi NZ Transport Agency (NZTA). Other key stakeholders of the roading network include:

- Environment Canterbury (ECan) Regional Council
- Owners and operators of inter-connecting or co-located networks, including NZTA State Highways and NZTA-appointed representatives, such as network contractors
- Representative road-user groups such as Road Transport Association (RTA), Federated Farmers, etc. These are distinct from users (Council's customers)
- Council employees, and Council-appointed consultants and contractors who manage and work on the District's roading assets

Customer Groups

Waimate District Council's customers fall into three different groups, detailed in Table 1.3.

Table 1.3 – WDC Roading Customer Groups

Customer Group	Description	Customers
Associated Service Providers	These are other service providers who rely on the Roading network	• Contractors • Utilities service providers – use the road corridor to co-locate and access their assets • Transport operators • Emergency Services
Users	Those who directly use the service	• Private drivers • Commercial road users • Drivers of public and other transport services (e.g. tourist buses) • Pedestrians and cyclists
The Wider Community	Non-users that are affected if the service is not provided	• Citizens • Tourists • Residents who live beside the roads • Local businesses – requiring access

Aoraki Mid-South Canterbury Roading Collaboration *(Waimate, Mackenzie, Timaru and Ashburton District Councils)*

Since 2014, a strong collaboration has developed across Mid-South Canterbury Councils. The development of a common maintenance contract document between Waimate, Mackenzie, Timaru and Ashburton District Councils has formed an excellent platform for greater alignment of transportation services delivery. It has also supported cost-effective procurement of physical works and professional services.

Funding Partners

Funding is provided by two significant parties:

- **Waka Kotahi NZ Transport Agency** – The District's Maintenance, Operations and Renewals, and minor Improvements "Continuous Programmes" are co-funded by NZTA in accordance with operational requirements. **The Financial Assistance Rate is currently 64%**
- **Ratepayers – Rates provide funding for all roading non-subsidised activities and the remaining "local share" of roading costs** qualifying for Financial Assistance from NZTA

1.5 LEVEL OF SERVICE

The Roading asset comprises a diversity of components including road pavements, surfaces, bridges, footpaths, drainage, signs, and streetlighting assets. **Levels of Service in this AMP cover key service attributes, such as accessibility, affordability, efficiency, quality, reliability, responsiveness and safety.**

Levels of service measures are expressed in terms of both "Customer Performance Measures", which measure the service received by the user, and "Technical Performance Measures" which measure how the organisation provides the service. Section 5.9 sets-out a framework for defining Levels of Service. There is still a significant effort required to bring the definitions up to standard and define appropriate target levels. This is included in the Improvement Plan (Section 12).

1.6 GROWTH AND FUTURE DEMAND

The Waimate District Roading network caters predominantly for low volume rural traffic on unsealed roads. There are only 40 kilometres of urban streets.
Just eight kilometres caters for a traffic loading greater than 800vpd, classified as Secondary Collector in the One Network Road Classification hierarchy.
The Waimate District's resident population of 7,815 (2018) is projected to increase to 9,000 in 2050, at an average rate of 0.4% growth per year). Due to issues with the 2018 Census, the Council has changed to an alternative method of establishing growth projections. This change has also strengthened the Council's ability to plan and respond to effects due to COVID-19. Growth projections currently anticipate short term effects. However, it is not yet known what, if any, long term effects there will be. Due to this uncertainty, it is recommended that annual "check-ins" are completed with the most up-to-date data to monitor the impact of COVID-19 and the progress of recovery.

Population growth itself is likely to have minimal impact on future demand on the roading network. **Trends in the mix of heavy traffic associated with land use changes within the District are likely to have a greater effect on Council's roading assets.** To get a better prediction of likely demand, Council is reviewing their traffic counting policy, and developing a strategy for Traffic Counting. This allows the Council to assess asset performance as utilisation of the asset changes, and review whether key assets provide sufficient capacity for current and future use.

1.7 SUSTAINABILITY

Transport legislation and policy in New Zealand calls for an affordable, integrated, responsive, safe and sustainable land transport network. A sustainable transport system should provide for our own economic and social wellbeing in a way that will not prevent our children and grandchildren from being able to provide for theirs. This now requires roading services to ensure that works and network management is delivered in a manner which can mitigate the likely impacts of climate change. Whilst **there are no significant negative effects assessed as resulting from the Council's roading activities**, opportunities exist to deliver road asset development and management services to reduce the negative impact for Waimate's residents on the social, economic, environmental, or cultural well-being of the community.

Sustainability also considers the management of Council's staff and resourcing to ensure continued cost-effective delivery of roading activities. There is a need to build-in a means of succession

planning for roading's engineering (technical) and physical works (contracting) practices and procedures.

1.8 RISK MANAGEMENT

Risk management is "the systematic application of management policies, procedures and practices to the task of identifying, analysing, evaluating, treating and monitoring those risks that could prevent a Local Authority from achieving its strategic or operational objectives or plans, or from complying with its legal obligations". There is currently no formal Risk Management process being implemented for the Roading activity within the Council, which poses a significant risk. A Risk Management strategy has been described in Section 8 of this AMP. The use of this strategy as outlined in the Improvement Plan should be adopted with high priority. Planning for climate change adaptation, network resilience, emergency management response and recovery, and insurances of assets require full review and inclusion in this plan.

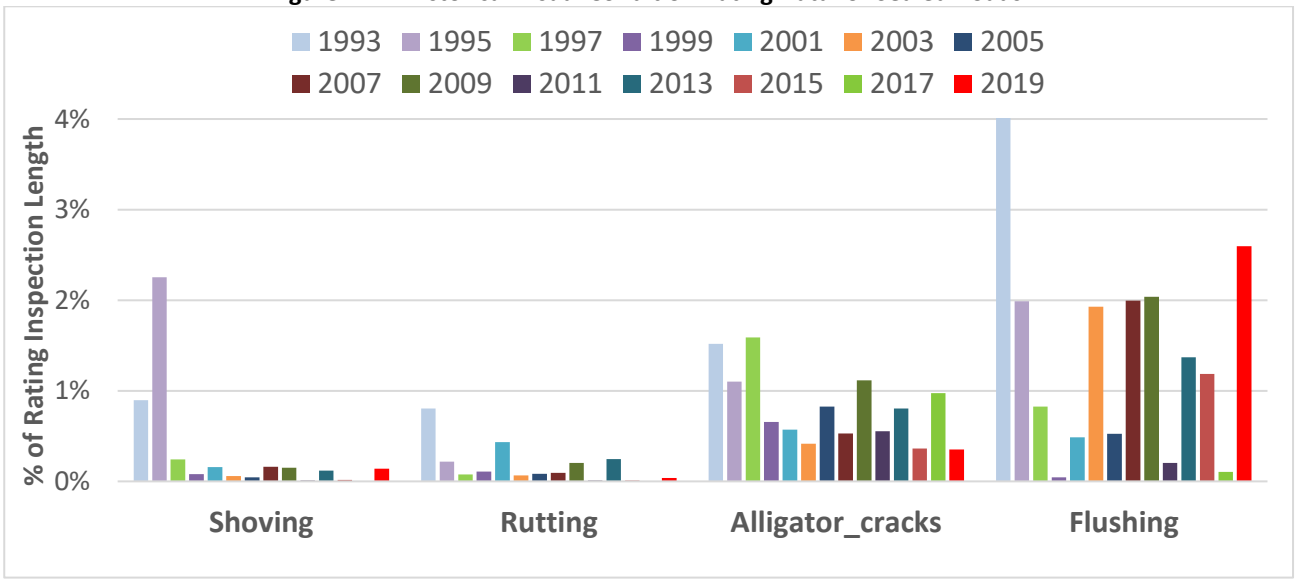
1.9 LIFECYCLE MANAGEMENT PLANS

Council's Lifecycle management planning identifies the maintenance, renewals and operations activities required to keep the assets operating at the currently established levels of service in the most cost-effective manner. **The Lifecycle Management Plan included in Section 9 of the AMP ensures that current strategies do not consume the asset, leading to an unexpected increase in maintenance/renewal expenditure in the future.**

Waimate District Council undertakes condition and performance analysis of the network relying on the practical experience and knowledge of engineering staff to provide a gauge of network performance. This knowledge is used extensively for planning purposes. Regular condition surveys of the asset components need to be undertaken and the results recorded to ensure that an improved understanding of asset capacity at current service levels is developed.

Figure 1.1 shows the historical results from visual condition rating for sealed roads. This shows that the overall network condition was improved significantly in the 1990's. Since then, it has remained relatively stable. This is indicating that maintenance and renewal levels for sealed roads are appropriate to maintain the condition of the pavements at an acceptable level, against the increase in heavy traffic mix and ages of parts of the network.

Figure 1.1 – Historical Visual Condition Rating Data for Sealed Roads



Current asset management practice applies a combination of "reactive" condition driven and network lifecycle depreciation techniques to determine the work necessary to maintain the network within pre-determined financial constraints. The majority of maintenance is reactive, so budgets have been based on historical quantities. Similarly, some asset groups are being periodically renewed on the basis of existing long term planning of work. This plan recommends increasing renewal works to the following transport infrastructure asset groups:

- **Sealed road resurfacing** - Actual resurfacing over the last 10 years has been lower than targeted 'average' annual reseal quantities. There is a backlog of work accumulating. Due to this there is a need over the next five years to address the current resealing backlog.
- **Pavement renewal**– The 'average' annual quantities of pavement renewal required - based on the assumed age, condition and capacity of the assets - needs to be increased in future. Given the large proportion of pavements that were constructed in the same periods Council is aware of the potential 'bow-wave' of rehabilitation and resealing works. While there is an acknowledgement of this, a small increase in funding is proposed initially as monitoring and modelling is undertaken to gain a more robust understanding of this issue.
  The Council plans to carry-out further testing and deterioration modelling to determine a sustainable level for future pavement renewals, with any changes implemented in the 2024-27 Activity Management Plan.
- **Drainage** – Roadside drainage is key to maximising the life of pavements by protecting them from ingress of water. The current amount of work is too low, especially given the change in groundwater conditions arising from irrigation. Some drainage assets are at or nearing the end of their life and provide insufficient capacity in extreme weather events. These assets will need to be progressively replaced for pavement protection, safety and amenity purposes.
- **Bridges** - WDC's Bridge Replacement/Upgrade Strategy lists the bridges which are prioritised for structural component replacements over the next 6-10 years.

This plan recommends a minimal investment in capital improvements to the existing transport infrastructure – focussing on minor safety improvements and level of service gaps for footpaths.
In general, Council has no specific plans for disposal of any Roading asset.

1.10 FINANCIAL FORECASTS

Table 1.4 – WDC Roading Forecast Expenditure

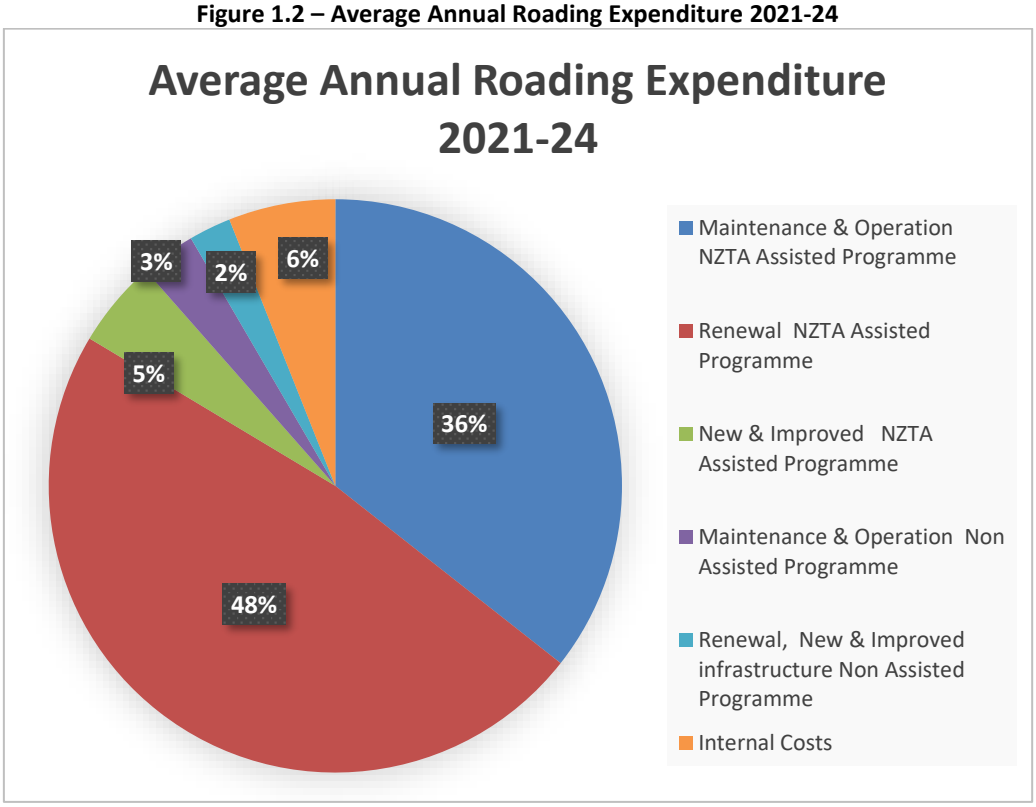
Draft Roading Budget Summary	2021-22	2022-23	2023-24	3 year Programme Totals
Maintenance & Operation NZTA Assisted Programme	$2,319,923	$2,391,841	$2,463,758	$7,175,522
Renewal NZTA Assisted Programme	$3,126,495	$3,223,416	$3,320,338	$9,670,249
New & Improved NZTA Assisted Programme	$330,000	$330,000	$330,000	$990,000
				$17,835,772
Maintenance & Operation Non Assisted Programme	$201,000	$207,231	$213,462	$621,693
Renewal, New & Improved infrastructure Non Assisted Programme	$155,000	$159,805	$164,610	$479,415
Internal Costs	$390,121	$411,838	$412,619	$1,214,577
				$2,315,685
	$6,522,539	**$6,724,132**	**$6,904,786**	**$20,151,457**

Table 1.5 – Waka Kotahi NZTA "Continuous Programmes" Investment

Activity area	2018-21	2021-24	Change	Change
Maintenance & Operations	$6,305,943	$7,175,522	$869,579	14%
Renewals	$8,651,004	$9,670,249	$1,019,245	12%
Improvement Projects'(Road to Zero; Walking and Cycling Bridges)	$1,480,190	$990,000	-$490,190	-33%
	$16,437,137	**$17,835,772**	**$1,398,635**	**10%**

The full budget and forecasts are shown in Sections 9 and 10. Funding for the management and maintenance and renewals of the road network is provided from the District roading rate and Financial Assistance received from Waka Kotahi NZTA.

Figure 1.2 – Average Annual Roading Expenditure 2021-24



1.11 PROCESSES AND ASSET MANAGEMENT PRACTICES

Asset Management Practices

Waimate District Council employ a Roading Manager, a Roading Officer, and a Roading Technician who are responsible for the management of the road asset. The Roading Manager is responsible for the maintenance management of the Roading network. Occasionally some elements of the work are competitively tendered to consultancy services to manage (e.g. AMP preparation, bridging asset management). **Roading staff and the Road Maintenance Contractor regularly inspect and monitor the network.**

Roading Procurement Processes

Routine maintenance and renewals are undertaken through a competitively tendered, collaborative contract. The previous contracting arrangements had been in-place for five years, extended to the 30 June 2021. A three to five year contract is proposed. Other works, such as sealed road resurfacing, pavement rehabilitation and major drainage renewals and upgrades are generally let as competitively priced contracts on an annual or biennial basis.

1.12 PLAN IMPROVEMENT AND MONITORING

Waimate District Council has developed this AMP based on its current knowledge of **customer requirements, the configuration of the existing and future network to meet customer requirements, current asset information and the strategies being adopted to achieve customer outcomes.** To further develop the AMP to support asset management processes, systems and data, Council recognises the need for a more structured approach, which includes:

- Council's firm commitment to implement and develop the AMP
- Incorporate this AMP as a tactical plan within Council's planning framework
- Review of the plans by internal staff and suitably qualified external consultants
- Developing an AMP that meets the requirements of the community
- Benchmarking key performance indicators against similar external TLAs
- A corporate commitment to implementing and maintaining suitable AM information systems
- Adopting a team approach to the preparation of future AMPs in order to maximise the buy-in of internal staff and sharing of specialised knowledge

Historically Asset Management Plans have been carried out for regulatory requirements and not used on an on-going basis. Sections 11 and 12 detail the processes and procedures for the on-going implementation, improvement and updating of the Roading Asset Management Plan. Council is committed to continuous improvements as outlined in Section 12.

1.13 KEY ASSUMPTIONS AND CONFIDENCE LEVEL

There **are significant assumptions that have been made in the development of this AMP** as outlined below:

- In preparing the plan, asset data in the RAMM database as at June 2020 has been taken as the verified network asset.
- Changes in government requirements in future may affect future Level of Service.
- No specific consultation or research has been completed to determine future demand on the network. There is a moderate level of confidence in future demand based on limited input information.
- The knowledge of the practitioners directly providing this activity has been been relied upon in preparation of this AMP. These practitioners include Council's Roading Department staff, Council's consultants and staff of the physical works contractors.

The key assumptions made in the financial forecasts are as follows:

- NZTA will continue to provide subsidised funding to Council for the road network
- Council will continue to fund the level of service currently set out in this AMP
- The dollar values shown in this Plan are June 2021 dollars adjusted for inflation applicable to this Activity.
- Some renewal costs are rough order of cost estimates that will need to be further researched and refined
- No account has been taken of the impacts related to the development, acceptance and implementation of the Risk Management Plan
- Assumptions made on Total Useful Life and Residual Useful Lives of the assets in relation to the asset valuation.
- The asset data is considered to be reliable and fit for the purpose for developing the long term financial forecasts.
- NZTA Funding Assistance Rate (FAR) subsidy will stay the same for 10-year period and there will be no other NZTA funding changes.

2. INTRODUCTION

2.1 PURPOSE OF THE PLAN

The objective of Asset Management planning is:

"To provide the required level of service, in the most cost effective manner, through management of assets for existing and future customers."

The purpose of this AMP is to:

i. Deliver on local government's purpose to promote the social, economic, environmental, and cultural well-being of communities in the present and for the future
ii. Demonstrate that the Roading assets are operated and maintained in a sustainable, prudent and cost effective manner, so that they provide the required level of service for current and future customers
iii. Demonstrate regulatory compliance, which includes ensuring the LTP is supported by:
    - Quality information and assumptions underlying forecast information
    - Framework for forecast information and performance measures are appropriate to assess meaningful Levels of Service
iv. Demonstrate that the AM level will be achieved

The Plan has been prepared with the intention of a yearly review of the financial statements and a three yearly review of the remainder of the Plan.

2.1.1 Asset Management policy statement for roading

The Waimate District Council Asset Management Policy Statement for the Roading Asset is outlined below. This Policy Statement sets the direction of the Roading Asset Management process.

The objective of the Waimate District Council's Asset Management Policy for the Roading Asset is to ensure that Council's service delivery is optimised to deliver agreed community outcomes and levels of service, manage related risks, and optimise expenditure over the entire life cycle of the service delivery, using appropriate assets as required.

This Asset Management Policy sets the appropriate level of asset management practice for Council's Roading Activity as 'Core' practice, with some intermediate elements as highlighted by the AM Maturity Assessment.
Definition: 'Core' asset management practice is basic technical asset management planning undertaken at a level designed to meet minimum legislative and organisational requirements for financial planning and reporting. 'Core' practice provides technical management outputs for current levels of service, demand management, asset lifecycles, asset forward replacement programmes, new capital expenditure and associated cash flow projections.

Policy Linkages to Other Plans
This Asset Management Policy links to, Council's LTP, the Canterbury Regional Land Transport Strategy, and Roading Activity Plan. New Zealand Transportation Agency asset management requirements form this Policy's minimum asset management practice requirements. The Mid-South Canterbury Roading Collaboration Group is also developing practice and producing numerous documents together.

Structured Assessment of Asset Management Practice

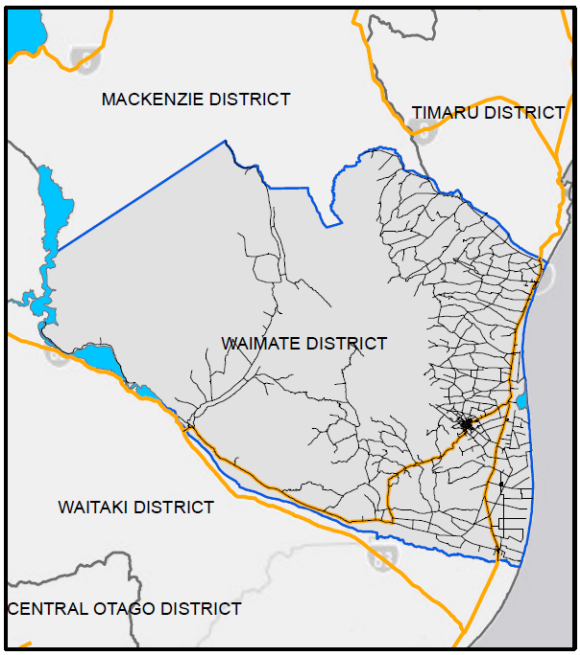
Council has undertaken a structured assessment of the appropriate level of asset management practice for the Roading assets (March 2017). This structured assessment follows the guidance provided in Section 2.1 of the International Infrastructure Management Manual (2015) and Table 2.1.2 International Infrastructure Management Manual (2015).

Table 2.1: Roading Activity Asset Management Practice Assessment

Criteria	Assessment	Commentary
Population	Core	The initial population risk screen for urban areas, all township populations, and total district population showed that asset management practice should be 'Core'
District Wide Risks	Core	Based on the identified district wide risk factors, the suggested level of appropriate asset management practice should be 'Core'
Costs and Benefits	$6.3 M (28% of total expenditure)	The roading budget is the largest in Council and represent higher risks if AM practice is not at an appropriate level. These budgets also allow more scope to develop asset management practice as appropriate
Legislative Requirements	Compliance approach	Waimate District Council policy is to meet minimum legislative requirements and Council follows clear directives within timeframes acceptable to the community. Council will advocate on behalf of the community where legislation is deemed inappropriate
Size, Condition, Complexity of Assets	Typical of a small urban and rural authority	There are a range of assets spread across the large district. In particular, the roading network and rural water supplies are extensive with only a small rating base. While the assets are not highly complex the isolated nature of the communities requires a
Risks Associated with Failures	Moderate level of risk	Overall risks associated with asset failure have been assessed to be moderate. There are some critical routes, bridges and demand issues pending
Organisational Skills and Resources	Average	Waimate District Council comprises a small organisation serving one main urban centre, small communities and a large rural area. The success of the organisation relies on key staff. Experienced managers cover operations and planning roles. Specialist technical work is outsourced Services are delivered through a combination of in-house teams and Contractors. This approach would be consistent with a 'Core' approach
Customer Expectations	Average	The District has a range of community assets that are of a high standard and the community is justifiably proud of them, and has high expectations of the development and maintenance. There is some variation in expectations across the district, particularly between Waimate township and more remote rural areas Overall customer expectations are judged to be medium and the trend of increasing customer expectation is likely. This suggests a requirement for well-developed asset management practice to consistently meet community expectations in the long term
Sustainability	No Corporate Policy at this stage, part of AMP and planning process at activity level	Waimate District Council is following the sustainability regimes of the Land Transport Management Act 2003, NZTS and RLTS requirements (including subsequent amendments and revisions) for Roading; otherwise Council is still in the process of developing its sustainability policies. This will include incorporating legislative changes and the any national or regional policies or plans Any impact of these on asset management practice will be incorporated into the next review of Asset Management Policies
Final AM Level	**Core**	**Analysis of factors suggests that asset management practice should be Core**
AM Maturity Assessment	**Core with some Intermediate**	**Generally, core practice. Intermediate practice identified for Demand Forecasting, Asset Register Data, Asset Condition, Operational Planning, Capital Works Planning, Financial and Funding Strategies and Service Delivery Models in line with national directives and requirements**

2.2 ASSETS INCLUDED IN THIS PLAN

2.2.1 Location

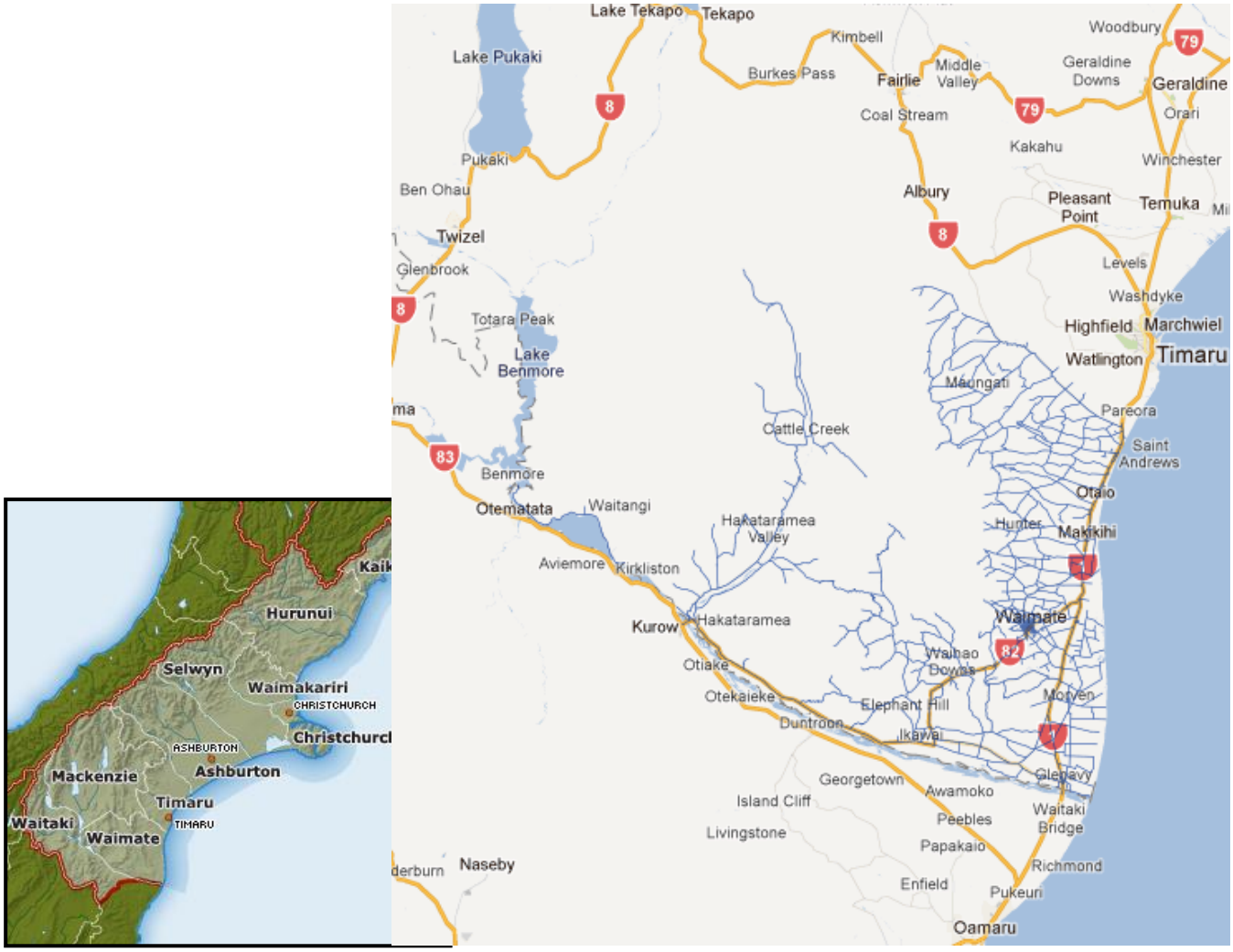


The general topography of the Waimate District is described as flat to rolling. The network has been split into 428 km in flat topography, 853 km in rolling topography and 55 km in mountainous topography. The district is bounded by the Pacific Ocean to the east, the Kirkliston Range to the west, the Pareora River to the north and the Waitaki River to the south. Figure 1.1 shows the boundary of the Waimate District alongside neighbouring authorities.

State Highway 1 and State Highway 82 provide the principal regional connections for the Roading network within the Waimate District. Figure 2.1 shows both the location of the district within the Canterbury Region and extent of the State Highway and District roading network.

Figure 1.1 – Map of Waimate District Council Boundary

Figure 2.1 – Map of Waimate District



2.2.2 The Asset

The transport asset includes all Council-owned and maintained roads, streets, bridges, footpaths and related infrastructure within the District as shown in Table 2.2. Unformed roads are not included.

Table 2.2 – Roading assets included in this plan

Asset	Number	Length
Length of Road		1339 km
Sealed Road		646 km
Unsealed Road		693 km
Bridges	182	3364 m
Culverts	3482	36485 m
Concrete Fords	85	1696 m
Kerb & Channel		48462 m
Signs	Over 5000 individual signs	
Street Lights	495	
Footpaths		63 km

The condition of the roads is dynamic over periods of time due to the District's topography, and the seasonal variations in climatic conditions and traffic.

2.3 RELATIONSHIP WITH OTHER PLANS

The Asset Management Planning process analyses the impact of the Levels of Service on the business and should be structured to be compatible with other key planning mechanisms and documents, including:

LTP: Council's LTP 2021 – 2031 sets out the broad strategic direction for the period of the plan, defining the District Vision, Outcomes, Strategic Objectives, Projects and Tasks and the Financial Framework that will be required. The outcomes are directly related to Governance, Community Well-Being, Environment Protection, Sustainability, Economic Development, and Organisation Performance.

District Plan: The Waimate District Plan assists the Council in carrying out its functions under the Resource Management Act 1991 so that it may achieve the purpose of the Act which is to "promote the sustainable management of natural and physical resources." The Plan was developed in consultation with local communities and interest groups. The Plan controls such activities as:

- Erection, relocation, or demolition of structures, buildings, network utilities and signs
- Commercial activities
- Earthworks
- Hazardous substances
- Planting, trimming or removing vegetation
- Subdivision and development

Other Related Asset Management Plans: Council has other activities each managed through the production and use of Asset Management Plans. Of particular relevance to the Roading Asset are

the Water, Waste Water and Storm Water Asset Management Plans. Cooperation with these Asset groups is required as their works in the road corridor will have impact on Roading assets.

Infrastructure Strategy: This plan will provide the inputs required for the roading portion of the 30-year Infrastructure Strategy as required by the 2014 amendment to the Local Government Act 2002.

Annual Plan and Budget: The works identified in this AMP will form the basis on which future annual plans are prepared.

Procurement Strategy: This is required by the Land Transport Management Act and signals Council's intentions for procurement of subsidised land transport activities.

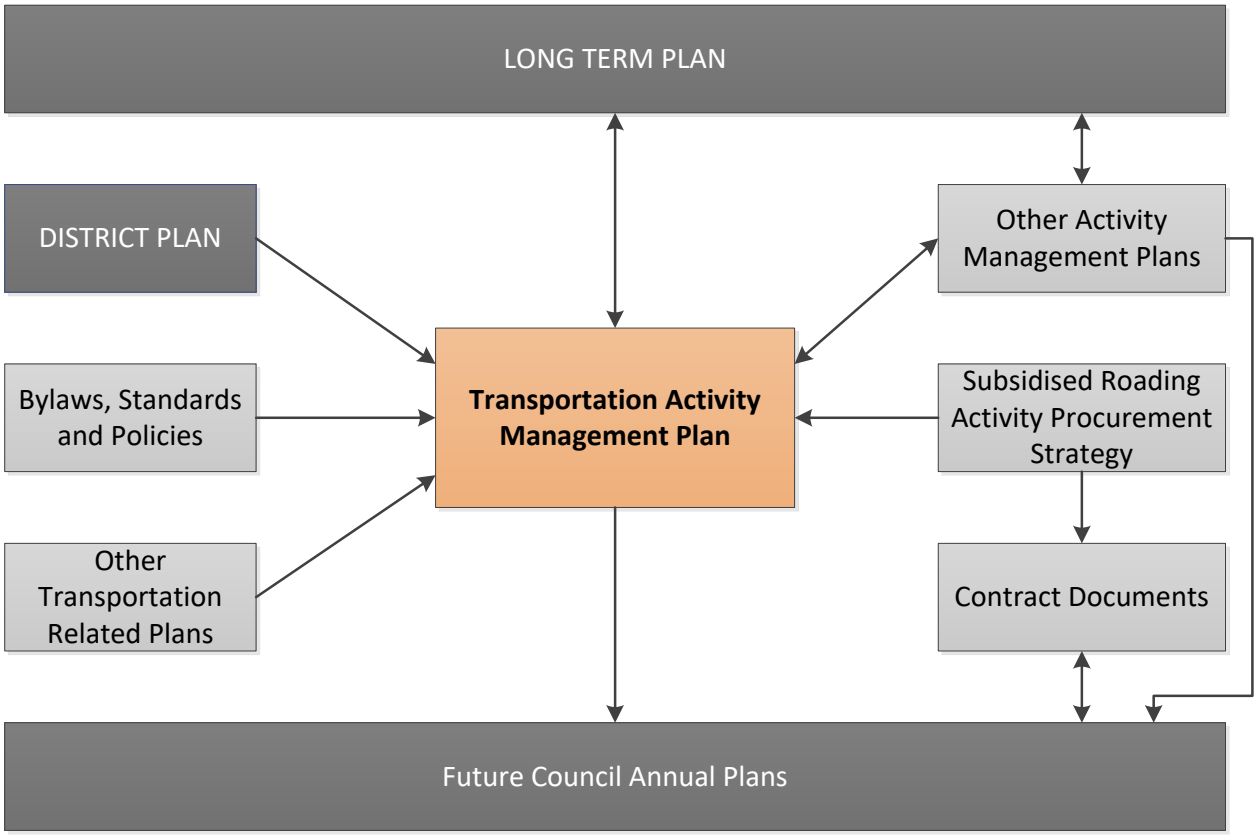
Contracts: The levels of service, strategies and information requirements contained in AMP's are translated into contract specifications and reporting requirements.

Bylaws, standards and policies: These tools for asset creation and subsequent management are needed to support AM tactics.

Other Roading Related Plans: These include:

- Walking and Cycling Strategies
- Regional Policy Statements
- Regional Land Transport Strategy
- Regional Passenger Transport Plan
- New Zealand Transport Strategy
- New Zealand Walking and Cycling Strategy; Getting there on foot, by cycle.

.Figure 2.2 – Relationship between the Roading Asset Management Plan and Other Plans



2.4 HOW THIS PLAN WILL BE USED

This plan should be used in the following ways:

- To support funding applications to NZTA
- To provide a key input into the LTCP and future Annual Plans, by providing a business case for why and how the Council will deliver its roading service and key programmes and funding required to deliver it.
- To help council meet its goals and objectives in a way that best serves customers, including measuring Council's performance against Levels of Service identified.
- To document existing and planned work practices and procedures

2.5 ROADING ASSET OUTCOMES

WDC's community outcomes for 2021-2031 and Roading rationale are outlined in Table 2.2.

These outcomes have been translated into various targets for maintenance and renewals to be achieved in each financial year. The outcomes will be reported in each Annual Report.

The purpose of road assets is to provide a sustainable, safe, convenient, comfortable and cost effective road network for the movement of people, goods and vehicles throughout the Waimate District.

Table 2.3 – Community Outcomes and Roading Rationale

Community Outcomes		Rationale
Thriving Community	A district that provides infrastructure for economic activity	*Efficient and safe roading networks are part of the essential infrastructure for economic growth and development*
	A District that encourages development	
	A District that actively promote itself and its businesses	
Safe and Healthy People	A place where people are safe in their homes, work and public spaces	*Safe and well maintained roads, footpaths and road verges promote safety of all road users, including pedestrians*
	Our services, infrastructure and environment enhance quality of life	
Sustainable District and Environment	A district that is enhanced through sustainable and diverse development	*A well-managed roading network minimises the adverse effects on the Environment*
	We value the natural environment, biodiversity and landscapes	
	Our heritage is valued and protected	
Active, Diverse and Supportive Community	District assets provide recreation and leisure choice	*Roads and footpaths are an important element in both the residential and rural environment for physical exercise, leisure activities and social contact*
	We celebrate and support the good things in our community	

2.6 KEY STAKEHOLDERS

Key Stakeholders

The Council as the ultimate owner of assets. The Crown entity established to manage Roading activities is the NZ Transport Agency (NZTA). Other key stakeholders of the roading network include:

- Regional council
- Owners and operators of inter-connecting or co-located networks, including NZTA state highways
- Significant representative user-groups such as Road Transport Association (RTA), Forestry Contractors, Irrigation Companies and Waimate 50 (motorsport) Committee.

Funding Partners

Funding is provided by several parties and in particular the following are significant contributors:

- NZ Transport Agency – The District Roading Programme is funded by NZTA in accordance with operational requirements set out in NZTA Programme and Funding Manual.
- Ratepayers – Rates provide funding for non-subsidised activities and part of subsidised works

Partners Aoraki Collaboration

Since 2014, strong collaboration has developed across Mid-South Canterbury. The development of a common maintenance contract document meant Waimate, Mackenzie, Timaru and Ashburton District Councils had to work together and resolve differences. This has formed an excellent platform for combined work, as well as procuring physical works and professional services.

Customer Groups

WDC's customers fall into three different groups: associated service providers, users and the wider community. These are shown in Figure 3.3 and further detailed in Table 3.4.

Figure 2.3 – Customer Groups (Source: IIMM Figure 2.1.5)

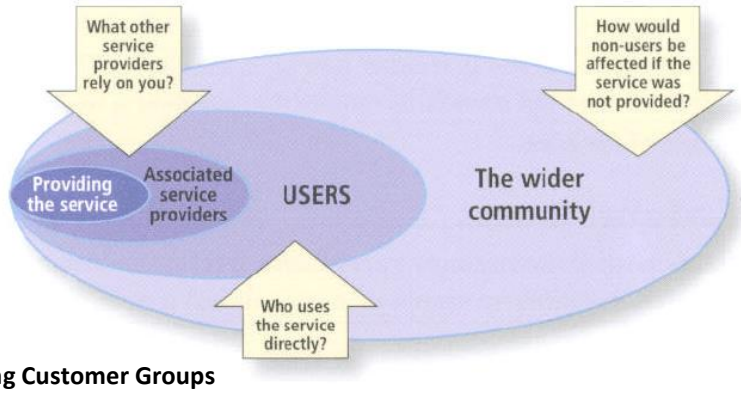


Table 2.4 – WDC Roading Customer Groups

Customer Group	Description	Customers
Associated Service Providers	These are other service providers who rely on the Roading network	• Contractors • Utilities service providers – use the road corridor to access their assets • Transport operators • Emergency Services
Users	Those who directly use the service	• Private drivers • Commercial road users • Drivers of public and other transport services (e.g. tourist buses) • Pedestrians and cyclists
The Wider Community	Non-users that are affected if the service is not provided	• Citizens • Tourists • Residents who live beside the roads • Local businesses – requiring access

Other Parties
Other parties with an interest in WDC's AMP include Council employees, consultants and contractors who manage and work on the asset.

2.7 PROGRESS SINCE LAST AMP

This is the sixth version of the Roading Asset Management Plan produced by Waimate District Council. It provides a medium to long term indication of asset management requirements and specific work programmes over the planning period from 1 July 2021 to 30 June 2031 and beyond.

This version of the plan includes the Business Case Approach which was initially developed during 2016 and 2017, and has been updated since. The strategic and Programme Business Cases can be read as a standalone document form this AMP, but much of the content has been incorporated into this plan.
The Business case approach brings a new thinking approach to the plan and this is particularly clear in section 9 lifecycle management.

The plan will be periodically reviewed to incorporate further improvements and as appropriate new asset information. A significant objective is to optimise life cycle asset management activities and provide a greater degree of confidence in financial forecasts.

2.8 THE PLAN FORMAT

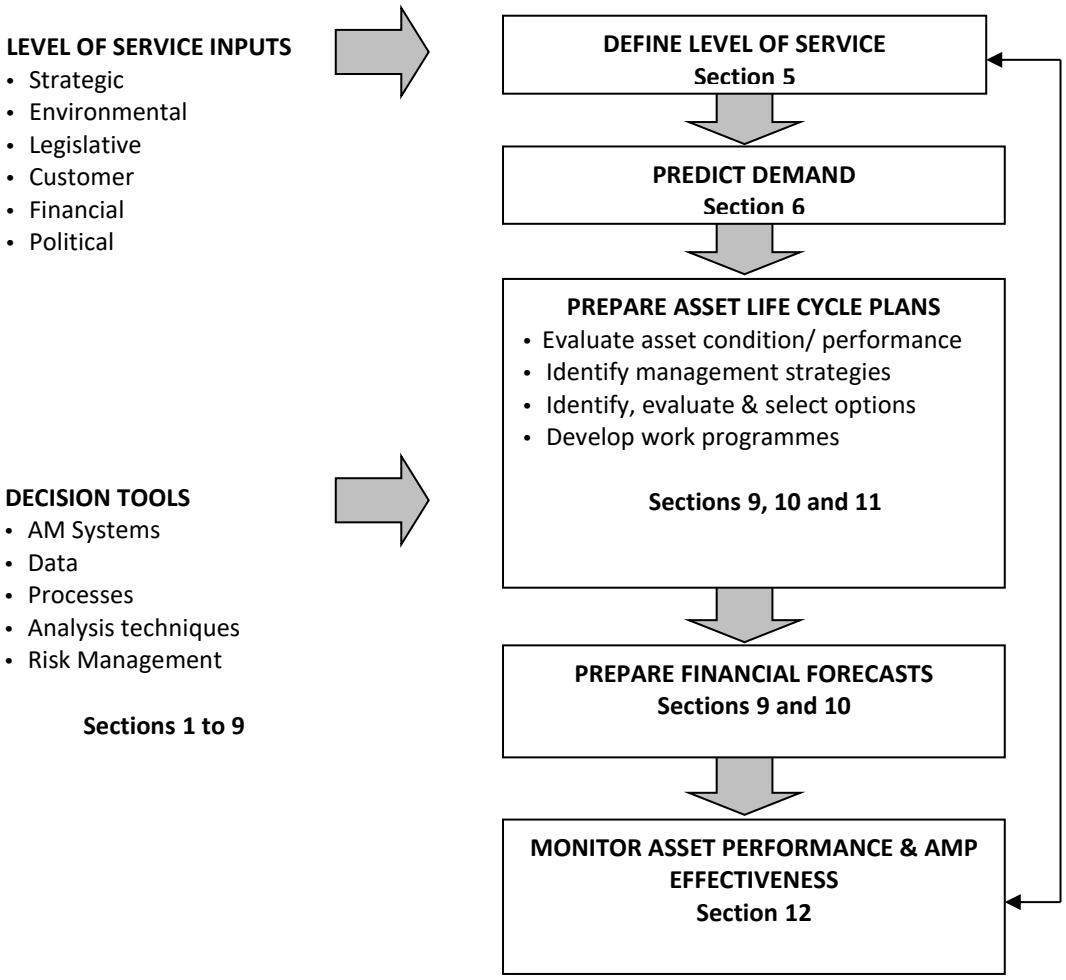
This AMP is structured around the current asset inventories, the existing levels of service and consequential financial management plan for the next ten years. The LTFS includes Maintenance requirements, Renewals, and Capital improvements in terms of NZTA and Council requirements.

This AMP generally follows the format recommended in the International Infrastructure Management Manual (IIMM) 2015 to a core level. The general Roading AMP framework is included in Figure 3.4.

This has been modified to integrate the business case approach (Strategic Case and Programme Case).

This AMP assumes that the current road network will be maintained in perpetuity.

Figure 2.4 – Roading AMP Framework



3. PROBLEM & BENEFIT STATEMENTS

3.1 PROBLEM STATEMENTS, IMPACTS, RESPONSES AND BENEFITS

Through the revision of the AMP and regional workshops problem statements have been developed. Over time these have been refined and simplified into the statements below. *Changes are indicated in italics*

Former Problem Statement	Revised Problem Statement	Impacts on the Network	Evidence
Much of the network is located on difficult Soils which are poorly drained	*The operating environment, and climate change predictions, require the existing network management strategies in Waimate to adapt*	• Limited strength for pavements • Drainage important	• Soils and drainage maps • Site works and pits
The network is impacted by storm related flooding that is predicted to gradually increase	***(Combine with above)***	• Flood damage • Pavement damage • Road user safety	• Post event analysis • Post event network damage
	The existing network and driver behaviour contribute to an unacceptable number of serious injuries and fatalities in Waimate	• Infrastructure improvements and speed management required • Regional approaches to informing road user choices and system management	• Regional accident and fatality statistics
	There are a diverse range of road users in Waimate, whose needs inform provision of a fit-for-purpose network	• *Suitability for different users (including pedestrians and cyclists)* • *Larger and oversized vehicles*	• *Traffic counting* • *Request form the community* • *Observations*
We operate a 'Budget' network which is challenged by changes in demand • minimal widths • limited pavement depth • 1963-73 rapid construction (Seal extension 30km per year)	***Retain***	• No longer fit for purpose across all of network • Performance • 'Gaps' becoming evident • cheap to maintain • metrics good	• Pavement defects where drainage poor • Backlog of drainage work • RAMM rating FWD's
• Intensive land use – more heavies • Intensive land use – reshaping of farmland • Irrigation – higher water tables and moisture in pavement subgrades		• Pavement strength challenged • Natural water courses lost, surface flooding • Pavement strength challenged	
• Vehicle types – large • Vehicle types – heavier • Vehicle types - more		• Width of pavements & bridges too narrow • Pavement strength challenged • Bridge capacity prioritisation (ONRC) • Efficiency for operators	• Increase in Heavy vehicle traffic counts

The issue of the difficult soils which are poorly drained is contextual and not a problem requiring a solution. However, it is regarded as core to the management of the roading network.

The benefits associated with addressing these problems were ascertained as follows.

Problem Statement	Impacts on the Network	Benefits to Customer	Management Benefits
The operating environment, and climate change predictions, require the existing network management strategies in Waimate to adapt.	• Limited strength for pavements • Drainage important • Flood damage • Pavement damage • Road user safety	• - Low costs of damage • Levels of service and expectations met Safer roads	• Meeting levels of service • Providing safer network • Minimising storm disruptions to network • *Progressive climate change adaptation* • Effect of the soils on the network are understood and appropriate solutions developed.
The existing network and driver behaviour contribute to an unacceptable number of serious injuries and fatalities in Waimate	• Infrastructure improvements and speed management required • Regional approaches to informing road user choices and system management	• Improved road safety • 'Road to Zero' objectives progressively achieved	• Contribution to 'Road to Zero' infrastructure achievements • Contribution to 'Road to Zero' regional initiatives
There are a diverse range of road users in Waimate, whose needs inform provision of a fit-for-purpose network	• *Suitability for different users (including pedestrians and cyclists)* • *Larger and oversized vehicles*	• *All users considered and safety improvements for pedestrians and cyclists given greater priority*	• *Meeting levels of service* • *Providing safer network*
We operate a 'Budget' network which is challenged by changes in demand. • minimal widths • limited pavement depth • 1963-73 rapid construction (Seal extension 30km per year)	• Performance • 'Gaps' becoming evident No longer fit for purpose across all of network • cheap to maintain metrics good	• Low costs to date • Levels of service and expectations met	• Rates and NZTA investment has been minimised • Changing levels of service and expectations will be met • Efficiencies sought through ONRC based differentiation
• Intensive land use – more heavies Intensive land use – reshaping of watercourses	• Pavement strength challenged • Natural water courses lost, surface flooding	• Changing levels of service and expectations will be met • Pavement strength challenged	
• Irrigation – higher water tables and moisture in pavement subgrades • Vehicle types – large • Vehicle types – heavier • Vehicle types - more	• Width of pavements & bridges • Pavement strength challenged	• Efficiency for Operators	• Bridge capacity prioritisation (ONRC)

3.2 ALIGNMENT OF PROBLEMS TO STRATEGIC DIRECTIONS

The following chart shows the alignment of these problems identified above to National Statements, Regional and Local Directions. Nationally the GPS provides clear objectives and regionally, Canterbury has identified issues that are common; locally community outcome indicates desires and expectations. Local problems are primarily associated with increased agricultural activity, which in turn supports the economy.

National: GPS	National: Transport Outcomes Framework	Canterbury RLTP 2020 Problem Statements	Problem Statement	Community Outcome Contribution
Climate Change Developing a low carbon transport system that supports emission reductions, while improving safety and inclusive access	**Environmental sustainability** **Resilience and security**	Planning and investment do not always support sustainable transport choices, resulting in **high greenhouse gas emissions and adverse health impacts**. Lack of resilience of the network to **unknown stresses, severe events and climate change** are resulting in community severance and infrastructure being damaged or destroyed.	*The operating environment, and climate change predictions, require the existing network management strategies in Waimate to adapt*	**Sustainable District and Environment** • A district that is enhanced through sustainable and diverse development • Our heritage is valued and protected • We value the natural environment, biodiversity and landscapes
Safety Developing a transport system where no-one is killed or seriously injured	**Healthy and safe people**	Unforgiving network provision, deficiencies in design and vehicle quality, and poor decision making by transport users, are leading to **deaths and serious injuries** on our transport network	*The existing network and driver behaviour contribute to an unacceptable number of serious injuries and fatalities in Waimate*	**Safe and Healthy People** A place where people are safe in their homes, work and public spaces • Our services, infrastructure and environment enhance quality of life
Better Travel Options Providing people with better transport options to access social and economic opportunities **Improving Freight Connections** Improving freight connections for economic development	**Inclusive access** **Economic prosperity**	Planning and investment do not always support **sustainable transport choices**, resulting in high greenhouse gas emissions and adverse health impacts Land use change, and increased freight and tourism demand, can result in inefficiency and reduce the condition and suitability of infrastructure.	*There are a diverse range of road users in Waimate, whose needs inform provision of a fit-for-purpose network* We operate a 'Budget' network which is challenged by changes in demand.	**Active, Diverse and Supportive Community** • All people are encouraged to participate in our democratic processes • District assets provide recreation and leisure choice • We celebrate and support the good things about our community **Thriving Community** • A district that provides infrastructure for economic activity • A district that encourages development • A district that actively promotes itself and its businesses

3.3 BENEFITS

The benefits associated with the problem statements discussed are management or community focussed.

An improved understanding of the issues that affect network performance assisted in optimising the work programme and delivering appropriate levels of service in a value for money manner. Council is used to operating lean budgets and a move to greater prioritisation is not a step-change.

As the demands on the network increase and the land-use adjacent to the network changes, it is clear that levels of service will be challenged. It is timely to acquire knowledge and invest to protect the existing asset and ensure that levels of service remain satisfactory.

Road safety initiatives contribute to the national 'Road to Zero' road safety strategy and critical and urgent changes required as part of the strategy.

The consequences of not addressing these problems and an associated programme may mean

- No longer fit for purpose across all of the network
- Pavement strength challenged
- Performance "gaps" become evident

The programme needs to reflect the changing situation and proposes a greater investment in improving pavements to meet the changing needs of customers.

4. DESCRIPTION OF ROADING ASSET

4.1 WAIMATE DISTRICT OVERVIEW

The Road Assessment and Maintenance Management System (RAMM) system asset component is the main information system used in the management of the Roading network. RAMM provides an asset register for storage of primary asset attributes including all roads in the network, hierarchy, carriageway widths, surfacing types and ages, pavement composition, traffic volumes and loadings and road condition data. Basic information on structures such as drainage facilities, footpaths, bridges, Streetlights and signs is also stored on the RAMM system.

The information held on RAMM is continually being updated and improved following the completion of roading maintenance and renewal treatments, capital improvements, traffic counts and road rating condition assessments.

4.2 DESCRIPTION OF ASSET

Roading is the largest Council activity, involving over one-quarter of rates income and totalling around one-third of Council's expenditure is devoted to this activity. Costs are expected to remain high to ensure that we can deliver the present service level.

The Waimate District Council is responsible for the day-to-day operation, maintenance, renewal and improvement of the District's local roading network excluding State Highways No 1 and 82 which are managed by the New Zealand Transport Agency. The Council also provides other assets such as footpaths and street lights. The New Zealand Transport Agency is responsible for State Highways 1 and 82 which service the district. They are an important part of the overall roading network of the District. The Council works with New Zealand Transport Agency and the Regional Transport Committee to meet its obligations with regard to roading and to be consistent with the Regional Land Transport Strategy.

The purpose of road assets is to provide a sustainable, safe, convenient, comfortable and cost effective road network for the movement of people, goods and vehicles throughout the Waimate District.

The Roading asset is made up of the following components, which are described in more detail in the sections below.

- Land
- Road pavements - sealed and unsealed
- Bridges.
- Drainage (Culverts, Concrete fords and Surface Water Channels)
- Traffic services
- Footpaths
- Street lighting

4.2.1 One Network Roading Classification (ONRC)

A joint initiative between the New Zealand Transport Agency and Local Government New Zealand has introduced a road classification system for all roads in New Zealand. The classification system aims:

- to deliver similar driving experience across New Zealand,
- To support more consistent asset management across the country
- to make collaboration and prioritisation between those organisations responsible for the planning, delivery, operation and maintenance of the nation's roading network, leading to a more efficient and safer network and improved value for money.

The ONRC categories are described below.

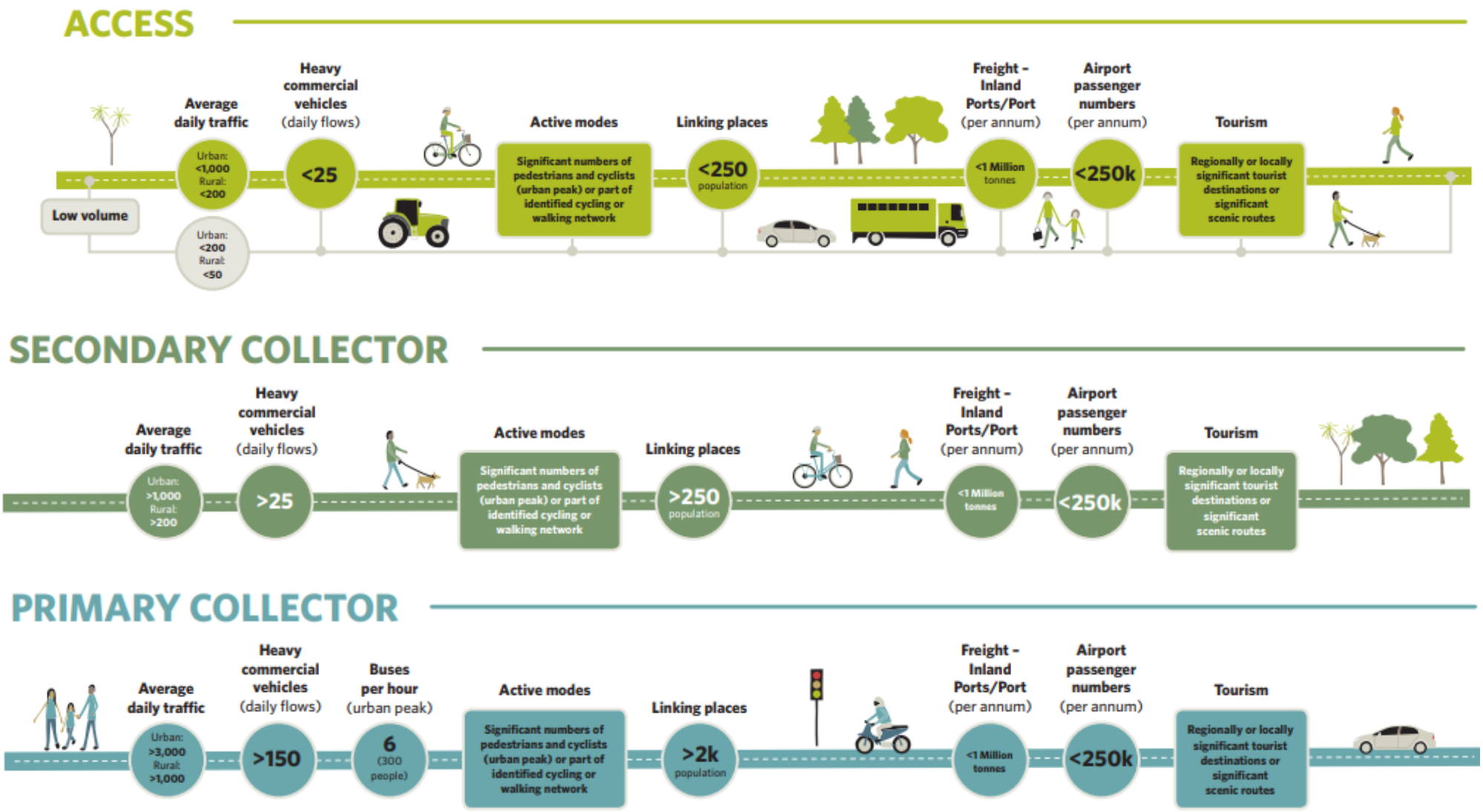
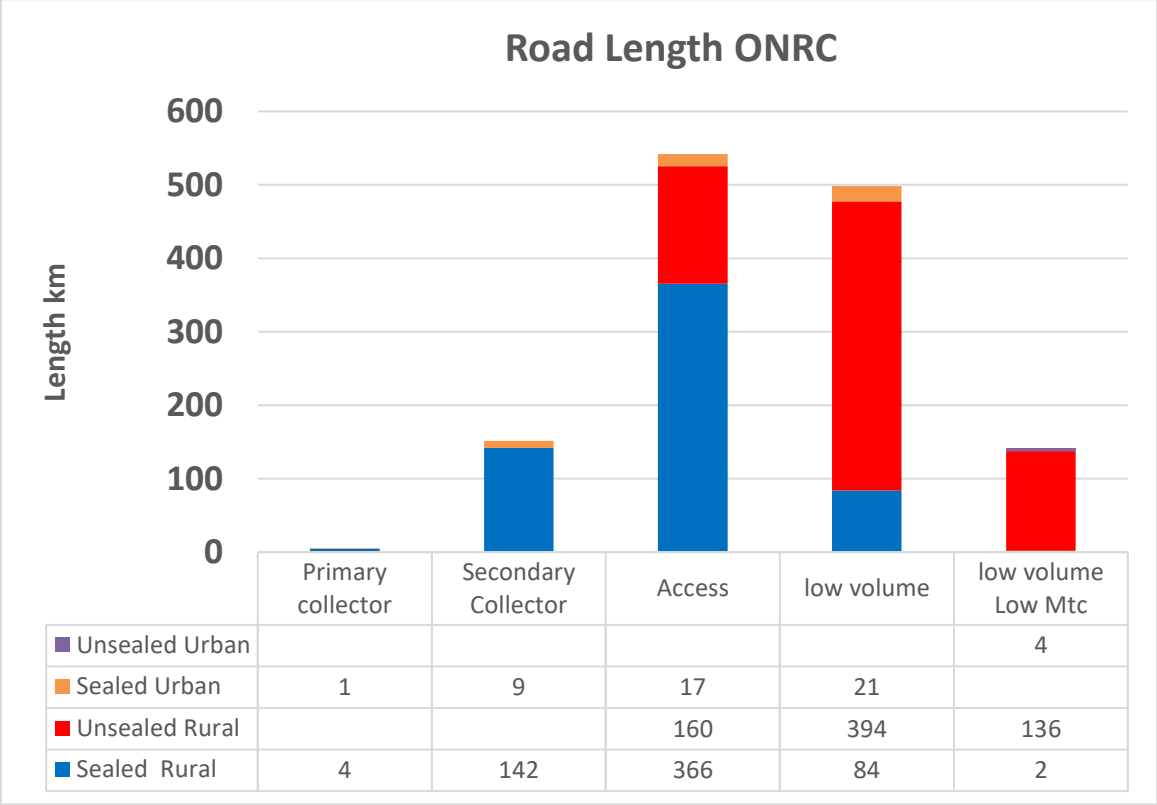
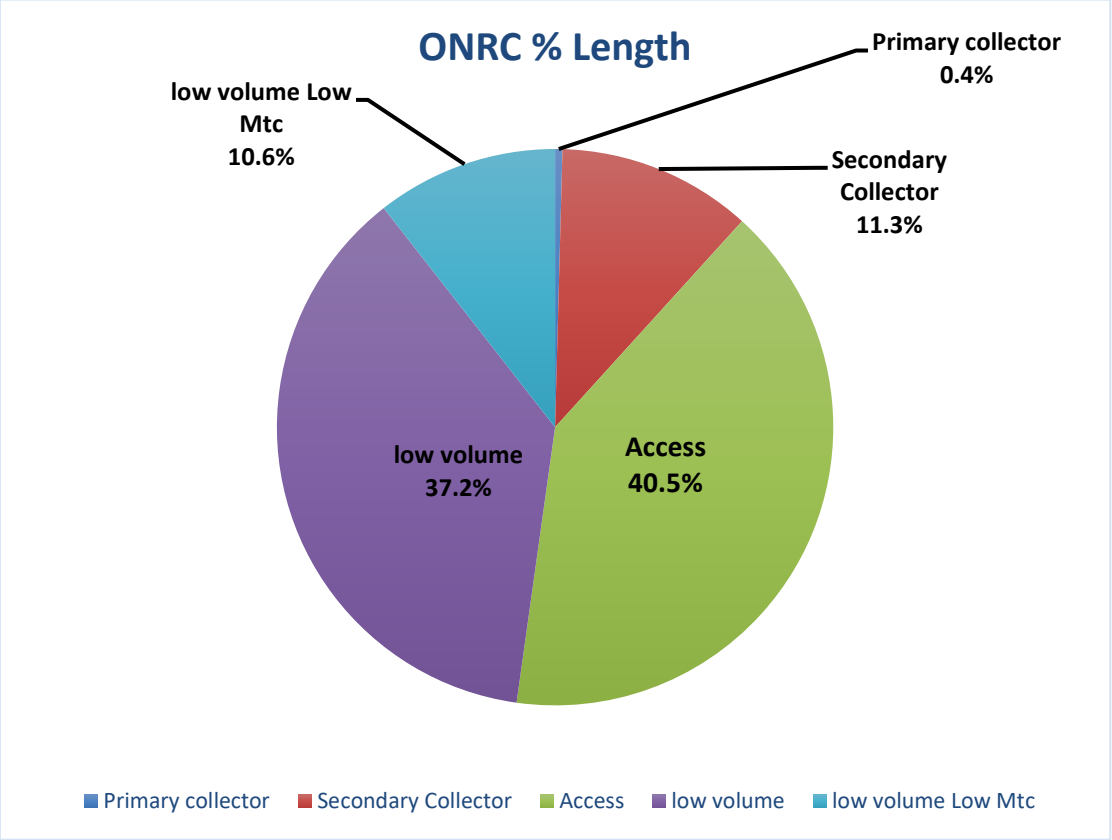

ACCESS
Low volume
Average daily traffic
Urban: <1,000 Rural: <200
Urban: <200 Rural: <50
Heavy commercial vehicles (daily flows)
<25
Active modes
Significant numbers of pedestrians and cyclists (urban peak) or part of identified cycling or walking network
Linking places
<250 population
Freight – Inland Ports/Port (per annum)
<1 Million tonnes
Airport passenger numbers (per annum)
<250k
Tourism
Regionally or locally significant tourist destinations or significant scenic routes
SECONDARY COLLECTOR
Average daily traffic
Urban: >1,000 Rural: >200
Heavy commercial vehicles (daily flows)
>25
Active modes
Significant numbers of pedestrians and cyclists (urban peak) or part of identified cycling or walking network
Linking places
>250 population
Freight – Inland Ports/Port (per annum)
<1 Million tonnes
Airport passenger numbers (per annum)
<250k
Tourism
Regionally or locally significant tourist destinations or significant scenic routes
PRIMARY COLLECTOR
Average daily traffic
Urban: >3,000 Rural: >1,000
Heavy commercial vehicles (daily flows)
>150
Buses per hour (urban peak)
6 (300 people)
Active modes
Significant numbers of pedestrians and cyclists (urban peak) or part of identified cycling or walking network
Linking places
>2k population
Freight – Inland Ports/Port (per annum)
<1 Million tonnes
Airport passenger numbers (per annum)
<250k
Tourism
Regionally or locally significant tourist destinations or significant scenic routes

Table 4.1 – Sealed and unsealed pavement quantities

Road Type	ONRC Category	Typical Daily Traffic	Heavy Commercials Vehicles	Length km	% of network by Length	Total
Sealed Rural	Primary collector	> 1000	>150	4	0.3%	
	Secondary Collector	>200	>25	142	10.6%	
	Access	<200	<25	366	27.3%	
	low volume	<50	<25	84	6.3%	
	low volume Low Mtc	<10		2	0.1%	598
Unsealed Rural	Access	<200	<25	160	11.9%	
	low volume	<50	<25	394	29.4%	
	low volume Low Mtc	<10		136	10.1%	689
Sealed Urban	Primary collector	> 3000		1	0.1%	
	Secondary Collector	> 1000		9	0.7%	
	Access	<1000		17	1.2%	
	low volume	<200		21	1.6%	48
Unsealed Urban	low volume	<200		4	0.3%	4
				1339		





WDC has elected to identify an additional division within the ONRC's access road low volume category - low volume low maintenance.
The total lengths of road classified as "low volume and low volume low maintenance" is 640 km (48%)
The combined total of access and the access-low volume groups is 1182km (or 88%) of the network

4.3 BRIDGES

WDC manages a total of 182 bridges with a combined length of 3352m (includes large culverts that are considered bridges as they have a waterway area over 3.4m^2). The types of bridges include:

- 145 single lane bridges (92% length)
- 25 Timber bridges (12% length)
- 27 speed and weight restricted bridges (12% length)
- 1 speed only restricted bridges

The Optimised Replacement Cost (ORC) for bridges is $28,080,257as at 1 July 2020

Bridge Asset Type	Number	Length m
Major Culvert		
Concrete Box Culvert	9	41
Concrete Precast Box Culvert	9	43
Conc. pipes Culvert	6	37
Steel multi-plate Culvert	12	56
Concrete		
Concrete, HC units	10	475
Concrete, I beams	1	51
Concrete	11	84
Steel & Concrete		
Steel , Precast Conc. Deck	75	1548
Steel, Insitu. Conc. Deck	8	306
Steel, Timber		
Steel, Timber deck	18	416
Steel, Steel deck	1	4
Timber		
Timber	18	231
Timber light truss	3	49
Stone Arch		
Stone Arch	1	11
Total	**182**	**3352**

Bridge Length range metres	No of	Total Length	No of Spans
2 to 5	35	135	39
6 to 13	79	775	105
14 to 29	42	882	94
30 to 60	16	648	56
61 to 161	10	912	71
	182	**3352**	**365**

4.4 DRAINAGE

Waimate District Council own, operate and maintain drainage assets associated with the road pavements. The quantities of each type of drainage asset is detailed in Table 4.2.

Table 4.2 – Drainage asset quantities

Drainage Type	Quantity	
Culvert	Length m	No. of
0-300mm Dia.	22472	2293
300-440mm Dia.	3671	350
440-500mm Dia.	2942	241
500-600mm Dia.	4167	335
600-760mm Dia.	584	48
760-990mm Dia.	1335	105
990-1190mm Dia.	353	30
1190-1300mm Dia.	607	48
>1300mm Dia.	356	32
Total	**36485**	**3482**

Concrete Fords	Length m	No. of
Concrete Fords	**1696**	**85**

Kerb & Channel	Length km
Kerb & Channel	41.288
Kerb only	0.406
Dished Channel	1.125
Kerb & Dished Channel	5.453
Mountable Kerb & Channel	0.105
Mountable Kerb Only	0.085
Total	**48.462**

The Optimised Replacement Cost (ORC) for drainage is $17,156,987 as at 1 July 2020.

4.5 TRAFFIC SERVICES

WDC owns and maintains approximately 5000 signs, 70km of road marking and road marking symbols, 1800 Edge Marker Posts and 240 metres of guard and site railing.

The Optimised Replacement Cost (ORC) is $601,565 for signs and $419,922 for Street Lighting (as at 1 July 2020).

4.6 FOOTPATHS

There are 62.7km of footpath on the Roading network principally designed for and used by pedestrians. The majority (56.3km) of the footpath is within the Waimate Township area and a relatively small amount (3.4km) is in the small townships of St Andrews, Glenavy and Makikihi etc. Footpaths on State Highways are included in this asset group, as they are the maintenance responsibility of the Waimate District Council.

The current inventory of formed footpath is included in Table 4.3.

Table 4.3 – Footpath assets

Footpath Material	Length km	Area m²
Asphaltic concrete (black)	22.23	45,672.60
Concrete	0.13	302.80
Interlocking blocks	0.58	878.40
Metal	4.17	7,161.50
Opengrade Emulsion mix	3.12	7,682.70
Seal	34.7	66,610.30
Total	**62.69**	**128,308.30**

The Optimised Replacement Cost (ORC) for footpaths is $7,313,312 as at 1 July 2020.

4.7 STREET LIGHTING

WDC manages the maintenance and renewal of street lights throughout the district including those on the state highways owned by NZ Transport Agency. Street lighting asset details (excluding NZTA owned assets) are summarised Table 4.4.

Table 4.4 – Street Light assets

Lanterns	Number
150W HP Sodium	23
160W SBMV	20
17 Watt LED	10
70W HP Sodium	438
Blank	8
Total	**495**
Columns	**114**

The Optimised Replacement Cost (ORC) for street lighting is $419,922 as at 1 July 2020.

4.8 FUTURE IMPROVEMENTS

Along with implementing the amended road classification system the most significant input proposed into management of the Roading asset is improving knowledge of the current age and remaining life of all assets. This will allow Council to better optimise the lifecycle of their assets, getting the most out of the life of the Roading assets.

5. LEVELS OF SERVICE

5.1 INTRODUCTION

Asset management planning requires a clear understanding of customer needs and preferences and the minimum obligations that must be met. A key objective of this Asset plan is to match the levels of service provided by the asset with the expectations of the customers, given legislative, financial, technical and safety constraints. Service standards, which are set to meet this objective, provide the basis for the life cycle management strategies and work programmes identified in Section 9.

The selection of appropriate Levels of Service is a key determinant of the cost of maintaining a network. The desire of a community is always for the highest possible levels of service, but this needs to be balanced against the cost and what can be afforded. In NZ, this balancing process is required to be undertaken in consultation with the community, to ensure that the wishes of the community are reflected in what is provided.

The WDC levels of service for the Roading Asset reflect current industry standards and are based on:

- **Statutory Requirements:** Environmental standards, regulations and acts that impact on the way assets are managed (i.e. resource consents, building regulations, health and safety legislation, Local Government Act)
- **Customer Research and Expectations:** Information gained from the community through service complaints and feedback
- **Strategic Goals:** Provide guidelines for the scope of current and future services offered, the manner of service delivery and define specific levels of service which the WDC wishes to achieve
- **Demands on the Roading Network:** Service demands that are placed on the network by the mix of road users and the way this demand varies across the District.

5.2 COMMUNITY OUTCOMES

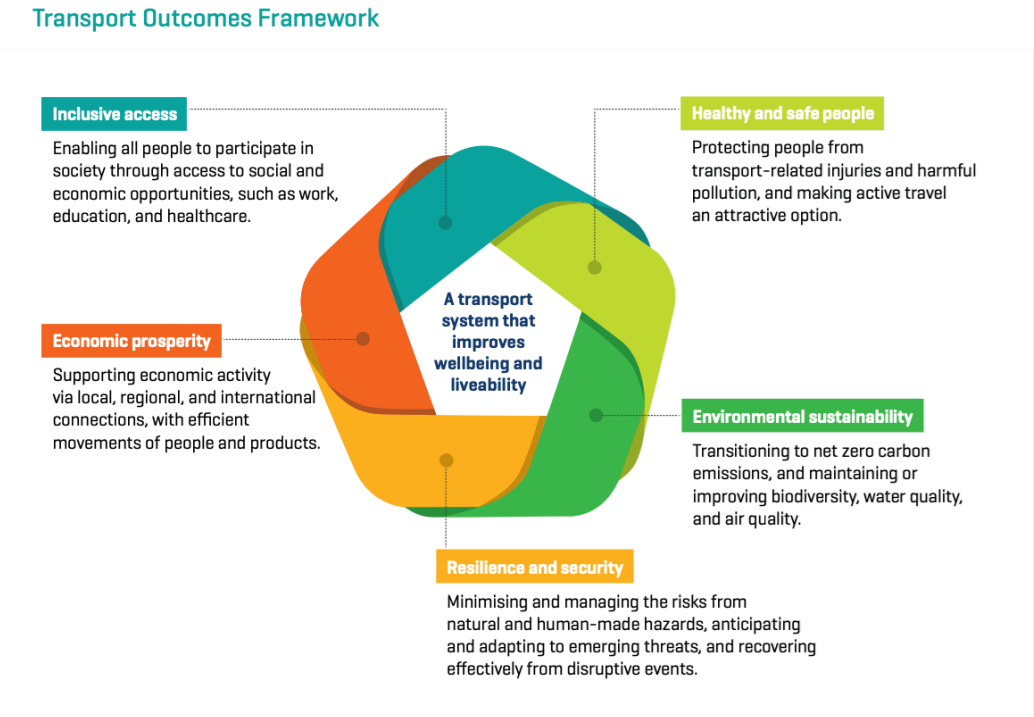
Community consultation is undertaken in terms of determining desired community outcomes. The challenge of the consultation process is to ensure that the community understands the cost implications of the outcomes they are requesting. The Levels of Service in this Asset Management Plan are linked back to the community outcomes using Roading rationale. WDC's community outcomes for 2021-2031 and Roading rationale are outlined in Table 5.3.

5.3 NATIONAL STRATEGIES AND PLANS

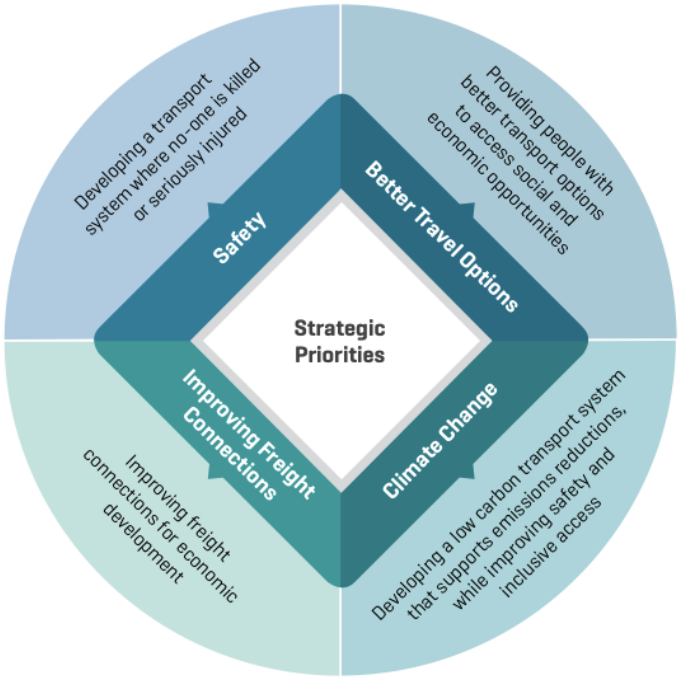
Management of the transport network is subject to various strategies and plans determined at a national level. The Government's transport policy directions are set out in a number of guidance documents, including the ***National Infrastructure Plan (NIP), Government Policy Statement on Land Transport 20212/22–2030/31 (GPS2021)*** and ***Road to Zero: New Zealand's Road Safety Strategy 2020–2030***. Together these documents outline the Government's strategic direction and priorities for transport.

Government's overall objective for transport as set out in the **GPS2021** is:

The purpose of the transport system is to improve people's wellbeing, and the liveability of places. It does this by contributing to five key outcomes, identified in the Ministry of Transport's Transport Outcomes Framework.



The GPS2021 is a high-level Government statement on desired outcomes and funding priorities for transportation activities to achieve national and regional targets, such as supporting growth and economic activity or increasing walking and cycling and public transport. The Government's investment will be guided by four strategic priorities:



The third ***National Infrastructure Plan (NIP)*** was released in 2015. The NIP outlines the government's 30-year vision for New Zealand's infrastructure. It builds on the previous plans, by outlining the government's vision for New Zealand's infrastructure and the role infrastructure will play in supporting our economic growth. The overall purpose of this version of the NIP is to improve investment certainty for businesses by giving confidence over current and future infrastructure provision. The chapter dedicated to the transport sector assesses the current situation, current work programme, and key issues for transport infrastructure.

Linkages between land transport documents are shown in Figure 3.1 below

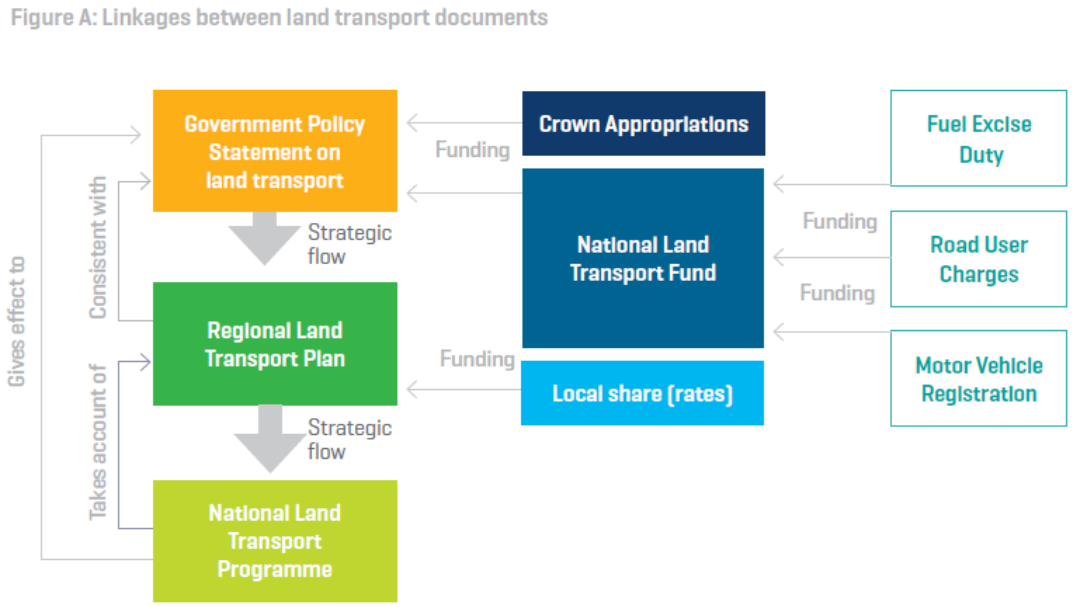


Figure 3.1: Strategic Context of Government Policy Statement on Land Transport Funding

Road to Zero: New Zealand's Road Safety Strategy 2020–2030 is the government's strategy to guide improvements in road safety. 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.

5.4 KEY LEGISLATION AND REGULATION – IMPLICATIONS FOR ASSET MANAGEMENT

Legislative requirements set the framework for the minimum standards of service that Council as the Road Controlling Authority has to meet. The key legislation relating to the Council's responsibility to manage the Roading asset is:

- Local Government Act 2002
- Land Transport Management Act
- Resource Management Act 1991
- Building Act 2004 and 2005 Amendment
- Health & Safety Act in Employment Act 1992
- Civil Defence Emergency Management Act 2002

- Traffic Regulations Act 1976
- Public Works Act 1981
- Land Transport Rule: Setting of Speed Limits 2003
- Land Transport Rule: Traffic Control Devices 2004
- Climate Change Response (Zero Carbon) Amendment Act 2019

The ***Local Government Act 2002*** gives local authorities the full capacity, and full rights, powers and privileges, to carry on or undertake any activity or business, do any act, or enter into any transaction wholly or principally for the benefit of its district.

Along with these wide sweeping powers comes the requirement to identify practicable options before making a decision, and to assess the benefits and costs of each option against the likely economic, environmental, social and cultural impacts.

Local authorities are also required to consult widely, effectively and appropriately with the community to determine the communities' wishes and to seek feedback on all potentially significant activities – not only when a particular course of action is proposed, but at the various stages of the decision-making process.

The WDC has determined that it will consult its communities where practical, reasonable and within the resources available to it. A significant aspect of this consultation process is the development of the LTP, which forms the long-term (not less than ten years) direction for all Council's activities.

The ***Land Transport Management Act (LTMA)*** requires Council to prepare a three-year land transport programme (which is reviewed annually and fully redeveloped at the completion of the three-year period) through a special consultative procedure, unless the local authority includes the matters that are required to be in such a programme in its LTCP or Annual Plan, and provide details of those matters in a form acceptable to Land Transport New Zealand (NZTA).

When preparing its land transport programme Council must take into account how road maintenance:

- assists economic development
- assists safety and personal security
- improves access and mobility
- protects and promotes public health
- ensures environmental sustainability

Levels of service provided and maintenance practices used should be in line with the objectives of the New Zealand Transport Strategy and the requirements of the Land Transport Management Act 2003.

The ***Resource Management Act 1991*** requires Council to:

- sustain the potential of natural and physical resources to meet the reasonably foreseeable needs of current and future generations
- comply with the District and Regional Plans

- avoid, remedy or mitigate any adverse effect on the environment and structures (e.g. adverse effect of surface run-off from roads)

The ***Building Act 2004*** requires Council to:

- Ensure all buildings and facilities constructed comply with the Act
- Produce Project Information Memoranda (PIM's) which supply all available information relating to an individual property. For the roading network the relevant information may include details of access restrictions, approvals, leases, plans, relevant records, notices, etc.

The ***Health and Safety at Work Act 2015*** requires Council to:

- protecting workers and other persons against harm to their health, safety and welfare by eliminating or minimising risks arising from work
- providing for fair and effective workplace representation, consultation, co-operation, and resolution of issues
- encouraging unions and employer organisations to take a constructive role in promoting improvements in work health and safety practices and assisting PCBUs and workers to achieve a healthier and safer working environment
- promoting the provision of advice, information, education, and training in relation to work health and safety
- securing compliance with the Act through effective and appropriate compliance and enforcement measures
- ensuring appropriate scrutiny and review of actions taken by persons performing functions or exercising powers under the Act
- providing a framework for continuous improvement and progressively higher standards of work health and safety.

The ***Civil Defence Emergency Management Act 2002*** requires Council to:

- Establish and be a member of a Civil Defence Emergency Management Group
- Co-ordinate, through regional groups, planning, programmes and activities related to civil defence emergency management across the areas of reduction, readiness, response and recovery, and encourage co-operation and joint action within those regional groups
- Improve and promote the sustainable management of hazards in a way that contributes to the well-being and safety of the public and also to the protection of property

The ***Traffic Regulations Act 1976*** requires Council to:

- Comply with the rules for pedestrian crossings, traffic islands, road markings etc.
- Plan activities such that the network complies with driving rules

The ***Public Works Act 1981*** requires Council to:

- Set requirements for the acquisition of land by local authorities for roading works
- Sets requirements for stopping of roads and removal of trees on adjacent land

Land Transport Rule: Setting of Speed Limits 2017 and its amendments requires Council to:

- The Rule establishes procedures and requirements whereby RCAs may set enforceable speed limits on roads within their jurisdictions.

Land Transport Rule: Traffic Control Devices 2004 and its amendments requires Council to:

- Authorise and install traffic control devices in accordance with the rule;
- Ensure safe practice in the design and installation of traffic control devices and how they are used for traffic management.

Climate Change Response (Zero Carbon) Amendment Act 2019 does four key things.

- set a new domestic greenhouse gas emissions reduction target for New Zealand to:
  - reduce net emissions of all greenhouse gases (except biogenic methane) to zero by 2050
  - reduce emissions of biogenic methane to 24–47 per cent below 2017 levels by 2050, including to 10 per cent below 2017 levels by 2030
- establish a system of emissions budgets to act as stepping stones towards the long-term target
- require the Government to develop and implement policies for climate change adaptation and mitigation
- establish a new, independent Climate Change Commission to provide expert advice and monitoring to help keep successive governments on track to meeting long-term goals

Council will be required to contribute to emissions reductions.

Legislation (e.g. Resource Management Act) requires Council to consult with the Tangata Whenua and take into account the principles of the ***Treaty of Waitangi*** in the management of road infrastructural assets.

5.5 STANDARDS, CODES OF PRACTICE AND GUIDELINES

A list of standards, codes of practice and guidelines adopted for use by Council are included below.

Bridge Inspection and Maintenance Manual
Bridge Manual, NZTA
Chipsealing in New Zealand, TNZ, 2005
Code of Practice for Temporary Traffic Management (CoPTTM), NZTA
Economic Evaluation Manual:, NZTA
Guide to the Geometric Design of Rural Roads; AUSTROADS,
High-risk rural roads guide
International Infrastructure Management Manual, NAMS,2015
Investment knowledge - base
RAMM Database Operation Manual and Road Condition Rating and Roughness Manual
Manual of Traffic Signs and Markings NZTA
National Code of Practice for Utility Operators Access to Transport Corridors
NZS 4404:2010 Land Development and Subdivision Engineering
NZS 3910:2013 Conditions of Contract for Building and Civil Engineering Construction
Procurement manual NZTA
NZTA Specifications
Overweight Permit Manual (OPM)
Project Evaluation Manual, NZTA
Waterway Design: A guide to the Hydraulic Design of Bridges, Culverts and Flood ways Austroads

5.6 REGIONAL PLANS

The **Draft Canterbury Regional Land Transport Plan 2021-31** outlines the investment priorities into land transport within the region.
The plan identifies the future transport challenges as:

- Providing for freight demand
- Providing choice for people
- Safety
- Canterbury earthquake recovery
- Resilience and long-term sustainability
- The role of technology

The objectives are listed as follows.

Objective 1: A transport network that addresses current and future transport demand
Objective 2: A land transport system that is increasing free from death and serious injury
Objective 3: The Canterbury earthquakes recovery is supported
Objective 4: The land transport network that is resilient and supports long term sustainability
Objective 5: Investment in land transport infrastructure and services is efficient

A monitoring and performance indicator framework has been established with 2024 and 2042 targets.

The statement of priorities for 2018-28 are detailed as follows.

Priority One: Looking after what we have
Priority Two: Finishing what we have started (existing commitments)
Priority Three: Improvements with high strategic alignment

The **Canterbury Land & Water Regional Plan (LWRP)**
The community-driven priorities being developed by zone committees under the Canterbury Water Management Strategy will be actioned through the Land and Water Regional Plan, which will build on, improve, and in some instances replace, Chapters 4 to 8 of the NRRP. This new plan will also embed the provisions of the Chapter 2 in the NRRP.

There are higher standards for Stormwater control and treatment will be needed to be considered in drainage and environmental management going forward.

5.7 WAIMATE DISTRICT COUNCIL STRATEGIES, PLANS AND BYLAWS

Bylaws and Policy
Waimate District Council has a number of bylaws and policy documents that come under the heading of Roading Policy. The Roading Policy has an overall objective of:

> ***The purpose of road assets is to provide a sustainable, safe, convenient, comfortable and cost effective road network for the movement of people, goods and vehicles throughout the Waimate District.***

To support this objective WDC has a number of Roading related policies in place to help regulate activities undertaken on the roading network. These Roading policies achieve a number of purposes:

- To protect the asset from Ad Hoc development
- To provide stakeholders with clear expectation on right of use
- To enable council to provide consistent guidance for its stake holders

Table 5.1 lists those policies related to the Roading Asset.

Table 5.1 - Roading Policy

Policy
District Plan 2014
Waimate District Council Consolidated Bylaw 2018
Asset Management Policy Statement for Roading 2017
Waimate District Council Procurement Strategy 2019

5.8 LEVEL OF SERVICE CONSULTATION

Customer consultation has occurred as part of Council-wide discussion and Roading specific; from this approach information on customer expectations has been gathered from the following:

- Customer Surveys
- LTP and Annual Plan consultation
- Customer feedback database
- Public meetings

A summary of the service requests made to council over the year 2010/11-2018/19 is included in Table 5.2. A total of 192 requests were made, with the most frequent being operational requests followed by drainage (flooding affecting the road network and adjacent properties) and street lighting (not working).

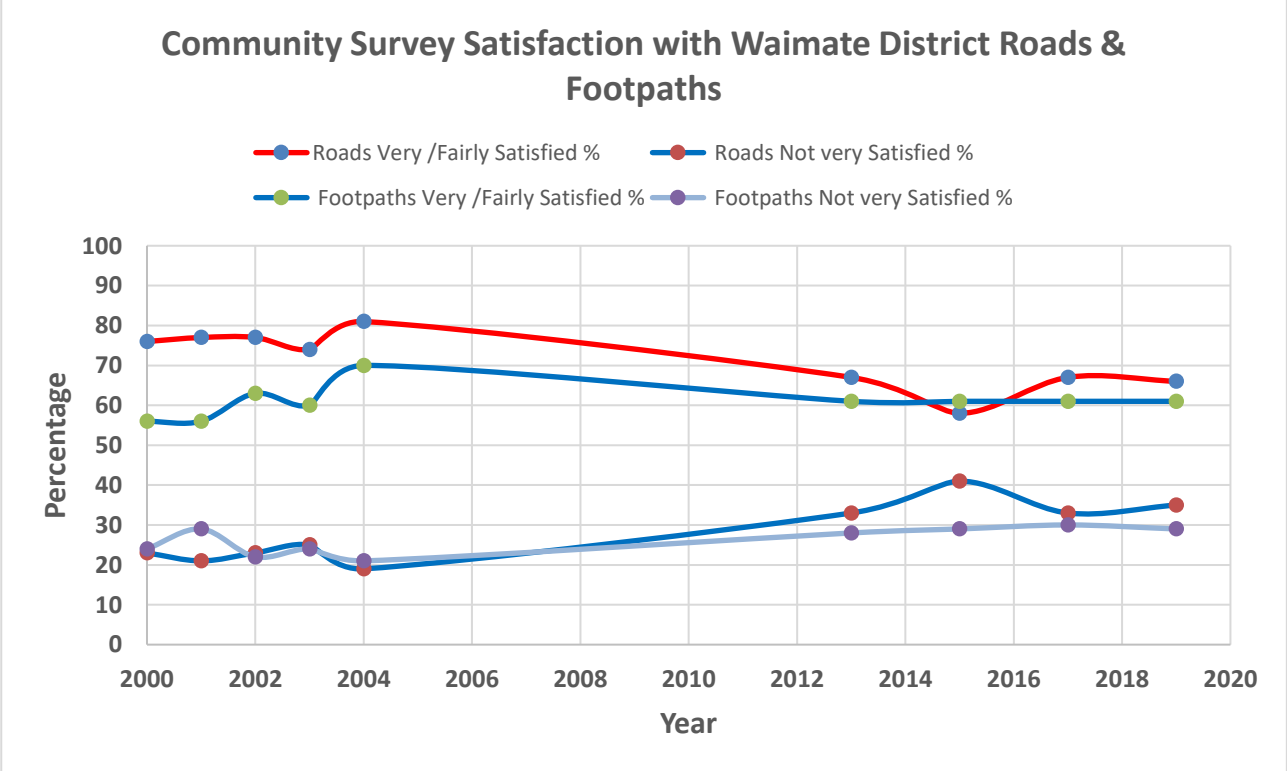


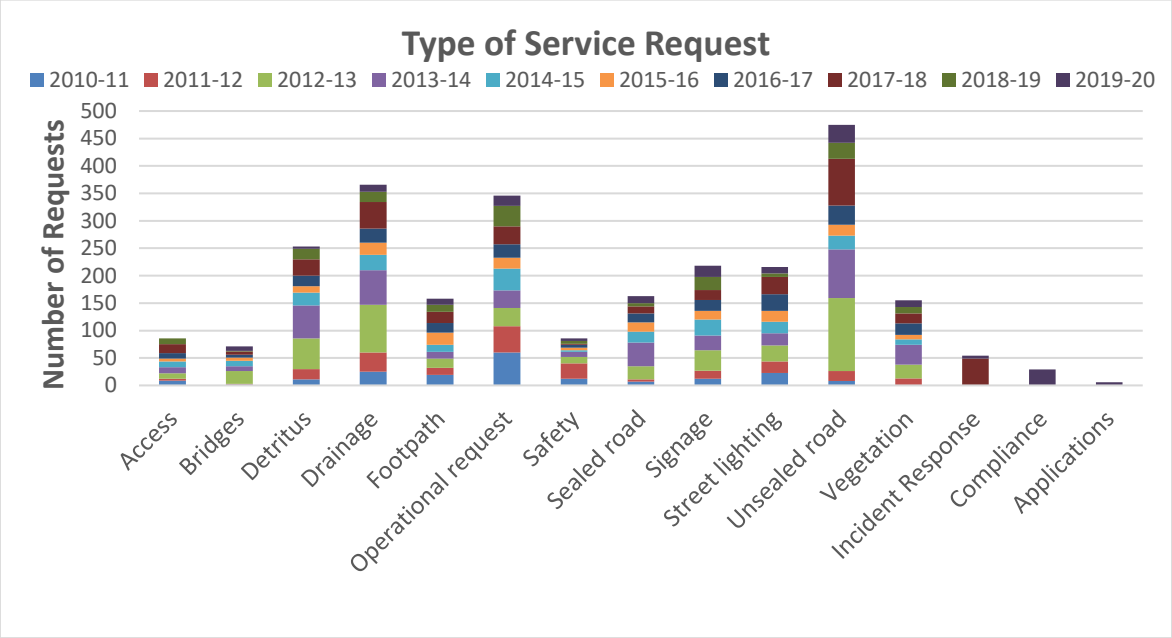
Table 5.2 - Roading Services Requests 2010-11 – 2019-20

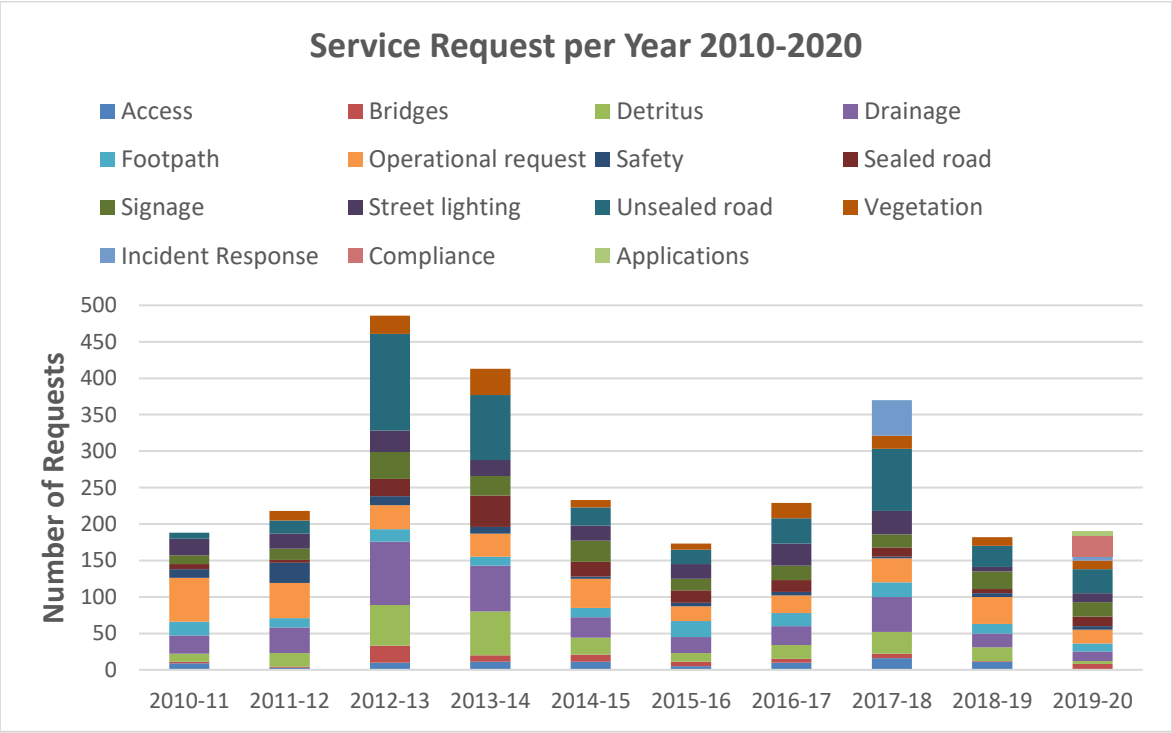
Type of Service Request	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Access	9	3	10	11	11	5	10	16	11	
Bridges	2	1	23	9	10	6	5	6	1	8
Detritus	11	19	56	60	23	12	19	30	19	4
Drainage	25	35	87	63	28	22	26	48	19	13
Footpath	19	13	17	12	13	22	18	20	13	11
Operational request	60	48	33	32	40	20	24	33	37	19
Safety	12	28	12	9	3	5	5	2	5	5
Sealed road	7	4	24	43	20	17	16	13	6	13
Signage	12	15	37	27	29	16	20	18	24	20
Street lighting	23	21	29	22	21	20	30	32	6	12
Unsealed road	8	18	133	89	25	20	35	85	29	33
Vegetation		13	25	36	10	8	21	18	12	12
Incident Response								49		5
Compliance										29
Applications										6
Total	**188**	**218**	**486**	**413**	**233**	**173**	**229**	**370**	**182**	**190**

In general, road users want roads which are operational, safe and adjacent land owners/occupiers want to minimise the impact these roads have on their properties but retain maximum benefit from the access and convenience that the roads provide.

Flooding is often raised as an issue and this needs to be considered carefully as there are limitations on Council's responsibility for surface water on State Highways and private property.

Unsealed roads attract comment for a range of reasons. The performance of unsealed roads is rapidly changeable. This is affected by changes in demand, road users' activities, weather patterns and contractor performance. Council will continue to balance value for money with performance in maintaining a suitable programme. Some residents expect to see a grader on a regular a prescribed circuit regardless of if grading is required); while some will lodge complaints with the intent of seeking a sealed road, irrespective of the condition of an unsealed road.





Customer expectations are one of the key considerations used to determine the acceptable target levels of service prescribed for Roading in the Waimate District. The community's expectations can be summarised as being:

- Roads address the needs of network continuity
- Roads serve demands for access consistent with the needs of the time
- Roads can be traversed at a level of safety, comfort and speed appropriate with their use
- Roads are constructed and maintained to avoid unjustified or avoidable expenditure
- Minimal interruption to use of roads

5.9 CURRENT AND TARGET LEVELS OF SERVICE

5.9.1 Overview

Levels of Service cover a number of key service attributes, such as accessibility, affordability, efficiency, quality, reliability, responsiveness and safety. For this AMP, levels of service measures are expressed in terms of both "Customer Performance Measures", which measure the service received by the user, and "Technical Performance Measures" which measure how the organisation provides the service.

The design and layout of the Levels of Service is based on the terminology and recommendations in the 2015 **International Infrastructure Management Manual (IIMM)**. The following statements from the IIMM outline the principles used in determining levels of service:

- Levels of service statements typically focus on describing the organisation's outputs rather than an outcome
- Each level of service statement is supported by one or more performance measures
- Customer and technical performance measures have different purposes. In setting customer performance measures, the focus is on measuring how the customer receives the service and making sure that the organisation is providing customer value. Technical measures are focussed more on technical criteria that demonstrate effective organisational performance.
- Asset Managers should plan, implement and control technical service levels to influence the customer service levels. The customer and technical dimensions are usually dependent on each other.

Council's community outcomes and Roading rationale are shown in Table 5.3.

Table 5.3 – Community Outcomes and Roading Rationale

Community Outcomes		Rationale
Thriving Community	A district that provides infrastructure for economic activity	*Efficient and safe roading networks are part of the essential infrastructure for economic growth and development*
	A District that encourages development	
	A District that actively promote itself and its businesses	
Safe and Healthy People	A place where people are safe in their homes, work and public spaces	*Safe and well-maintained roads, footpaths and road verges promote safety of all road users, including pedestrians*
	Our services, infrastructure and environment enhance quality of life	
Sustainable District and Environment	A district that is enhanced through sustainable and diverse development	*A well-managed roading network minimises the adverse effects on the Environment*
	We value the natural environment, biodiversity and landscapes	
	Our heritage is valued and protected	
Active, Diverse and Supportive Community	District assets provide recreation and leisure choice	*Roads and footpaths are an important element in both the residential and rural environment for physical exercise, leisure activities and social contact*
	We celebrate and support the good things in our community	

5.9.2 Mandatory Performance Measures

Established by the Department of Internal Affairs in 2013, the Non-Financial Performance Measures Rules 2013 are to be reported by Council on an annual basis. The measures are listed below:

Performance measure one (road safety):
The change from the previous financial year in the number of fatalities and serious injury crashes on the local road network, expressed as a number.

Performance measure two (condition of the sealed road network):
The average quality of ride on a sealed local road network, measured by smooth travel exposure.

Performance measure three (maintenance of a sealed local road network):
The percentage of the sealed local road network that is resurfaced.

Performance measure four (condition of footpaths within the local road network):
The percentage of footpaths within a territorial authority district that fall within the level of service or service standard for the condition of footpaths that is set out in the territorial authority's relevant document (such as its annual plan, Asset management plan, asset management plan, annual works program or long term plan).

Performance measure five (response to service requests):
The percentage of customer service requests relating to roads and footpaths to which the territorial authority responds within the time frame specified in the long term plan.

All of these measures can be accommodated within existing WDC processes, and some existing measures have been aligned to reflect the Non-Financial Performance Measures Rules 2013, which are inflexible. These are integrated into the Customer Levels of Service. The linkages between the Levels of Service to 2015 and Roading rationale are shown in Tables 5.4 and 5.5.

Table 5.4 –Customer Levels of Service and Performance Measures

What we do:	The purpose of this activity is to provide for the safe, convenient, and efficient movement of people and goods around and through the district. This is achieved by providing a network of roads, footpaths, bridges, signs and markers, streetlights, and associated drainage systems. The Roading Activity is managed by Waimate District Councils Roading Team, who manage most aspects of the activity internally, although the physical maintenance of the Roading assets is externally contracted. Waka Kotahi NZ Transport Agency (NZTA) is Council's co - investment partner for roading and the works programme which is approved on a three-yearly cycle in the National Land Transport Plan.

1. Provide quality roads and footpaths

How we do it:	
	• Planned and Reactive maintenance • Replacement (renewal) of assets • Manage Inspection and condition rating of network assets • Manage Road Assessment and Maintenance Management (RAMM) data. • Work collaboratively with neighbouring Councils. • Undertake Activity Management planning to demonstrate that the roading assets are operated and maintained in a sustainable and cost-effective manner. • Investigate improvement projects and long-term network needs

How we measure performance		Years 1—3 Target	Years 4—10 Target
	Resident satisfaction with sealed roads	*≥66%*	*≥66%*
	Resident satisfaction with unsealed roads	*≥55%*	*≥55%*
	Average quality of ride on sealed local roads (Mandatory)	*Smooth Travel Exposure: 93%*	*Smooth Travel Exposure: 93%*

2. Respond to customer complaints and requests in a timely manner

How we do it:	
	• Provide customer service request system 24 hours a day, 7 days a week • Investigate and rectify roading and footpaths complaints

How we measure performance		Years 1—3 Target	Years 4—10 Target
	Percentage of customer service requests relating to roads and footpaths responded to within 10 working days (Mandatory)	*≥95%*	*≥95%*

3. Provide a safe transport environment

How we do it:	
	• Conduct safety audits on aspects of the district's roading network • Deliver quality community road safety campaigns with Timaru and Mackenzie Districts to improve road behaviour and awareness • Monitor road accident statistics and locations • Ensure traffic management plans are in place for all road works sites which effect roads and footpaths • Ensure that private activities undertaken on the road corridor don't adversely compromise road safety or the road condition • License and monitor all cow crossings

How we measure performance		Years 1—3 Target	Years 4—10 Target
	The change from the previous year in the number of fatalities and serious injury crashes on local road network (Mandatory)	*Number of fatalities and serious injury crashes is less than the previous year on an annual basis*	*Number of fatalities and serious injury crashes is less than the previous year on an annual basis*

4. Provide well maintained footpaths

How we do it:	
	• Inspection and condition rating of footpath assets • Manage footpath renewals and maintenance projects • Determine future footpath projects based on defined prioritisation approach and future demand

How we measure performance		Years 1—3 Target	Years 4—10 Target
	Compliance with footpath prioritisation model	*No more than 7km non- complaint*	*No more than 7km non- complaint*
	Resident satisfaction with footpaths	*≥58%*	*≥58%*
	Percentage of footpaths that fall within a condition rating of 1-3 (Mandatory)*	*≥85%*	*≥90%*

*As detailed in the Roading Asset Management Plan

5. Provide Adequate Asset Renewal

How we do it:	• Monitor and inspect the state of the roading network, including traffic counts, pavement roughness and condition • Renewals implemented at the right time with the right treatment		
How we measure performance		**Years 1—3 Target**	**Years 4—10 Target**
	Percentage of the sealed local road network that is resurfaced (Mandatory)	*>5.5%*	*>5.5%*
	Annual quantity of metal spread on unsealed roads	*13,000 m³*	*13,000 m³*

There is still a significant effort required to bring the definitions up to standard and define appropriate target levels, so should be regarded as work in progress. Required improvements include:

- Establish current levels of service by measurement, referenced to contract specifications
- Align current customer levels of service to the One Network Road Classification hierarchy
- Establish target levels of service through consultation
- Extend levels of service targets to cover 3 year and 10 year periods. These will identify Council's aims for long-term improvement, managed reduction of service levels (for affordability) or maintaining the same levels of service
- Align contract specifications with level of service targets

Some of the measures suggested are conceptual only and require further definition; e.g. crash severity and signs visibility. More work is required in developing corresponding customer and technical performance measures, as part of improvement planning.The following technical levels of service will remain in place as the ONRC technical levels of service are implemented, providing consistency in measurement for the interim.

Table 5.5 – Roading Rationale Linked to Technical Levels of Service

Service Attribute	Technical Level of Service	Technical Performance Measure	Measurement Procedure	Current Level of Service	Target Level of Service
Safety	Structural integrity of structures is not diminished by lack of maintenance.	Percentage of structures inspected and faults remedied within appropriate timeframe	Scheduled bridge inspections.	?	>=95%
Safety (continued)	Adequate provision of traffic services.	Signs, edge marker posts raised pavement markers and road markings will be provided in acceptance with Council traffic Service Standard.	Network Audit	New measure	>=90%
	Adequate maintenance of traffic services.	Compliance with maintenance contract	Network Audit	New measure	>=90%
	Carriageway lanterns are maintained in effective operational condition to ensure road safety.	Percentage of defective or non-operating lanterns	Streetlight Contract Inspection Report	N/A	<=5%
Efficiency	Adequate destination and directional signs	Compliance with schedule of road names and destination signs.	Network manager annual audit.	New Measure	>=95%
Quality	Provide smooth roads	Smooth travel exposure.	Annual RAMM NZTA Report	All Rural 98% All Urban 85%	>=95% >=82%
	Road drainage system Flood design capacity	Culvert shall cater for a ARI of 10 years. Bridges shall cater for a ARI of 100 years.	Roading Asset Manager approval of all new works.		100% (compliance for new works)
Quality Safety	Minimise the surface defect on unsealed roads.	Compliance with road grading schedule.	Monthly Contractor's report	90%	>=90%
Asset preservation	Maintain good pavement condition	Surface Condition Index (CI) Pavement Condition Index (PII)	Annual RAMM NZTA Report	All roads 98% All Roads 96%	SCI>=98% PII>=96%
Asset Renewal	Adequate metal cover is maintained.	Adequate metal replacement for unsealed roads is programmed.	Annual quantity of metal spread	11500 m^3	Metal spread is equal to estimated loss

5.9.3 One Network Road Classification System

A joint initiative between the New Zealand Transport Agency and Local Government New Zealand has introduced a road classification system for all roads in New Zealand. The classification system aims

- to deliver similar driving experience across New Zealand,
- To support more consistent asset management across the country
- to make collaboration and prioritisation between those organisations responsible for the planning, delivery, operation and maintenance of the nation's roading network, leading to a more efficient and safer network and improved value for money.

This will introduce different levels of service across roads of different classification. This allows the Agency and the Road Controlling Authority better information on which to make better investment decisions.
As with the Mandatory Performance Measures, these levels of service are now integrated into council's suite of Customer Levels of service (publicly reported) and the technical levels of service (for internal management).

The ONRC performance measures are listed below along with a commentary on achievement.
The REG ONRC Summary report is appended to this document.

ONRC Performance Measures

Measures	Measure	Primary Collector	Secondary Collector	Access	Low Volume	Comments
Safety Measures						
Safety Customer Outcome 1 – Serious Injuries and Fatalities	Injury Counts	□	□	□	□	Reduction over time
Safety Customer Outcome 2 – Collective Risk	Injures per km	Low	Low	Low	Low	Very low
Safety Customer Outcome 3 – Personal Risk	Injuries per 100M Vehicle km	Low	Medium-High	High	High	Access and low volume high due to low volumes
Safety Technical Outcome 1 – Permanent Hazards	Permanent hazards not marked in accordance with national standards					Data collection process to be established
Safety Technical Outcome 2 – Temporary Hazards	% audits compliant with COPTTM					Data collection process to be established
Safety Technical Outcome 3 – Sight Distances	% locations where sight distance or signs are obstructed					Data collection process to be established
Safety Technical Outcome 4 – Loss of control on Wet Roads	Trend of serious and fatal injuries due to loss of control in the wet.					Only two incidents recorded on 2012, no trend available
Safety Technical Outcome 5 – Loss of Driver Control at Night	Trend of serious and fatal injuries due to loss of driver control at night					6 records in 2014/15 only , no trend available
Safety Technical Outcome 6 - Intersection	Trend of serious and fatal injuries at intersections	□	□			One or two records per annum for some classifications, no trend available
Safety Technical Outcome 7 – Hazardous Faults	Number of hazardous faults which require evasive action by road users					Data collection process to be established
Safety Technical Outcome 8 – Cycle Path Faults	Number of cycle path hazards requiring evasive action by cyclists					Data collection process to be established
Safety Technical Outcome 9 – Vulnerable Users	Trend in the number of serious and fatal injuries to vulnerable road users.					Data incomplete due to CAS/RAMM issues
Safety Technical Outcome 10 – Roadside Obstructions	Number of locations where there are unauthorised items placed within the road reserve.					Data collection process to be established

Measures	Measure	Primary Collector	Secondary Collector	Access	Low Volume	Comments
Resilience Measures						
Resilience Customer Outcome 1 – The Number of Vehicles Impacted by Unplanned Events	Number of unplanned road closures and the number of vehicles affected by those closures annually					Data collection process to be established
Resilience Customer Outcome 2 – The Number of Instances Where Road Access is Lost	Number of unplanned road closures and the number of vehicles affected by those closures annually					Data collection process to be established
Amenity Measures						
Amenity Customer Outcome 1 – Smooth Travel Exposure (STE)	% Journeys on smooth roads	100%	97%	98%	97%	Network smoother than peers
Amenity Customer Outcome 2 – Peak Roughness (Urban)	NAASRA Counts per km	118	180	152	140	Network similar to peers except secondary collectors that are worse
Amenity Customer Outcome 2 – Peak Roughness (Rural Sealed Roads)	NAASRA Counts per km	80	96	95	96	Network similar to/smoother than peers
Amenity Technical Outcome 1 – Roughness of the Road (Median)	NAASRA Counts per km					Considerable variation between urban and rural roads
Amenity Technical Outcome 2 - Aesthetic Faults	The number of aesthetic faults that detract from the customer experience					Data collection process to be established
Accessibility Measures						
Accessibility Customer Outcome 1 – Proportion of Network not Available to Heavy Vehicles					No class I access 16km 50MAX (and HPMV) restricted routes total 11km.	Need to take an alternative route of ten minutes or more
Accessibility Technical Output 1 - Wayfinding						Data collection process to be established

5.10 PERFORMANCE GAPS

Establishing performance gaps will be undertaken once the ONRC levels of service and performance measures are finalised and integrated into WDCs documentation. This is expected to lead into amendments to the maintenance specification, public information and the development of business cases for future funding submissions.

One area where a significant gap exists is the provision of footpaths. Accordingly, a prioritisation process has been developed which is expected to take ten to fifteen years to implement. The detail of this process is included in the section 9

5.11 MONITORING ACHIEVEMENT

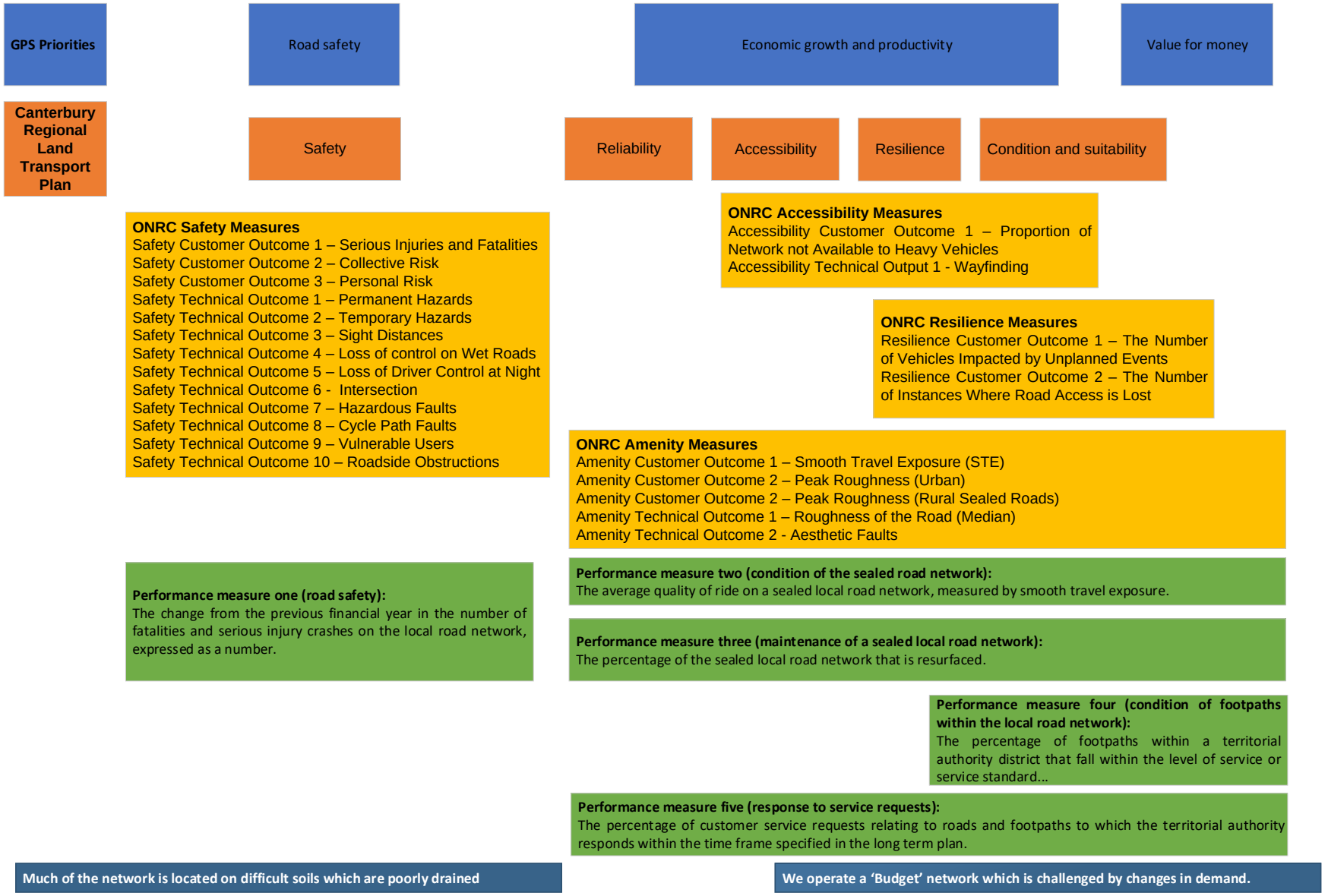
The combined Mandatory Levels of service, ONRC performance measures and technical measures combine to provide a performance management framework (see chart following).

It is important to ensure the 'work on the ground' is contributing to echeloning the outcomes sought by the community. The following diagram illustrates the alignment from the GPS through the RLTP to the combination of WDC and ONRC performance measures. The framework of measures is sufficient to ensure the objectives sought are monitored, with the possible exception of value for money. Tracking value for money will be undertaken using the ONRC measures once finalised, and using the normalised costs provided by NZTA.

Monitoring Benefits

Problem Statement	Impacts on the Network	Benefits to Customer	Management Benefits
Much of the network is located on difficult soils which are poorly drained	• Limited strength for pavements • Drainage important	-	• Effect of the soils on the network are understood and appropriate solutions developed.
Tracking the interventions effected, and the cost to maintain the network will indicate if works are fit for purpose in terms of the topography. Undertaking testing (e.g. FWD) will help grow knowledge of the network performance in relation to geology.			
We operate a 'Budget' network which is challenged by changes in demand. • minimal widths • limited pavement depth • 1963-73 rapid construction (Seal extension 30km per year)	• Performance • 'Gaps' becoming evident No longer fit for purpose across all of network • cheap to maintain • metrics good	• Low costs to date • Levels of service and expectations met	• Rates and NZTA investment has been minimised • Changing levels of service and expectations will be met • Efficiencies sought through ONRC based differentiation
• Intensive land use – more heavies • Intensive land use – reshaping of watercourses	• Pavement strength challenged • Natural water courses lost, surface flooding	• Changing levels of service and expectations will be met • Pavement strength challenged	
Tracking benefits of a fit for purpose network can be achieved through the accessibility measures, public feedback			
• Irrigation – higher water tables and moisture in pavement subgrades • Vehicle types – large • Vehicle types – heavier • Vehicle types - more	• Width of pavements & bridges • Pavement strength challenged	• Efficiency for Operators	• Bridge capacity prioritisation (ONRC)
Tracking benefits of a fit for purpose network can be achieved through the accessibility measures, public feedback			

Alignment of Objectives and Levels of Service

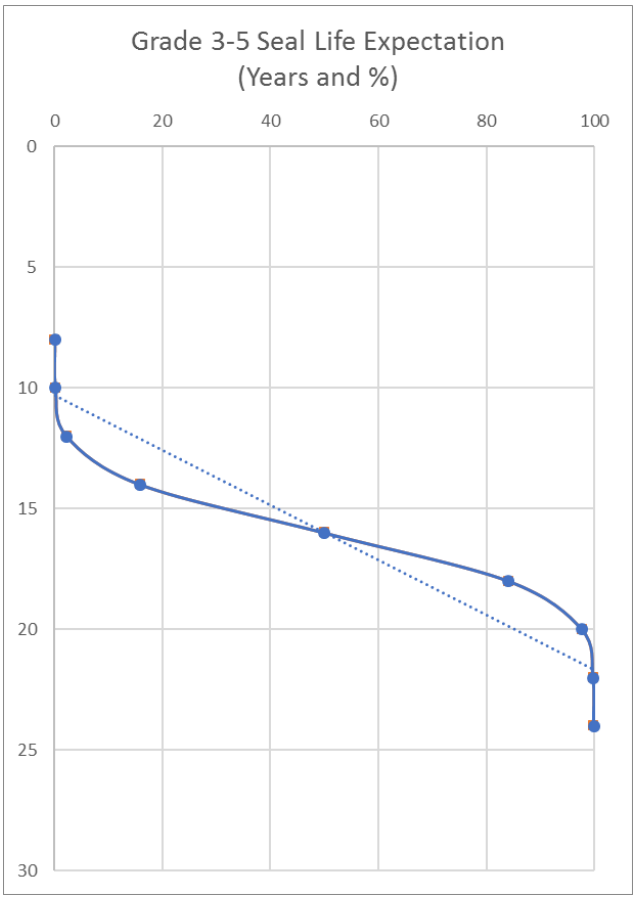


5.12 SERVICE LIFE OF THE NETWORK

The service life of the network is the period over which the asset is expected to be available for use. There is limited confidence in the service life information currently held by council. This data needs to be reviewed and more information needs to be gathered to better determine the service life.

In the 2014 Valuation Report each asset (component, sub-component) was assigned a base life (estimate of average useful life). An initial assessment of remaining life was calculated as the difference between economic life and age of the asset. Where information is available further adjustments are then made to the useful life estimate to take into account condition and use of the asset. The methodology for calculating economic and remaining lives is summarised in Appendix A – Methodology and Assumptions for Roading Assets of the Valuation report.

A review of achieved lives was undertaken in 2017 based on observations of the network. The analysis indicated that grade 3-5 surfacing (the most common surfacing on the network) can regularly achieve 20 years, however the average life expected is only 16 years.



5.13 FUTURE IMPROVEMENTS

The tables in Section 5.9 are based on similar Levels of Service frameworks provided in Council's other AMPs to feed into the Rationale associated with delivery of Waimate's Community Outcomes for roading. There is still work required to bring the definitions up to standard and define appropriate target levels. The target levels may need further refinement as performance measurements are reviewed.

Required improvements include:

- Establish current levels of service by measurement, reference to contract specifications
- Refine target levels of service through consultation
- Extend levels of service targets to cover 3 years and 10 year periods; i.e. long-term improvement, deterioration (for affordability) or stay the same
- Align contract specifications with level of service targets
- More work is required to assess the validity of the technical levels of service for the purposes of supporting Customer levels of service.

5.13.1 Levels of Service Development With Users And Stakeholders

The current and target Level of Service included in Section 5.9 have not been developed in consultation with users and stakeholders. This next step in the process is vitally important. Options to further examine this issue could include:

(a) Monitor and interpret customer feedback through customer feedback and complaints. This information can be analysed for any trends or common factors related to current service levels (e.g. number of complaints received from identified road sections can be compared to current conditions)

(b) Review agreed (with Stakeholders) Levels of Service on other local authority road networks as a means of benching these on this network as there may be opportunities to consider some reduction in service levels where any reduction would result in savings or enable some reallocation of expenditure between activities

(c) Engage customers in a formal process. There are a number of mechanisms to achieve this from public meetings to surveys to focus groups. This may include the use of documented feedback processes. In all methods the clear description of different Level of Service options, fully costed, is a prerequisite to meaningful feedback

(d) Engagement with key stakeholders. These include the Regional Council, NZTA, transport operator groups, Automobile Association and others. Again good input information to these engagements will produce valuable feedback.

5.13.2 Affordability and willingness to pay

Hand in hand with the current Level of Service vs. Desired Level of Service is the issue of cost. This needs to be addressed at two levels:

(a) Cost for different Levels of Service options within the Roading Activity
(b) Cost of the Roading activity within the total Council programme.

The first level can be addressed using the options outlined above where fully described and costed service level options are consulted with the community.

The second level needs to be addressed as an assessment of the relative contribution the Roading Activity makes towards the achievements of Community Outcomes at the current level vs. greater or lesser levels of service.

6. GROWTH AND DEMAND MANAGEMENT

6.1 DRIVERS FOR DEMAND

The significant future demands affecting Roading in Waimate District to be considered are:

➔ **Growth Trends –** Trends in population growth or decline give a good indication of future growth and in turn demand on the network.

➔ **Economic Changes** – Changes in land use, industry, freight movements and tourism can all affect the demand on the Roading asset.

➔ **Vehicle Mix and Use Changes** – The available modes of transport, vehicle ownership and heavy vehicle trends can all impact on future demand on the network.

➔ **Improvements to Levels of Service -** Continual demand for improvements in the levels of service. This can result from:

- Advances in available technology
- A greater understanding of customers' perceptions and expectations
- A higher level of road safety conscientiousness
- Changing legislative requirements
- Funding organisations setting higher standards

Table 6.1 indicates how these factors are expected to be reflected in changes in use of the roading network.

Table 6.1: Roading Demand Drivers

Transport Demand Drivers	Urban - Sealed	Urban - unsealed	Rural - sealed	Rural - Unsealed
Growth	Population changes	Not significant	Not significant	Not significant
Economic	Not significant	Not significant	Changes in land use	Changes in land use
Vehicle Mix and Use	Changes in vehicle ownership	Not significant	Increased heavy vehicle usage	Increased heavy vehicle usage
Improvements to Levels of service	Expectation to maintain current standards			

6.2 OVERVIEW OF WAIMATE DISTRICT

6.2.1 Growth Trend

Introduction

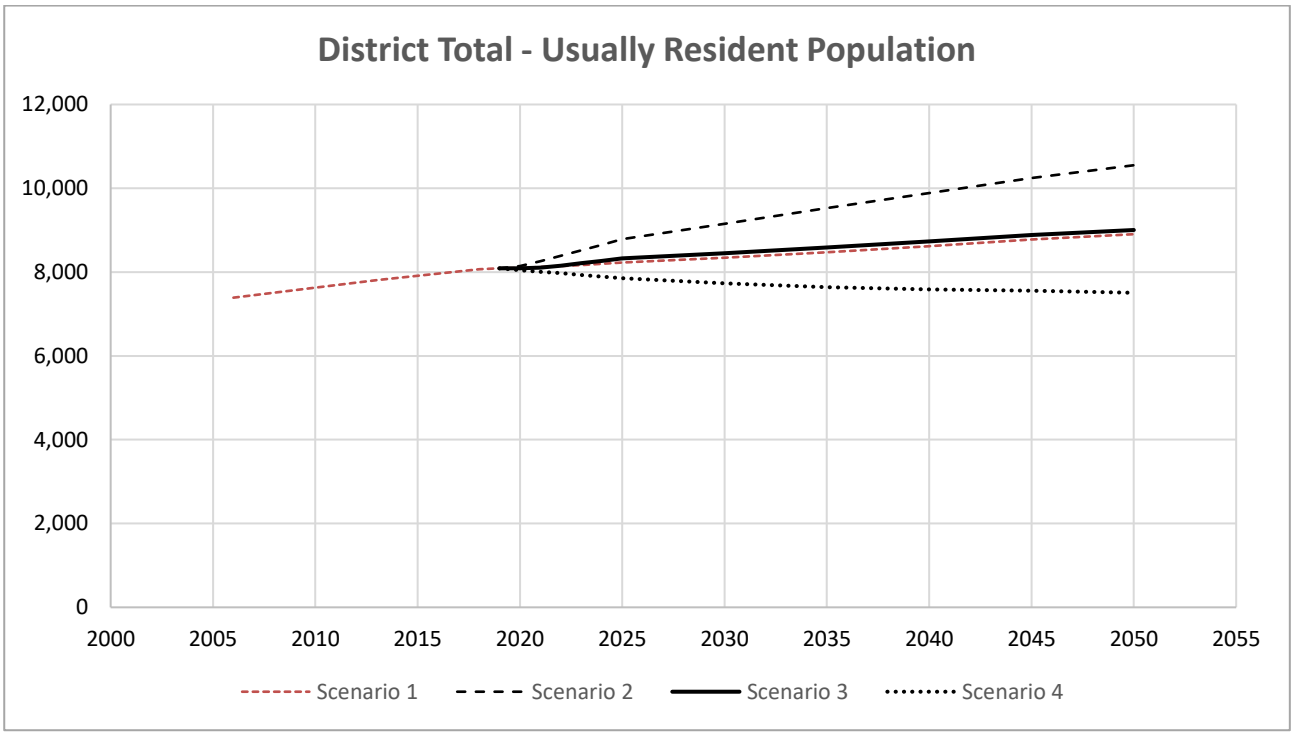
Population growth (or decline), age structure and distribution (spread), and the number and type of households and families in our district affects:

- Demand for local services
- The willingness and ability of ratepayers to pay for them
- Representation and participation in local democracy
- Interactions between human activity and the environment.

It is therefore an essential for asset management planning that sound information is used regarding population, demographic and geographic change.

Methodology

In the past Waimate District Council (WDC) have used the growth projections prepared by Stats NZ. WDC are now looking for a more in-depth understanding of what their district might look like over the next 30 years. This coupled with the delayed release of the Stats NZ projections, following the 2018 Census, has led WDC to commission these growth projections from an external specialist. The 2020 projections have been developed using a bottom up approach. Individual growth drivers for each Statistical Area 2 (SA2) have been developed using migration for employment and lifestyle as the basis of the modelling. The 'Waimate District Council Growth Projections, August 2020' reporting prepared by Rationale enables the organisation to understand the future growth in their district and provide a single source of the truth for the Council.



Growth scenarios

Four growth scenarios have been modelled for each parameter representing different levels of ambition in terms of the district's growth over the next thirty years.

Table 6.2: Summary of the four growth scenarios.

	Scenario	Description
Scenario 1	Business as Usual (Pre COVID-19)	Used as a baseline to compare the other three scenarios. It assumes that there has been no impact from COVID-19 and there is no limit on the number of dwellings that can be constructed.
Scenario 2	High	Assumes that COVID-19 has a minimal impact on the district. While there are some job losses, the district recovers to a level above the business as usual scenario. Migration drivers and assumptions are also increased by 20% which means more people will move to Waimate and less people will leave. Investment in the town centre of Waimate is expected to generate an additional 20 long term jobs per year, from 2020 to 2025.
Scenario 3	Medium	Models the expected impact from COVID-19. This assumes that all parameters return to the business as usual prediction by 2025. Investment in the town centre of Waimate is expected to generate an additional 10 long term jobs per year, from 2020 to 2025.
Scenario 4	Low	Models a situation in which COVID-19 has a higher than expected impact on the district, i.e. more job losses, and only recovers to 5% less than the business as usual scenario by 2025. Migration drivers and assumptions are also reduced by 20% which means less people will move to Waimate and more people will leave.

Recommendation – Growth Scenario 3

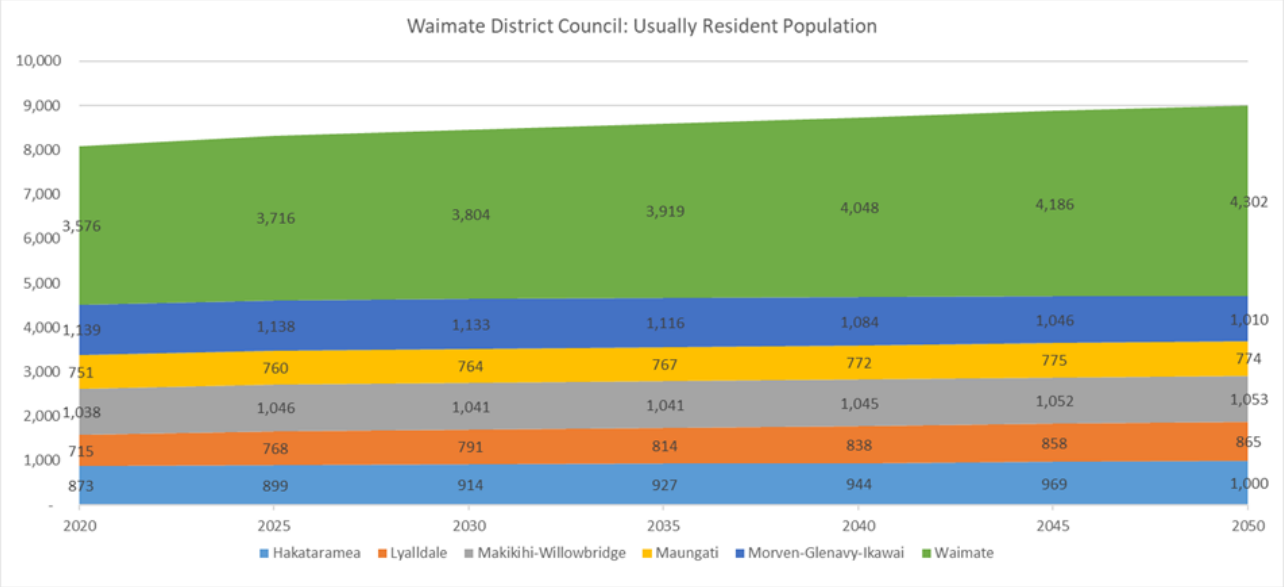
It is recommended that WDC adopt Scenario 3 as the expected level of growth in the next thirty years and use this information to inform key projects, plans and strategies.

Scenario 3 is recommended as there will be short term effects due to COVID-19. However, it is not yet known what, if any, long term effects there will be.

Due to this uncertainty it is recommend that annual "check-ins" are completed with the most up-to-date data to monitor the impact of COVID-19 and the progress of recovery. At this time growth can be re-projected, if necessary.

Since this growth projections model was developed it has become apparent that a bubble between New Zealand and Australia will not be forming in 2020. To offer best value for money to WDC, and due to the minimal impact on the final projections, Rationale recommend revisiting these assumptions once there is a known scenario and date for border reopening.

Population Projections (Usually Resident Population)



Over the next thirty years, the usually resident population of Waimate District is predicted to increase slightly.

The average age of Waimate District's population is older than the national average of 37.3 years (Stats NZ). Looking across the district Waimate township has a significantly older average age of 48.6 years in 2020 when compared to the outlying rural areas. This makes sense as people are living and working on farms then moving into Waimate for retirement later in life.

The 2017 estimated population of Waimate was 7,900[1]. The recommended medium growth scenario projects the District's population to increase to 9,000 by 2050.

Based on the medium projection, the population of the Waimate District is projected to grow by, on average, 0.4% a year between 2017 and 2050. This is less than the projected 1.0% a year growth rate of the Canterbury region and New Zealand's total population.

The high projection would see Waimate District population of 10,500 by 2050. This is not the recommended growth scenario but does demonstrate the upper bound of modelled growth.

With a low base population, significant industrial projects are capable of having an impact of the District's population. Expansions of both Oceania and Fonterra Dairy Factories in the next ten years could increase job opportunities in the District.[2] The potential future Hunter Downs Irrigation Scheme (currently suspended) could also see an increase in on-farm jobs in the District and the creation of secondary jobs as a result of increased agricultural production in wider South Canterbury.[3] Should all of these projects proceed the District may see population growth trending more towards the high projection. While this may appear conservative, it is important that Council

[1] Statistics New Zealand, Subnational population estimates 2017)

[2] Oceania anticipate an additional 67 jobs in the next twelve months though a number of expansion projects and a further 43 jobs in two or three years with the addition of another dryer. Fonterra estimates a sizeable expansion of its Studholme factory should plans proceed - 70-80 new jobs on site with potentially 500 persons involved in the construction.

[3] Original Hunter Downs predictions (published in 2011) detailed the creation of between 1400 and 1800 jobs in wider South Canterbury and approximately 450 on-farm jobs. The latest information provided by Hunter Downs Water was that construction of the scheme would start late 2017 and would take approximately 27 months.

does not overestimate population growth and the associated infrastructure provision required. Also reflects that a considerable number of employees from both dairy factories live in either the Waitaki or Timaru Districts.[4] Given the close proximity of both Timaru and Oamaru to these sites, increased job opportunities may not necessarily equate to comparable population increase in the Waimate District. Growth over the next 30 years of between 1,000 and 2,000 people is likely.

Natural Decrease

As New Zealand's population continues to age, more and more areas will consistently experience a natural decrease, i.e. more deaths than births (3 territorial authorities experienced this between 2010-2014). For areas that have traditionally relied on a natural increase for population growth (including Waimate), a natural decrease will mean a shrinking population unless offset by net migration gains. Within the Waimate District, natural decrease is projected to occur by 2038. Without net migration gains, the population proper will decrease.

Table 6.3: Average age of District Population

	2020	2030	2040	2050
District Wide	43.8	43.4	43.3	43.5
Hakataramea	40.3	40.3	39.7	40.0
Lyalldale	41.7	43.9	44.8	45.5
Makikihi-Willowbridge	43.0	43.0	42.9	43.0
Maungati	36.8	39.0	40.4	41.5
Morven-Glenavy-Ikawai	37.8	39.8	40.6	41.4
Waimate	48.6	46.2	45.2	45.0

Higher Median Age

The median age for the Waimate District population is set to increase from 45.5 years in 2013 (census figure)(46.4 2018) to 47.1 years by 2043. Canterbury region is projected to increase from 39.4 years in 2013 to 43.5 years in 2043, and New Zealand from 37.5 years in 2013 to 42.7 years in 2043.

Larger proportion of older people

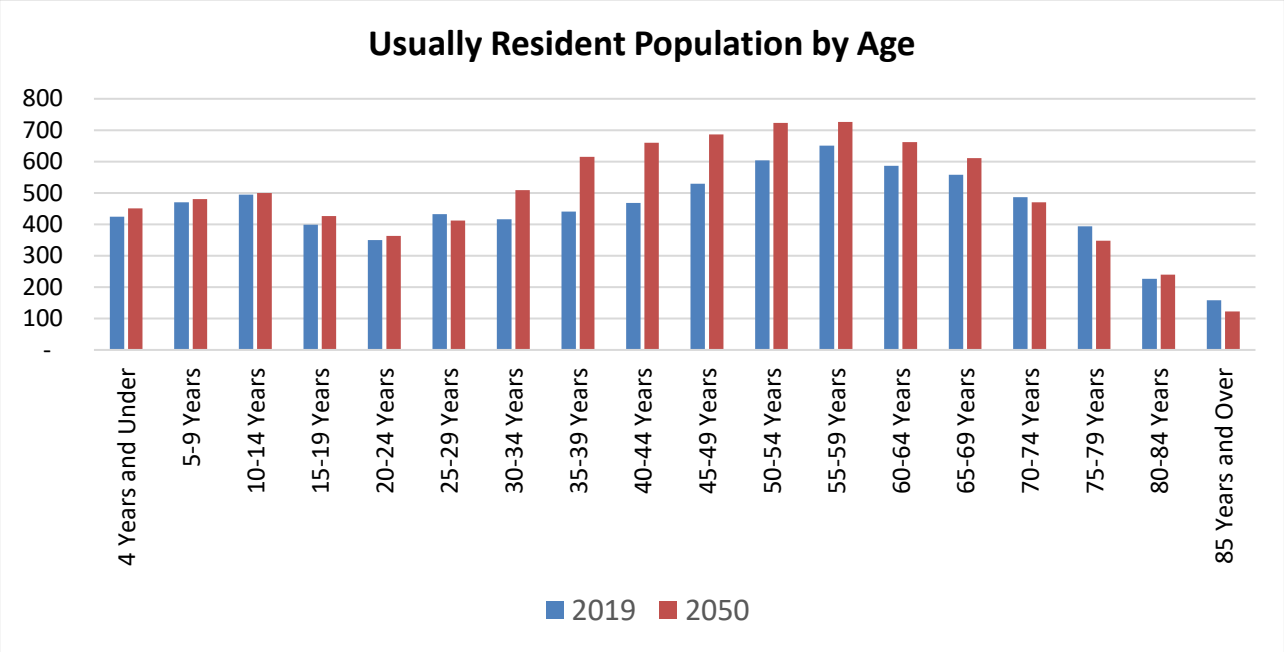
Under all projection series (high, medium and low), all 67 territorial authorities in New Zealand are projected to have a higher proportion of older people (aged 65 and over) in 2043 compared with 2013.

In 2013 19.5% of the Waimate District population was aged 65 and older. Using the medium projection series, by 2043 29.6% of the Waimate District population will be aged 65 and over.

[4] Employment data provided by Fonterra shows approximately a third of staff live in the Timaru District. Oceania Dairy report that 79% of their staff live outside of the Waimate District.

Urban Rural Split

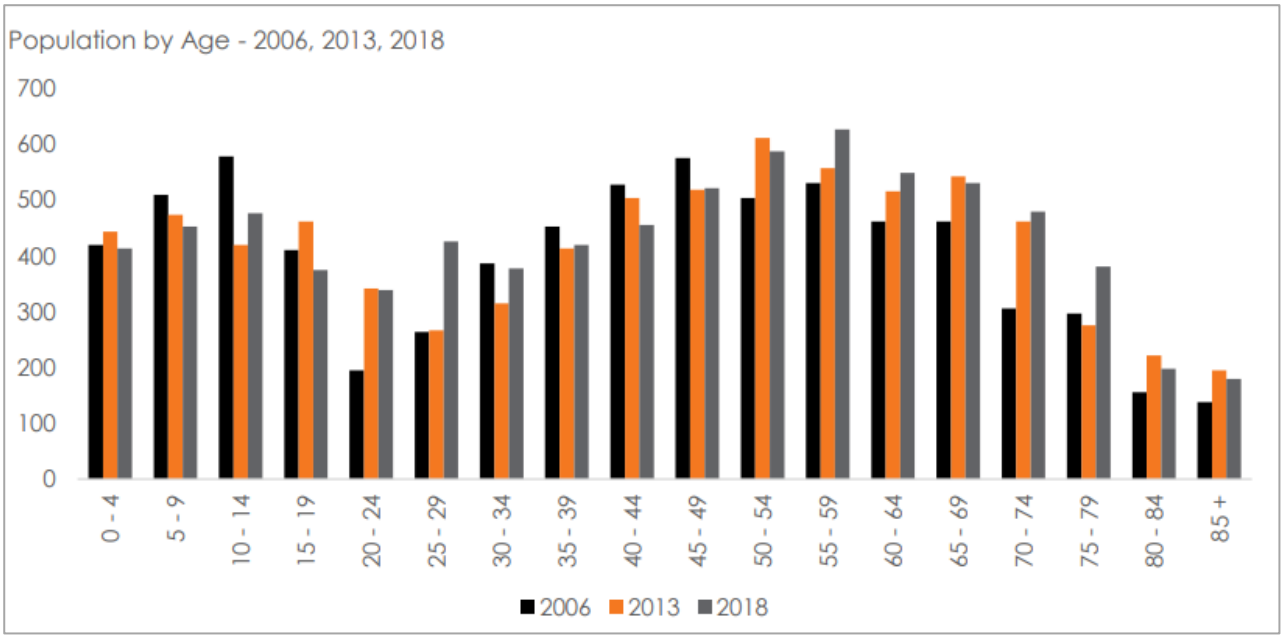
Projections also suggest a change in the age composition of the urban and rural populations. While the 0-14 years, 15-39 years' age brackets remain relatively stable across the 25-year period in all areas, there is a considerable increase in the number of residents over the age of 65 living in the rural areas of the District and a decrease in the number of residents aged 40-64 years. The proportion of people aged over 65 living in the Waihao area unit is projected to nearly double, from 8.7% to 16.4% of the total district population. While the number of residents over the age of 65 living in urban Waimate is also projected to increase over the 25 years, by 2038 it is projected there will be more over 65s living rurally than in the urban centre of Waimate.



Key migration drivers

The key characteristics of Waimate District's population are:

- Younger people leave the area for education and employment opportunities.
- People later in their working lives or early retirement are moving to the area for the lifestyle, affordability and/or retirement.
- Older people (over 70) are moving from the rural areas of the district to Waimate or leaving the area, likely in search of better healthcare or to be closer to family.

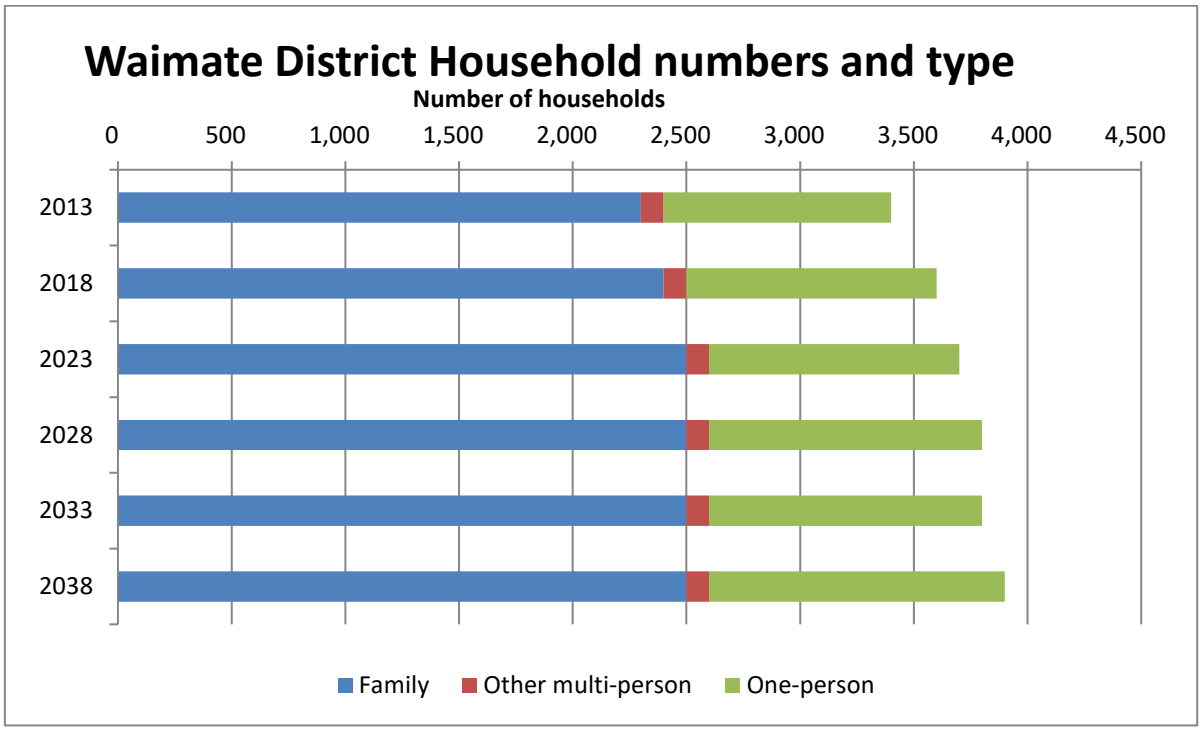


Waimate District's population by Age – 2006, 2013, 2018. Source: NZ Stats.

Households

The number of households in the District is projected to increase by an average of 0.7% a year, lower than the national and Canterbury regional increase of 1.1%.

The average household size in the Waimate District is set to decline from 2.3 people in 2013 to 2.1 people by 2038. This will follow the national and regional trends (NZ – decrease from 2.64 people to 2.50 people. Canterbury - decrease from 2.4 to 2.3 people). Smaller households may contribute to demand for housing over and above the impact of population growth.



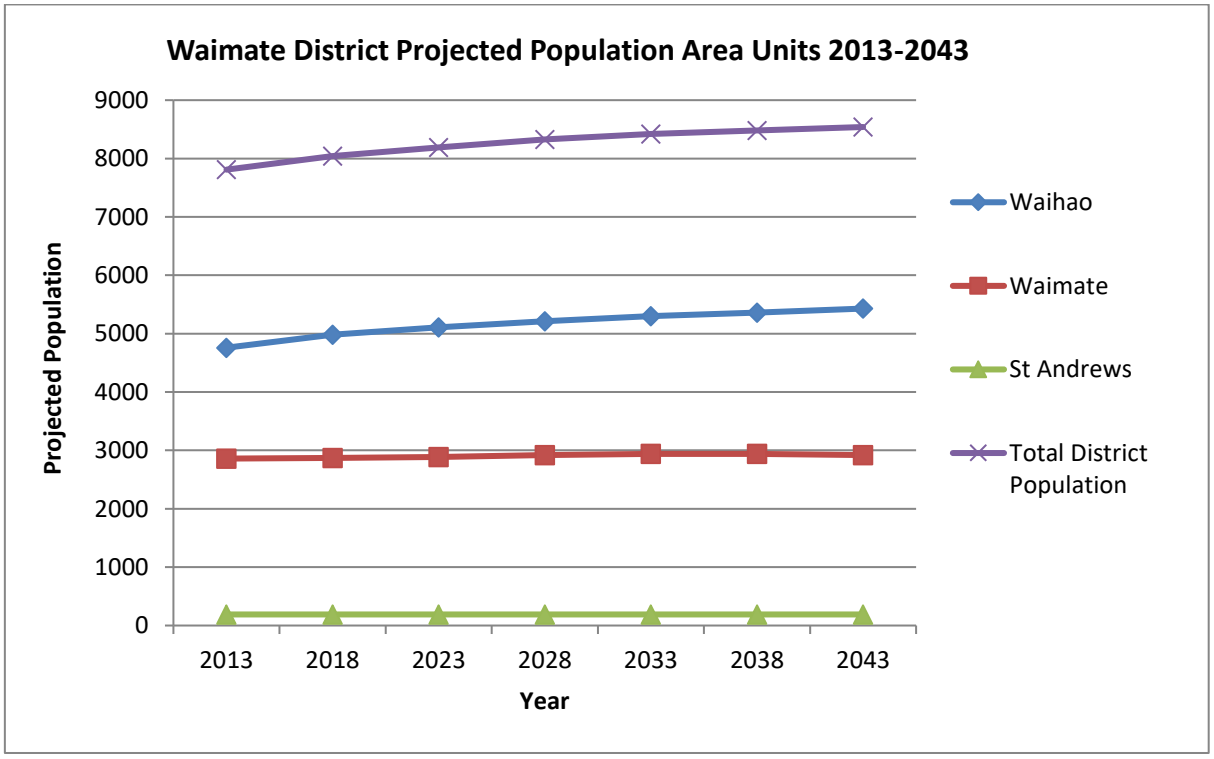
The number of one person households is the fastest growing household type in the Waimate District, increasing by an average of 1.2% per year. By 2038 33% of Waimate households will be one-person households and over 15% of Waimate residents will be living alone.

The number of families in the Waimate District is projected to increase by an average of 0.34% per year between 2013 and 2038.

Population Location

Statistics New Zealand provides population breakdowns for area units within territorial authority boundaries for the period 2013-2043. For the Waimate District the area units provided are for urban Waimate, St Andrews township, and Waihao (covering the rest of the district).

The projections show that the majority of the growth in the Waimate District will occur in the rural areas with a 14.1% growth in the Waihao area unit over the 30-year period 2013-2043 (an average of 0.46% a year). Rural growth, in keeping with the District-wide trends, is projected to be decrease over the 30-year period. In comparison, the Waimate area unit (which is urban) will grow by 2.1% (.06% on average per year). This urban growth will also slow over the 30-year period, and between 2033 and 2043 the population of the Waimate area unit is projected to decline.



6.2.2 Economic Changes

Changes in Land Use, Practices and Resource Use

There are numerous changes in land use or practices that may affect the performance of the network. These include:

- Forestry development
- Dairying development
- Project development including irrigation schemes
- Changes in agricultural land use
- Changes in industrial activity
- Changes in tourism

The nature of each change and its impact on the network are difficult to monitor and predict. Each change will affect the type and volume of goods transported on the network, thus altering the impact on the pavements in the network.

Forestry

The district's forestry is primarily owned by Blakely Pacific Ltd after Council sold its forestry interests in 2010.

Over the last five years, the majority of forestry within the district has reached harvesting age. Since this time harvesting has continued at a steady rate and it is understood that there has been no increase in forestry size through additional planting. It is unlikely that there will be any increase in planted areas in future, however existing forestry areas that are harvested are likely to be replanted. There are a limited number of district roads which are impacted by harvesting. A higher level of maintenance is required on these roads. Figure 6.2 shows the roads that are affected by forestry.

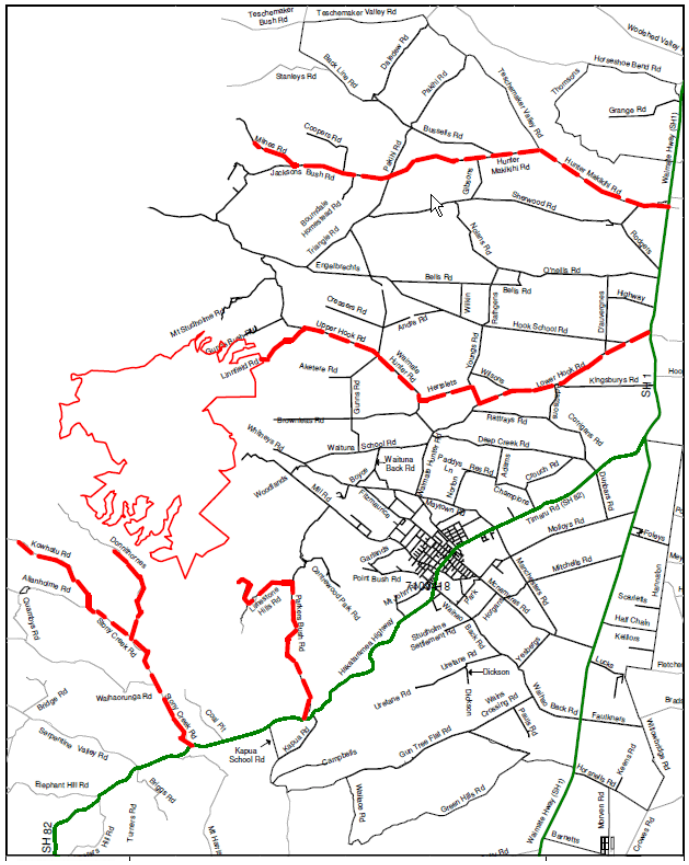
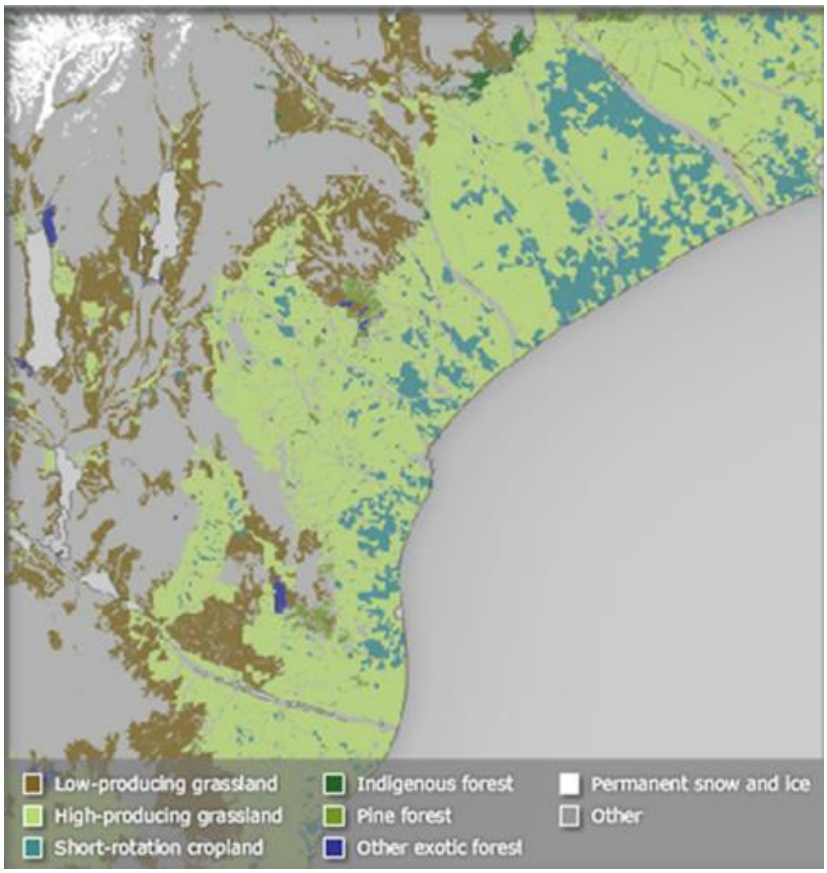


Figure 6.2 – Roads Used by Forestry Traffic

Most logging trucks travel to processing facilities outside of the district using the same road for travel to the State Highway, so limited change in demand on the district road. The only other timber processor in the district is Waimate Timber, which only processes a small amount of timber with approximately three heavy vehicle movements a day. This mill is also close to the State highway so has limited impact on district roads.

Figure 6.3 – Forestry Area



Forestry

There are large areas of forestry in the district. Some of the access roads receive minimal attention, but Council needs to work with logging operators to ensure roads are adequate for trucks and other users.

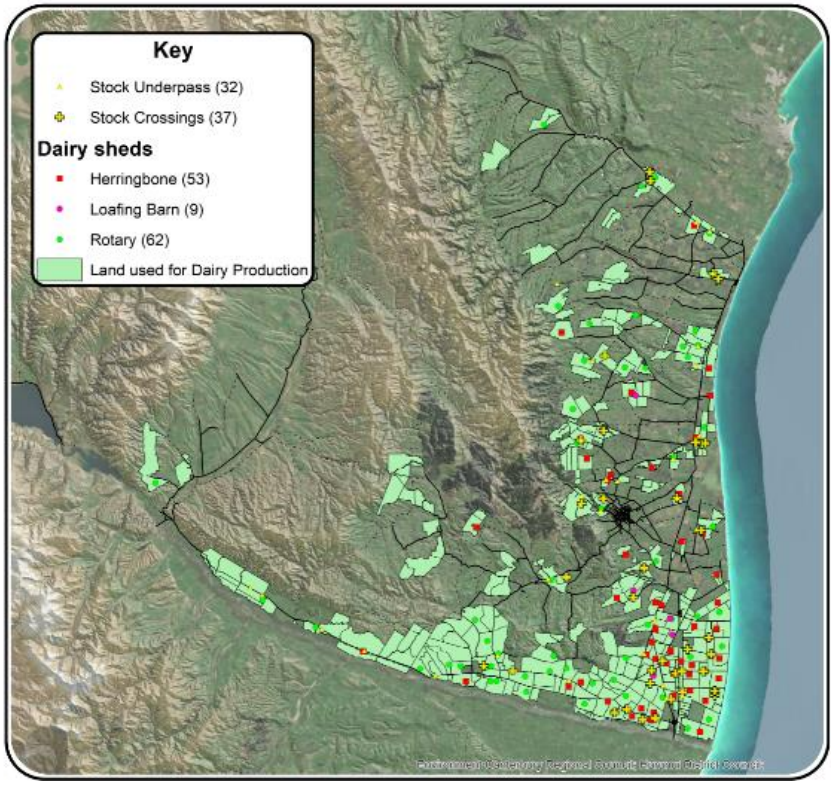
Forecasts of Vehicle Movements Carrying the Selected Commodities by District (Heavy vehicle movements pa) (Richard Paling Consulting and GHD. 2012)

Area	Logs		Liquid Milk		Arable Products		Total		
	2009	2041	2009	2041	2009	2041	2009	2041	Growth 2009-2041
Kaikoura District	300	100	3700	4500	1700	4900	5700	9400	65%
Hurunui District	15300	28200	22100	76500	12600	53200	50000	157900	216%
Waimakariri District	2700	3200	18300	22300	7600	22000	28600	47600	66%
Christchurch City	3300	1800	3000	3700	16100	46700	22400	52200	133%
Selwyn District	2500	1400	52000	112600	20600	78200	75100	192200	156%
Ashburton District	1600	1400	95500	157500	16800	64100	113900	223100	96%
Timaru District	1300	1800	36900	54800	9300	30600	47400	87200	84%
Mackenzie District	1900	3600	4000	12500	4100	14400	10000	30500	205%
Waimate District	7200	5000	28000	62800	5800	30500	40900	98300	140%
Total	36000	46400	263500	507300	94500	344500	394000	898200	128%

Legend: increasing and decreasing traffic loading

Dairy Conversion

Figure 6.4 – Dairy Farmland in the Waimate District



As irrigation is improved throughout the district, more land is being converted for dairy farming. Over the last five years, there have been 2-3 dairy conversions each year North of Waimate. Subject to further irrigation projects going ahead this trend will continue. However, dairy conversions can only continue at a slow rate until there is any further increase in irrigation.

Dairy conversions have a large impact on the roading network during construction of the conversion due to carting gravel. There is then an ongoing increase in freight traffic to and from each new dairy farm (i.e. milk tankers, increase in fertiliser, feed requirements). There is also a significant increase in use of agricultural vehicles on the roading network as many other district farms support the dairy farm by harvesting and transporting grass for feed. Some dairy conversions are using loafing barns with cows fed inside during winter and requiring all feed to be carted in. This will require intense road use at certain times of the year.

Dairy conversions do not currently require any resource consent so there is often no warning that the conversion is going to go ahead until a building consent request is lodged. Each conversion is variable in terms of impacts, which are dependent on feed and freight cartage routes. Therefore, maintenance and renewals associated with an increase in demand are very reactive. Generally, the impact is on shoulder issues and general pavement maintenance. Two farm conversions each year may contribute an extra 4kms of maintenance metalling and grading of unsealed roads to be included in the works programme.

Studholme Dairy Factory

New Zealand Dairies' Ltd plant at Studholme was opened in October 2007, in 2013 it was purchased by Fonterra. To date the majority of heavy traffic movements generated by the plant enter via the state highway system and only impact upon roads immediately adjacent to the facility.

In 2016 Fonterra obtained a resource consent for an expansion on the site to a new drier to process an extra 4.5million litres of milk. The number of vehicles, mainly trucks, serving the site would rise from 162 per day to 529 per day.

There is no time frame announced for the development. This development is expected to increase the numbers and of heavy vehicle movements on local collector roads, especially the Pareora River, Pareora Gorge route and the Old Ferry

Figure 6.5 - Studholme Dairy Factory

Glenavy Dairy Factory

The Oceania Dairy Factory at Glenavy opened in November 2014 with suppliers in the South Canterbury and North Otago region. Oceania Dairy Limited is a wholly-owned subsidiary of Inner Mongolia Yili Industrial Group (Yili). Stage one is delivering more than 70 jobs.

Yili has announced details of a further five-year, $400 million development project on the Glenavy site. It is expected that the completed project will add a further 150 staff to the Oceania Dairy roster at Glenavy. The first phase of the expansion project commenced in 2015 and the remaining phases have been scheduled through to completion in 2019.

This comprehensive project will add capacity to output a wide range of additional products from the Glenavy factory. That will include a whole milk powder dryer, an infant formula canning line, and facilities to manufacture UHT milk products and lactoferrin.

By the end of the expansion project in 2019 Glenavy is expected to be handling more than 630 million litres of milk from local farm suppliers, generating export revenues in excess of $700 million.

This development is also expected to increase the numbers and of heavy vehicle movements on local collector roads, especially the Pareora River, Pareora Gorge route and the Old Ferry

Figure 6.6 - Oceania Dairy Factory (Cooneys Road, Glenavy)

Hunter Downs Irrigation Scheme (Development SUSPENDED)
September 2020 Status – development of the scheme is suspended

Hunter Downs Irrigation scheme (HDI) is an irrigation proposal to take water from the Waitaki River and deliver the water by a series of canals, pipes and pump stations to the north of Waimate.
The scheme now has been redesigned to irrigate up to 12,000 hectares. It will provide opportunities for land use diversification, including horticulture, sheep, beef and dairy farming.
The impacts on demand from this projects are expected to be sustained in the long term. There will be a short term increase in the usage of the network as the infrastructure is constructed. A sustained increase in economic activity driven by the improved water resource will bring an increase in traffic volumes. It is possible that there would be further dairy conversions meaning higher heavy traffic volumes to transport increased production.
This section has been left in the AMP for future reference, and potential future development.

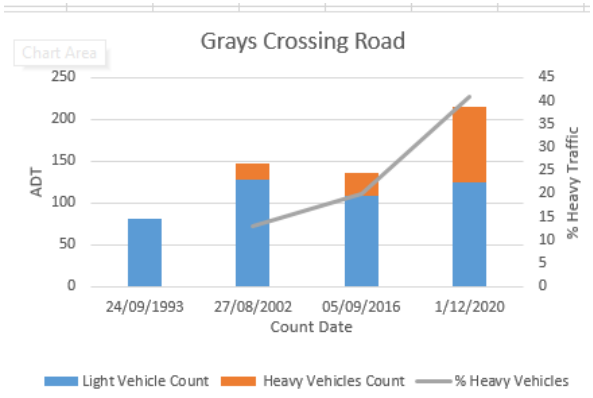
Tourism
September 2020: Domestic Tourism only due to pandemic travel restrictions. Section to be revisited in future revisions of the AMP

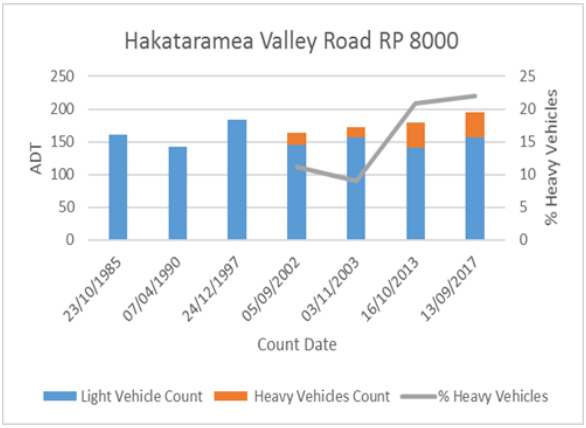
Tourism makes up a small component of Roading demand within the district. Reported visitor numbers stood at 8,330 in 2006, which accounted for approximately 25 light vehicles per day. Such small traffic volumes have minimal impact on the Roading infrastructure in terms of pavement quality; however, tourist traffic is likely to have a greater impact on safety issues.

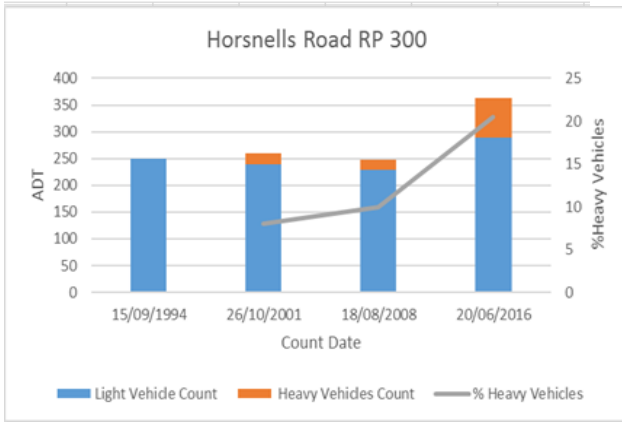
The Bushtown historic complex is expected to continue to be developed within the next ten years, but the potential impact on the network will be negligible.

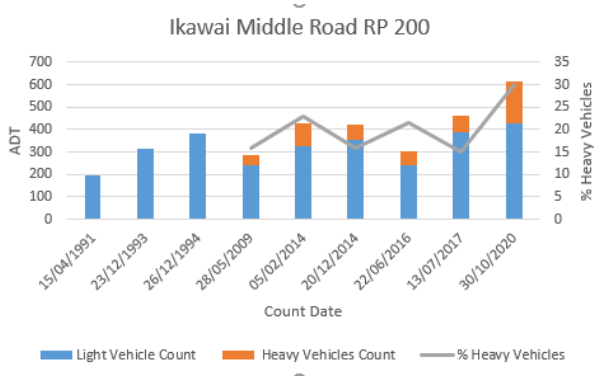
6.2.3 Vehicle Mix And Use Changes

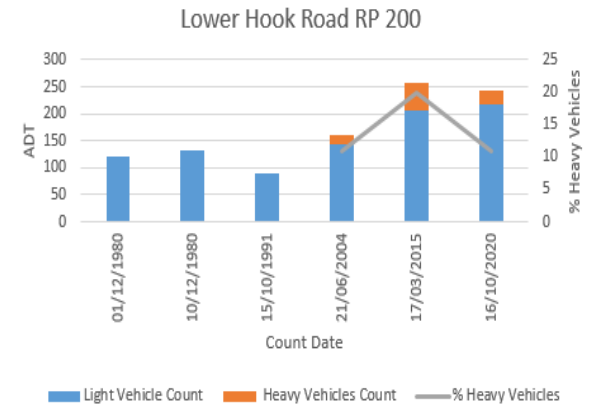
Traffic Count Data
WDC is Implementing a traffic counting strategy to improve the quality of our traffic count estimates. Council has recently increased and replaced its traffic counting equipment. This allows for regular annual traffic counts to be completed on at least a representative sample of Council roads, particularly highly trafficked roads, to allow historic comparisons and from this prediction on future growth. Analysing existing records shows a steady increase in heavy traffic. See count data below.

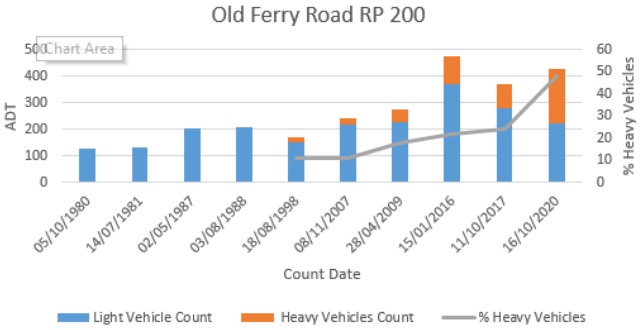

Grays Crossing Road
ADT
% Heavy Traffic
24/09/1993
27/08/2002
05/09/2016
1/12/2020
Count Date
Light Vehicle Count
Heavy Vehicles Count
% Heavy Vehicles

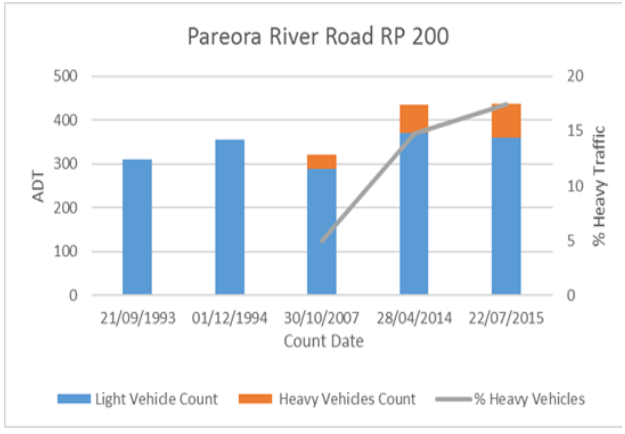

Hakataramea Valley Road RP 8000
ADT
% Heavy Vehicles
23/10/1985
07/04/1990
24/12/1997
05/09/2002
03/11/2003
16/10/2013
13/09/2017
Count Date
Light Vehicle Count
Heavy Vehicles Count
% Heavy Vehicles

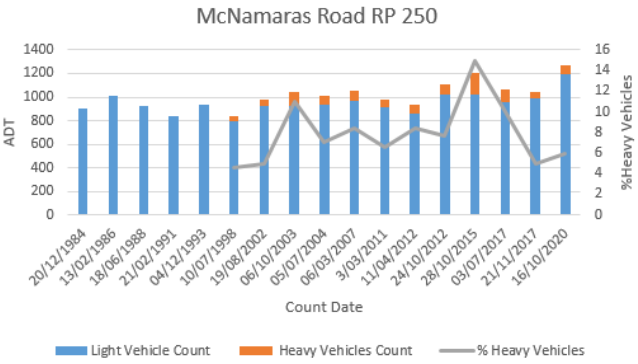

Horsnells Road RP 300
ADT
%Heavy Vehicles
15/09/1994
26/10/2001
18/08/2008
20/06/2016
Count Date
Light Vehicle Count
Heavy Vehicles Count
% Heavy Vehicles


Ikawai Middle Road RP 200
ADT
% Heavy Vehicles
15/04/1991
23/12/1993
26/12/1994
28/05/2009
05/02/2014
20/12/2014
22/06/2016
13/07/2017
30/10/2020
Count Date
Light Vehicle Count
Heavy Vehicles Count
% Heavy Vehicles


Lower Hook Road RP 200
ADT
% Heavy Vehicles
01/12/1980
10/12/1980
15/10/1991
21/06/2004
17/03/2015
16/10/2020
Count Date
Light Vehicle Count
Heavy Vehicles Count
% Heavy Vehicles


Old Ferry Road RP 200
ADT
% Heavy Vehicles
05/10/1980
14/07/1981
02/05/1987
03/08/1988
18/08/1998
08/11/2007
28/04/2009
15/01/2016
11/10/2017
16/10/2020
Count Date
Light Vehicle Count
Heavy Vehicles Count
% Heavy Vehicles


Pareora River Road RP 200
ADT
% Heavy Traffic
21/09/1993
01/12/1994
30/10/2007
28/04/2014
22/07/2015
Count Date
Light Vehicle Count
Heavy Vehicles Count
% Heavy Vehicles


McNamaras Road RP 250
ADT
%Heavy Vehicles
20/12/1984
13/02/1986
18/06/1988
21/02/1991
04/12/1993
10/07/1998
19/08/2002
06/10/2003
05/07/2004
06/03/2007
3/09/2011
11/04/2012
24/10/2012
28/10/2015
03/07/2017
21/11/2017
16/10/2020
Count Date
Light Vehicle Count
Heavy Vehicles Count
% Heavy Vehicles

High Productivity Motor Vehicles (HPMVs)

The Land Transport Rule: Vehicle Dimensions and Mass Amendment 2016 (**VDaM Rule Amendment**), allows for High Productivity Motor Vehicles (HPMVs) to travel on approved roads within New Zealand. The VDaM Rule Amendment makes changes to both the 2002 and 2010 Rule for some heavy vehicles requirements and allows for long-term permits to be issued for HPMVs to operate (with divisible loads) on approved roads. The main changes affecting the road network are:

- All standard vehicles can operate as-of-right at an increased gross mass of 46 tonnes without a permit.
- HPMVs can operate by permit at a gross mass above 44 tonnes up to a maximum of 62 tonnes.
- HPMVs can operate by permit at lengths greater than 20m.

Because specific HPMV routes have to be approved with input from road controlling authorities, Wimate District Council has some control over the impacts of this rule change on the district's roading network. However, there is likely to be increased pressure in future from local industry to approve some routes within the district.

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Specific trucks with a gross mass of 50 tonnes (known as 50Max vehicles) are permitted on roading networks unless limitations on bridge capacity are identified. The axle configuration results in little change in terms of Equivalent Standard Axles (the measure of loading affecting road pavements) but has an impact where the entire load is supported by a bridge structure. An evaluation of bridges is therefore essential.

Table 6. - Waimate District 50MAX HPMV Non Accepted Bridges

Road Name	RP	Bridge Name	Reason
Bridge with No ford			
Armstrongs	1055	Armstrongs	Condition
Bluecliffs	13696	Drinnans	Condition
Brasells Bridge	1372	Brasells	Condition
Champions	125	Champions No 1	Condition
Champions	635	Champions No 2	Condition
Davidsons	4463	Parrys	Uncertain Design
Deep Creek	3685	Adams	Posted bridge
Dons	3390	Dons	Condition
Flemings	3360	Kanes	Condition
Galways	7710	Galways	Uncertain Design
Hakataramea Downs	470	Hakataramea Downs	Posted bridge
Hannatons	581	Cunninghams	Condition
Hook Beach	1825	Hook Beach	
Kaiwarua	1780	Lanes	Condition/alignment
Meyers Pass		Meyers Pass	Inappropriate route
Molloys	5340	Molloys	Uncertain Design
Morven	1060	Murphys	Condition
Old Horseshoe Bend	462	Old Horseshoe Bend	Posted bridge
Otaio Cemetery	70	Otaio Cemetery	Condition
Pakihi	420	Hunter	Posted bridge
Poigndestres	1250	Poigndestres	Posted bridge
Woodlands	276	Becketts	Condition

22

Road Name	RP	Bridge Name	Reason
Bridges with a Ford			
Bournedale Homestead	690	Bournedale Homestead	Posted bridge
Bridge	1970	Ponsonbys	Posted bridge
Cliffs	2905	McKenzies	Posted bridge
Crowes	7082	Lundys	Posted bridge
Esk Bank	2515	Ryans	Posted bridge
Farm Road	2904	Farm Road	Posted bridge
Fletchers	1008	Scarletts	Posted bridge
Forrests	678	Forrests No 2	Condition
Gunns	1995	Meyers	Posted bridge
Homestead	5160	Hakataramea Station	Posted bridge
Hursts	1150	Hursts	Posted bridge
Menzies	2110	Frazers	Posted bridge
Menzies	2450	Menzies	Posted bridge
Milne	11270	Cleeves	Posted bridge
Milnes	180	Jacksons	Posted bridge
Moores	126	Frewens	Posted bridge
Pareora River	1220	Holme Station Corner	Posted bridge
Pareora River	9562	Maidens	Other
Redcliffs Back	2063	Waihuna	Posted bridge
Waihaorunga Back	6750	McKees	Posted bridge
Waitaki Valley	104	Rickmans	Posted bridge
Whites	158	Whites	Posted bridge
Woolshed Valley	1287	Spring Bank	Posted bridge
Woolshed Valley	12984	Taylors	Posted bridge
Youngs	1356	Crouches	Posted bridge
25			
47			

Overweight and over-dimension vehicles are still subject to individual permitting issued by the Road Controlling Authority, or under delegation.

Agricultural Vehicles

The size and number of agricultural vehicles on the network is increasing and this is causing a unique set of issues as discussed below.

- Vehicle weight and configuration – vehicles are not subject to or actively in compliance with normal requirements for road-going vehicles
- Vehicle width – dual wheeled tractors and trailer (fodder wagons/implements etc.) are often oversize and create safety and road damage issues
- Distance and frequency of travel – distances travelled are greater than in the past, particularly given the higher speeds modern tractors are capable of; and intensive farms are using roads for regular (daily) access.
- Mud on roads is an even greater issue with larger and more frequent use by agricultural machinery
- Remoteness of location- sometime unacceptable use of the road may go unnoticed by staff or contractors and therefore there is no opportunity for timely intervention
- Funding – due to the agricultural licencing rules, the contribution to the funding is limited

Council may opt to provide controls on such vehicles through education and bylaws if the current regime is insufficient.

Figure 6.7 - Large Agricultural Vehicles using the network

Vehicle Ownership and Use Changes

Although the population is effectively static people are tending to use their cars more and there are more vehicles per household and more households with vehicles. It is apparent that people are prepared to travel longer distances to and from work, again contributing to higher traffic volumes. Such an increase is expected to be constrained in the medium to long-term by an ageing population and increased Roading and fuel costs.

6.2.4 Improvements To Levels Of Service

Changes in Technology

Changes in technology can be considered in relation to road construction and changes in the vehicle fleet. The following are considered the most likely technology advancements affecting future demand on the network:

➔ Stabilising and recycling for road construction and maintenance. Where there is sufficient pavement depth this will reduce the need for heavy vehicles to carry aggregate and waste material over the network.

➔ In recent years the vehicle fleet in New Zealand has changed markedly. Some of the changes that will continue to have an effect on driver expectation or road performance have included:

- Increased power of trucks leads to greater potential damage on steep hills and intersections as trucks change gear, accelerate and decelerate.
- Larger agricultural machinery for harvesting and feeding out fodder crops
- The improvements to power steering leads to greater damage with turning vehicles entering and leaving the roadway and at intersections.
- Larger Trucks require wider intersections and corners to accommodate increasing turning circles.
- Cars with thinner metal on the body that are more prone to damage from loose metal and lower chassis requiring unsealed roads to be graded more frequently.

With these changes road users expect a higher standard of road with fewer changes in standards across a network.

Changes in Customer Expectations

In recent years there has been an increasing awareness on the part of drivers with respect to safety issues. It is anticipated that the following safety issues will become an increasing priority for Council in determining design and operational standards.

- Increased carriageway and shoulder widths
- Improved surface condition of unsealed roads
- Upgraded Intersection controls
- Bridge end protection
- Destination signage for tourists
- Reduction in the number of loss of control crashes

Changing Level of Service Demands

The intended Levels of Service defined in Section 3 are considered to be representative of the service demands of the current and the future community. With the lack of growth in the rating base the following factors may need to be considered:

- reduction in maintenance of low trafficked roads
- disposal of asset components not being significantly used (e.g. bridges, sections of roads)

Policy or Management Changes

Changes to Roading policies may be driven from a number of directions. They could be internally driven (e.g. Development Impact Levy policies) or externally driven (e.g. changes driven by national organisations like NZTA). Monitoring and being aware of possible implications of these changes enables the impacts of such changes to be anticipated and predicted. While there is no certainty, it is important to consider them when developing asset management risk forecasts and strategies.

Government Policy Statement on Land Transport Funding (GPS) – September 2020

GPS 2021/22-2030/31 directs funding for the New Zealand land transport networks. The GPS 2021/22-2030/31 has considered priorities across New Zealand's diverse communities acknowledging that urban, regional, and remote communities have very different needs. GPS 2021/22-2030/31 has four strategic priorities, which are to direct land transport investment into activity that:

- safety (Road to Zero)
- better travel options
- climate change
- improving freight connections

Development Contributions

Development Contributions are another means of funding network infrastructure, reserves or community infrastructure. Waimate District Council does not currently have a development contributions policy. A contribution policy should include a methodology for calculating the cost of the impact a development will have on existing community infrastructure including roads. This should ensure that the negative impact of development is in part funded by the developer rather than the ratepayer.

Failure to develop this policy will impact on future development within the District. Assets may not meet Council standards and/or a portion of ratepayer funding in excess of the developers contribution may be required to upgrade asset components to the desired standard.

6.3 DEMAND IMPACTS ON ASSETS

Overall implications for the network of population growth, continual demand for improvement in levels of service and potentially increasing numbers of heavy vehicles on the road are:

- An increased rate of deterioration on road pavements
- An increasing focus on road user safety
- An increased level of expenditure to attain the desired levels of service
- A minimal increase in ratepayer base to fund Waimate District Council's contribution to the roading budget

Given the limited data available, it is only possible to make qualitative projections about future levels of demand in the Waimate District. Any projections made must be based on an understanding of the composition of the district's roading network. The network has 640km of sealed and 696 km of unsealed road. Given that increases in demand are expected mainly from heavy vehicles and that only 4% of the network is in an urban environment, demand most affects the rural portion of the network.

Generally current demand issues are focused on the standard of roading and in particular the sealing of unsealed roads to remove dust nuisance and to provide a better level of roading service. Satisfying this demand through seal extensions is being carried out to the greatest extent that Council can manage. It is limited by the availability of NZTA financial assistance and the affordability of matching those funds locally. Whilst the Council is committed to continue with seal extension projects, problems with obtaining the local funding may impede this endeavour.

The majority of the district's roads were originally constructed with thin pavements; these pavements were not expected to carry the heavy vehicles they presently do nor any projected increases. There is little understanding of the rate of failure of these pavements under heavy loading, as most analyses are based on the assumption of strong pavements constructed to best practice. Many rural roads only carry a small volume of heavy traffic and small changes can result in rapid deterioration. In the case of on-farm development projects, in particular dairy conversions, it will be necessary to closely monitor individual developments. The location of aggregate sources and the route to the farm must be known so that maintenance can be undertaken prior to the

development rather than more expensive remedial work that would be needed after the heavy traffic has damaged the road.

6.4 DEMAND MANAGEMENT

There are three recognised components to a demand management strategy:

- ***Transport demand management*** – a transport system approach which seeks to achieve modal shift (i.e. to low impact modes such as cycling and walking)
- ***Traffic demand management*** – a single network approach which seeks to optimise or reduce traffic flows
- ***Travel demand management*** – focuses on the individual travellers and seeks to change travel behaviour through various initiatives (such as education and marketing).

6.4.1 Asset Based Demand Management

This encompasses traffic demand management and for this network it is managed through "Pavement Use" Hierarchy. The adoption of a roading hierarchy, which identifies a tiered roading system based on road function and planned levels of service, is important to enable the effective management of traffic. The hierarchy of WDC roads is defined and classified in Table 4.1. This has been further developed through the implementation of the One Network Road Classification system which includes the numbers of heavy vehicles as a parameter.
The adopted hierarchy needs to be physically implemented to ensure that traffic patterns match traffic planning. Therefore, in order to manage traffic demand on the network design standards and a level of service is set against the road hierarchy classification. Road design widths and traffic services requirements provide us with a mechanism for providing an appropriate standard for the use of various road sections. Table 6.3 sets out the design widths and traffic services requirements to be used for the different road hierarchies in the district.

Table 6.2 – Design Width Standards and Traffic Services Requirements

Group	Traffic Volumes Range for Group (ADT)	Desired Width (m)	Length (km)	Other Requirements
Rural				
Primary collector	> 1000	7.0	4	Reflective 100mm centreline, Raised Reflective Pavement Markers (RRPMs)
Secondary Collector	>200	6 - 7	134	Centreline marking
Access	<200	4-6	375	Partial centrelines on hills/ corners as appropriate
low volume	<50	4-5	80	
Urban				
Primary collector	> 3000	12	2	
Secondary Collector	> 1000	12	3	
Access	<1000	10	19	

Group	Traffic Volumes Range for Group (ADT)	Desired Width (m)	Length (km)	Other Requirements
low volume	< 200	6	29	

These targets will be reviewed once the ONRC details are further advanced.

As with any design standard there is an economic and cost implication of achieving it. It is important where physical or other constraints exist that impedes Council's ability to meet a standard, that there is a rational mechanism for the use of lower standards.

6.4.2 Non-Asset Based Demand Management

Non-asset based solutions for managing demand are available as alternatives to asset based solutions and generally fall into the transport and travel demand management categories. Possible non-asset based solutions for the District are:

- Traffic Bylaws on heavy commercial vehicles on sub-standard roads within the district
- Threshold and speed hump installation
- Education communication programmes targeted at stakeholder expectation
- Setting speed restrictions
- Subdivision bylaws restricting development from existing roads that are of sub-standard width and safety
- The use of development impact fees (DIF)
- Manage failure of roads to disposal

National non-asset based demand management solutions include **alternative transport modes**. Although vehicle ownership and usage is high in Waimate district due to the rural nature of the district, it is important to consider the use of other modes of transport as ways to manage demand on the network where possible. Public transport systems, car-pooling or alternative Roading (including cycling and walking) are sustainable and environmentally friendly Roading modes as convenient pedestrian, bicycle, and public transport networks can reduce reliance on vehicle transport. However, low volumes of population, combined with dispersed communities, means that public Roading is not a cost effective option at present and is unlikely to be so in future given the relatively low growth of population in the district.

6.5 ASSET PROGRAMMES TO MEET DEMAND

The **Canterbury Land Transport Plan 2015-25 (Revised 2018)** acknowledges that in rural Canterbury the focus of implementation of the strategy will be on improving safety and the efficient use of motor vehicles as there are limited opportunities to use other modes. Given the highly dispersed population and low volumes of traffic on most rural roads there is little need for large scale improvements to infrastructure or services. Because of the relatively small numbers of people living in rural Canterbury there are significant challenges surrounding the funding of transport initiatives. The focus of implementation in rural Canterbury will be on maintaining and renewing road networks to retain community connectedness and reliable travel times. Low cost measures that help remote communities maintain affordable access to key services are also considered.

The capital works programme includes works that will assist with meeting the current and future demands on the network.

The capital improvement works improvements for the next 10 years include:

- **Bridge Component Renewal** – this will ensure that accessibility to all parts of the network is maintained
- **Low Cost Low Risk Projects** – 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
- **Footpath development** – to extend and improve footpath where demand or safety issues dictate

Details of the costs associated with these works are outlined in Section 10.

6.6 FUTURE IMPROVEMENTS

In order to have a more accurate idea of the impacts of demand on the network and managing any growth, Council should review the following:

Traffic Count Data
Council will review their traffic counting policy and develop a strategy for Traffic Counting that allows for regular annual traffic counts to be completed on at least a representative sample of council roads, particularly highly trafficked roads, to allow historic comparisons and from this prediction on future growth. This allows council to assess and report on utilisation of the asset and review whether the asset actually provides sufficient capacity for current and future use.

Development contributions policy
Development Contributions policy needs to be developed to ensure that the negative impact of development is in part funded by the developer rather than the ratepayer.

Land Use Research Study
Further research should be conducted to review changes to land use which may impact on demand. This should include a review of the impact of District Plan changes and future predictions of development and asset creation within the WDC area, which potentially could impact on the Roading asset. This would involve developing relationships and surveying key stakeholders and land users so they can report on any forward planning that may affect the Roading asset in future.

Customer Demand Changes
Complete a Customer Survey, including local industry, to establish any changes in customer expectations as they relate to demand on the network.

Monitoring of Post-Pandemic Economic and Behavioural Demand Changes
The September 2020 release of the New Zealand Treasury PREFU showed modelling of low growth (average 1.6% per annum) in the NZ economy through a forecast 5-year period. The modelling assumed opening of New Zealand's boarders in January 2022. Given the predominant agricultural use of the Waimate transport network this projected low growth represents a business as usual scenario.

Consumer, tourism and community behavioural demand changes may be more wide ranging following the 2020 pandemic shocks. There is potential for more adoption of stay-local, communicate remotely behaviours. Council will continue to monitor changes in demand because of any observed community behaviour change and adjust network management strategies as necessary following any observed changes.

Climate Change Risk and Adaptation

7. SUSTAINABILITY

Sustainability can be defined as meeting the needs of the current generation without compromising the ability of future generations to meet their own needs.

7.1 OVERVIEW OF SUSTAINABILITY

Transport legislation and policy in New Zealand calls for an affordable, integrated, responsive, safe and sustainable land transport network. The Resource Management Act (RMA) 1991 is the guiding piece of legislation in New Zealand for the sustainable management of natural and physical resources.

A sustainable transport system should provide for our own economic and social wellbeing in a way that will not prevent our children and grandchildren from being able to provide for theirs.

The transport sector has an impact on every aspect of life and business. It directly affects quality of life through its movement of people, goods and services. However, transport systems can both enhance and detract from quality of life and the quality of physical and natural environments. For the NZ Ministry for the Environment sustainable transport means finding ways to move people, goods and information in ways that reduce its impact on the environment, the economy, and society.

A number of issues and concepts form the building blocks of a sustainable land transport system. These sustainable 'building blocks' represent the outcomes sought to achieve a sustainable land transport system and can be summarised as:

- environmental sustainability
- accessibility
- improved health
- functional transport networks
- economic development
- integrated urban form
- safety

7.2 SUSTAINABILITY AND LIFECYCLE

Asset management is designed to improve decision-making about assets to enable the better manage existing and future assets. Effective asset management ensures that agreed levels of service are met and risks, including public health, financial and environmental are minimised, while costs are optimised. Improved decision-making is crucial to achieve asset management and sustainability goals. Therefore, having the correct asset information available is important to support the decision-making process. It is thus clear that lifecycle costs are part of and supports asset management and sustainability.

Asset management practises include actions that recognise the need for environmental, Economic, Social and Cultural sustainability, that is -

- The natural environment needs to be preserved for future generations and not degraded as a result of Council's asset management operations and development projects.

- Financially, there is a limit to what ratepayers, developers, and therefore Council, can afford. Expenditure needs to remain within this limit and the costs need to fall equitably on the generations which derive the benefits.
- Social relationships between individuals, interest groups and local government are valuable, and Council needs to facilitate and encourage this by providing infrastructure.
- Our history, customs and creativity are valuable to us. Their preservation and enhancement over time is facilitated by providing venues where they can be practiced, preserved and displayed.

7.3 SUSTAINABLE DEVELOPMENT

Opportunities exist to complete road asset development and management services in a manner which reduces the negative impact of roading on the environment and simultaneously enhances economic, social and cultural outcomes.

Below are some (not all) of the sustainability elements that Council should address on roading projects through planning, design, construction and operation.

Environmental

- Emissions
- Run-off (erosion & water quality)
- Resource efficiency (recycled aggregates and fuel efficiency)
- Ecosystems & Habitat
- Climate change
- Urban design
- Land use

Social

- Access
- Community cohesion
- Safety
- Health (air quality & non-motorised transport modes)
- Noise, vibration, lighting
- Visual Amenity
- Community Viability
- Urban design

Economic

- Congestion
- Safety
- Health
- Life cycle cost (cradle to grave of the construction)
- Climate change
- Economic Development
- Access

Cultural

- Heritage
- Local and regional culture
- Indigenous cultural values

The NZ Energy Strategy and the NZ Energy Efficiency & Conservation Strategy

The NZ Energy Strategy, and the NZ Energy Efficiency and Conservation Strategy are statutory documents and are and referenced in the GPS.

Released in 2011, the revised New Zealand Energy Strategy provides the government's direction for energy and the role energy will play in New Zealand's economy. It replaces the 2007 New Zealand Energy Strategy. It covers the supply, delivery and use of energy. It offers direction for the energy industry; for energy-related aspects of transport, housing, research and development; and infrastructure. The last section is the New Zealand Energy Efficiency and Conservation Strategy, which provides direction more specifically for energy efficiency, renewable energy and energy conservation.

Source: New Zealand Energy Strategy

The New Zealand Energy Efficiency and Conservation Strategy (NZEECS) was written in 2007, and was a key part of the government's response to meeting its energy, climate change, sustainability and economic transformation goals. It has been written as a companion document to, and will give effect to a number of the objectives set out in, the New Zealand Energy Strategy (NZES).

Source: EECA.govt.nz

The New Zealand Energy Strategy 2011–2021 and the New Zealand Energy Efficiency and Conservation Strategy 2011–2016 will add a focus on energy efficiency to these goals. New Zealand's per capita energy use for transport is high compared to many other OECD countries. Improving transport energy efficiency offers major opportunities to improve the productivity of the overall economy.

To do this these strategies will focus on improving vehicle fuel efficiency, and increasing the uptake of low-carbon fuels and technologies. They will highlight the potential to reduce energy use in urban areas through walking and cycling and greater use of public transport. The strategies will place an expectation on local authorities to ensure integrated travel options through their transport and planning roles. Local authorities will also be expected to improve the efficiency of local transport networks and layouts so that people and freight can move about with greater ease and energy efficiency.

Source: GPS 2011

The Canterbury Land and Water Plan

Adopted in 2014 this plan runs alongside the Natural Resources Regional Plan until fully in force. These plans provide a framework for sustainability objectives and policies throughout Canterbury.

Introduction of a Council Sustainability Policy

Council is currently developing a sustainability policy to be adopted late 2020

Energy Efficiencies

The Waimate District Council is committed to implementing environmental best practices. This includes being more energy efficient. Where technologies exist that allows Council to operate in a more energy efficient manner it will be investigated and if there is a significant cost and environmental benefit it will be considered for implementation.

7.4 NEGATIVE EFFECTS

Table 7.1 below identifies the negative effects for the Waimate Community that the Roading Activity may have on the social, economic, environmental, or cultural well-being of the community. It indicates how the existing approach mitigates these negative effects or highlights proposed action to address these in the future Whilst there are no significant (critical) negative impacts assessed as resulting from the Council's roading activities, opportunities exist to deliver road asset development and management services in a manner which reduces the negative impact for the Waimate Community on the social, economic, environmental, or cultural well-being of the community.

Table 7.1 – Negative Effects – Roading Activity

Effect	Status of Effect		Impact on Well-Being (existing situation)				Existing Approach or Proposed Action to Address
	Existing	Potential	Social	Economic	Environmental	Cultural	
Pavements							
Runoff from sealed roads	+	+	Minor	Minor	Mod	Nil	• Capture runoff, e.g. concrete cutting or bitumen before it enters waterways, esp. sumps in urban areas. • Temporary erosion and sediment control during works including weed matting, hydro-seeding, silt traps and settling ponds. • Comply with Regional Council rules and/or consents for working within waterways.
Dust from unsealed roads	o	-	Mod	Minor	Mod	Nil	By sharing the cost of sealing all or part of the road causing the problem 50-50 with any property owner who wishes to reduce the effects of dust on their property. By requiring developers whose projects will significantly increase adverse effects of vehicle to seal road.
Noise in urban situations	+	+	Minor	Nil	Nil	Nil	• Comply with District rules, e.g. working hours and maximum noise levels. • Size of chip/type of resurfacing, e.g. thin asphalt quieter. • Smooth repairs, i.e. no bumps at joins, Service covers flush with surface.
Drainage							
Undersize culverts causing flooding	+	+	Mod	Minor	Minor	Nil	Replace undersize culverts with appropriate size to flood event frequency agreed by Council

+ Increasing o Remaining the same - Decreasing

7.5 SUSTAINABILITY WITHIN COUNCIL

In addition to managing the assets in an economically sustainable way, Council will also manage its internal operations to optimise their cost, efficiency and effectiveness, so that in the long term the costs of administering the infrastructure are sustainable. While the overall view of this is not a subject for this plan, the management of the asset services delivery unit is relevant.

7.5.1 Staffing Levels

Currently the Roading Group has 3.5 Full Time Equivalent (FTE) employees.

The greater emphasis being placed on the responsible management, distribution, operation and maintenance of existing and future resources will add to the tasks of the Roading Group. Compliance with the requirements of the Local Government Act requires a great deal of effort and prudent decision making from the Roading Group staff.

The current staffing levels are supplemented by outsourcing. However, outsourcing still requires scoping, input and supervision from Council staff and does not exonerate staff from outsourced work.

Because of this, assessment of staffing requirements will be required on an annual basis to ascertain the appropriate requirements for the increased workload. Assessment needs to consider the level of staffing coverage required to implement all of the Roading Group functions including internal management, information systems management, project management, design, supervision, construction, operations and maintenance.

7.5.2 Skills

In addition to staffing numbers, assessment of staffing levels needs to consider the skill requirements to meet the demands of the infrastructure that Council does and will own and operate. A review of Council policy on resourcing the operations and maintenance is required to ascertain the most appropriate method for delivery of the required levels of service should be considered.

7.5.3 Training

Training of staff is presently on an ad-hoc basis with no structured long term development plans for the individual staff members in the asset management field. The link between asset life, and the ability to deliver of levels of service with the skills of the people who plan, design, install, operate and maintain the assets is inevitable. It is crucial that the skill gaps of staff, contractors and service providers are identified; that there are structured training programmes to close these gaps; and that the effectiveness of the training provided is evaluated. Training programmes should be designed and reviewed for each individual – not for a business unit, contractor or service provider as an entity.

7.5.4 Succession Planning

Succession planning within any business is considered necessary to reduce the risk associated with staff leaving the organisation. Succession planning allows institutional knowledge to be passed on, and assists in ensuring continuity of organisational culture.

Local Authorities have traditionally not been particularly successful at implementing succession planning techniques and practices. In previous decades the pool of experienced local authority and ex-public service engineers available meant that the negative effects of poor succession planning were not experienced. With a shrinking pool of experienced engineers, and near full employment these effects are now being experienced by more local authorities. Whilst there is always potential for staff in key positions to move on to further their careers, succession planning can help to mitigate the effects of this.

Succession planning techniques can include:

- Sourcing replacement staff from within the organisation wherever possible
- Comprehensive personal career development plans in place for all relevant staff. This can include identifying weaknesses in training and experience and attempting to address those weaknesses by use of mentoring, relevant projects and continuing professional development programmes etc.
- Identifying likely staff retirements, promotions, resignations or position changes on an annual basis. Identifying potential internal staff to fill those positions, providing those staff with projects that extend them, and giving them relevant experience for filling the positions

No formal succession planning is implemented at present by Waimate District Council.

7.6 CLIMATE CHANGE

The following summary has been extracted for the Environment Canterbury website https://www.ecan.govt.nz/your-region/your-environment/climate-change/climate-change-in-canterbury/climate-change-projections-for-canterbury/, September 2020.

7.6.1 New Climate Projections for Canterbury

Environment Canterbury are committed to helping our communities to understand and be resilient to natural hazards risk, including climate change, and we asked the National Institute of Water and Atmospheric Research (NIWA), to analyse projected climate changes for our region.

Canterbury Plains Published in 2020, NIWA's report looks at how aspects of our climate such as temperature, precipitation (rain, snow, drought potential), wind and sea levels might change between now and 2100. It is based on global climate model simulations from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment, scaled down for New Zealand, with a focus on Canterbury.

This is a technical report (not for the faint-hearted!) but it is the most detailed information we have. Each chapter has a helpful summary, and key projections are set out below.

7.6.2 Understanding Emissions Scenarios

A little bit of technical knowledge goes a long way. Remember the thickness of the blanket?

Assessing future climate change due to human activity is difficult, because projections depend on greenhouse gas concentrations, which in turn depend on how we respond as a society. Climate scientists have dealt with those dependencies by developing different possible 'scenarios', based on different amounts of greenhouse gases in the atmosphere. These scenarios are called

Representative Concentrations Pathways (RCPs), abbreviated as RCP2.6, RCP4.5, RP6.0, and RCP8.5. RCP8.5 is the highest level.

The NIWA report looks at two scenarios: RCP4.5 (which could be realistic if immediate global action is taken towards mitigating climate change) and RCP8.5 (sometimes called the 'business-as-usual', where emissions continue at current rates).

7.6.3 Projections for Canterbury

To keep it simple here, we've described these two scenarios as whether we cut emissions, or if we do

Average Temperatures

- Increase with time and greenhouse gas concentrations.
- By 2040, annual mean temperature up 0.5 to 1.5°C.
- By 2090, up 0.5 to 2°C (if we cut emissions) or up 1.5 to 3.5°C (if we don't).

Maximum Daytime Temperatures

- By 2040, annual mean maximum temperature up 0.5 to 2°C.
- By 2090, up 1 to 3°C (if we cut emissions) and up 2 to 5°C (if we don't).
- By 2090, western Canterbury's alpine and sub-alpine areas could be 5 to 6°C warmer in spring and summer (if we don't).

Maximum Night-time Temperatures

- By 2040, annual mean minimum temperature up zero to 1°C.
- By 2090, up 0.5 to 1.5°C (if we cut emissions) and up 1 to 2.5°C (if we don't).
- The difference between a day's high and low increases with time and greenhouse gas concentrations.

Hot Days (25C or more)

- By 2090, expect 20 to 60 more hot days in most of Canterbury (if we don't cut emissions).
- Inland areas feel it the most, particularly the southern Mackenzie Basin, which could have 60 to 85 more hot days.
- Most of these hot days would happen in summer.
- Our warmer season could get longer in relatively low-elevation areas, with 5 to 10 more hot days in autumn and spring.

Cold Days (Frosts)

- Expect fewer frost days throughout the region.
- Inland areas and higher elevations warm the most, with 10 to 30 fewer annual frost days by 2040, and 20 to 50 fewer by 2090.
- The frost season (the time between a year's first and last frost) will likely get shorter.

Rainfall

- Most of the region can expect small changes in annual rainfall, up or down 5%.
- By 2040, autumn might be dryer in the Mackenzie Basin, with up to 10% less rain.
- By 2090, winters could be wetter in many eastern, western and southern parts of the region, with 15 to 40% more rain.
- By 2090, Banks Peninsula and many inland areas might get 5 to 15% less rain (if we don't cut emissions).

Snow

- Expect fewer snow days everywhere, especially in the mountains.

Drought

- Expect more potential for drought across most of Canterbury.

Windspeed

- Annual mean wind speeds up slightly, by nil to 5%.
- By 2090, winter and spring could be windier (up 5 to15%, if we don't cut emissions).
- That seasonal change might be more keenly felt in inland areas north and west of Rangiora (up 15 to 25%).

Sea Level Rise

- Sea level rise projections for Canterbury are the same as for New Zealand.
- Up by 0.4m in the next 50 years and up 0.6 to 0.7m in 100 years (if we cut emissions).
- Up 0.5m in 50 years and up 1.2 metres in 100 years (if we don't).
- High tides get higher. At 0.65 metres of sea level rise, every high tide is above the spring tide mark (compared to 10% now).

7.6.4 Extreme Climate Changes

In reality, the average climate change will be affected most greatly by changes at the extreme end of the range of weather experienced. Projections for extreme climate changes are outlined below. Daily temperature extremes: Modelling suggests a significant decrease in the number of frost days experienced in the region, and an increase in the number of hot days, or those days exceeding 25°C. Extreme climate change includes:

- **Extreme rainfall:** A warmer atmosphere can hold more moisture (about 8% for every 1oC increase in temperature). Therefore, there is likely to be increased rainfall depth and intensity associated with climate change. In addition, the heat that comes from the condensation of this increased moisture will make storms more intense.
- **Drought:** The modelling indicates that by the 2080s, there will be a significant increase in the average water deficit across Canterbury, with increases of between 2 weeks and over 6 weeks of pasture deficit as an average climate condition. By the 2030s, current drought events that are so severe that they only occur in 1 out of 20 years are projected to occur more frequently.
- **Fire:** Studies and modelling suggest that there is likely to be an increased fire risk. This will include longer fire seasons, increases in fuel drying, easier ignition, and faster fire spread due to wind. Potential increases in thunderstorms and lightning may also play a role.

7.6.5 Climate CHANGE EFFECTS

Specific effects that may impact on the Roading Activity are set out below along with potential mitigation options.

Dust from Unsealed Roads: Hotter temperatures and associated drought conditions could have detrimental effects in terms of increased dust from unsealed roads. This may mean that in future areas of unsealed roads need to be sealed, particularly close to residential properties.

Changes in Demand: An overall decrease in the mean rainfall for the district could impact on land use and in turn demand on certain areas of the road network.

Drainage Capacity: Extreme rainfall events in a generally dry region may cause surface flooding affects due to poor capacity of drainage assets. The cost of upgrading drainage assets for these extreme events is likely to be prohibitive for Council.

Increased Flood Damage Repair Work: Extreme rainfall events in a generally dry region may cause surface flooding affects and in turn increase requirements for flood damage repair works. Consideration will need to be given to design and location aspects for council roads to reduce the risk of damage or loss of service due to extreme weather events.

Water availability for Construction: Increasing demand for water is currently an important issue for Canterbury. This increased demand is likely to become increasingly critical in a future characterised by drier average conditions, and an associated increase in both drought frequency and intensity. This may mean, as an example, that it will be more difficult to obtain the required water to complete construction works.

Council will continue to maintain a weather eye on the effects of climate change.

7.7 FUTURE IMPROVEMENTS

A full assessment of negative effects created by the Roading network should be completed. Details of resulting strategies and operations to enable greater sustainability in both the short and long term can then be developed for use.

- Include MFE National Climate Risk Assessment, August 2020 summary information
- Include NIWA Climate change projections for the Canterbury Region, February 2020 summary information

8. RISK MANAGEMENT

8.1 RISK MANAGEMENT STRATEGY

The approach taken in the 2015 AMP has been advanced due to the collaborative effort of the Aoraki Roading Collaboration. As well as undertaking risk management assessment jointly, critical rotes have been identified.

The following sub-sections of this plan describe the issues considered and the outputs achieved to date.

Appendix 13.2 described the risk management procedure for the WDC road network in more detail. The process has not been completed at this stage and is a priority for the 2014-15 and 2015-16 financial years.

8.2 UNDERSTANDING THE CONTEXT

As for the levels of service, the context for the application and development of risk must be set to ensure that risk development is not completed in isolation, as the identification analysis and treatment of risk will impact at all levels in the management of the asset; from community outcomes through to service level delivery, strategic goals and operational delivery.

8.2.1 Strategic Context

This AMP for Roading sets out the strategic context as it relates to risk management. It outlines the relationship to identified community outcomes, activity rationale, strategic result and strategic action. Further the plan sets out the relationship to other plans, legal requirements, financial strategies, regulatory and policy obligations of the Roading activity.

8.2.2 Organisational Context

The organisational context is approached through the identified activities of managing the Roading asset, as the activity identifies the risk associated with staffing, the elected representatives and work areas, location and IT systems.

8.2.3 Risk Management Context

The risk management context refers to the risk-related activities undertaken within the Roading activity. The remainder of this section sets out the risk management context in terms of risk management activities, likelihood scale, and consequence scale. A risk assessment matrix and risk register are introduced, as are the required analysis and format for a risk treatment plan.

8.2.4 Considered Risks

The risks considered in this edition of the AMP reflect the framework discussed in NZTA Research Report 415: Case studies and best-practice guidelines for risk management on road networks.

This approach identifies risk groups and provides a thorough representation of the type of risks that should be considered.

Under these groups, risks have been identified as follows:

The **Planning risks** identified are relevant to WDC are:

- Insufficient business continuity planning for disruptive events
- Ineffective input into regional strategic planning
- Risks associated with council-owned roads and bridges on private land – e.g. council-owned bridges and walls on private (minor)
- Underestimating the effects of climate change
- Lack of transport alternatives – e.g. cycleways and walkways
- Moderate natural hazards –
- Dust nuisance
- Hazardous materials
- Surface water contamination (minor)

The **Management risks** identified are relevant to WDC are:

- Lack of staff resources (limited)
- Loss of system knowledge – e.g. inability to retain knowledge, loss of institutional knowledge; insufficient systems in place to manage data/information
- External economic influences
- Inability to utilise funding options
- Diminishing funding allocation
- Insufficient technology (minor)
- Lack of political alignment (minor)
- Handover of low-quality assets from property developers or council (limited)

The **Delivery risks** identified are relevant to WDC are:

- Inadequate project management
- Inadequate portfolio management
- Inadequate maintenance contract management
- Inadequate capital works contract management (limited)
- Non-compliance with legislation and legal requirements
- Inadequate procurement practices

The Physical Asset risks identified are relevant to WDC are:

All assets
- Damage to Infrastructure through vandalism

Roads/pavements
- Inadequate road design
- Inadequate road maintenance
- Low-lying road inundated by floods during heavy-rainfall events
- Loss of amenity and visibility caused by roadside vegetation
- Road-user conflicts

Streetlights
- Inadequate street lighting
- Damage to streetlights

Footpaths/accessways
- Inadequate footpath quality
- Inadequate accessibility

Signage
- Inadequate signage/markings causing accident/damage – vandalism)

Guard rails/medians
- Guard rails/medians damaged and/or missing

Drainage
- Flooding affecting roads

Bridges and structures
- Wall failure resulting from a natural hazard
- Bridge collapse/damage/deterioration/erosion/blockage
- Structure damage from overloading

8.3 RISK SUMMARY

A review of the risk types jointly undertaken is shown below.

8.3.1 Consequences Rating

Consequence	Code		1	2	3	4	5
	Level		Insignificant	Minor	Moderate	Major	Extreme/ Catastrophic
Interpretation	**Image, Reputation and Public Trust and Council Trust**		No media attention or damage to reputation.	No media attention, but minor damage to image to a small group of people.	Negative local media coverage, community concerned about company performance.	Negative national media coverage, major decrease in community support.	Negative international media coverage, Significant political outfall, loss of community support, loss of several key staff.
	Financial/ Economic (Sum of)	**Financial Direct Costs (Repair, Lost Revenue, 3rd party damage, legal costs)**	< $10,000	$10,000 to $50,000	$50,000 – $200,000	$200,000 – $1,000,000	>$1,000,000
		Economic impacts on users and businesses	Equivalent to < $10,000	Equivalent to $1,000 to $50,000	Equivalent to $50,000 – $200,000	Equivalent to $200,000 – $1,000,000	Equivalent to > $1,000,000
	Environmental		No breaches	Minor breaches affecting very small part of the network	One-off major breach, affecting a small part of the network	Several major breaches affecting a significant part of the network	Widespread and major breaches of standards, failure to meet legislative requirements over most of system area / network
	Public health and safety		No health or safety impact.	Minor safety impact on small number of people.	Serious safety impact on small number or minor impact on large number of people.	Extensive injuries or significant safety impacts, single or several fatalities.	Widespread safety impacts; large numbers of fatalities.
	Service level/ Effectiveness		One-off minor failure to meet levels of service	Minor failures to meet levels of service.	One-off major failure or widespread minor failures.	Some major performance failures.	Major, widespread, unacceptable performance failure.

8.3.2 Likelihood Rating

Likelihood		Interpretation	Probability
Code	Name		
5	Almost Certain	Is expected to occur several times a year	0.8
4	Likely	Could occur once a year	0.6
3	Possible	Could occur at some time in the next 10 years	0.4
2	Unlikely	Could occur at some time in the next 50 years	0.2
1	Rare	Could occur only in exceptional circumstances (unlikely next 50 years)	0.05

8.3.3 Risk Score

		Consequences				
	Likelihood	1	2	3	4	5
		Insignificant	Minor	Moderate	Major	Severe
5	Almost Certain	M	H	H	E	E
4	Likely	M	M	H	H	E
3	Possible	L	M	M	H	E
2	Unlikely	L	M	M	M	H
1	Rare	L	L	M	M	H

8.3.4 Planning Risk

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/Lo	Funded?	Data Items	Reference
		/Corporate image	Financial / economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
Compliance	Non-compliance with legislation and legal requirements	5	4	2	3	2	**4**	**4**	16	Training & awareness		**4**	**2**	8	No	M			
	Inability to comply with council's own standards	4	2	2	2	2	**4**	**4**	16	Training & awareness		**4**	**2**	8	No	M			
Planning Status	Inadequate asset management/infrastructure strategy planning	4	3	2	1	4	**4**	**2**	8	Ensure adequate resources are available ARC collaboration	80k	**2**	**2**	4	No	L			
	Insufficient business continuity planning for disruptive events	3	3	1	1	2	**3**	**5**	15	Ensure adequate resources are available Link risk to resilience planning		**2**	**4**	8	yes	M			
	Ineffective input into regional strategic planning	2	2	3	1	2	**4**	**4**	16	Ensure adequate resources are available		**4**	**2**	8	No	M			

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/Lo	Funded?	Data Items	Reference
		/Corporate image	Financial / economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
Climate	Underestimating/understanding the effects of climate change	1	3	3	1	3	**2**	**4**	8	Ensure appropriate advice is sought available		**2**	**2**	4	No	L			
	Overestimating the effects of climate change	1	4	3	1	1	**2**	**4**	8	Ensure appropriate advice is sought available		**2**	**2**	4	No	L			
Assumptions and Projections	Poorly defined levels of service	2	1	2	1	1	**3**	**4**	12	Included in AMP processes		**4**	**2**	8	No	M			
	Level of Service	2	1	2	1	1	**3**	**4**	12	Included in AMP processes		**2**	**3**	6	No	M			
	Population Projection	2	1	2	1	1	**3**	**4**	12	Included in AMP processes		**2**	**3**	6	No	M			
	Demand Change	2	1	3	1	2	**3**	**4**	12	Included in AMP processes		**3**	**3**	9	No	M			

8.3.5 Delivery Risk

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/ Low)	Funded?	Data Items	Reference
		Corporate image	Financial / economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
Management Processes	Inadequate portfolio management	3	4	2	4	3	4	3	12	• Structure (management) • Appropriately trained personnel • Have technical audits • Have independent review network • Work in-line with contract documents • Ensure quality control • Monitor contractor	$150k	2	2	4	N	M			
	Inadequate capital works contract management	4	4	2	4	3-4	4	3	12	• Appropriate supervision • Contract documents in place • Appropriate/qualified civil works contractor • Documentation • Technical knowledge • Design / drawing / spec • Photos • Site inspection at critical times	$100k	2	2	4	N	M			

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/ Low)	Funded?	Data Items	Reference
		Corporate image	Financial / economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
	Inadequate maintenance contract management	3	3	2	4	4	3	3	9	• Appropriate staffing levels • Holding contractor accountable for their contractual obligations • Auditing • Contract document • Site inspections • Technical knowledge • Data collection	≥ $50k	2	2	4	N	M			
Relationships	Service level agreements between transport/roading and other parties	3	3	2	2	3	3	3	9	• Have a written agreement • Communicate issues • Monitor agreed levels • Spot check • Monitor vehicles • Have defined measures • Adjust/be aware of seasons • Prescribe maintenance regime • Discuss/communicate variances	$3k	2	2	4	N	M			

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/ Low)	Funded?	Data Items	Reference
		Corporate image	Financial / economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
	Unsatisfactory working relationships with utilities	3	4	3	2	3	3	5	15	• Provide training • Provide maintenance intervention strategy • Communicate • Reason/work in together • Agree on an integrated FWP • Address conflicts • Have standards • Try to time works effectively • Discuss issues civilly with facts up front	$10k	2	2	4	N	M			
	Unsatisfactory public relationship management and communication	4	4	1	2	3	4	3	12	• Involved in process early • Follow up complaints/enquiries • Put customer first • Communicate plans and changes • Reasons for decision/provide facts where possible	≥ $5k	2	2	4	N	M			

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/ Low)	Funded?	Data Items	Reference
		Corporate image	Financial / economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
Resources	Inadequate procurement practices	4	4	2	2	4	4	3	12	• Mixture of age and experience in workforce • Succession plan • Maintain asset/training/ recommendation • Support resources • Performance reviews • Sharing of knowledge • Record processes/methodology	$20k	2	1	2	N	M			

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/ Low)	Funded?	Data Items	Reference
		Corporate image	Financial / economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
	Shortage of local contractors and consultants	4	4	3	3	4	4	3	12	**Address through procurement strategy including:** • Approach larger players to establish forward workload • Keep in competitive marks • Keep works local where possible • Discuss with key stakeholders • Early involvement • Design builds • Collaboration • Share work around • Have a good spread of short/long term contracts • Don't package to larger portions of work over great terms.	$5-10k	2	3	6	N	M			

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/ Low)	Funded?	Data Items	Reference
		Corporate image	Financial / economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
Control	Inadequate event management	3	3	–	4	4	4	3	12	**Address through resilience strategy including:** • Run scenarios • Monitor costs • Right equipment for job • Work out entire picture • Monitor landform changes – e.g. loss of overland footpaths • Warning signage/road closures • Carry out preventative works as soon as practicable to limit further damage • Have completed preventative prior to event • Communication • Experienced decision makers	≥ $100k	2	3	6	N	M			

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/ Low)	Funded?	Data Items	Reference
		Corporate image	Financial / economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
	Poor Workmanship	3	2	2	3	3	3	4	12	**Address through procurement strategy including:** • Quality Control • Appropriate materials • Well training staff • Appropriate weather • Partnership	≥ $5k	2	2	4	N	M			
	Ineffective enforcement measures	3	3	–	2	3	3	3	9	**Address through procurement strategy including:** • Work to policies/plans and introduce new • Limit/no exceptions • Random audit • Rectify exceptions/hazards • Discuss why with public • Have approved standards	≥ $5k	2	3	6	N	M			

8.3.6 Asset Risks

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/Low)	Funded?	Data Items	Reference
		Corporate image	Financial/Economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
Performance	Sub-optimal condition level Unsealed Roads	2	2	3	3	2	3	3	9	Ensure adequate resources are available to adequately monitor	$60k	2	2	4		M			
	Failure Risk Bridges	4	4	4	5	3	5	2	10	Bridge Management Strategy Engage qualified structural bridge engineer to undertake regular inspections	$6k	5	1	5		H			
	Over Loading Pavements (significant issue)	1	3	2	2	2	3	5	15	Encourage law enforcement Work with transport providers		3	3	9	Y	M			
	Inadequate Functional Performance	2	2	2	1	2	2	4	8	Maintenance and Operational Management		2	2	4		M			
	Poor Amenity Performance	3	1	1	1	2	2	4	8	Address through LCC planning		2	2	4		M			
	External Damage E.g. Bridge	3	3	3	2	3	3	5	15	Maintenance and Operational Management		1	5	5		H			

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/Low)	Funded?	Data Items	Reference
		Corporate image	Financial/Economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
Natural Hazards	Geo-hazards	5	5	4	4	4	5	3	15	Life lines strategy Resilience/adaptation strategy		2	5	10	Y	H			
	Floods	2	4	3	2	3	4	3	12	Life lines strategy Resilience/adaptation strategy Drainage investment		2	3	6	Y	M			
	Snow	2	3	1	2	3	3	2	6	Have adequate plans and resources in place to deal with it	$20k	1	3	3		L			
	Wind	1	2	1	2	2	2	4	8	Maintenance and Operational responses to clear roads (e.g. fallen trees)		1	4	4		L			
	Fire/others	3	2	2	3	2	3	5	15	Life lines strategy Resilience/adaptation strategy Work with forestry		4	2	8		M			)
Safety/Security	Crashes	1	1	1	2	1	2	5	10	Safety programme		2	4	8	Y	M			

Risk Type	Specific Risk Description	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/Low)	Funded?	Data Items	Reference
		Corporate image	Financial/Economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
	Sabotage – Signs	1	1	1	2	1	1	3	3	Maintenance and Operational Management		1	3	3		L			
	Spills	1	2	3	3	2	3	3	9	Maintenance and Operational Management, incident response		2	3	6		L			

The most critical risks on the roading network have been identified by practitioner knowledge, as a formal assessment and identification process to establish a risk register has not yet been completed. Bridges have been acknowledged to be the determining factor in the resilience of the network.

Critical Structures – The Waimate District Council Disaster Resilience Summary Report 2006 provides a useful assessment of the risk and impacts on the network.

This has been improved on through an assessment in 2020 by the Roading Manager as part of considering the resilience of the network.

38 bridges have been identified where there is no alternative route. These are listed below.
Of these one bridge is rated as 'high risk' in terms of likelihood and consequence (O'Briens Bridge on Hakataramea Road). Options for addressing the resilience for this part of the network are limited as sections of the road within this valley are also prone to flooding.

BRIDGE No	BRIDGE NAME	ROAD NAME	Likelihood	Consequence	Risk
52	Ryans	Esk Bank	Rare	Minor	low
59	Forrests No 2	Forrests	Rare	Minor	low
81	Bournedale Homestead	Bournedale Homestead	Rare	Minor	low
90	Hook Beach	Hook Beach	Rare	Minor	low
104	Frewens	Moores	Rare	Minor	low
116	Cunninghams	Hannatons	Rare	Minor	low
117	Poigndestres	Poigndestres	Rare	Minor	low
130	Lundys	Crowes	Rare	Minor	low
135	Glenavy	Te Maiharoa	Rare	Minor	low
148	Dons	Dons	Rare	Minor	low
153	Whites	Whites	Rare	Minor	low
172	Cleeves	Milne	Rare	Minor	low
186	Menzies	Menzies	Rare	Minor	low
51	Church Hill	Church Hill	Rare	Moderate	low
80	Coopers	Coopers	Rare	Moderate	low
92	Hook Gap	Upper Hook	Rare	Moderate	low
129	Sinclairs Creek	Maori	Rare	Moderate	low
157	Hursts	Hursts	Rare	Moderate	low
160	Bursens	Pentland Hills	Rare	Moderate	low
161	Meyers Creek	Kaiwarua	Rare	Moderate	low
163	Lanes	Kaiwarua	Rare	Moderate	low
170	Farm Road	Farm Road	Rare	Moderate	low
174	Hakataramea Station	Homestead	Rare	Moderate	low
176	Hurstlea	McHenrys	Rare	Moderate	low
181	Mt Florence	Mt Florence	Rare	Moderate	low
185	Frazers	Menzies	Rare	Moderate	low
192	Scour Stream	Moorland Farm Settlement	Unlikely	Moderate	low
156	Rickmans	Waitaki Valley	Unlikely	Minor	Medium
79	Jacksons	Milnes	Unlikely	Moderate	Medium
74	Stanleys	Stanleys	Possible	Moderate	Medium
175	Wrights Crossing	Hakataramea Valley	Likely	Moderate	Medium
177	Station Creek	Hakataramea Valley	Rare	Major	Medium
178	Little McKay	Hakataramea Valley	Rare	Major	Medium
179	Middle McKay	Hakataramea Valley	Rare	Major	Medium
180	Big McKay	Hakataramea Valley	Rare	Major	Medium
182	Rocky Point	Hakataramea Valley	Rare	Major	Medium
169	O'Briens	Hakataramea Valley	Possible	Major	HIGH

In order to better define critical risks, Council will need to:

- Identify and agree the risk management context, i.e. consequence/likelihood frame work. Without this agreement the risk rating process may lead to an extensive number of high to very high risks requiring funding to mitigate or fix
- Complete management and supervision of the risk management activity. This is likely to require some additional staff resources.

8.3.7 Management Risks

Risk Type	Specific Risk Description	(my) Comments	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/Low)	Funded?	Data Items	Reference
			Corporate image	Financial / Economic	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
Finances	Inadequate Funding		4	5		3	5	5	2	10	• Sufficient AMP process • Strong funding applications • Adequacy in rates charged • Not over invest • CPI adjustment		5	1	5		M			
	Financial Response to Disasters		3	5	4	4	5	5	3	15	• Resilient network • Property resilience	$500k	4	3	12		H			
	External economic influences			4		4	4	4	2	8	• AMP • Cash reserves	$100k	4	2	8		M			
	Consumer Costs		3	4	–	–	3	4	3	12	• Maintaining network effectively • Sound asset management • Holding levels of service with finances		2	2	4		M			
People Resources	Staff Skills/Knowledge Base		4	4			4	4	3	12	• Succession plan • Training on job • Policies / records • Processes written up	$10k	4	2	4		M			

Risk Type	Specific Risk Description	(my) Comments	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/Low)	Funded?	Data Items	Reference
			Corporate image	Financial /	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
	Critical Council Size	Section 17a reviews	3	4	–	–	4	4	4	16	• Multi party funding agreement • Collaboration contract (ARC) • Consultants (external) help		4	2	8		M			
	Loss of System / Institutional Knowledge		4	4	–	–	4	4	3	12	• Standard operating procedures • Off-site storage/Cloud base system • Electronic that than paper based	$300k	1	2	3		L			
	Technology		2	3	2	–	3	3	3	9	• Resources reviewed remotely • Paper copies/rept • Generator • Internal (closed base) system	$10k	1	3	3		M			
	Shortage of local contractors and consultants		3	4	–	–	4	2	4	8	• Open tenders • Collaboration • Larger contracts • Multi party funding agreement	$70k	2	3	6		M			

Risk Type	Specific Risk Description	(my) Comments	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/Low)	Funded?	Data Items	Reference
			Corporate image	Financial /	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
Politics	Lack of political alignment		4	3	–	2	4	4	3	12	• PR with council • Provide answers rather than options • Present issues and associated costs indicating 'do nothing'	$5k $20k	3	2	6	N	M			
	Inadequate Governance /Policy		4	4	4	4	3	4	2	8	• Have policies in place and operate under • Operate under governing legislation	$10k	4	1	4	N	M			
	Public Satisfaction		3	2	–	–	3	3	3	9	• Carry out public surveys • Answer/follow-up/action public complaints	$20k	2	2	4	N	M			
	Loss of public trust		5	3	2	5	5	5	1	5	• Risk management process • Governance/management		5	1	5		H			
	Loss of political trust/dysfunctional organisation		5	4	3	4	4	5	1	5	• Risk management process • Governance/management		5	1	5		H			
	Rating		4	4	–	–	3	4	3	12	• Plan in advance • Communicate with public • Advertise make people	$30k	3	3	9	N	M			

Risk Type	Specific Risk Description	(my) Comments	Consequences					Consequence Rating	Likelihood	Level of Gross Risk	Mitigation Strategy (Existing Controls)		Residual Risk			Further Action Req?	Priority (Extreme/High/Medium/Low)	Funded?	Data Items	Reference
			Corporate image	Financial /	Environment	Health & Safety	Service level/ Effectiveness				Action	Costs	Consequence Rating	Likelihood Rating	Net Risk					
	Background/Influence –Bias/Elective Members		3	4	–	–	3	3	4	12	• Educate elected members • Provide supporting information • Discuss pros and cons individually	$5k	2	3	6	N	M			
	Lack of Supporting Economic Growth (Tourism)		4	4	3-4	2	4	4	3	12	• Adjust infrastructure where possible • Recognise needs • Apply for additional funding with supporting info • Get community/elected members on board • Form forward plan		4	2	6	N	M			
	In-adequate Communications Plan		3	2	1	1	3	3	3	9	• Commit sufficient resources at this risk		2	3	6	N	M			

WDC Contract Procedures Manual

The various contracts for the operation and maintenance of this activity require the contractors to provide Quality Plans for the execution of the contract requirements. The Quality Plans include procedures for work to be carried out. The risk is that the WDC and contractor's procedures are not followed.

Health and Safety

Healthy and safety risks are identified and managed using the following:

- Council has a comprehensive Health and Safety Programme for its operations.
- The various contractors involved in this activity have Health and Safety Programmes in operation. Reports are received from the contractors about any incidents relating to health and safety. Council's risk is that no inspection of work sites is undertaken by Council staff or their consultant to ensure that the requirements of the Council's and the contractors' Health and Safety Programmes are being carried out on site.
- Traffic management – Council has adopted the NZTA's Code of Practice for Temporary Traffic Management Edition 4 (COPTTM). All contractors working within district council road reserve are to use this code.

General Management Issues

General management risks include the following:

- **Contract Observation** - The various contractors are not being observed sufficiently to ensure that all aspects of the contracts are being carried out or met.
- **Legislative Compliance -** Council staff practitioners supported by their experience and training, believe that all legislative requirements that impact on this activity are being complied with.
- **Resources -** The financial provisions shown in this Plan should be sufficient to provide the service required for this activity.
- **Service Agreements -** There are no specific service agreements in place between each department to ensure everyone is aware of their roles in this activity. However, being a small Council with a small staffing level, interdepartmental discussion in relation to any facet of this activity is normal practice.
- **Ensuring Clear Council Policies** - Council's policies are held in the Policy Manual. In particular, roading policies have been incorporated into the Waimate District Consolidated Bylaw 2008. The Roading content (in particular Chapter 11) of the bylaw was written by the Roading Group.

Financial

Financial risks include the following:

Cost 'Overruns' - Council staff manage expenditure by:

- ordering work only if finance is available and approved
- reviewing expenditure monthly
- reporting exceptions

Ensuring True Costs – Costs Not 'Manipulated' - The financial forecasts that have been made in this Plan portray the true cost of this activity, given the assumptions made in making those forecasts.

Financial Assistance - for this Activity is received from NZTA in accordance with their policies. The current financial assistance rates is 64% and calculated as per NZTA formula for emergency works.

8.4 INSURANCE

There is no current insurance cover for roads or bridges within the Waimate District. There is an expectation that Council will use NZTA emergency funds and council reserves and/or loans for local share. This is a risk in itself given NZTA has indicated that emergency works will be subject to a stricter regime in the future.

8.5 EMERGENCY MANAGEMENT

8.5.1 Operational Emergency Management

Operational Emergency Risks are those associated with the day to day operation of the District, including incident response and winter maintenance. Initial response to all these events is managed through the Road Maintenance Contract, and is covered in the road maintenance contract specification. This specification covers response times, liaison, notifications, plant and personnel requirements. The snow clearance requirements ensure high risk/use areas are cleared initially with the lower priority areas then being cleared.

Where the size of an event extends beyond the capability of the Contractor (generally requires more than 6 staff to respond/manage) Council staff will take over management of the event. Where necessary Council will engage additional resources directly to manage and respond to events.

8.5.2 Lifelines Emergency Management

The Waimate District Council Disaster Resilience Summary Report was completed in 2006 by the Manager of the Canterbury Engineering Lifelines Group with support from the national Engineering Lifelines Committee. Although this is five years old, it still provides a summary of the processes for responding to a large scale emergency event. This includes personnel responsibilities and contact details for outside organisations.

Council has also participated in an Engineering Lifelines project, Earthquake Hazard Assessment, and the summary of the assessment is outlined below.

8.5.3 Earthquake Damage Assessment

Table 8.1 Damage Assessment Chart has been compiled for use in conjunction with the Waimate, Mackenzie and North Waitaki Districts Engineering Lifelines Project, Earthquake Hazard Assessment, Report to Environment Canterbury, May 2008, (Ecan Report No. U/08/18) prepared by Geotech Consulting Ltd. It should be read in conjunction with Sections 6, 7 and 8 of that report. Section 9 outlines three earthquake scenarios, and it is recommended that these also be read to provide a perspective on the contents of Table 6.8.

Chart Zones

Table 8.1 has been set out for each of the three Ground Shaking Zones as shown in Figure 6.13 of the above report. Because of the large area of the Districts, and the range of expected earthquake shaking intensities for any single earthquake event, or on a probabilistic basis, indicative damage is shown for a range of shaking intensities for each zone. The damage is indicative only and a wide variation can be expected within each zone due to variations in subsurface conditions, geology, terrain and orientation of the site with respect to the earthquake source.

Chart Limitation

The Damage Assessment Chart is an indicative guide only. This table is derived from a similar chart originally prepared for the Christchurch Engineering Lifelines Study (Risks and Realities, 1997). It is based on damage reports from historical earthquakes in New Zealand and overseas. There is little information on damage ratios for structures or infrastructure other than buildings, (this particularly applies to in ground pipework) and the relative damage is necessarily somewhat subjective. The damage to structures should be read in conjunction with the description of damage in the Modified Mercalli Intensity Scale, Appendix C of the Report. It may be used for coarse screening of effects, but must not be used as the basis for any design. Any decision involving expenditure or engineering design requires a more detailed evaluation of the conditions pertaining at that particular site.

Liquefaction

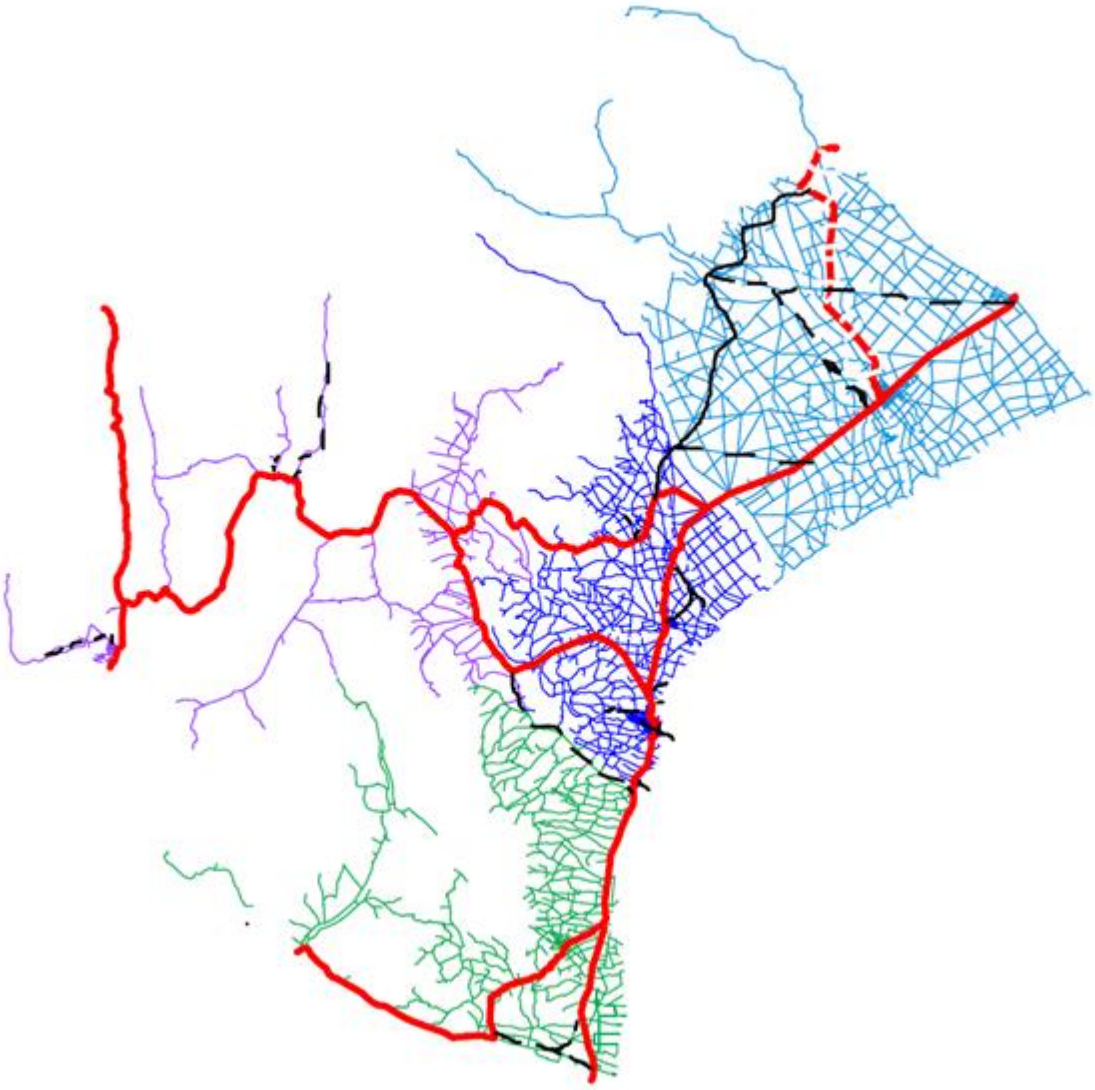
The Damage Assessment Chart does not include reference to liquefaction. Areas of significant liquefaction hazard in the Districts are limited. The majority of the areas are underlain with alluvium are older Pleistocene surfaces. Both the relatively old age and the predominantly coarse grading of this gravel make widespread liquefaction very unlikely. Liquefaction is more likely to occur within the ground shaking Zone 3 areas. If liquefaction occurs, the damage outlined in the chart could be significantly greater. For an indication of the effect of liquefaction, refer to Table 2.2, page 28 of Risks and Realities, report of the Christchurch Engineering Lifelines Group, CAE, 1997.

Table 8.1 – Damage Assessment Chart

Zone	Shaking Intensity	Roading	Railway	Bridge Structure	Bridge Abutments
1	MM VI	Little to no damage	Little to no damage	Refer section A - Structures	Little to no damage
	MM VII	Minor damage to kerbs and cracking of seal	Minor damage to alignment		Minor slumping
	MM VIII	Some damage to kerbs. Some distortion and cracking of seal.	Distortion of rail lines, some fissuring and spreading of embankments		Some slumping of abutment fill common
	MM IX	Widespread damage to kerbs, Distortion and cracking of seal, some ground fissuring. Permanent ground distortion and settlement.	Marked distortion of rail lines, both horizontal and vertical, significant embankment damage		Slumping of abutment fill at nearly all bridges, many of significant magnitude. Translational or rotational movement at some abutments.
2	MM VI	Little to no damage	Little to no damage		Little to no damage
	MM VII	Minor damage to kerbs and cracking of seal. Small slips on steep batters.	Minor damage to alignment		Minor slumping
	MM VIII	Some damage to kerbs. Some distortion and cracking of seal. Slips in batters	Distortion of rail lines, some spreading of embankments		Some slumping of abutment fill common
	MM IX	Damage to kerbs, distortion and cracking of seal, Land sliding in steep slopes and batters, cracking of ground	Distortion of rail lines, both horizontal and vertical, significant embankment damage		Slumping of abutment fill at most bridges, many of significant magnitude. Translational or rotational movement at some abutments.
3	MM VI	Little to no damage	Little to no damage		Little to no damage
	MM VII	Rock fall and small slips on steep batters.	Minor damage to alignment		Minor slumping
	MM VIII	Rock fall and slips in steep batters	Distortion of rail lines, some spreading of embankments		Some slumping of abutment fill common
	MM IX	Land sliding in steep slopes and batters, cracking of ground, large volume rock fall possible	Distortion of rail lines, both horizontal and vertical, significant embankment damage		Significant slumping of abutment fill at most bridges. Translational or rotational movement at some abutments.

8.6 CRITICAL ASSETS

Together the Aoraki Roading Collaboration have identified the critical routes for mid-south Canterbury.



These are predominantly the major state highways, supported by key resilient routes. Waimate District roads identified include:

District	RCA	Criticality level	Description
Waimate	NZTA	Critical 1	SH1
Waimate	NZTA	Critical 1	SH82
Waimate	WDC	Critical 1	Pareora River Road Pareora Gorge Road
Waimate	WDC	Critical 2	Old Ferry Road Tawai Ikawai Road Ikawai Middle Road
Waimate	WDC	Critical 2	Glenavy Tawai Road

8.7 ASSUMPTIONS AND UNCERTAINTIES

Waimate District faces a similar level of risk from natural hazards as other Canterbury local Authorities. Flooding is the most common issue and Council is well-prepared for these events. It is

assumed that Council will be able to manage the vast majority of events through normal business practices and beyond that there will be access to emergency works funding.

8.8 FUTURE IMPROVEMENTS

8.8.1 Development of Risk Management

It is important to have input from a broad range of people and organisations so that the risk register is as comprehensive as possible. Often the greatest risks arise from events that were not anticipated or considered beforehand. Initially the risk register and assessment should be created in a workshop environment from a number of stake holders including Council staff and input from other stakeholders (e.g. contractors). Once the risks have been identified these should then be analysed in the consequence / likelihood frame work to assess the validity of the scales. If the risk outcome for all identified areas of risk is too great, then the consequence and likelihood scales may need to be adjusted. At this stage a second review of the scales and reassessment of the identified risk can be completed. From this overall assessment critical risks and assets can be identified.

After rating the risks and creating the risk register, Council will need to determine which parties are in the best position to carry out risk treatment planning for each of the high and very high risks, so that the appropriate actions may be taken.

8.8.2 Cross-Asset Risk Management Process

Risk Management procedures set out in AS/NZS 4360:2004 and SNZ HB 4360:2000 are generic for a wide range of activities and organisations. The Risk Management system proposed in this Asset Management Plan is based on the assessment of Council values and goals for its road Roading network. Council will need to review the risk management process and provide feedback on the proposed risk rating criteria.

To ensure a robust and fair approach is taken with all of these assets, it is recommended that Council consider the development of a Cross-Asset Risk Management process in the future. This would then provide a greater level of assurance to Council that the prioritisation of the risks associated with its entire asset base, along the allocation of Council funds required to manage them, has been based upon an approach that is both rational and equitable.

8.8.3 On-Going Review

To ensure that emerging risks are identified and captured and that the Risk Treatment Plans are monitored for effectiveness over time, both the register and treatment plans must be reviewed on a regular basis by Council and other stake holders. The frequency for these reviews should be agreed and included in the Councils Operating Procedures.
Any significant additions or changes to the risk register will be noted as they occur through regular reporting procedures. It is recommended that the risk register should have a comprehensive update at each amp review.

9. LIFECYCLE MANAGEMENT PLANS

9.1 LIFECYCLE MANAGEMENT – AN OVERVIEW

This section of the AMP outlines what is work planned to keep the assets operating at the current levels of service defined in Section 5 while optimising lifecycle costs. The overall objective of the Life Cycle Management Plan is:

> ***To maintain performance measures to ensure that the current strategies do not consume the asset leading to an unexpected increase in maintenance/renewal expenditure in the future.***

This lifecycle management plan covers the following:

➔ **Background Data** identifying where possible:

- Physical parameters of the assets
- Current capacity and performance of the asset relative to the levels of service defined in Section 5 and demand projections of Section 6
- Current condition of assets
- Asset valuations
- Historical data

➔ **Operations and Maintenance Plan**: This covers planning for on-going day to day operation and maintenance to keep assets serviceable and prevent premature deterioration or failure. This plan includes:

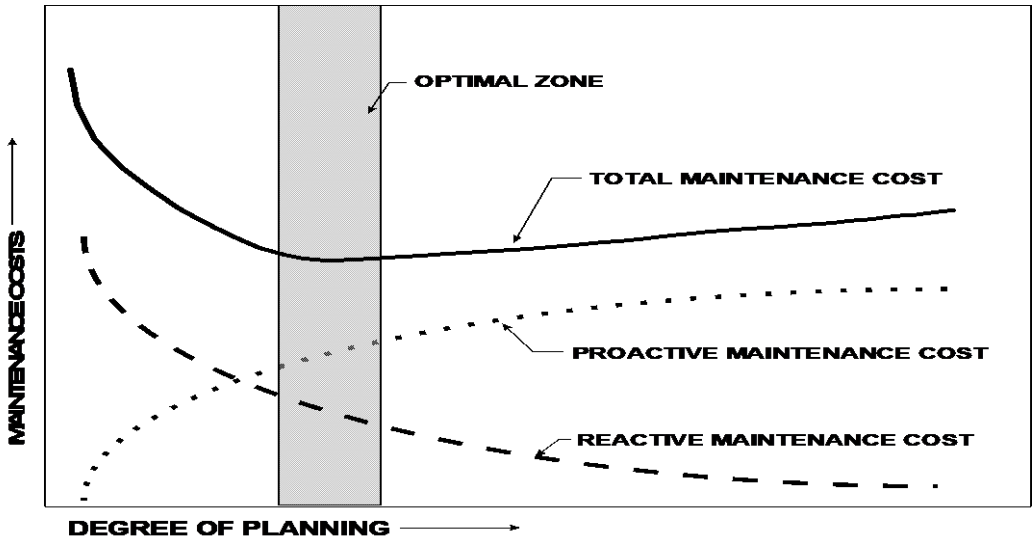
- Current trends and issues
- Maintenance decision making process
- Strategies required to meet levels of service
- How tasks are prioritised
- Summary of future costs
- Any deferred work and associated risks

Two categories of maintenance are carried out:

- Unplanned Maintenance: Reactive work carried out in response to reported problems or defects (e.g. pothole repair, dig-outs)
- Planned Maintenance: Proactive work carried out to a predetermined schedule (e.g. metalling, grading, bridge inspections).

A key element of asset management planning is determining the most cost effective blend of planned and unplanned maintenance as illustrated in Figure 9.1.

Figure 9.1 – Balancing Proactive and Reactive Maintenance



➔ **Renewal/Replacement Plan**: This covers Major work which restores an existing asset to its original capacity or its required condition (e.g. resurfacing, rehabilitation or footpath reconstruction). This plan includes:

- End of life projections
- Renewal decision making process
- Renewals strategies and methods to meet required Level of Service
- How renewals are identified, prioritised and to what standard they are replaced
- Summary of future costs

➔ **Asset Development Plan**: This section of the plan covers the creation of new assets (including those created through subdivision and other development) or works which upgrade or improve an existing asset beyond its existing capacity or performance in response to changes in usage or customer expectations (e.g. forestry harvesting routes).

➔ **Disposal Plan**: This covers activities associated with the disposal of a decommissioned asset. Assets may become surplus to requirements for any of the following reasons:

- Under utilisation
- Obsolescence
- Provision exceeds required level of service
- Uneconomic to upgrade or operate
- Policy change
- Service provided by other means (e.g. private sector involvement)
- Potential risk of ownership (financial, environmental, legal, social, vandalism).

9.1.1 NZ Transport Agency Work Categories

NZTA's Work Categories (WCs) are outlined in Planning & Investment Knowledge Base https://www.pikb.co.nz/ shown in Table 9.1. These are the WCs used for all financial reporting. This Life Cycle Management Plan reports on work within these WCs. For clarity we have identified the WC numbers for the work within each section of the Life Cycle Management Plan.

Table 9.1 – NZ Transport Agency Work Category Structure

Work Category	Work Category Name
	Maintenance and Operations of Local Roads
111	Sealed pavement maintenance
112	Unsealed pavement maintenance
113	Routine drainage maintenance
114	Structures maintenance
121	Environmental maintenance
122	Traffic services maintenance
123	Operational traffic management
124	Cycle path maintenance
125	Footpath maintenance
131	Level crossing warning devices
140	Minor Events
141	Emergency reinstatement
151	Network and asset management
171	Financial grants
	Renewals of Local Roads
211	Unsealed road metalling
212	Sealed road resurfacing
213	Drainage renewals
214	Sealed Pavement rehabilitation
215	Structures component replacements
221	Environmental renewals
222	Traffic services renewals
225	Footpath Renewal
	Local Road Improvements
321	New Traffic Management Facilities
322	Replacement of bridges and other structures
323	New roads
324	Road improvements
325	Seal extension
332	Property purchase - local roads
333	Advance property purchase - local roads
341	Low cost, low risk roading improvements
351	Resilience improvements

9.2 MANAGEMENT PROGRAMME AND BACKGROUND DATA

9.2.1 Council's Procurement Strategy

Waimate District Council seeks to procure goods and services to support the community in an affordable and efficient manner. The Waimate Long Term Plan states the aspiration that *the District has top quality services at an affordable price.*

The Waimate District Council Procurement Strategy was revised in 2019.
The objectives are:

- Supporting the achievement of Council's Community Outcomes and the Waimate District Council Long Term Plan programme, through efficient and realistic procurement processes to meet Waimate District's needs
- Integration of Council's organisational goals into the procurement process
- Delivery of the agreed levels of service to the community that represent value for money
- Encouraging appropriate and equitable levels of competition across suppliers
- Ensuring procurement is fair and transparent with effective accountability measures
- Ensuring procurement is efficient and appropriate to the scale of the activity

In general, Waimate District Council will utilise the guidance provided by the NZTA Procurement Manual Procurement for activities funded through the National Land Transport Programme. However, a departure to this is where Council has varied the limit for closed contests (selected tender) to $250,000.

Within this approach Council will consider the most appropriate bundling of work for maintenance and construction (renewal and improvement) in terms of Council's objectives and the market's ability, capacity and competitiveness.
While retaining scope for in-house teams and small local suppliers along with the benefits to the local economy they can provide, Council also has a responsibility to recognise the efficiencies and benefits derived from larger and longer term maintenance and construction contracts. Competitive tendering where price and quality are evaluated will be used to select suppliers for road maintenance and capital projects.
In some cases, direct appointment may be the most effective approach and this will be considered in terms of specialisation, market competitiveness and the overall cost and efficiency to Council.

9.2.2 Method of Service Delivery

Council staff manage the roading network with some assistance from consultants. The maintenance on the network is completed through a competitively tendered multi-year contract. Other works such as resealing and large renewal projects are let as competitively priced contractors on an annual basis. The current contracts let are included in Table 9.2.

Table 9.2 – 2011 Physical Works Contracts

Contract No.	Contract Name	Length (Years)	Responsibilities	Contractor
15/1	Road Network Operations & Maintenance – ends 30 June 2021	5	▪ Sealed pavement maintenance including pre-seal repairs ▪ Unsealed pavement grading & metalling ▪ Vegetation control ▪ Traffic services maintenance ▪ Pavement Marking ▪ Drainage maintenance ▪ Footpath maintenance ▪ Minor Pavement rehabilitation ▪ Street cleaning ▪ Routine Bridge Maintenance	Whitestone Contracting Ltd
	Timaru, Waimate & Mackenzie Road Resurfacing 2019-21	2	All resurfacing (chip seals)	Fulton Hogan Ltd
	Street Lighting Maintenance	Annual	All lighting maintenance	Netcon - negotiated
	Major Seal Pavement Rehabilitation /	Annual	Rehabilitation sealed roads d	Tendered
	Major Drainage	Annual	Major K&C renewals	Direct appointment or tendered depending on size & value
	Improvement Works	Annual	▪ Minor Improvements	Direct appointment or tendered depending on size & value

Other Works

There are a number of other outputs that are carried out on the roading network each year that are not listed above. They are outputs that have a variable quantum each year but still form an essential part of the maintenance regime. They are outputs such as:

- Major bridge works
- River control works at bridges
- Seal extensions

Roading Network Operations and Maintenance Contract 2015-20

Ashburton, Timaru, Waimate and Mackenzie District Councils jointly prepared a Road Network Operations and Maintenance Contracts as part of the roading collaboration. The contracts were tendered concurrently as four individual contracts. The Conditions of Tendering allowed for contractors to submit conditional tenders which would enable them to factor any scale related savings and efficiencies with combinations of tenders.

Waimate DC and Mackenzie DC agreed accept the Conditional Tender of Whitestone Contracting Ltd which offered a discount price if they were awarded both contacts

Network Operations and Maintenance Contracts Renewal

Timaru, Waimate and Mackenzie District Councils have extended the contract period to 30 June 2021.

Ashburton District Council has not extended their contract. They has let their own contract are with work to start on 1 December 2020.
Timaru, Waimate and Mackenzie District Councils Timaru are jointly preparing a new Road Network Operations and Maintenance Contracts as part of the roading collaboration.

Collaborative Contract for Road Resurfacing
Two collaborative contracts for the road resurfacing in the Waimate, Timaru and Mackenzie Districts has been awarded, Downer NZ Ltd. (Dunedin) for a two-year period 2015-17 and Fulton Hogan Ltd for a two-year period 2017-19. New contracts are scheduled to be let in 2021.
The result of the collaboration between ARC Councils has provided a range of benefits. To continue to access these benefits WDC is working towards having common contract documentation with Mackenzie and Timaru District Councils.

9.2.3 Forward Works Programme

Information obtained from network inspections, RAMM condition rating, RAMM roughness surveys, and maintenance inputs are used to develop forward works programmes for the pavement asset. Specific details of individual component FWPs is as follows:

Reseals – Intervention is primarily based on age, condition and maintenance history. RAMM data is used to develop an inspection list, which is then used as the basis for a detailed inspection once a year of aged seals. A detailed rolling three-year programme has been developed for Years 1, 2, and 3. Future work requirements beyond this period are based on historical need.

Unsealed Road Metalling – This is generally treated as a maintenance operation. The FWP is based on historical quantities and inspection, which have used set spread rates.

Bridges - A Bridge Replacement and Upgrade Strategy has been developed. The priority of this work is indicated (see 9.12.5 Bridge Structures Component Replacement /Renewals Strategy)

Drainage Assets – Council has assessed condition of all culverts on the roading network, verifying RAMM data and estimating construction dates and condition of culvert itself. This information is being used to form a replacement programme.

Other asset groups do not have formal FWPs recorded for use in programming future works.

9.2.4 Asset Valuation

A valuation is undertaken every three years in order to assess the value of the network, the depreciated value and the annual depreciation. Details on Asset Valuation and Depreciation are held in Section 10 Financial Summary.

9.2.5 Historical Data

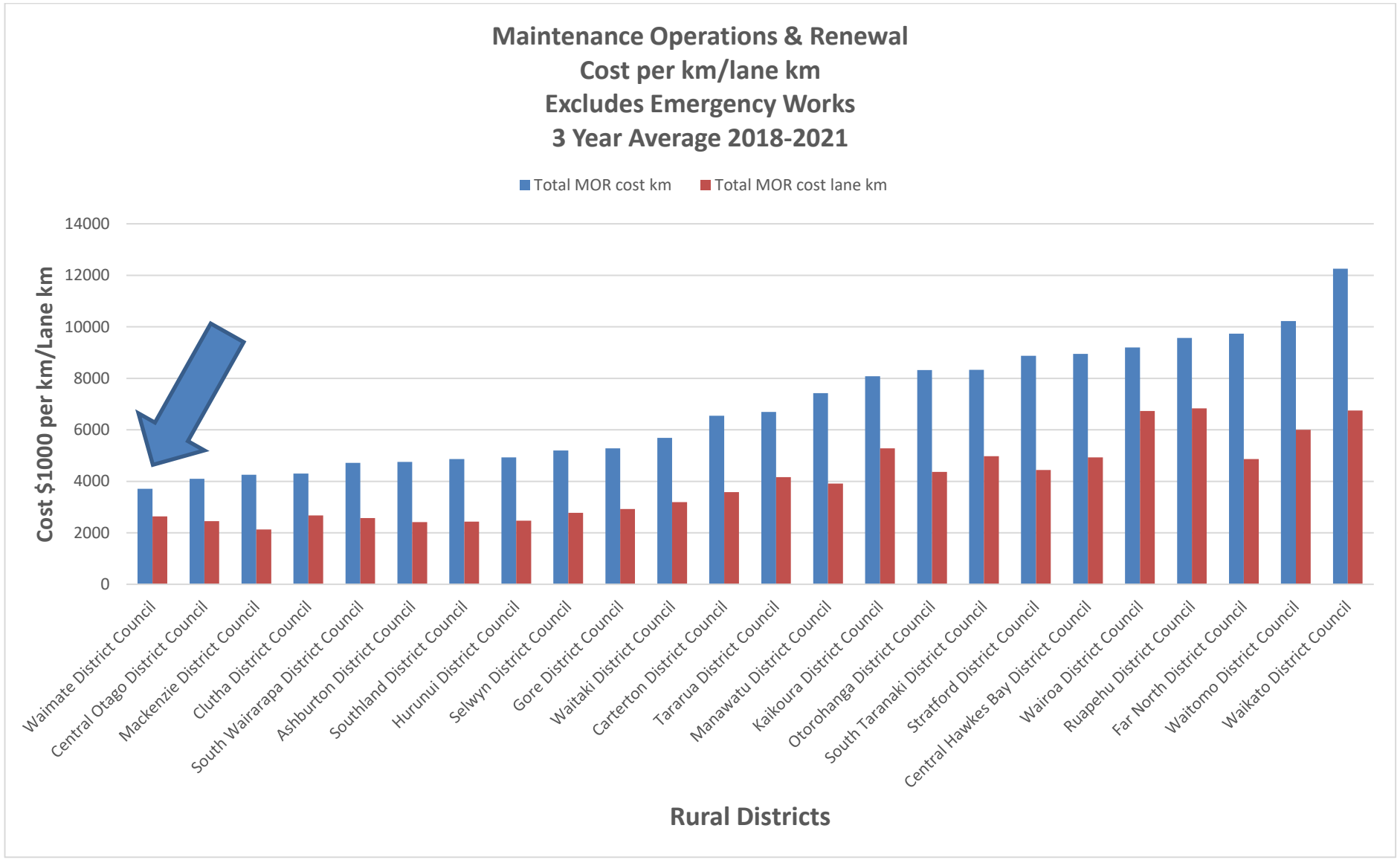
Network Condition
Historical data is used to make an assessment of past performance and to see if future trends can be applied. At a network level, these trends can indicate if the condition of the network is deteriorating or improving. The different forms of historical data and their location are outlined in Table 9.3.

Table 9.3 – Historical Data

Type	Location	Comment
Roughness	RAMM	Survey every 2 years from 1990
Sealed Rating Data	RAMM	visual condition rating
Carriageway surfacing data	RAMM	Holds surfacing history for all roads.
Past Maintenance Costs	Roading Office	Record of maintenance quantity's for 20 years
Present Maintenance Costs	RAMM contractor	Maintains location, quantity, cost, fault activity and cost group. 11 year data
As Built Drawings	Roading Office	Road project and Bridge Plans
Pavement Structure	RAMM	Holds pavement history for all roads.

Historic expenditure summaries have been produced by NZTA. The most useful comparisons are made with other areas or authorities with similar characteristics, rather than with the whole country. The data for WDC is compared with a peer group of similar council authorities.

Figure 9.4: Maintenance Operations & Renewal Costs by Peer Group



Safety Standards

State Highway
There were 13 deaths, 34 serious injuries, and 78* minor injury crashes over the past five financial years at a social cost of over $70 million.

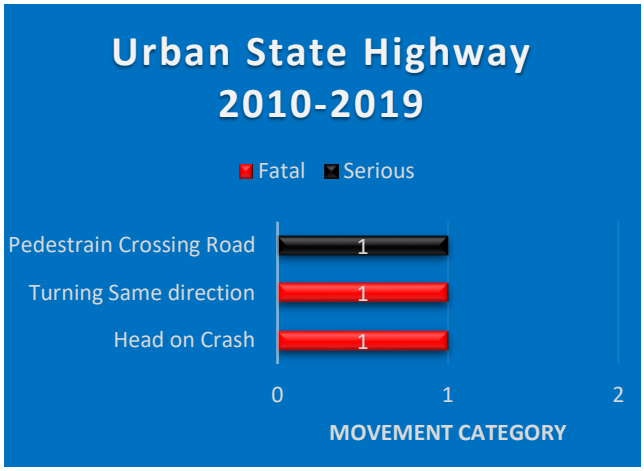
Local road crashes:
There were 3 deaths, 11 serious injuries, and 20* minor injury crashes over the past five financial years at a social cost of over $21 million.

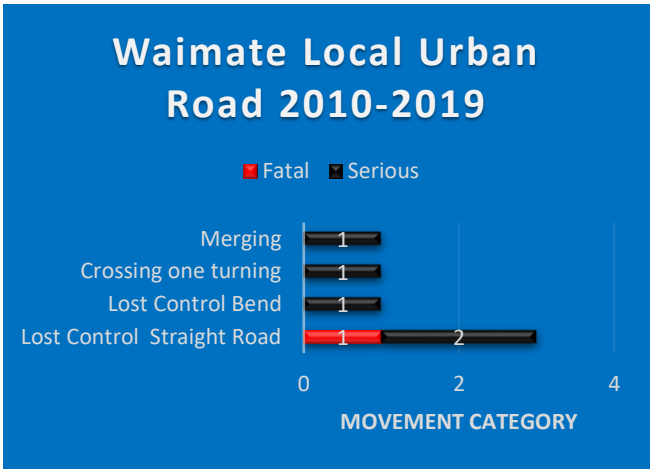
South Canterbury Road safety strategy and Action Plan
See Appendices 13.2

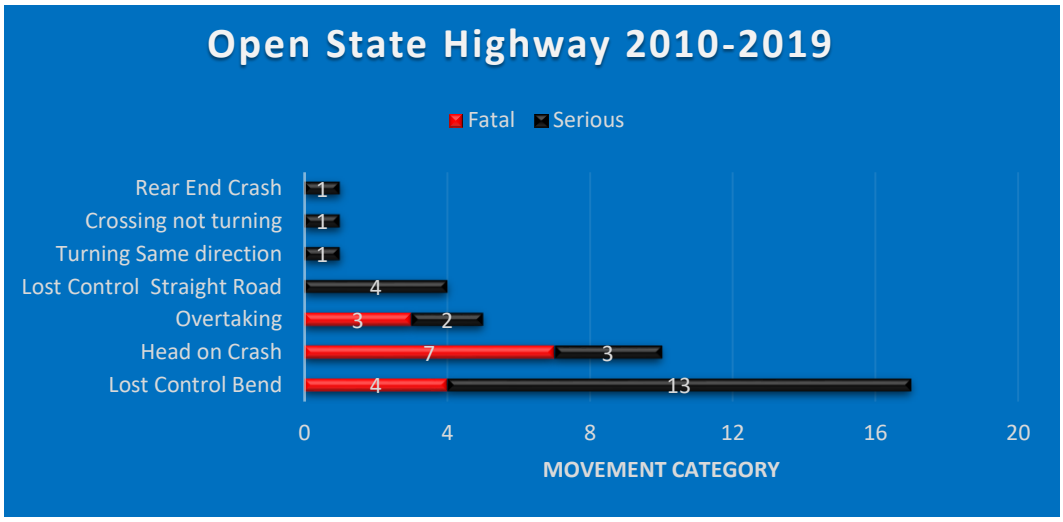
Council's involvement in Road Safety and the national Road to Zero programme involves ongoing maintenance of the road network in appropriate condition, small improvement projects (NZTA low cost, low risk roading improvements category) and the combined Road Safety Education programme with Timaru and Mackenzie District Council.

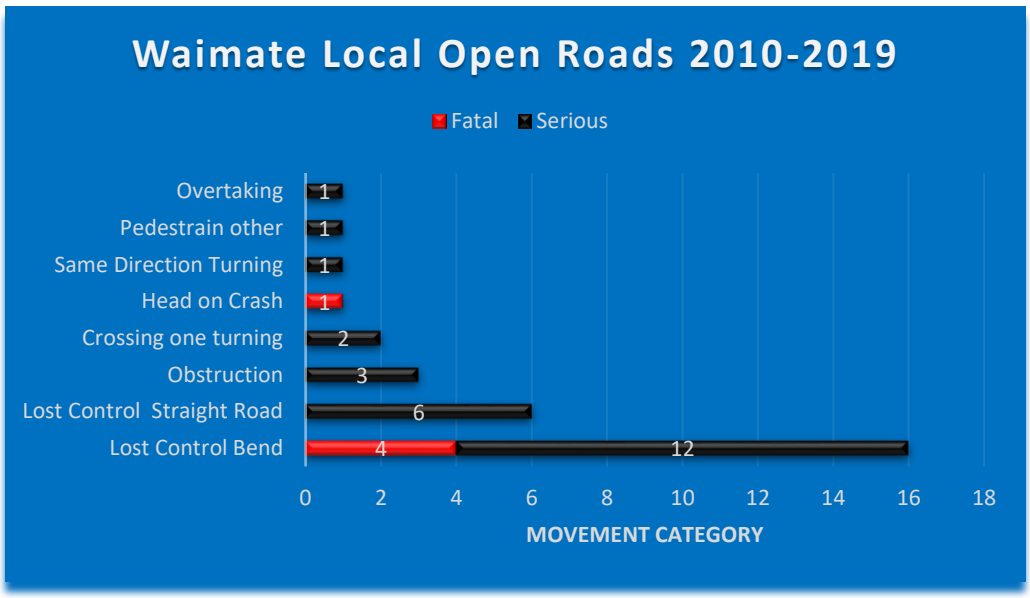
The Council will also meet and coordinate operations with other Councils, agencies and the private sector {e.g. NZTA, Police, NZTA, South Canterbury Road Safety Liaising Group) to improve road safety out comes.

Figure 9.5 – Crash types in Waimate District









9.3 OPERATIONS AND MAINTENANCE PLAN

9.3.1 In Perpetuity Maintenance

This Maintenance and Operations Plan sets the level of work that needs to be carried out for "in perpetuity" maintenance. "In perpetuity" maintenance is defined as maintenance, which is of such a nature that it does not allow the physical deterioration of the road. Hence the condition of the road is maintained. It does not consider changes in service requirements (e.g. increase in or decrease in traffic, enhanced safety standards, consent requirements etc.). These other factors may require capital works to create a higher service level asset. In effect, "in perpetuity" maintenance incorporates incremental and sustained asset **renewal** into the maintenance function and therefore will indefinitely provide the **current levels of service.**

Yearly, the monetary value of work carried out will be affected by the following:

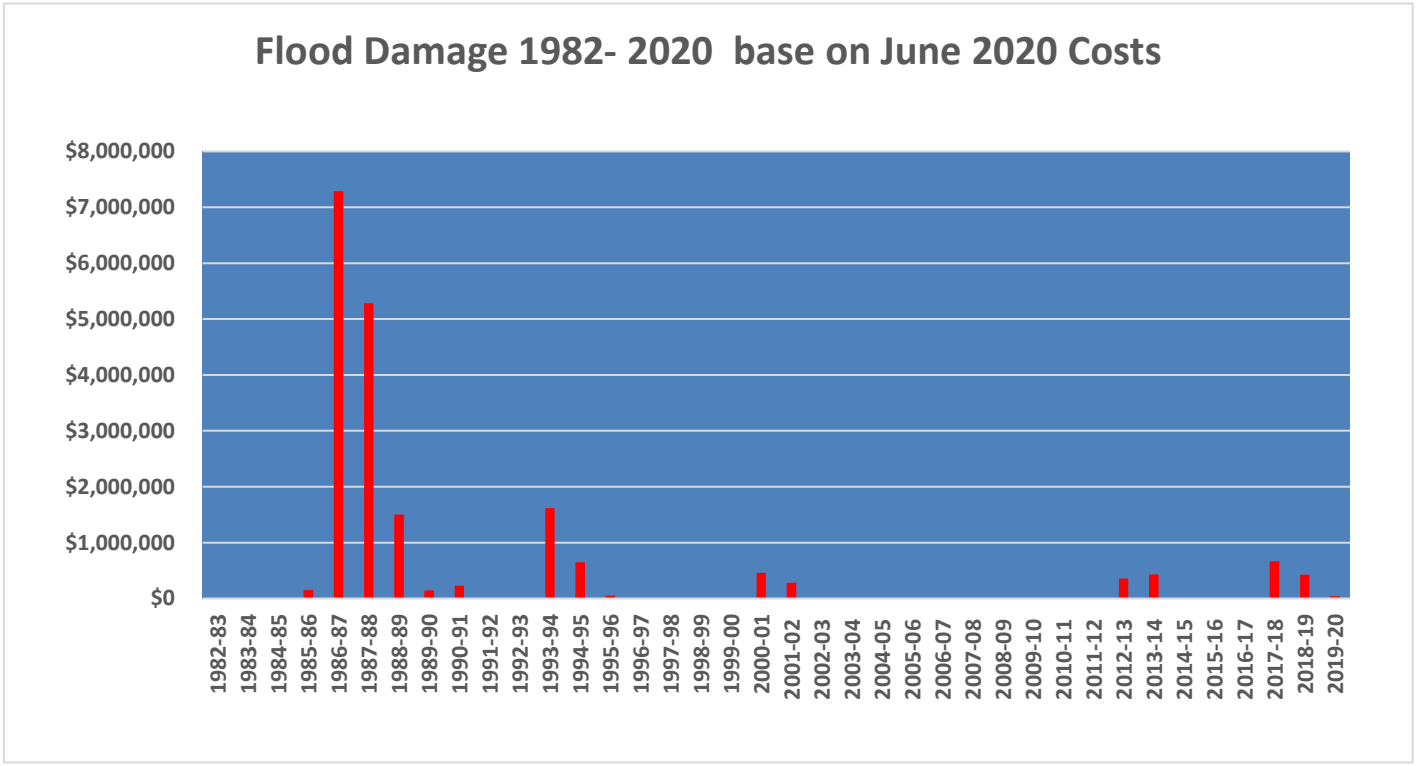
- Actual contract prices received for the work specified

- The scheduled length of resealing for the next year. As Council's proactive maintenance strategy is to attend to all pavement maintenance in reseal sites the year prior.
- The effect of deferred resurfacing work from previous years, therefore deferred maintenance

Therefore, each year the expenditure for the same volume of work may differ. An annual reconciliation of physical work done against the in perpetuity level of work will indicate either deferred maintenance is being accrued, or improvements are being made to the network. The cost of these variations can then be determined and used in Council's balance sheet.

9.3.2 Storms and Other Events

The level of maintenance described in this Maintenance Plan is adequate for normal climatic events in Waimate District. The remedial works required after emergency events will be assessed at the time, and the funding for repairs will be met from adverse events funds and catastrophic events funds held by Council, combined with subsidy money from NZTA.



9.4 RENEWAL/REPLACEMENT PLAN

Renewal expenditure is major work, which does not increase the assets design capacity but restores, rehabilitates, or renews an existing asset to its original capacity.

The activity and work category requirements included in this renewal/replacement plan are as shown in Table 9.1.

Renewals may be impacted by other stakeholders wanting to utilise the roading corridor, particularly Council water and wastewater assets and other utilities buried in road reserve. The Roading group need to collaborate with other stakeholders to ensure that the timing of all works is optimum and presents the lowest cost option to ratepayers.

9.4.1 Storms and Other Events

The level of renewals described in this Renewal/Replacement Plan is adequate for normal climatic events in Waimate District. The remedial works required after emergency events will be assessed at the time, and the funding for repairs will be met from adverse events funds and catastrophic events funds held by Council, combined with subsidy money from NZTA.

9.4.2 Base Asset Lives

As outlined in Section 4 Description of the Asset better optimisation of the asset lifecycle can be achieved by improving knowledge of the current age and remaining life of all assets. As this is currently not well understood, the base asset lives used in the 30 June 2020 Valuation detailed in Table 9.7 have been used throughout the renewal/replacement plan.

Table 9.4 – Base asset lives from Roading Infrastructure Valuation (30 June 2020)

Asset	Base Life (years)	Comment on Actual Life
First coat seals	5	Dependent on seal type
Second coat/reseals	12-18	Dependent on seal type
Pavement Unsealed	35	Highly trafficked roads may have significantly lower life
Pavement Sealed	100	
Bridges	70-100	
Large Culvert Bridges	100	Some existing steel Armco culverts are 50 year old and in good condition
Drain Fords	40	
Drainage (steel, concrete culverts)	20-100	Helcor steel pipes have significantly lower life.
SWC (Earth, concrete)	50-80	
Signs (including posts)	14-30	Many will achieve less life due to damage out of Council's control
Footpaths	25-50	Dependent on surfacing type
Traffic Facilities (including street lighting)	15-50	

9.5 SEALED ROADS (WC111)

9.5.1 Current Trends and Issues

Scope and Nature of Asset

The purpose of a sealed road is:
To provide a paved network suitable for the efficient movement of vehicles and people, with an all-weather surface appropriate to its location and function in terms of skid resistance, noise reduction and smoothness, and that has a structure suitable for legal traffic loading requirements.

Only 640 km or 48% of the districts roads are sealed – 48 km of urban roads and 598 km of rural roads.

The key issues relating to the sealed pavements are:

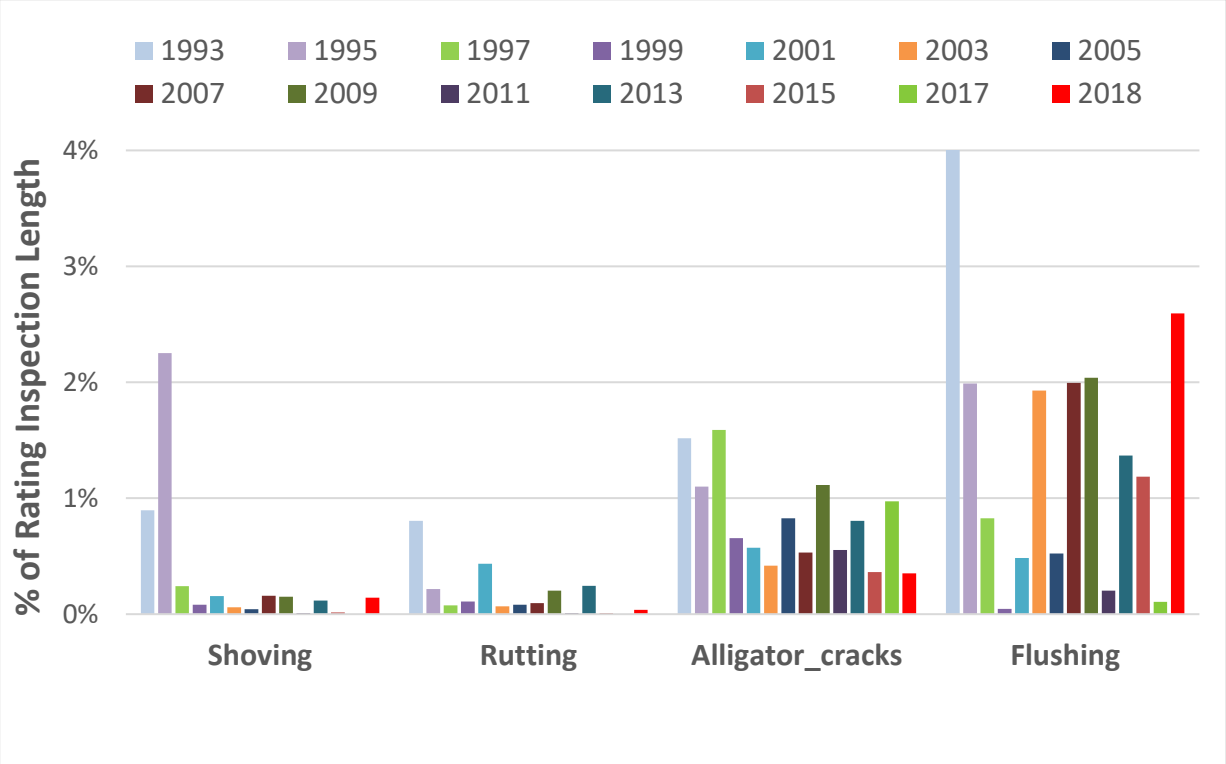
- Setting Levels of Service that align financial restrictions with road user expectation
- Optimising the use of limited funds to maintain the condition of the asset
- Deterioration of sealed pavements due to use by Agricultural industry including machines on road, stock on road etc.
- Ageing pavements

Current Condition

Many of the District's roads evolved from tracks to unsealed roads that were constructed to absolute minimum standards in terms of pavement strength, width and drainage facilities. As traffic volumes increased individual roads were widened, extra metal added as considered appropriate and then sealed. Construction consisted of river run gravel subbase under a thin layer of crushed aggregate basecourse with a single coat chip seal surface. The metal courses were often laid over silty clay subgrade of unknown bearing capacity with little or no consideration given to whole of life strength requirements needed to satisfactorily carry the expected traffic loads over the roads expected life. It has only been since the 1970's that pavements have been designed to carry expected traffic loading over a projected 25-year design life.The condition of this sealed road network is currently monitored by:

- Regular routine inspections by Council and contractor personnel with any defects found included in the proposed programme of works to be undertaken by the maintenance contractor. The number and location of defects are logged to provide a measure of conformance with key performance measures required within the contract
- A formal bi-annual road condition rating survey. The information from this survey is recorded in RAMM and used to:
    - Assist with the development of a forward reseal and reconstruction work programme
    - Provide surface and pavement condition data for the "Treatment Selection Algorithm" in RAMM
    - Calculate surface condition indices that provide a measure of the performance of the sealed surface
- Bi-annual roughness surveys of the sealed network to ascertain the current condition and provide a measure of performance against the required levels of service
- Annual maintenance costs per kilometre for work types are calculated from the costs recorded within the maintenance contract and the trends used to establish relative network surface condition
- The safety of the network is gauged by recording accident information, analysing accident trends and the statistical data produced in the NZTA "Road Safety Issues" reports

Figure 9.6 – Historical Visual Condition Rating Data for Sealed Roads



Overall trends for the last five rating years are noted below:

- The rates per kilometre for shoving and flushing have increased in 2019 compared to the previous 4 rating years, this increase is more prominent in flushing.
- Compared to 2017, results show that in general the road condition has improved. There were increases in average rates per kilometre in five out of the eleven faults types with flushing having the most significant increase.

Reviewing individual faults:

- Alligator cracking showed a large improvement compared to 2017. Alligator cracking is generally load related and often results from insufficient road strength. The reduction in alligator cracking may be due to resurfacing and rehabilitation works being completed, and/or efficient maintenance programming.
- Longitudinal and transverse cracking improved by a small amount since 2017 which is in contrast to the historic steady increase from 2011 to 2015. Joint cracking isn't very substantial however it has improved since 2017. These faults are often caused by poor service trench reinstatement or poor construction. Transverse cracking is typically due to thermal factors or reflection of older cracks. These types of faults may not be load related.
- Flushing increased significantly since 2017. Some of the contributing factors to flushing are aggregate abrasion and breakdown, compaction and reorientation of the seal layer under traffic, binder to stone ratio affecting layer instability, and water venting and sub-surface stripping in seal layers. Other factors include thermal expansion of bitumen, excess bitumen application and binder viscosity.
- Scabbing increased in 2019. This fault may occur if there is not enough binder, or if the binder does not adhere to the chip due to poor material or

construction practices. Chip loss can also occur on older surfacing when the binder oxidises or becomes hard and loses its grip on the chips.

Cracking

Alligator cracking is the primary driver for surface renewal in the NZ IDS dTIMS template. Figure 9.7 shows the alligator and L&T cracking separately and combined. Both alligator and L&T cracking have been up and down over the past 5 surveys. These types of cracks could be mistaken for each other, and some cracking that starts out as L&T can later turn into alligator type cracks. Looking at the two combined, the quantities have been steady from 2011 to 2017. There is a considerable improvement in 2019

Figure 9.7 - Visual Condition Rating - Cracking Data

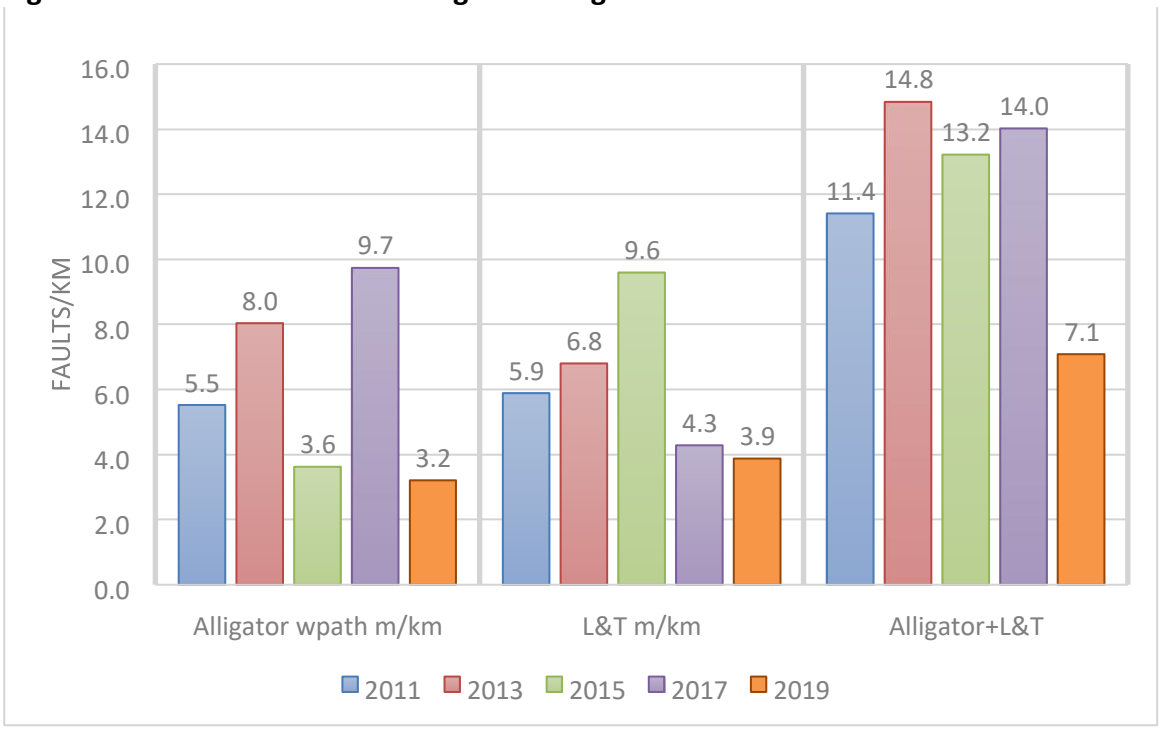


Figure 9.8 - Visual Condition - Rutting and Shoving Data

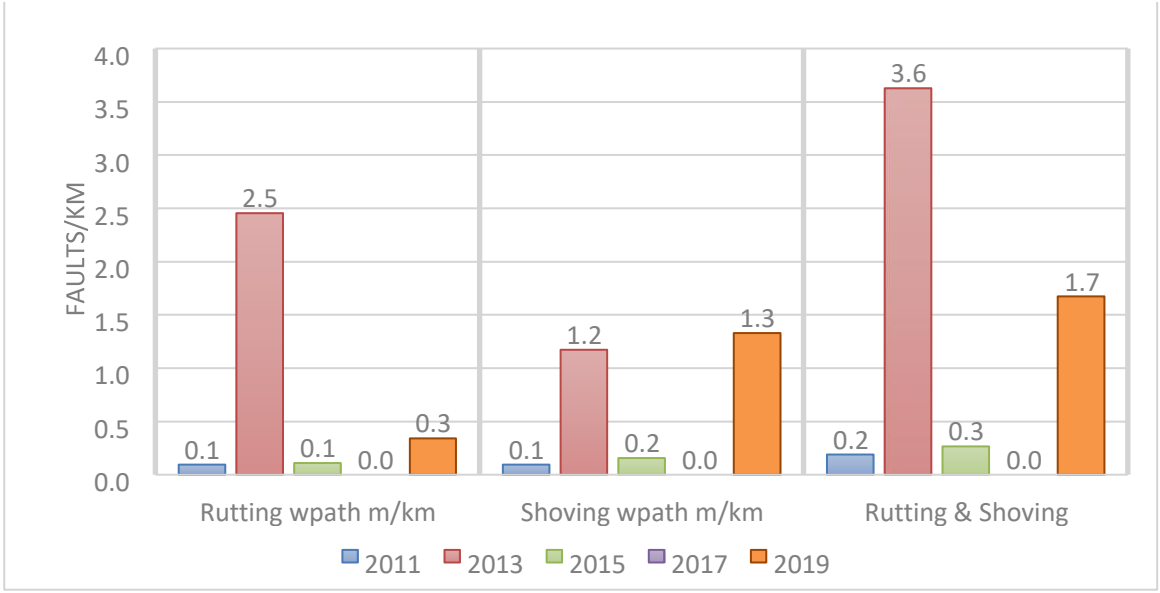


Figure 9.8 shows that rutting on the network appears to be minimal, with the 2013 survey showing an exception. Shoving is another measure of pavement failure which can sometimes be mistaken for rutting. Where shoving is recorded, no other faults are. Shoving also has a high quantity in 2013. Both faults have increased in 2019.

Figure 9.7 – Roughness Distribution by Length

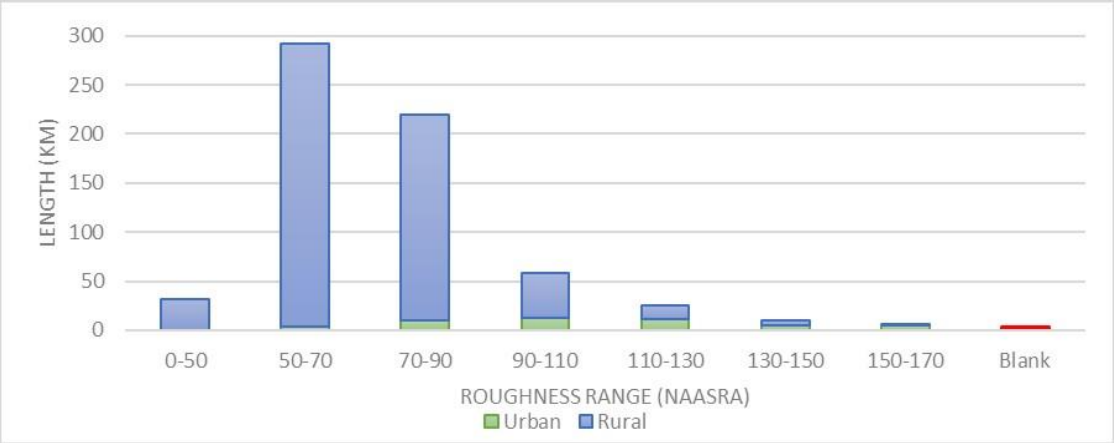
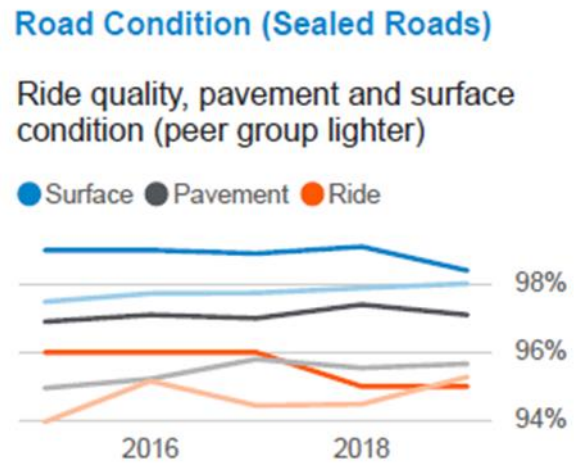


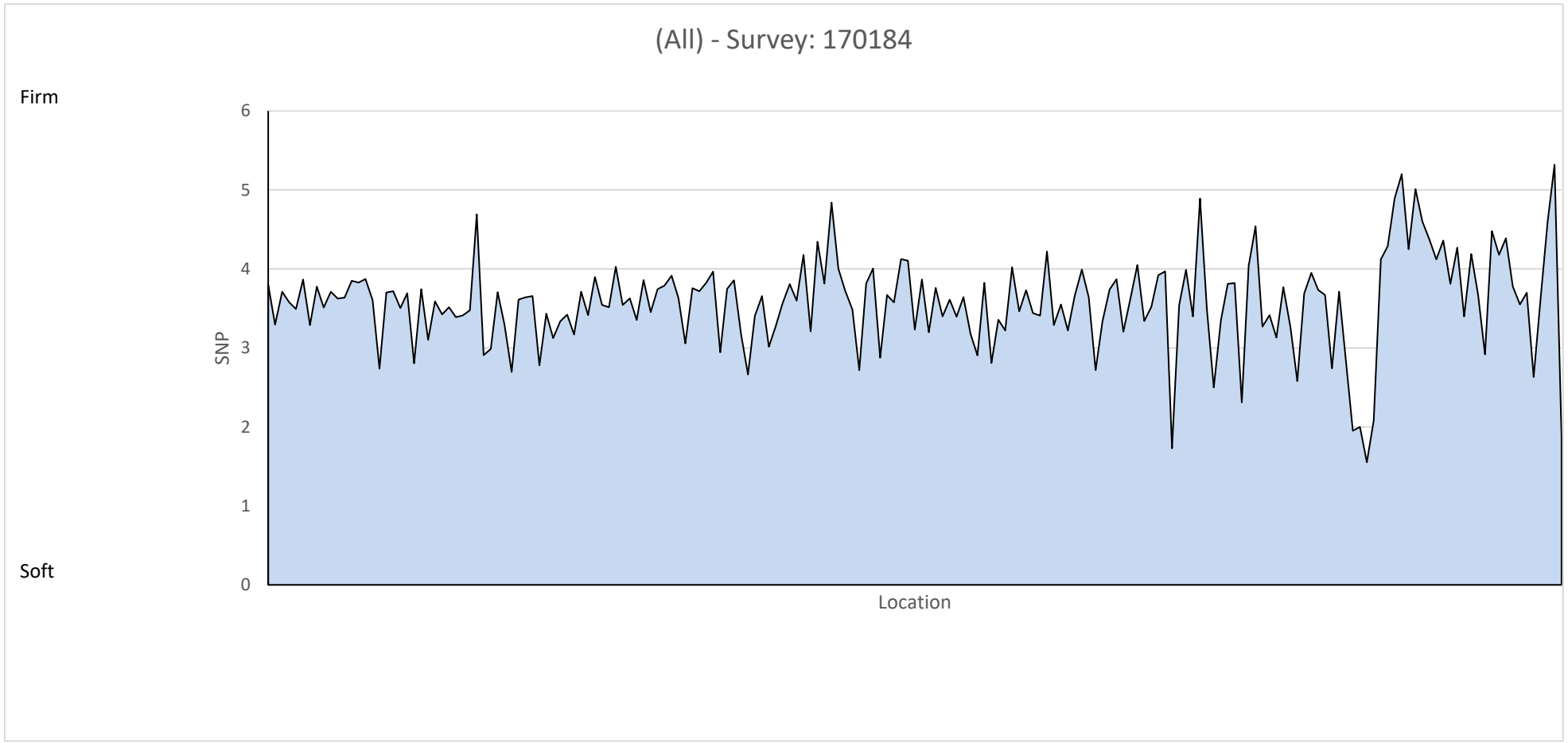
Figure 9.7 shows the distribution of roughness across the network. The network generally shows low roughness, with 50% of the length having a NAASRA less than 70



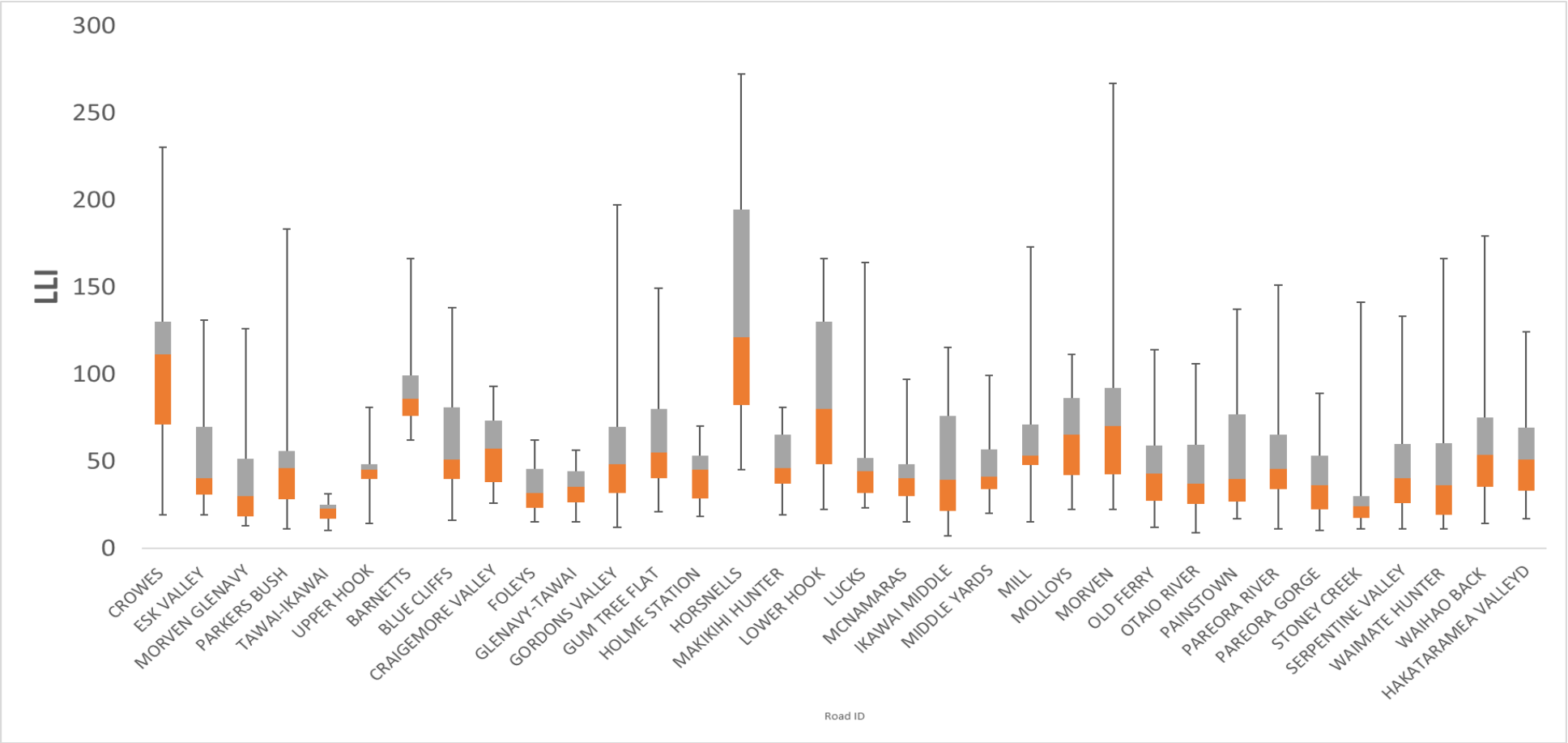
In 2017 WDC undertook a Falling Weight Reflectometer survey across key rotes to ascertain the pavement strength and identify where there may be pavement risk should there be a change in demand or ground conditions. The lower layer index (LLI) indicates areas where stronger pavements may be needed or where attention should be given towards drainage provision.

The following graphs illustrate the SNP of the roads surveyed and the lifecycle strategy that will involve protecting vulnerable routes and rehabilitating those where the SNP indicates resurfacing will not maintain the requires level of service.

Pavement Strength – Composite of all roads surveyed (2017)



Lower Layer Index


300
250
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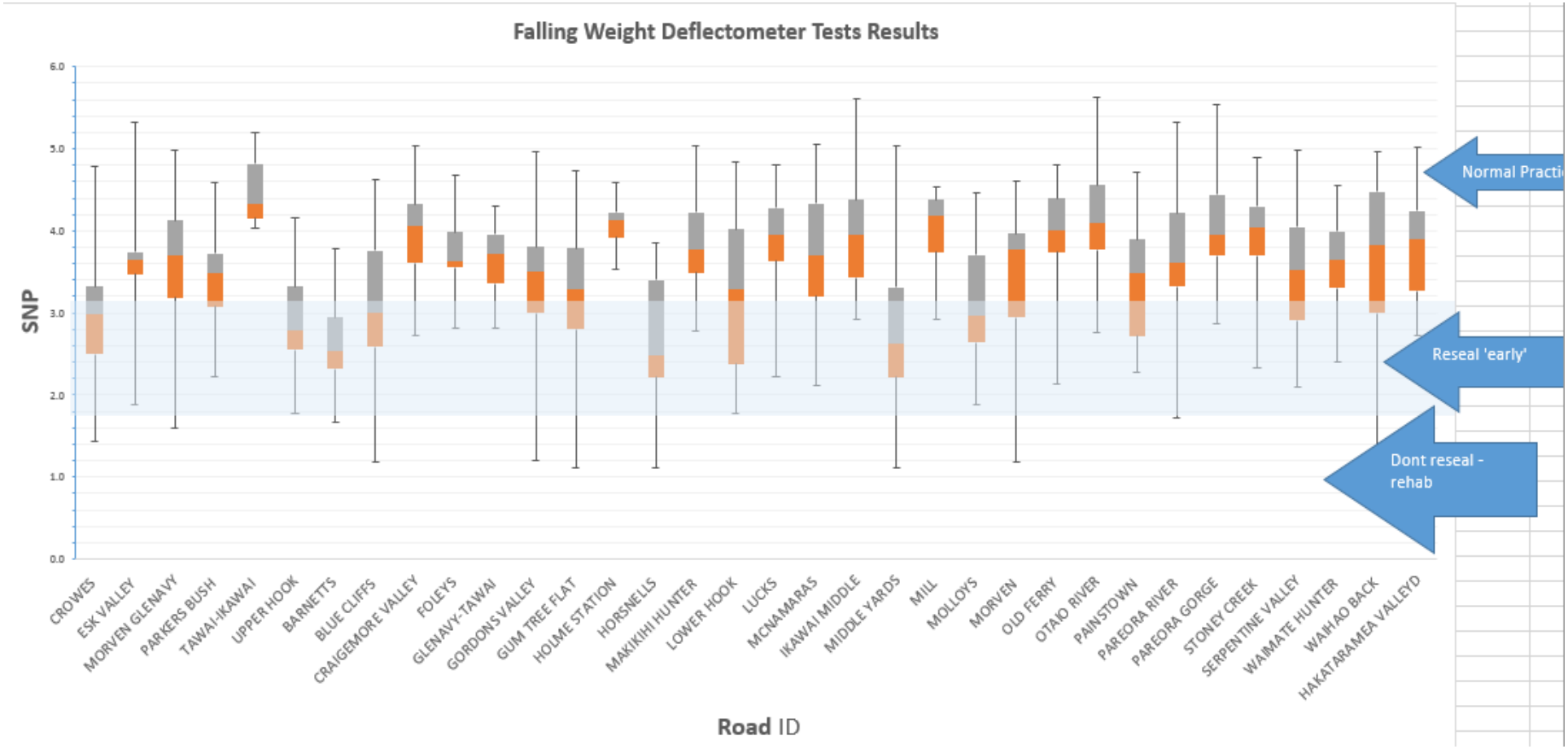
LLI
CROWES
ESK VALLEY
MORVEN GLENAVY
PARKERS BUSH
TAWAI-IKAWAI
UPPER HOOK
BARNETTS
BLUE CLIFFS
CRAIGEMORE VALLEY
FOLEYS
GLENAVY-TAWAI
GORDONS VALLEY
GUM TREE FLAT
HOLME STATION
HORSNELLS
MAKIKIHI HUNTER
LOWER HOOK
LUCKS
MCNAMARAS
IKAWAI MIDDLE
MIDDLE YARDS
MILL
MOLLOYS
MORVEN
OLD FERRY
OTAIO RIVER
PAINSTOWN
PAREORA RIVER
PAREORA GORGE
STONEY CREEK
SERPENTINE VALLEY
WAIMATE HUNTER
WAIHAO BACK
HAKATARAMEA VALLEYD
Road ID

Falling Weight Deflectometer Tests Results



Current Capacity and Performance

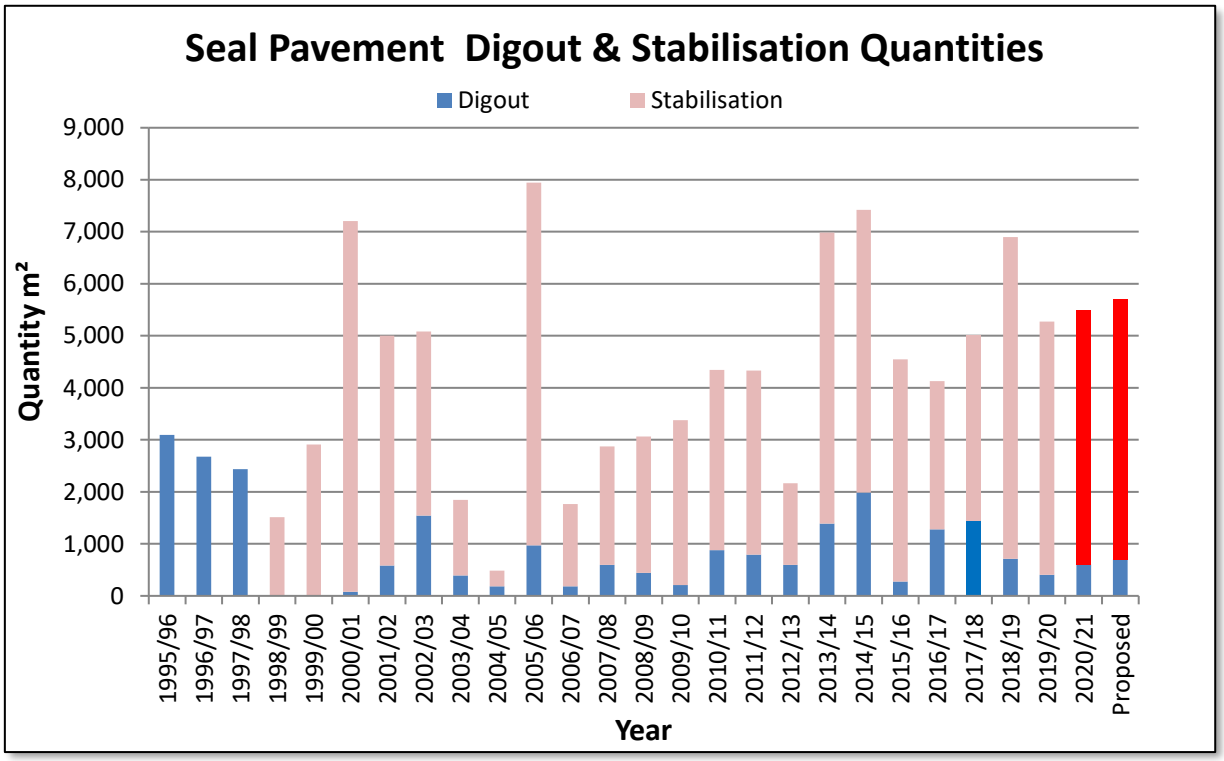
The assets capacity and performance is a measure of its ability to meet its design standard, agreed levels of service and any perceived future demand that may be placed on the asset.

As the levels of service are currently being developed there is limited information to show whether or not the current asset is providing sufficient capacity and performance.

Historic Maintenance Data

Historic repair quantities and costs have been accurately tracked and recorded over a period of 21 years. Figure 9.8 shows the trends in Pavement Digout and Stabilisation repair quantities for the last 22 years. This average quantity over 22 years is 3873 m², over the last five years the average is 5050 m². The Estimated ongoing annual Pavement Digout and Stabilisation repair quantity is 5000m².

Figure 9.8 – Historic Repair Quantities



Historic Maintenance Costs

Over the years 2015/18 the average expenditure has been $475,500 for sealed pavement maintenance (WC111). This expenditure has increased to an indicative average budget of $574,000 for the period 2021/24 reflecting current costs and network maintenance trends.

9.5.2 Maintenance Decision Making Process

Current practice is to apply a combination of "reactive" condition driven and network lifecycle depreciation techniques to determine the work necessary to maintain the network within pre-determined financial constraints (see chart Appendix VII). These methods rely heavily on:

- The Roading Manager's knowledge of the network
- annual or biennial inspections to obtain the condition data as included in RAMM
- accurate base inventory
- life and cost information of each asset component

9.5.3 Strategy to Meet Levels of Service

The maintenance standards to be achieved and response times required are set out in WDC specifications contained in the road maintenance contract. These standards will need to be reviewed in light of the new Levels of Service outlined NZTA ONRC.

Pre Seal - Maintenance work is carried out to a high level to ensure all pavement and drainage repairs are done before the reseal.

Holding - A minimum amount of work is undertaken for the one to two years preceding a rehabilitation.

Normal/General Maintenance - Network locations are inspected at regular intervals, defects identified; treatment selections agreed, prioritised and scheduled to fit within the budgets allocated.

Reseal - Road section is to be resealed. Pre seal repairs completed in the prior year/season if possible. Programme based on the age and condition of the seal coat

Rehabilitation - Road section is to be reconstructed. Holding strategy in place in prior years. Programme developed based on the condition of the pavement and maintenance costs.

9.5.4 How Tasks Are Prioritised

The Contractor is required to use RAMM Contractor software, for contract management tasks such as entering jobs, creating work programmes, prioritising work, entering claims, producing reports, monitoring job progress and recording maintenance cost etc. Programmes of work are submitted by the Contractor in priority order for approval by Council roading staff

The mechanism for prioritisation used by Contractors as outlined in the road maintenance contract specification is outlined in Table 9.6.

Table 9.5 – Prioritisation of Maintenance Tasks

Priority	Description
Priority 1: Urgent Maintenance	Immediate action to ensure the safety and integrity of the road network. Upon notification of a hazard the Contractor shall immediately inspect and make safe the site until permanent repair is affected.
Priority 2: Essential Maintenance	Must be completed to ensure the safety and integrity of the road network. (Generally completed within one month)
Priority 3: Less Essential Maintenance	May be delayed without unduly compromising the safety and integrity of the road network or inconveniencing road users. (Generally programmed and completed within 3 months)
Priority 4: Desirable Maintenance Works	Less urgent to be completed for the safety and integrity of the network but will potentially enhance the road environment, improve safety and the integrity of the road network.

9.5.5 Summary of Future Costs

Over the last three years, the maintenance budget has increased annually with the resulting condition showing some deterioration. This indicates that in order to keep the network at the same condition level, future maintenance cost increases will be required. However, further work would be required to analyse maintenance costs requirements at a detailed level, to ensure that maintenance works remain as efficient and effective as possible.

Future costs have been based on historic quantities and rates for sealed pavement maintenance items completed under the Road Network Maintenance contract. Pre-reseal repair quantities and costs have also been estimated and included within the future funding requests.

9.5.6 Deferred Maintenance and Associated Risks

The current level of investment is considered adequate to maintain the current condition of the roading assets and so long as this is sustainable then the risk of any future accumulation of deferred maintenance is considered to be low.

111 Seal Pavement Maintenance	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Sealed Road - Potholes	12	$633.36	$7,600				
Stabilisation	5000	$41.25	$206,248				
Digouts	800	$70.84	$56,673				
Digouts Additional Depth below 400 mm (solid)	50	$73.31	$3,665				
Geotextile	500	$3.88	$1,939				
Subsoil Drainage	100	$31.25	$3,125				
Premix Reshaping	500	$37.76	$18,879				
Rip and Remake	1000	$32.33	$32,332				
Single coat Chipseal <200 m2	500	$18.39	$9,194				
Single coat Chipseal >200 m2	1000	$11.54	$11,536				
Double coat Chipseal <200 m2	1500	$19.88	$29,818				
Double coat Chipseal >200 m2	1500	$8.54	$12,812				
Edge Break Repair m	2000	$7.15	$14,299				
Raise Low Shoulder m	3500	$3.99	$13,962				
Grade and Compact Shoulders km	10	$44.20	$442				
Localised Seal Widening	300	$61.68	$18,504				
Excavation and backfill below 100mm (solid)	50	$108.06	$5,403				
Priced & Day Work	$30,000	1.00	$30,000				
Share of Monthly Costs inspection Programming Etc.	0.25	$297,216.67	$74,304				
Administration	0.12	$90,000.00	$10,800				
111 Seal Pavement Maintenance Total			**$561,537**	**$561,537**	**$578,945**	**$596,352**	**$1,736,834**
	Pre-seal Repairs			**$155,504**	**$160,325**	**$165,145**	**$480,974**
	Other Seal Repairs			**$406,033**	**$418,620**	**$431,207**	**$1,255,860**

9.6 SEALED ROADS RENEWAL/REPLACEMENT PLAN (WC 212 & 214)

Renewals include resurfacing, smoothing and pavement rehabilitation.

9.6.1 End of Life Projections surfacing

Figure 9.9 shows the amount of renewal activity achieved since 1971.

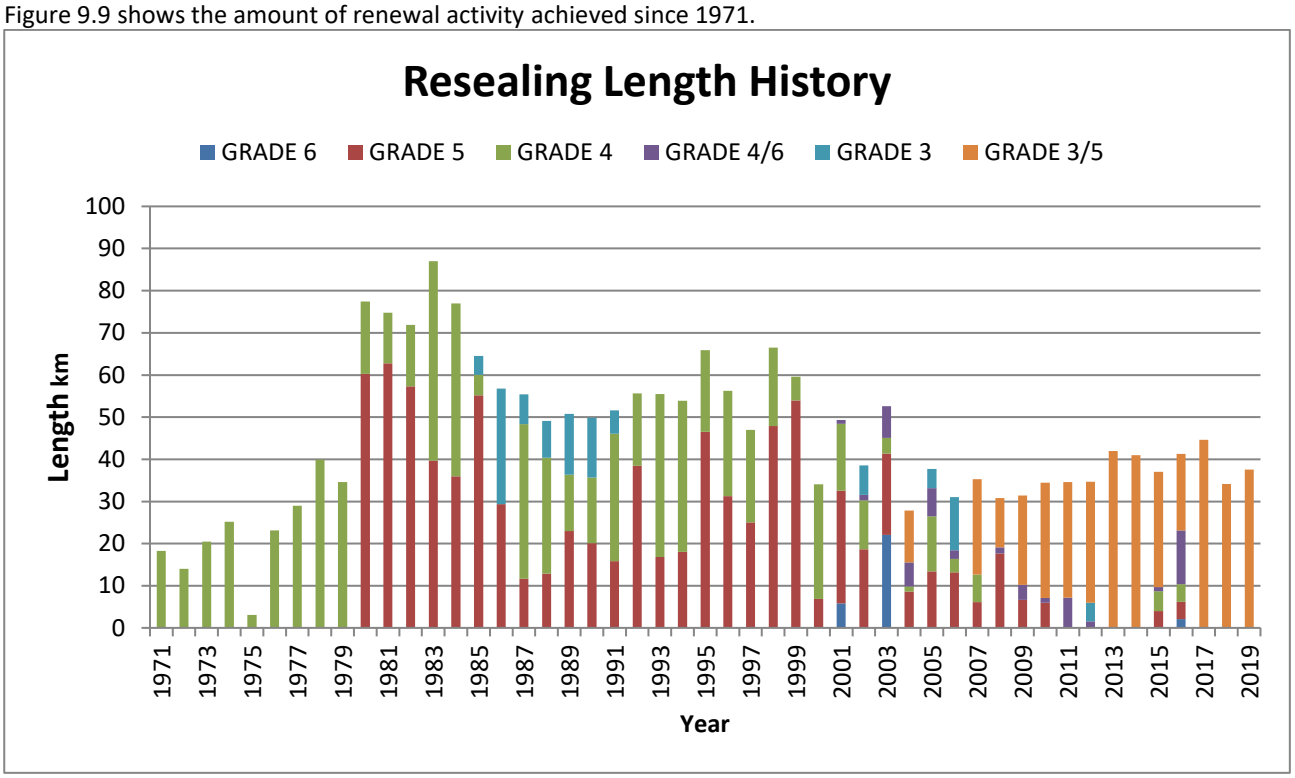


Figure 9.10 shows the amount of renewal life activity achieved since 1971.

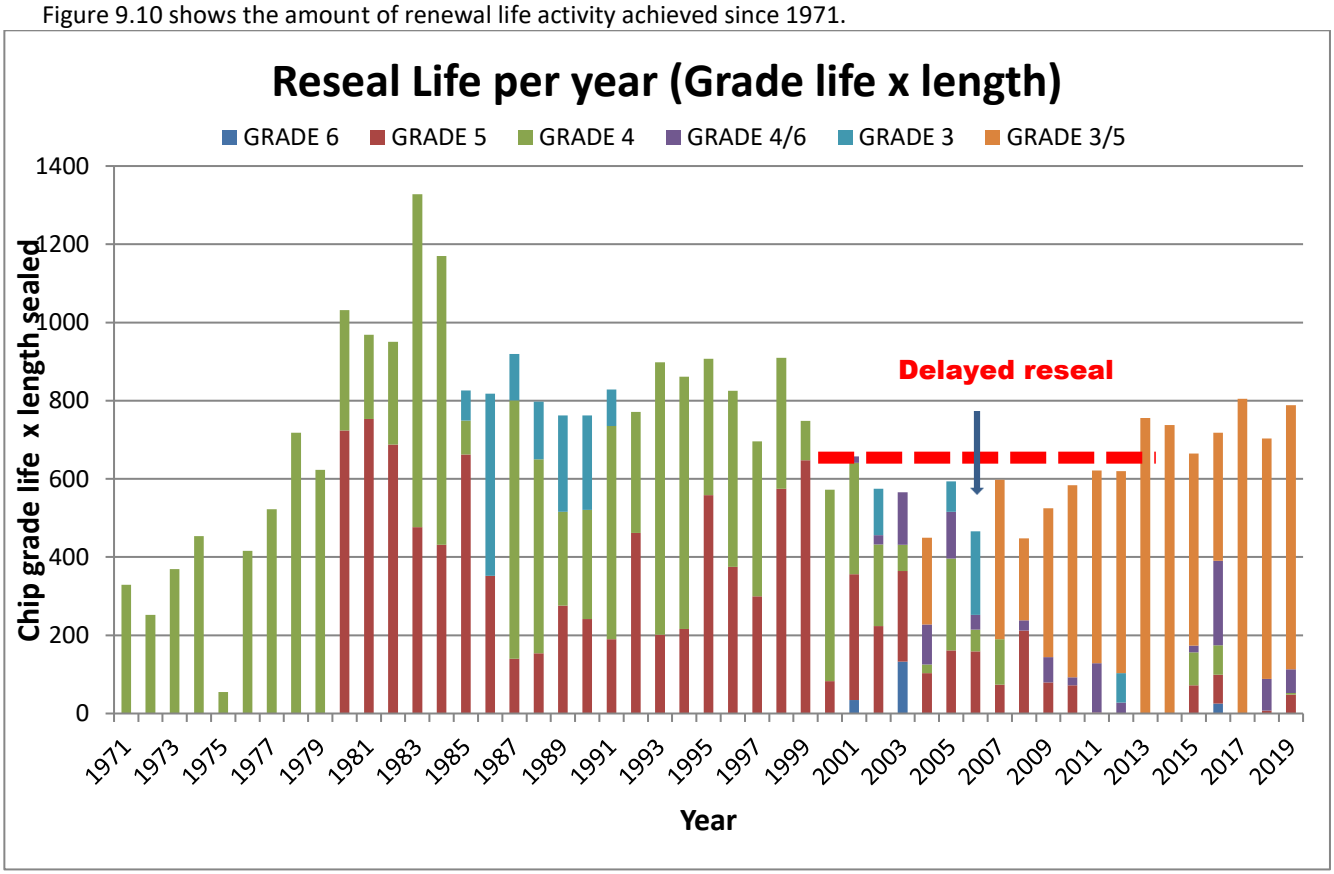


Figure 9.12 seal length over expected life

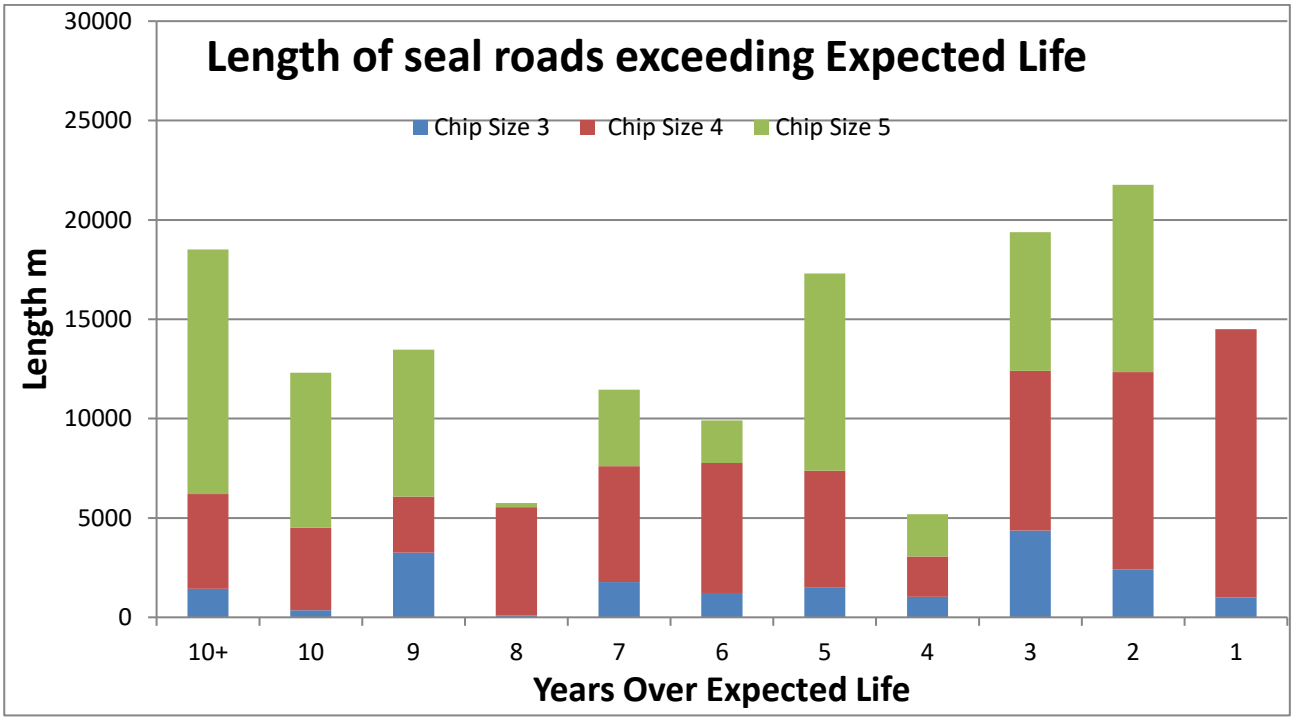
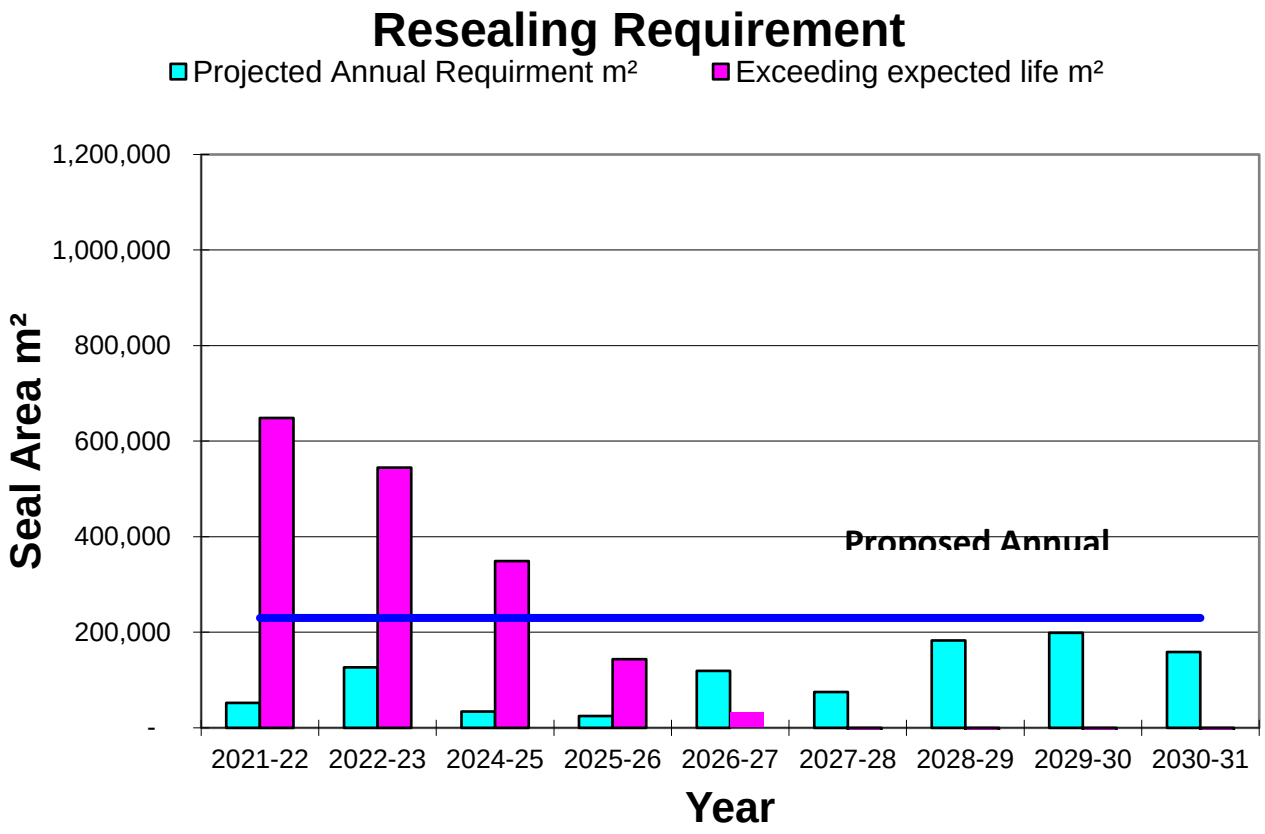


Figure 9.11 Resealing requirement to remove backlog



Resurfacing

Resealing is undertaken periodically to retain the waterproofing qualities of the sealed surface and provide good skid resistance. 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 and traffic volumes. The types of surfacing commonly used include single and two-coat chip seals.

An annual programme of resealing is developed using seal age data and the results of field inspections to identify surface defects such as potholes, cracking, scabbing and flushing. The programme also includes second coat seals which are normally undertaken within 5 years of a First Coat Seal which are never entirely waterproof.

The average resurfacing achieved over the 10-year timeframe is 36km with the last 5 years averaging 39km. Based on the expected life as shown and a sealed pavement length of 640, a target average annual reseal length of at least 36 km of grade 3/5 chip could be regarded as the average annual need. Actual resurfacing over the last 10 years has been lower than this average and there is a backlog of work accumulating. Due to this there is a need over the next five to seven years to address the current resealing backlog

Grade of Chip	Expected Life Years
GRADE 6	6
GRADE 5	12
GRADE 4	16
GRADE 4/6	18
GRADE 3	17
GRADE 3/5	18

9.6.2 End of Life Projections Pavement

Figure 9.13 Year of seal road construction

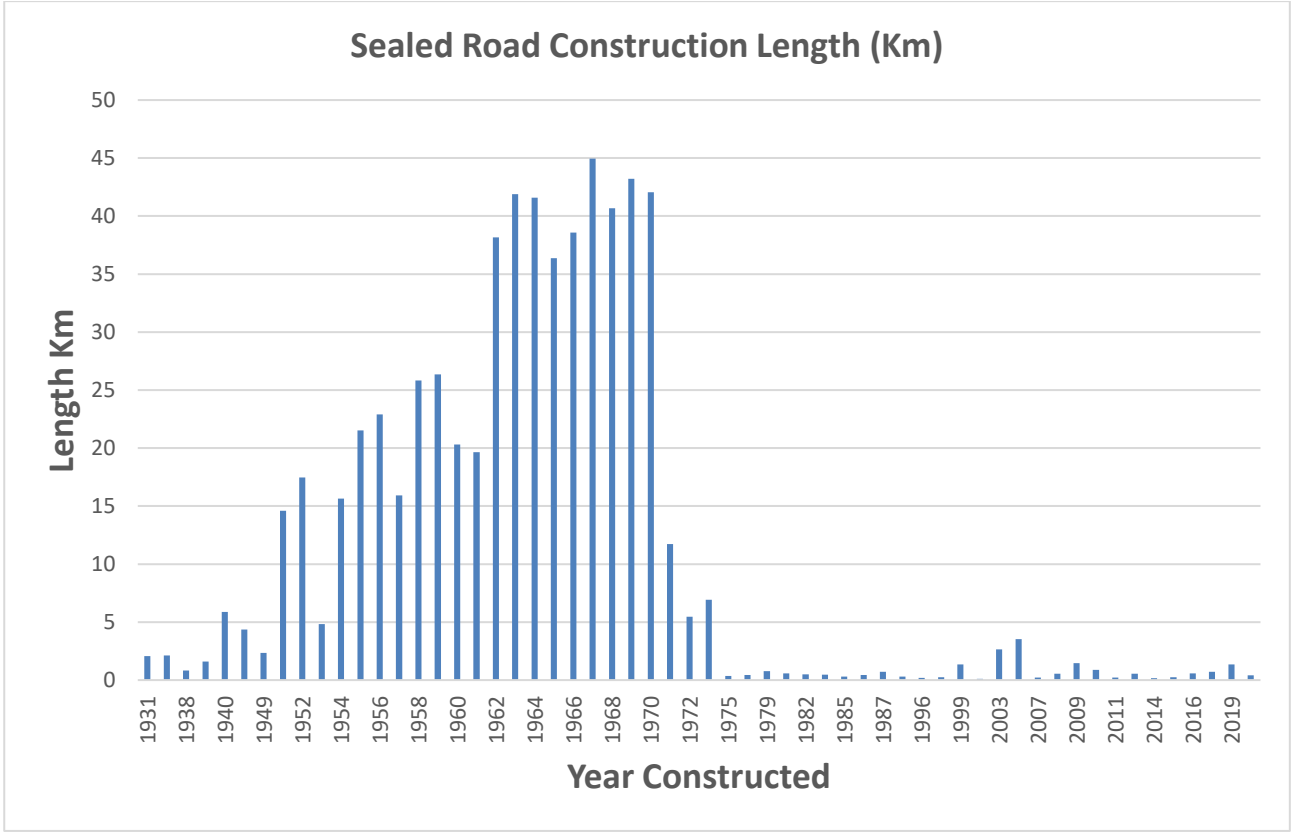
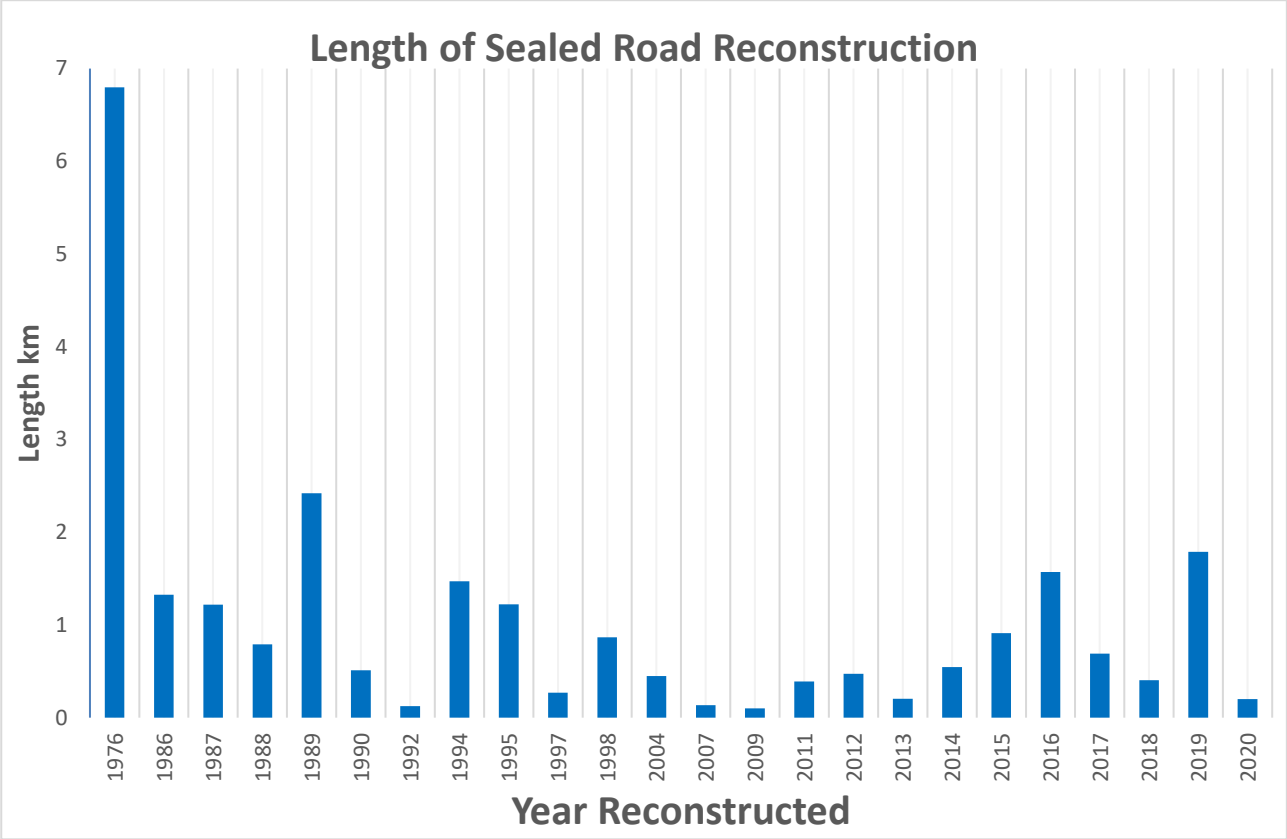


Figure 9.14 Year of seal road reconstruction



Pavement Rehabilitation

The average pavement renewal required based on the assumed life of 75 years currently used in the asset valuation, is in the order of 8.5km per annum. This is significantly more than the average of 700m for the past 10 years. 25km per year of pavement has been renewed over the last 43 years.

The sealed road network was mostly constructed since the 1930's. The pre 1960 roads are generally higher traffic roads and were built to higher standard. In the 1960-1970's a significant portion of the unsealed network was sealed (approximately 38 km a year for about 10 years). Construction was not to such a high standard and these pavements appear to be more susceptible to traffic loading. It is expected that these pavements will start coming up for renewal in the next 10-year period (beyond 2025). For the next 3 years up to 1.5km per year has been budgeted and for the following 7 years 2 km per year has been budgeted for renewal.

It is proposed to assess the expected lives for all pavement and surfacing treatment lengths and input this into RAMM. It would also be beneficial for council to further develop their FWP to incorporate this information for pavement renewals as well as resurfacing.

9.6.3 Renewal Decision Making Process

The required level of renewal varies depending on:

- The age profile of carriageway surfacing and structure
- The condition profile of the carriageways
- The deterioration of the top surface
- The level of ongoing maintenance demand
- The likely future demand on the road

In terms of reseals, intervention is primarily based on age and maintenance history. RAMM data is used to develop an inspection list, which is then used as the basis for a detailed inspection once a year of aged seals. A detailed rolling three-year programme has been developed for Years 1, 2, and 3. Future work requirements beyond this period are based on historical need.

9.6.4 Renewals Strategies to Meet Levels of Service

Maintenance Chip Seals

Maintenance chip seals are pavement resurfacing where the reseal is to be applied to an established sealed road. Examples of these activities include:

- Conventional chip reseals, including second coat seals
- Void filling seal coats
- Texturising seals
- Other special purpose surfacing (polymer modified seals) that fall into the maintenance chip seal NZTA category

In the past there was a trend alternating between Grade 3 and Grade 5 reseals. However, the older seals on the network are now getting varying texture and there are thicker seal layers. Also there are a lot of older grade 4 seals on the network that now getting too smooth to take another Grade 5, and some of the recent Grade 5 seals are not performing as a result. Therefore, the strategy has changed to completing more two coats Grade 3/5 on rural roads and Grade 4/6 on Urban Roads to increase texture.

Emulsion has been used for the District resealing for the last 5 seasons with excellent results. Emulsion is safer and environmental emissions are significantly reduced (almost 50% less) .

Pavement Renewals

<u>Road Rehabilitations</u>
Road rehabilitation of pavements is actioned to maintain pavement structural integrity and to benefit road users. This work category allows construction of:

- Thin asphaltic overlays
- Granular overlays
- Treatments involving ripping and/or reshaping
- Pavement Stabilisation

Basic rehabilitation works are not to increase the existing seal width or provide a seal width greater than the standard for the traffic use of the road. Formation widening may be permitted where it is required for support or structural integrity.

<u>Seal Widening</u>
Seal widening allows for the widening of existing seals where this is the least cost maintenance treatment necessary to overcome edge break or to reduce shoulder maintenance. Work may include shoulder strengthening and/or formation widening where this is necessary to maintain the structural integrity of the pavement. This work may also be carried out to improve safety.

9.6.5 Identification and Prioritisation of Work

The identification of sealed pavement requiring renewals is brought about in a number of ways:

- Annual drive-over survey
- RAMM rating surveys
- Ratepayer service requests
- Contractor inspections
- Annual maintenance costs

This information is used as base data in the generation of road condition forecasts, forward works programmes and road renewal programmes.

Proposed reseals are field checked by the Roading Engineer and current condition determines whether the reseal proceeds or is deferred. The proposed surface treatment is also verified during this field check.

In terms of pavement renewals Roading staff monitor problem roads. Where there is not sufficient percentage of a road failed to complete a full rehabilitation, a maintenance type area treatment will be completed. This is expected to continue, however forecast budgets allow for increased length. This may create a bow wave of renewals work for the future.Rehabilitation sites are then analysed using NZTA simplified benefit cost procedures to determine the economic net present value (NPV) of each project. All projects are then ranked by NPV. This procedure determines whether rehabilitation/ reconstruction is a better economic solution than on-going maintenance.

Formal ranking of projects is based on either benefit cost ratios or net present values depending on the funding mechanism.

9.6.6 Replacement Standards

NZTA standards see section 5.5

9.6.7 Summary of Future Costs

Future costs have been based on the forward work programme and assessed need.

The FWP amounts are escalated to produce the annual budgets for the 10-year period to 2031/32.

212 Sealed Road Resurfacing	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Resealing Chip seals have a limited useful life, Resealing is programmed on as needed basis to arrest and prevent the deterioration of the road surface.	230000	$5.20	$1,195,999				
Professional Services Resealing	$25,000	1	$25,000				
Administration	0.26	$90,000.00	$23,400				
212 Sealed Road Resurfacing Total			**$1,244,399**	**$1,244,399**	**$1,282,976**	**$1,321,552**	**$3,848,927**

214 Pavement Rehabilitation.	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Replacement / restoration of strength to pavement. Project must be the long-term least -cost option . 1700 m 3.4 lane km	11050	$33.00	$364,650				
Professional Services	$15,000	1	$18,000				
Administration	0.07	$90,000.00	$6,300				
214 Pavement Rehabilitation Total		$0	**$388,950**	**$388,950**	**$401,007**	**$413,065**	**$1,203,022**

9.7 UNSEALED ROADS (WC 112)

9.7.1 Current Trends and Issues

Scope and nature of the Asset

Unsealed roads have generally evolved over the past one hundred years from tracks which over time and increasing use have had vegetation removed and gravel progressively added to obtain the current road pavement width and strength.

The unsealed road network in Waimate District comprises 52% of the districts road asset and carries 20% of the total vehicles travelling on the network.

Design standards have not been specifically set for the unsealed road network as many roads were gradually developed over the years rather than specifically designed and constructed.

The roads are surfaced with a range of locally obtained and imported materials. The maintenance contracts specifications are aimed at maintaining this surface into perpetuity.

Current Condition

The unsealed road asset is in a constantly changing condition depending on traffic use, weather, position in its maintenance cycle etc. This condition is monitored through Contractor and Roading Engineer inspections as well as complaints and queries from users. No formal condition rating information is currently collected.

Use by Agricultural industry including machines on road, stock on road etc. contributes to increased deterioration of condition.

Current Capacity and Performance

Performance

The road user perception of unsealed roads is that they are of inferior quality to sealed roads due to issues with carriageway width, roughness, dust, mud, corrugations, potholes and soft areas. These issues, except for the width of carriageway, are being continually assessed by the maintenance contractor with work programmed and executed to keep the deficiencies within acceptable limits.

Some unsealed road users may never be satisfied until their road is sealed, but this is not possible given the large network, low use and cost involved. A sealed road costs far more to construct and maintain, so cannot be justified in lightly trafficked situations. Despite this there is ongoing pressure for seal extensions.

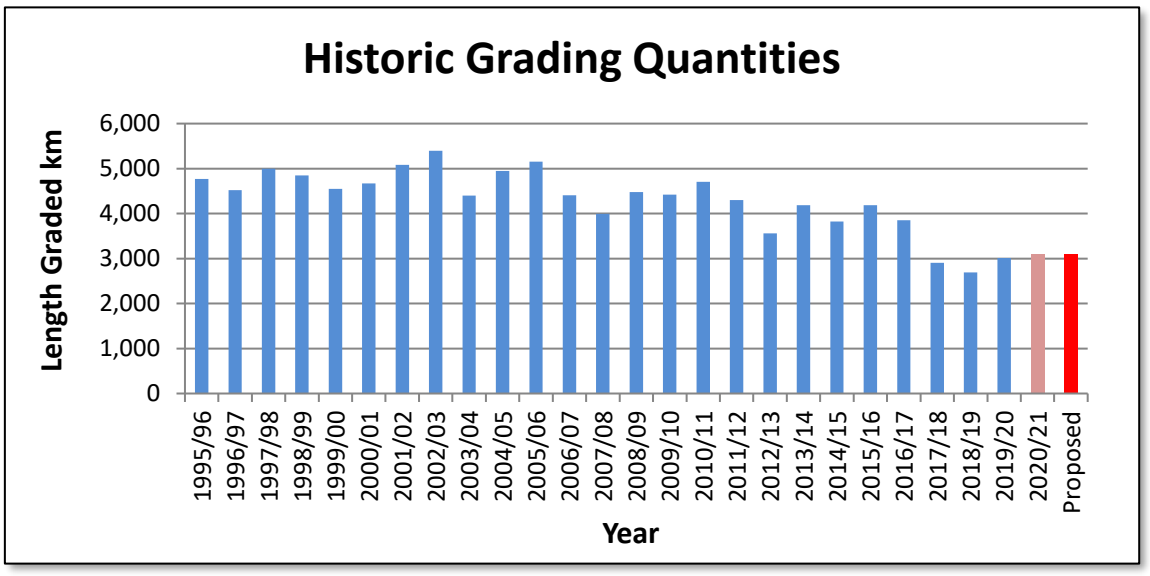
Capacity

The current capacity of the unsealed carriageway component of the Waimate District Roading network is measured by adequate metal cover. This aspect changes over time and needs to be measured on an ongoing basis, and is monitored through the road maintenance contract.

Historic Maintenance Data

Maintenance records for grading over the last 22 years show relatively static maintenance requirements, although there has been a slightly reducing trend over this period. Figure 9.9 shows the annual maintenance need over the last 22 years.

Figure 9.15 – Historic Grading Quantities



Historic Maintenance Costs

Over the years 2018/21 the average expenditure estimate has been $369700 for unsealed pavement maintenance

9.7.2 Maintenance Decision Making Process

Unsealed road maintenance comprises regular grading and spot metalling to;

- Maintain cross-falls and pavement width
- Remove potholes, corrugations, ruts clay spots and exposed sub-grade.

Resources are applied to unsealed roads on a needs basis. -The more highly trafficked roads will attract the most attention.

9.7.3 Strategy to Meet Levels of Service

The maintenance standards to be achieved are set out in WDC specifications contained in the road maintenance contracts

9.7.4 How Tasks Are Prioritised

The grading frequency is used as a guide to which locations will need maintenance and the timing. Inspections, moisture conditions, road use, and metalling programme are taken into account when programming unsealed pavement maintenance.

9.7.5 Summary of Future Costs

Future costs have been based on estimated grading requirements as well as general pavement maintenance requirements including scour repair, digouts, unsealed fords maintenance and additional grading due to storms. Rates from the existing Network Maintenance contract have been applied to estimated quantities.
Costs has been escalated to produce the annual budgets for the 10-year period.

112 Unsealed Pavement Repairs	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Grading The grading frequency is used a guide , inspections, moisture conditions, road use, Metalling programme are taken into account when	3300	$50.24	$165,806				
Grades per year	**km**	**Quantity**					
6.5	366	2379					
3.5	222	777					
2	35	70					
1	25	25					
	648	3251					
Share of Monthly Costs inspection Programming Etc.	0.15	$297,216.67	$44,583				
Administration	0.06	$90,000.00	$5,400				
			$215,789	**$215,789**	**$222,478**	**$229,168**	**$667,435**
Unsealed Pavement Repairs							
Unsealed Roads - Potholes	12	$633.36	$7,600				
Repair of scours /digouts etc.	$45,000	1	$45,000				
Unsealed River Fords Maintenance	$20,000	1	$20,000				
Additional Grading	$15,000	1	$15,000				
			$87,600	**$87,600**	**$90,316**	**$93,032**	**$270,948**
112 Unsealed Pavement Repairs Total			**$303,389**	**$303,389**	**$312,794**	**$322,199**	**$938,383**

9.7.6 Deferred Maintenance and Associated Risks

Current maintenance funding levels appear adequate and there is no significant backlog of routine maintenance.

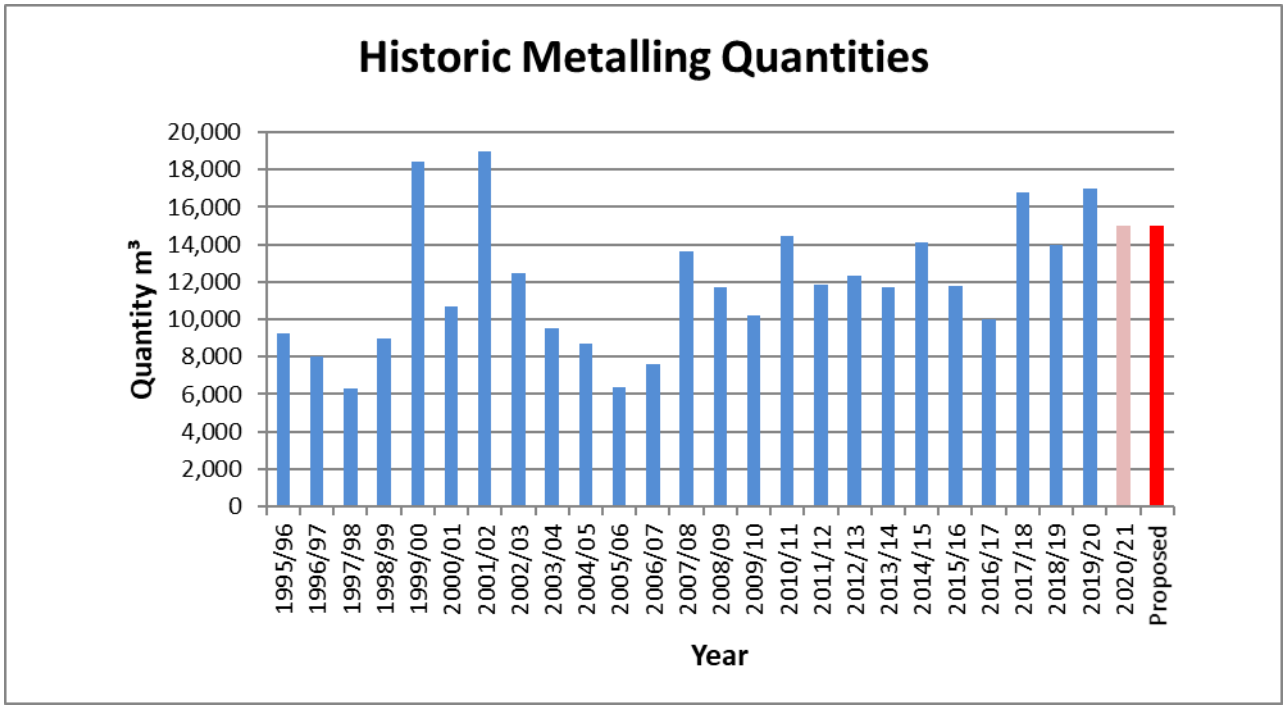
9.8 UNSEALED ROADS RENEWAL/REPLACEMENT PLAN (WC 212)

On unsealed roads renewals includes area wide pavement treatment, unsealed smoothing and replacement of wearing course metal. The unsealed pavements are generally renewed by replacement of wearing course (metalling). This is treated as a maintenance operation and is completed under the Road Maintenance contract.

9.8.1 End of Life Projections

In the 2020 Valuation report the assumed unsealed road pavements life is 35 years. However, as metalling is the main mode of renewal rather than using end of life predictions to quantify future work requirements, the FWP is based on historical quantities, which have used set spread rates. Figure 9.14 shows the historic trend for metalling quantities.

Figure 9.16 – Historic Metalling Quantities



9.8.2 Renewal Decision Making Process

Metalling is based on the requirement to ensure that there is no loss of pavement depth on any road. The work is programmed according to the effects on the safety of road users, the severity and assessed rate of deterioration of the pavement depth, and the location in relation to the carrying out of other works in the area.

9.8.3 Renewals Strategies to Meet Levels of Service

The WDC emphasis is on wearing course metal replacement and this is budgeted for on an annual basis. Rehabilitation and smoothing projects are included as a need is identified from regular network inspections.

The current strategy is to complete spot metalling on noticeable bare sections and then complete a thin spread over the full length to be remetalled. The management approach is very hands on by the inspector out on the road rather than planned in the office.

9.8.4 Identification and Prioritisation of Work

Currently the identification and prioritisation of work is mostly completed by the contractor and a programme of work put forward to the Engineer for approval each month. However, work is very reactive and areas of pavement can deteriorate very quickly if intervention is delayed. Therefore, Council Roading unit has a robust overview of the metalling requirements.

9.8.5 Replacement Standards

Requirements and standards for materials and replacement methodology for the wearing course metal are specified in the Road Maintenance contract.

9.8.6 Summary of Future Costs

Future costs have been based on estimated metalling requirements. Rates from the existing Network Maintenance contract have been applied to estimated quantities.

211 Unsealed Road Metalling	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
	300 km						
Replacement of wearing and running course metal on unsealed roads. (m^3 per year)	12000	$24.33	$291,985				
Heavy Metalling	2000	$33.42	$66,830				
Share of Monthly Costs inspection Programming Etc.	0.15	$297,216.67	$44,583				
Administration	0.09	$90,000.00	$8,100				
211 Unsealed Road Metalling Total			**$411,498**	**$411,498**	**$424,255**	**$437,011**	**$1,272,764**

9.9 DRAINAGE CONTROL FACILITIES (WC 113)

9.9.1 Current Trends and Issues

Scope and Nature of Asset

Drainage is vital to the performance of pavements, as well as customer level of service for safety and resilience.
Drainage control assets consist of kerb and channel, culverts of less than 3.4 m2 cross sectional area and fords. The purpose of these assets is to provide a storm water carrying capacity for runoff from the carriageway, footpaths, berms and adjacent properties to:

- allow the convenient and safe movement of pedestrians and traffic
- protect paved areas from water ingress and resulting structural deterioration

The use of concrete kerb and channels, as opposed to open drains, is a recognised and accepted sign of urban development. With the flat profile of the districts urban areas, ponding and stagnant water can easily eventuate if well-formed channels are not used.

The key issues relating to drainage control are:

- Poor inlet detail capacity within areas of Waimate urban
- Blockages causing high maintenance in Waimate urban
- Quantity of aged kerb and channel within the Waimate urban area
- Original watercourse disrupted by irrigation/border dykes causing flood prone areas

Roadside drainage is key to maximising the life of pavements by protecting them from ingress of water. Better targeting of drainage maintenance and construction has a significant effect on reducing pavement renewal quantity and cost

The quantity of drainage undertaken has been reduced since the large quantities of the early 2000's. The current amount of work is too low, especially given the change in groundwater conditions arising from irrigation.

Some portions of the urban kerb and channel network are at or nearing the end of their life, these sections will need to be replaced for pavement protection, safety and amenity purposes.

Figure 9.17 - Very poor condition rated K&C

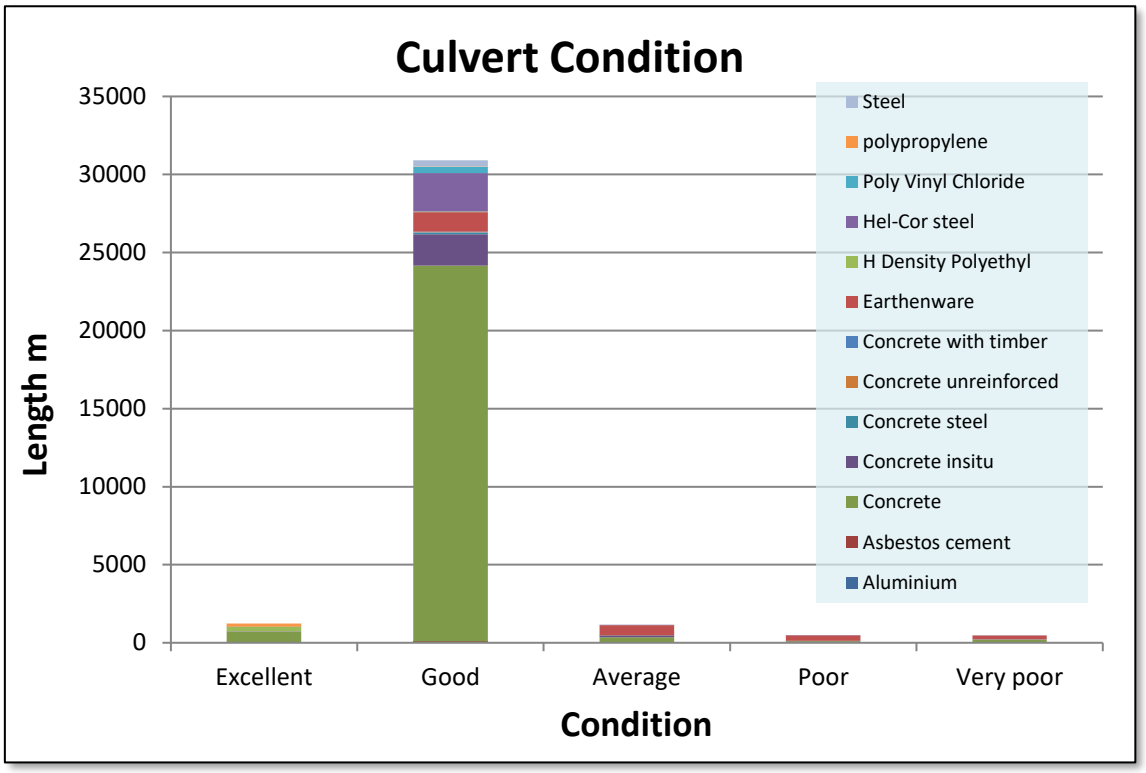
Drainage Type	Quantity	
Culvert	Length m	No. of
0-300mm Dia.	22472	2293
300-440mm Dia.	3671	350
440-500mm Dia.	2942	241
500-600mm Dia.	4167	335
600-760mm Dia.	584	48
760-990mm Dia.	1335	105
990-1190mm Dia.	353	30
1190-1300mm Dia.	607	48
>1300mm Dia.	356	32
Total	**36485**	**3482**

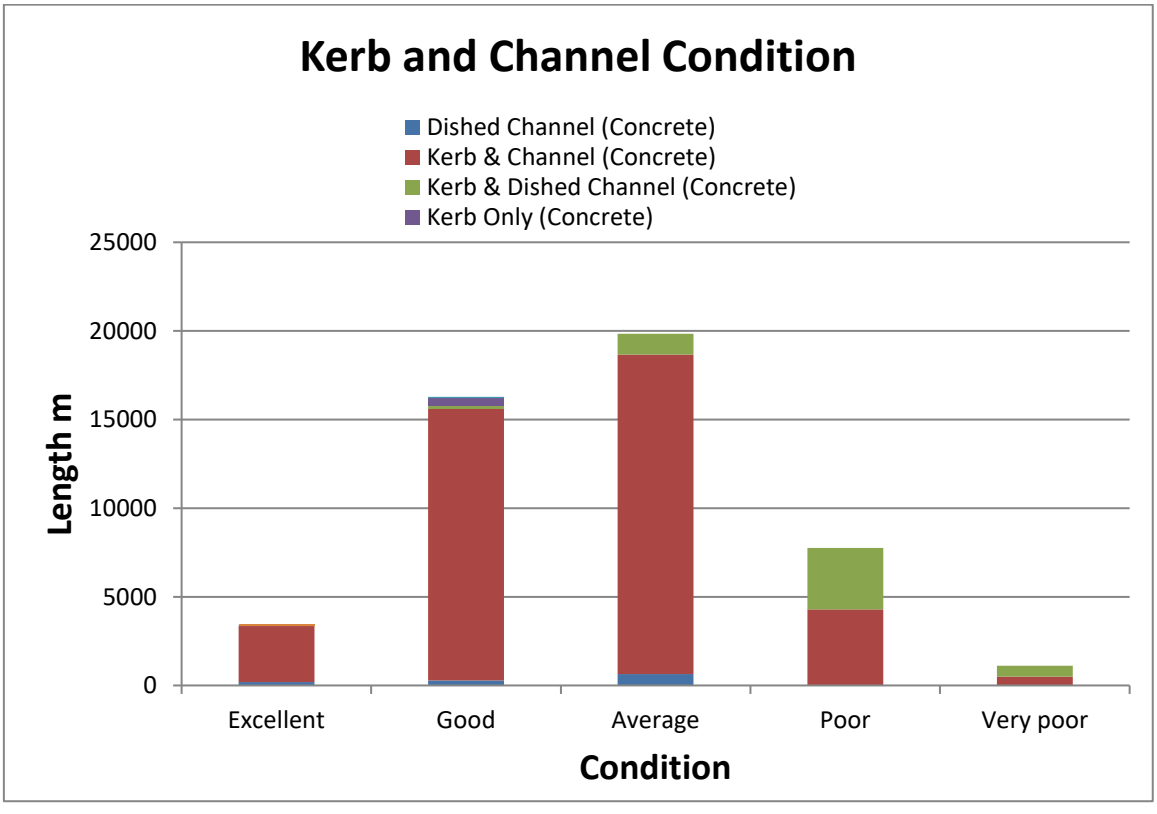
Concrete Fords	Length m	No. of
Concrete Fords	**1696**	**85**

Kerb & Channel	Length km
Kerb & Channel	41.288
Kerb only	0.406
Dished Channel	1.125
Kerb & Dished Channel	5.453
Mountable Kerb & Channel	0.105
Mountable Kerb Only	0.085
Total	**48.462**

Current Condition

. The kerb and channel and dished channels are inspected and classed as being in “good”, “poor” or “very poor” condition. There is also an ongoing inspection and maintenance regime under the routine maintenance contract.





Current Capacity and Performance

Performance issues for drainage control assets relate to:

- Coverage (i.e. are there open water tables or ponding areas that should be serviced by pipe drains or formed channels)
- Focusing on pavement damage due to drainage problems

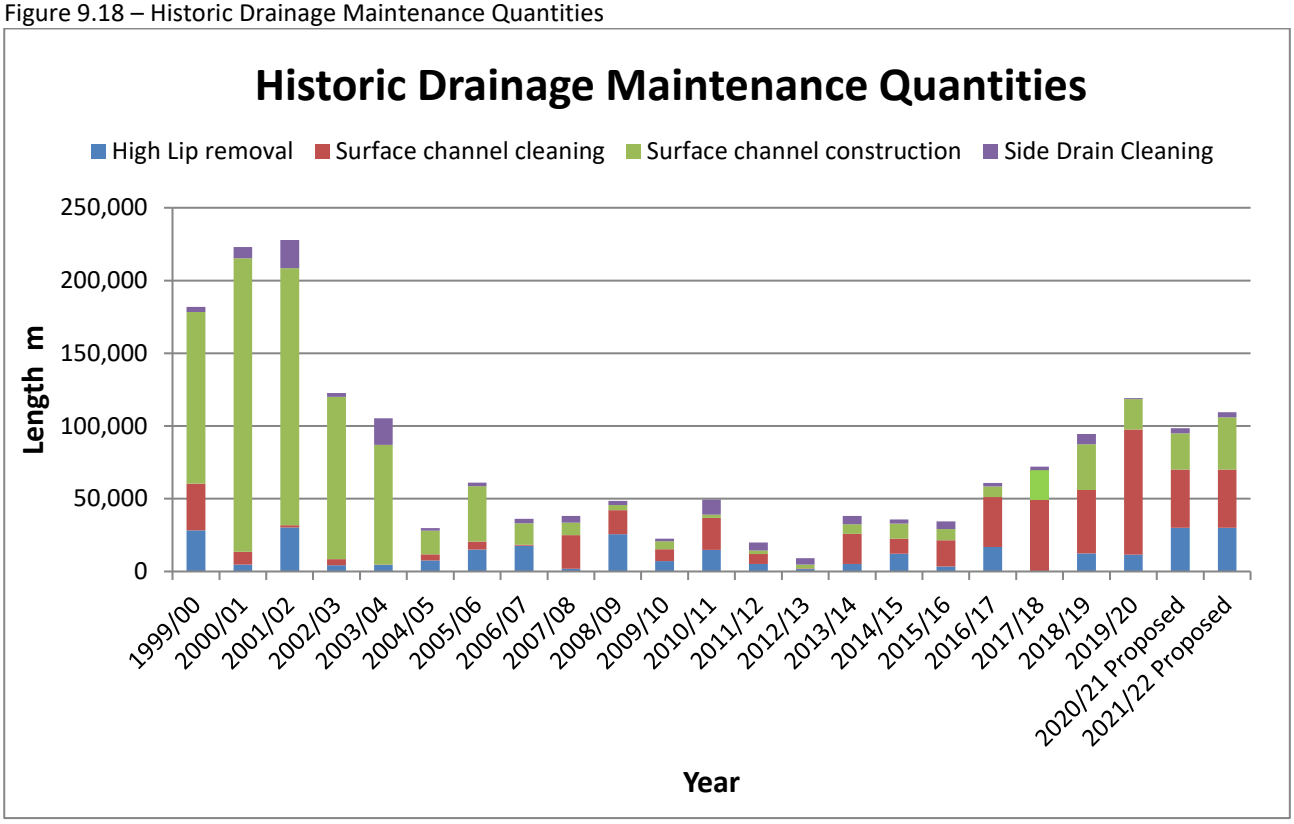
- Improving drainage where storm events cause continual scour problems
- Stormwater entrance capacity
- A large quantity of wash over culverts/fords
- River fords may require closing numerous times per year
- Conformity with standards (kerb and channel in all urban streets)

Surface water drainage requires regular maintenance and renewal. Recent quantities of surface water channels maintenance and renewals have been inadequate, some of our surface water channels have deteriorated to a point where they need to be reconstructed; this will be a priority.

Historic Maintenance Data

Figure 9.10 shows the annual maintenance quantities over the last 18 years. Quantities of drainage work completed have reduced since 2003/04 year due to budget constraints.

Figure 9.18 – Historic Drainage Maintenance Quantities



Historic Maintenance Costs

Over the years 2015/18 the average expenditure estimate was $240,000 for drainage maintenance 2018/21 the average expenditure estimate is $365,800
(WC113), including culvert, drainage channels and kerb &channel maintenance.

9.9.2 Maintenance Decision Making Process

Drainage maintenance is included under the main road maintenance contract covering:

- minimum maintenance standards
- frequency of routine inspections
- response times to correct defects

Condition inspections: The maintenance contractor is required to report any defects observed during day to day road maintenance activity.

Unplanned condition assessment of critical drainage assets is required after each heavy downpour to assess the number of culverts, drains and sumps affected by blockages.

The Contractor is required to maintain an effective communication system and level of preparedness to ensure emergency works are undertaken within the specified response timeframes.

9.9.3 Strategy to Meet Levels of Service

Poor maintenance of the drainage system can lead to blocked drainage and can cause the pavement layers to be submerged with excess water leading to pavement failure

The maintenance strategy is based on Identifying areas on the network where inadequate drainage can have a significant effect on to both road users and Council.

- **Pavement performance**
  Poor drainage and moisture is a main contributor to permanent deformation problems on roads. The most important factor triggering the need pavement repairs is poor quality drainage. Improving the drainage in critical sections, and maintaining it in good condition, increases the pavement life.
- **Traffic risk**
  Poor drainage is a traffic safety risk. Water may accumulate on the road like ponds. The accumulated water creates a risk of aquaplaning during rain. A wet surface reduces friction which leads to longer braking distances. Surface water can freeze during the night in winter causing ice.
- **Storm damage and gravel loss**
  Uncontrolled water flows on the road pavement and shoulders causes erosion and gravel loss. Improving the drainage will reduce storm damage repairs.

The maintenance standards to be achieved are set out in WDC's specifications contained in the road maintenance contracts.

All critical drainage assets are required to be inspected and cleaned following major storm events.

The WDC preference is for a minimum diameter of 300mm concrete culverts under roads. Metal culverts are not used due to premature corrosion failure.

9.9.4 How Tasks Are Prioritised

The mechanism for prioritisation used by Contractors as outlined in the road maintenance contract specification is outlined in Table 9.5. Also damaged and malfunctioning drainage assets identified by public complaint or contractor reports are programmed for repair according to the following additional priority:

- public safety
- accelerated deterioration of pavement likely to occur

- inconvenience occurring to road users, pedestrians and/ or property owners
- untidy appearance

9.9.5 Summary of Future Costs

The majority of the drainage maintenance are reactive so budgets are mainly based on historical expenditure.

113 Routine Drainage Maintenance	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Culvert & Concrete ford Maintenance.							
Regular inspections and cleaning of culverts Rural	12	$2,564.05	$30,769				
Regular inspections and cleaning of culverts Urban	12	$1,100.00	$13,200				
Concrete Ford Maintenance	$15,000	1	$15,000				
Culvert Maintenance	$40,000	1	$40,000				
			$98,969	**$98,969**	**$102,037**	**$105,105**	**$306,110**
Drainage Maintenance							
Vegetation control Kerb & Channel	12	$497.54	$5,970				
High lip removal (m)	30,000	$1.80	$54,035				
Surface water Channel clearing (m one side)	45,000	$2.57	$115,859				
Side drain cleaning	3,500	$2.93	$10,249				
Priced & Day Work Maintenance	$35,000	1	$35,000				
River maintenance schemes Council share	$8,000	1	$8,000				
Share of Monthly Costs inspection Programming Etc.	0.15	$297,216.67	$44,583				
Administration	0.08	$90,000.00	$7,200				
			$280,896	**$280,896**	**$289,603**	**$298,311**	**$868,810**
Kerb & Channel Cleaning 30% of cost	12	$2,000	**$24,000**	**$24,000**	**$24,744**	**$25,488**	**$74,232**
113 Routine Drainage Maintenance Total			**$403,864**	**$403,864**	**$416,384**	**$428,904**	**$1,249,152**

9.9.6 Deferred Maintenance and Associated Risks

Council completing a Risk assessment culverts on the roading network and verifying RAMM data. This information will be used to with condition data and to form a replacement programme. Ongoing attention will be directed to the impacts on drainage of climate change rainfall and drought changes and effects.

9.10 DRAINAGE RENEWAL/REPLACEMENT PLAN (WC 213)

9.10.1 End of Life Projections

There is 36.4 km of culvert length on the network. Based on an average 75-year life (Valuation assumes 40-100 years), 4850m would need to be replaced every year. The requested programme is for 260m per year that will replace the poor and very poor culverts in 5 years.
A risk Assessment of culvert will be completed to provide additional data for replacement projections. Therefore, based on end of life projections, council is possibly under investing in culvert renewals.

The kerb and channel (K&C) on the network is getting very aged. A substantial amount of it is deep K&C which is very expensive to replace. The requested programme is for 600m per year. This is a modest programme and will take 15 years to replace over 8000m of poor and very poor channel.

Culvert Material	Culvert Condition						
	Excellent	Good	Average	Poor	Very poor	Unknown	Grand Total
Aluminium		56					56
Asbestos cement		23				7	31
Concrete	713	24089	357	106	215	630	26109
Concrete insitu	20	2004	97	25	24	54	2224
Concrete steel		110	7				118
Concrete unreinforced		15	8				23
Concrete with timber		29	8				37
Earthenware		1265	645	338	232	106	2586
H Density Polyethyl	289	39				16	343
Hel-Cor steel		2455	16	9		30	2510
Poly Vinyl Chloride	12	420					432
polypropylene	195	12				18	225
Steel		389	5		8	39	440
Stone		338	622	203	137	14	1314
Timber construction		7				8	15
Unknown						22	22
Length Total m	**1229**	**31250**	**1765**	**680**	**617**	**944**	**36485**

9.10.2 Renewal Decision Making Process

WC 213 provides for drainage work which is not routine in nature but clearly demonstrated to reduce future maintenance costs to the roading agency.

Examples of qualifying work include:

- Renewal or installation of culverts with a diameter greater than 600mm, but having a waterway less than or equal to 3.4m^2
- Repair and replacement of kerb and channel, provided that the deterioration is likely to adversely affect the performance of the pavement
- Installation of water channels, sub-soil drainage, or kerb and channel, where this is shown to be necessary to protect adjacent property from run-off from the road surface and the most cost-effective form of drainage control for the purpose of protecting the pavement

9.10.3 Renewals Strategies to Meet Levels of Service

Council has a process of assessing condition of all culverts, verifying RAMM data and estimating construction dates of culvert itself so that a replacement programme can be determined. Along with the review of this asset information, the current size of the culvert is being reviewed against the waterway area need. Any culvert inlet and outlets are also being inspected to determine if they present a shoulder hazard.

9.10.4 Identification and Prioritisation of Work

The renewal programme is prioritised on the basis of overall condition, road group, proximity of street trees and extent of adjacent carriageway failure. Full renewal of kerb and dish channel is justified economically when more than 30% of the length of the channel is broken.

Contractors and council inspections are used to identify culverts and K&C for replacement.

9.10.5 Replacement Standards

Requirements and standards for materials and replacement methodology for culverts and K&C are specified in the Road Maintenance contract. All new culverts shall be installed in accordance with NZTA F3 specification.

The WDC preference is for a minimum diameter of 300mm concrete culverts under roads. Steel culverts are not now used due to corrosion.

9.10.6 Summary of Future Costs

Future costs have been based on estimated renewal requirements. Rates from the existing Network Maintenance contract have been applied to estimated quantities.

Increase level of drainage Renewal have been identified to provide

213 Drainage Renewals	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Drainage Construction							
Surface water Channel Construction m	32,000	$5.07	$162,302				
Soak Pit Construction	8	$637.29	$5,098				
Misc. drainage Construction Side drains etc.	$35,000	1	$35,000				
Share of Monthly Costs inspection Programming Etc.	0.15	$297,216.67	$44,583				
Professional Services	$8,000	1	$8,000				
Administration	0.12	$90,000.00	$10,800				
			$265,783	**$265,783**	**$274,022**	**$282,262**	**$822,067**
Concrete Ford Renewal	$40,000	1	$40,000				
Professional Services	$5,000	1	$5,000				
			$45,000	**$45,000**	**$46,395**	**$47,790**	**$139,185**
Culvert Replacement - Renewal or installation of culverts							
300/375 mm diameter m 20 road crossings	200	$294.05	$58,810				
450/600 mm diameter m 5 road crossings	50	$382.61	$19,130				
>600 mm die 2 road crossings	24	$1,337.05	$32,089				
Large culvert < 3.5 m² 1 crossing	12	$2,500.00	$30,000				
Additional work	$20,000	1	$20,000				
Share of Monthly Costs inspection Programming Etc.	0.05	$297,216.67	$14,861				
Professional Services	$12,000	1	$12,000				
			$186,891	**$186,891**	**$192,684**	**$198,478**	**$578,053**
Kerb & Channel Renewal Inc. renewal of sumps	600	$200.00	$120,000				
Professional Services	$10,000	1	$10,000				
			$130,000	**$130,000**	**$134,030**	**$138,060**	**$402,090**
213 Drainage Renewals Total			**$627,674**	**$627,674**	**$647,132**	**$666,590**	**$1,941,395**

Deep type kerb & Channel

Shallow Type Kerb& Channel

Hillboro Culvert Replacement

McNamaras Road Culvert | Replacement

Proposed large culverts Replacement.

9.11 BRIDGES (WC 114)

9.11.1 Current Trends and issues

Scope and Nature of Asset

The purpose of road bridges is to provide continuous all weather access over rivers and streams. They include culverts with a waterway area greater than or equal to 3.4m^2.

The key issues relating to the management of road bridges are:

- Council's lack of available funds to replace bridges
- The need to develop a policy on disposal of uneconomic bridges
- Ensuring the bridge foundations are protected against scour, degradation and aggradations
- Maintaining the structural integrity of the bridge

Bridge Asset Type	Number	Length m
Major Culvert		
Concrete Box Culvert	9	41
Concrete Precast Box Culvert	9	43
Conc. pipes Culvert	6	37
Steel multi-plate Culvert	12	56
Concrete		
Concrete, HC units	10	475
Concrete, I beams	1	51
Concrete	11	84
Steel & Concrete		
Steel , Precast Conc. Deck	75	1548
Steel, Insitu. Conc. Deck	8	306
Steel, Timber		
Steel, Timber deck	18	416
Steel, Steel deck	1	4
Timber		
Timber	18	231
Timber light truss	3	49
Stone Arch		
Stone Arch	1	11
Total	**182**	**3352**

Waimate District has 24 timber bridges (excluding deck). The expected life of timber structures is 70 years and 19 of the timber bridges are over 70 years old. However, 11 of these bridges have had major strengthening or bridge component replacement works completed within the last 30 years. Structure Component Replacement is planned for 10 bridges and replacement for 2 bridges.

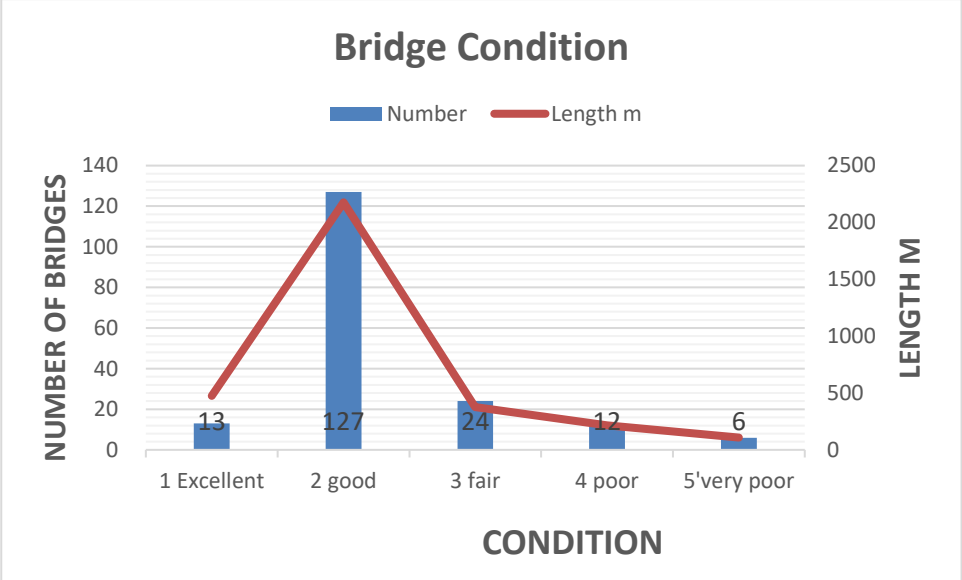
Timber Bridges Excluding Deck

BRIDGE No	BRIDGE NAME	KERB WIDTH	LENGTH metres	SPANS	Year	Beams Year	Deck Year	SINGLE LANE	Posted Bridge	Timber Structural Element
9	McKenzies	2.67	9.75	2	*1930*	*1930*	*1930*	Yes	Yes	Beam
29	Holme Station Corner	2.62	22.40	3	1924	1924	1994	Yes	Yes	Beam
41	Drinnans	3.70	66.40	9	1924	1988	1988	Yes		Piles
52	Ryans	2.03	11.90	2	1986			Yes	Yes	Beam
66	Old Horseshoe Bend	4.57	7.90	1	*1920*	*1920*	*1980*	Yes	Yes	Beam
79	Jacksons	2.54	19.70	3	1923	1923	1923	Yes	Yes	Beam
81	Bournedale Homestead	2.54	14.60	3	*1930*	*1930*	*1930*	Yes	Yes	Beam
96	Crouches	2.54	27.40	4	*1920*	*1920*	1997	Yes	Yes	Beam
99	Adams	5.03	4.80	1	1890	1990	1980	Yes	Yes	Beam
106	Golf Course	7.00	2.00	1	*1920*		1985			Beam
108	Becketts	3.80	20.10	3	*1930*	1992	1992	Yes		Piles
115	McNamaras	9.50	5.50	2	1898					Beam
116	Cunninghams	3.91	5.80	1	1992		1992	Yes		Beam
117	Poigndestres	4.57	33.80	7	*1920*		*1984*	Yes	Yes	Beam
120	Scarletts	2.36	12.20	2	*1920*	*1920*	*1920*	Yes	Yes	Beam
130	Lundys	2.10	7.30	1	1960	1960	1960	Yes	Yes	Beam
131	Murphys	4.27	10.50	2	1929		1981	Yes		Beam
142	Waihuna	2.54	11.00	2	*1920*		2009	Yes	Yes	Beam
152	Ponsonbys	2.69	14.60	3	1988		1988	Yes	Yes	Beam
156	Rickmans	3.35	11.30	2	1969			Yes	Yes	Beam
170	Farm Road	2.72	24.40	5	*1920*		*1988*	Yes	Yes	Beam
172	Cleeves	4.06	3.80	1	1986		*1986*	Yes	Yes	Beam
174	Hakataramea Station	3.10	14.60	3	*1930*		*1990*	Yes	Yes	Truss
191	Hakataramea Downs	3.70	42.10	5	*1920*	1994	1994	Yes	Yes	Piles
		24	404					22	18	

Current Condition

All bridges have a condition rating. Condition inspections are undertaken by both the maintenance contractor and the bridge maintenance professional services contractor. A third of the bridge stock is inspected each year (additionally after flood, earthquakes and overload events that may have had some effect on the bridges integrity) taking into account such factors as structural integrity, defects, safety and appearance. The Condition Rating Summary for all bridges is included in Figure 9.12. Condition equal to 1 is excellent and Condition equal to 5 is poor. Generally annual expenditure is keeping the asset in a fair to good condition.

Figure 9.19 – Condition Rating Summary for Bridges



Timber is a less durable material suffering from rot and insect attack (which can be controlled by chemical treatment), natural defects such as cracking and splitting and, in the case of timber decks, surface abrasion from traffic.

Current Capacity and Performance

Load Capacity

Design loadings have increased as vehicle sizes and carrying capacity have been increased. Appendix IV details of 27 bridges that do not meet current standard class 1 loads and are weight and/or speed restricted.

BRIDGE No	BRIDGE NAME	ROAD NAME	LENGTH metres	Year	axle/gross/speed
9	**McKenzies**	Cliffs	9.75	1930	1600/3000/10
29	**Holme Station Corner**	Pareora River	22.40	1924	2000/3500/30
52	**Ryans**	Esk Bank	11.90	1986	-/3000/30
58	**Taylors**	Woolshed Valley	8.00	1993	80% / 30
64	**Spring Bank**	Woolshed Valley	11.00	1923	---/6500/10
66	**Old Horseshoe Bend**	Old Horseshoe Bend	7.90	1920	5000/5000/30
79	**Jacksons**	Milnes	19.70	1923	1500/2000/30
81	**Bournedale Homestead**	Bournedale Homestead	14.60	1930	60%/4500/30
82	**Hunter**	Pakihi	24.40	1960	80% class1
93	**Meyers**	Gunns	7.30	1999	axle3500/30
96	**Crouches**	Youngs	27.40	1920	3500/3500/30
99	**Adams**	Deep Creek	4.80	1890	10km
104	**Frewens**	Moores	6.00	1950	6000/9000/30
117	**Poigndestres**	Poigndestres	33.80	1920	5500/8500/30
120	**Scarletts**	Fletchers	12.20	1920	3000/5000/10
130	**Lundys**	Crowes	7.30	1960	1500/3000/30
142	**Waihuna**	Redcliffs Back	11.00	1920	4500/4500/30
152	**Ponsonbys**	Bridge	14.60	1988	gross3000/30
153	**Whites**	Whites	7.30	2000	60%/60%/30
156	**Rickmans**	Waitaki Valley	11.30	1969	3000/4000/30
157	**Hursts**	Hursts	14.60	1930	---/6500/10
158	**McKees**	Waihaorunga Back	15.20	1930	gross5000/30
170	**Farm Road**	Farm Road	24.40	1920	1600/3000/30
172	**Cleeves**	Milne	3.80	1986	6000/90%/30
174	**Hakataramea Station**	Homestead	14.60	1930	2000/4000/30
186	**Menzies**	Menzies	9.80	1930	---/6500/10
191	**Hakataramea Downs**	Hakataramea Downs	42.10	1920	70% 10km/hr
27			397		

Traffic Capacity

144 bridges are single lane bridges, however given the low traffic volumes on the network this is considered appropriate for capacity purposes based on existing traffic volumes.

Natural Hazards

Bridges are at risk from natural hazard events such as floods, earthquakes, slips, and the failure of adjacent services (e.g. water mains). It is only in recent times that earthquake standards have been incorporated into bridge design. Most bridges were designed to have sufficient waterway area capacity to handle design flood flows. Erosion and scour of piers is a concern for some bridges. WDC have a number of bridges that are at risk from natural flood disasters and earthquakes.

Bridges being out of services has an impact on the performance of the network as a whole. The critical bridges have been identified through a risk management process (as detailed in section 8.3).

Historic Maintenance Costs

Over the years 2018/21 expenditure has been $132,000 for structures maintenance (WC114). The projected average annual expenditure for the period 2021/24 is $158,700 and is based on condition inspections and identified maintenance needs.

9.11.2 Maintenance Decision Making Process

Bridge inspections are completed as follows:

- On-going superficial inspections co-ordinated with other routine maintenance work
- General inspections and a full structural inspection of a third of the asset undertaken each year on a three-year cycle by a Bridge Engineer, taking into account such factors as structural integrity, defects, safety and appearance
- Special inspections after specific events such as earthquakes, severe floods or instances of overloading

Inspection outcomes include recommendations for maintenance and prioritisation for timing of repairs. Each item of the bridge maintenance programme is the most cost effective response to the defect identified, except where a shorter term but lower cost remedy is selected when budget limitations apply and all maintenance items are assessed as equally urgent. Standard NZTA economic evaluation criteria are used to evaluate treatment options.

The routine maintenance contract includes the routine inspection, maintenance and repair of bridges.

The type of maintenance work activity undertaken includes:

- planned maintenance inspections
- repairing structural defects (e.g. concrete spalling, corroded fastenings, rotten timber, undermining of foundations)
- repairing/replacing damaged components (e.g. handrails and guard-rails)
- restoring protective coatings (e.g. painting)
- maintaining drainage
- waterway area clearing
  The Waimate district has 98 bridges with steel beams (70% of the bridge length) 16 of these bridges require steel beam painting. It is proposed to complete this work in 5 years to preserve the life of the beams.

Maintenance Standards include:

- NZTA Bridge Maintenance Manual

9.11.3 Strategy to Meet Levels of Service

The maintenance standards to be achieved are set out in WDC specifications contained in the road maintenance contracts. These standards will need to be reviewed in light of the new Levels of Service outlined in Section 5.

9.11.4 How Tasks Are Prioritised

Maintenance programmes are developed from the schedules of defects identified during the inspections. Repair treatments and priorities are determined by considering the impact on:

- public safety (top priority)
- traffic movement
- future costs if the work is not done

9.11.5 Summary of Future Costs

Future costs have been based on estimated routine maintenance needs including inspections.

114 Structures Maintenances	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Provides for the work necessary to maintain the structural condition and appearance of all bridges							
Routine Maintenance -inspection clearing deck, drainage holes .	12	$2,604.40	$31,253				
Painting handrails 109 bridges 2150m 15 year programme 150m per year	150	$110	$16,500				
Painting Steel Beams (3 year prog. To treat unpainted steel beams)	$28,250	1	$28,250				
General Repairs	$55,000	1	$55,000				
Waterway Maintenance	$20,000	1	$20,000				
Administration	0.03	$90,000.00	$2,700				
114 Structures Maintenances Total			**$153,703**	**$153,703**	**$158,468**	**$163,232**	**$475,403**

9.11.6 Deferred Maintenance and Associated Risks

Current maintenance funding levels appear adequate and there is no significant backlog of routine maintenance.

9.12 BRIDGES RENEWAL/REPLACEMENT PLAN (WC 215 & 341)

9.12.1 End of Life Projections

The bridge schedule provides details of the actual age of most structures and the estimated age of those where the construction date is not known. This information is detailed in the bridge Operations and Maintenance Plan.

9.12.2 Renewal Decision Making Process

Asset renewal is undertaken when a structure, or significant components of a structure, has reached the end of their economic life. Renewal provides for the following work:

- replacing a structurally inadequate bridge
- replacing a bridge for non-structural reasons such as inadequate width or waterway area
- structurally modifying an existing bridge to increase its standard capacity to a level higher than originally provided

9.12.3 Renewals Strategies to Meet Levels of Service

A Bridge Replacement and Upgrade Strategy has been developed by the Bridging professional services consultant. This strategy details those bridges that need to be upgraded to Class 1, those

that require beam and/or deck replacement and those that need full replacement. A copy of this strategy is included in Appendix IV.

9.12.4 Identification and Prioritisation of Work

The timing for replacement and upgrade works is indicated in the strategy for some bridges, but is generally left to the Council to decide based on the information given and forecast budgets.

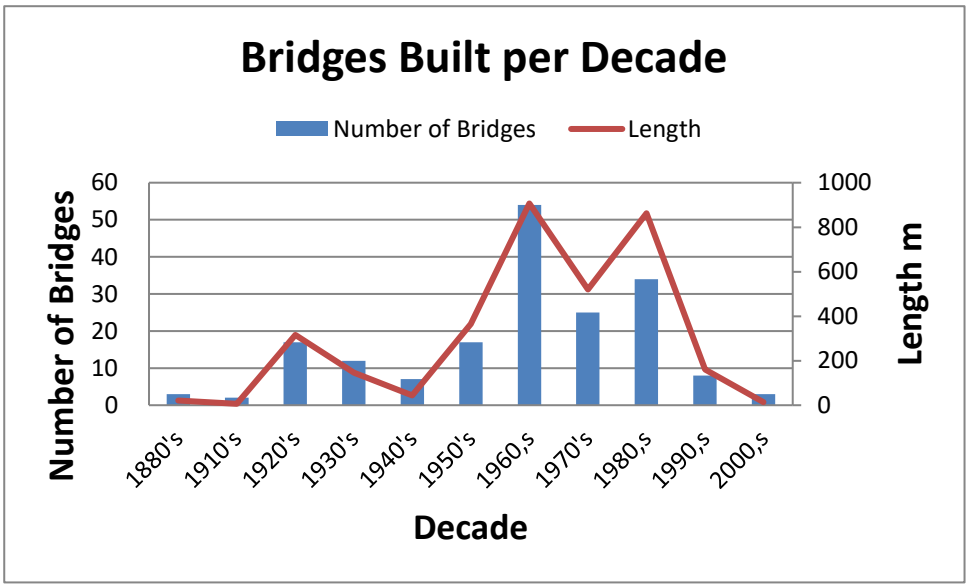
Prioritisation of works and the selection of renewal options are made on the basis of an economic evaluation using NZTA criteria. Cost/benefit calculations include an assessment of risks associated with earthquakes and floods. The lowest cost option, considering all life cycle costs over a 30-year period, is selected except where funding limitations necessitate shorter term (lower cost) options for works that cannot be deferred.

River crossing projects which cannot be economically justified in terms of NZTA criteria shall be considered by the Engineering and Works Committee on a case-by-case basis for recommendation to Council if additional funding is deemed appropriate.

9.12.5 Replacement Standards

The NZTA Manual is adopted for the design of new structures and for the evaluation of existing structures.

Figure 9.20 – Bridge built per decade



Scarletts Bridge Replace superstructure.

9.12.5 BRIDGE STRUCTURES COMPONENT REPLACEMENT /RENEWALS

Bridge		Existing Bridge Materials							Dimensions (m)		Component Replacement				
No	Name	Deck	Beams	Piers	Abuts	Condition	axle gross speed	Traffic Volume & Use	Notes	Width	Length	Option	ESTIMATE	Priority	Year	Bridge Replacement Estimate
170	Farm Road	Timber Fair	Timber Truss Poor	Rail iron/ timber	Rail iron/ timber	Very Poor	1600 3000 30	45 vpd	Gravel Ford ,Side bridge	3.0	24.0	Replace superstructure ex SH 82 Waitaki Br 2x 12m span Replace Piles	**$135,000**	1.0	2021	**$450,000**
65	Otaio Cemetery.	Timber	Steel	Nil	Concrete	Fair	C1	farm & Cemetary access	No alternative access, no Ford	4.3	4.0	Replace deck and beams	**$15,000**	1.0	2021	**$45,000**
190	Smiths	Culvert Steel multi-plate				Good		40vpd	Concrete invert too low corrision on side of culvert	6.0		Construct concrete invert	**$18,000**	4.0	2022	**$200,000**
192	Scour Stream	Culvert Steel multi-plate				Good		1 farm access	Invert of culvert wearing	6.0		Construct concrete invert	**$30,000**	4.0	2022	**$150,000**
81	Bournedale Homestead.	Timber	Timber	Rail iron/ timber	Rail iron/ timber	Poor	60% 4500 30	1 farm access	No alternative access, gravel Ford	2.5	14.6	Replace superstructure with steel beams timber deck	**$50,000**	1.0	2022	**$200,000**
120	Scarletts	Timber 1920	Timber	Rail iron/ timber	Concrete	Poor	3000 5000 10	60vpd	Concrete Ford, Side bridge	2.4	12.2	Replace superstructure.	**$40,000**	2.0	2022	**$250,000**
130	Lundys	Timber	Timber	Nil	Concrete	poor	1500 3000 30	1 farm access	Concrete Ford, Side bridge flood channel	2.1	7.3	Replace superstructure with steel beams timber deck	**$25,000**	2.0	2022	**$130,000**
82	Hunter	Precast	Steel	Nil	Concrete	Good	80% 30	95 vpd	Existing 22"beams requires 24" to be class 1	4.0	24.4	strengthen beams to remove posting.	**$45,000**	2.0	2023	**$500,000**
191	Hakataramea Downs	Timber Laminated 1994 Good Condition	Steel	Timber Piles poor	Timber Piles	average	70% 10	40vpd	Steel beams & new deck 1994. Timber piles poor	37.0	42.1	Replace Piles	**$140,000**	4.0	2023	**$650,000**
142	Waihuna	Timber 2010	Timber	Rail iron/ timber	Concrete	Poor	4500 4500 30	110 vpd	Concrete Ford, Side bridge	2.5	11.0	Replace beams, pier & deck. Retain Abutments	**$45,000**	2.0	2024	**$200,000**
117	Poigndestres	Timber	Timber	Timber Piles	Concrete	Fair	5500 8500 30	low Access to Beach only	Major structure access to beach walkway one farm Evaluate timber by boring. Develop strategy for the bridge.	4.6	33.8	**Develop Options** (Engineering Cost)	**$8,000**	4.0	2024	**$650,000**
156	Rickmans	Timber	Timber	Rail iron/ timber	Rail iron/ timber	Fair	3000 4000 30	1 large farm access	Rebuilt 1986. Ford bypass.	3.4	11.3	Replace timber beams in steel	**$40,000**	4.0	2024	**$200,000**
99	Adams	Timber 1990	Timber	Nil	Concrete	Fair	10km	35 vpd	no ford, Beams cracked, deck receives heavy traffic damage	5.0	4.8	**Replace superstructure with RC concrete**	**$35,000**	1.0	2024	**$135,000**

Bridge		Existing Bridge Materials								Dimensions (m)		Component Replacement				Bridge Replacement Estimate
No	Name	Deck	Beams	Piers	Abuts	Condition	axle gross speed	Traffic Volume & Use	Notes	Width	Length	Option	ESTIMATE	Priority	Year	
106	Golf Course.	Timber	Timber	Nil	Concrete	Fair		510 vpd	Review capacity and condition prior to committing to replacement	7.0	2.0	**Replace superstructure with RC concrete**	**$20,000**	4.0	2024	**$150,000**
103	Molloys	Concrete	Concrete	Nil	Concrete	Good		260 vpd	Uncertain Design	7.3	4.0	Strengthen deck	**$20,000**	7.0	2025	**$110,000**
52	Ryans	Timber	Timber	Rail iron/ timber	Rail iron/ timber	Fair	gross 3000 30	1 farm access	Gravel Ford Side Bridge Abutments Rebuilt 1988	2.0	11.9	Replace deck and beams.	**$35,000**	5.0	2025	**$200,000**
131	Murphys	Timber Baulk 1981	Timber	Concrete	Concrete	Fair		250 vpd	No Ford	4.3	10.5	Replace timber beams in steel Reuse deck	**$35,000**	4.0	2025	**$200,000**
29	Holme Station Corner	Timber Laminated 1994 Good	Timber	Rail iron/ timber	Concrete	fair	2000 3500 30	35 vpd	Side bridge, Arterial Road,site requires 2 lane, Existing concrete ford for	9.0	23.0	Replace superstructure with steel beams timber deck	**$60,000**	9.0	2025	**$1,300,000**
158	McKees	Timber	Steel	Steel Piles	Steel Piles	Fair	gross 5000 30	40 vpd	Concrete Ford, Side bridge Centre Pire is leaning	2.5	15.2	Replace pier	**$20,000**	4.0	2026	**$300,000**
152	Ponsonbys	Timber 1988	Timber/ Steel	Steel Piles 1988	Steel Piles	Fair	gross 3000 30	1 farm access	Gravel Ford Side Bridge Rebuilt 1988	2.7	14.6	Replace superstructure.	**$40,000**	6.0	2026	**$35,000**
172	Cleeves	Timber	Timber	Nil	Bearer.	Fair		1 farm access	Rebuilt 1987. Ford bypass.	4.1	3.8	Replace timber beams in steel	**$10,000**	8.0	2026	**$40,000**
1	Brasells	Timber 1981,1986, 1994	Steel 1986 & 1994	Steel Piles	Steel Piles	average		60 vpd	Bridge rebuilt following flood damage in 1986 & 1994 some 1981 deck used	3.9	161.3	Replace plank deck spans with laminated timber deck	**$150,000**	10.0	2027	
108	Becketts	Timber	Steel	Timber Piles	Timber Piles	average		25 vpd	Provide props between piers. Inspect annually. Evidence of ground movement. Piers leaning	3.8	20.1	**Remove Bridge**				**$650,000**
174	Hakataramea Station	Timber Fair	Timber Truss Poor	Rail iron/ timber	Rail iron/ timber	Poor	2000 4000 30	1 large farm access	Gravel Ford ,Side bridge	3.0	12.0	**Bridge Not on Public Road Discontinue Maintenance**		12.0		**$200,000**

9.12.6 Summary of Future Costs

The renewals budget for structures is based on the Bridge replacement and upgrade strategy.

215 Structures component replacement	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Bridge Upgrade -Deck , beam replacement etc.			$165,000				
Professional Services Structures component Replacement	$10,000	1	$10,000				
Administration	0.03	$90,000.00	$2,700				
215 Structures component replacement Total			**$177,700**	**$177,700**	**$183,564**	**$189,251**	**$550,515**

9.13 TRAFFIC SERVICES (WC 122)

9.13.1 Current Trends and Issues

Scope and Nature of Signs and Marking Asset

Traffic services are devices used for the orderly control of vehicles and people on public roads. Their function is to: Regulate, Warn, Guide and Inform.

They consist of road signs, road markings, edge marker posts (EMPs) and railings.

The key issues relating to traffic services are:

- Replacing deteriorated signs
- Repairing sign damage due to vandalism and traffic accidents

Within RAMM there is an inventory for these traffic services asset components: signs, traffic, features, markings and railings.

Sign Type	No
Bridge Warning	286
Bridge Weight Limit	52
Chevron Board	151
Intersection Control	293
Parking	41
Permanent Warning	959
Speed limit	116
Street/Road Name	1451
Width marker /Hazard marker	715
Total	**4064**

Scope and Nature of Street Lights Asset

The purpose of street lighting is to provide sufficient lighting levels in streets to allow the safe and efficient movement of vehicles, cyclists and pedestrians.

The asset has been developed over a number of years such that all of the light fittings are now high pressure sodium (which has a high output for a relatively low wattage, making them efficient and cost effective to use) and have been standardised to match makes in use in the surrounding districts to reduce maintenance expenditure.

WDC manages the maintenance and renewal of street lights throughout the district including those on the state highways owned by NZTA. Council's streetlights are attached to poles either owned by the Council or by Alpine Energy Limited. Alpine Energy Limited maintains their poles. The demarcation point is the pole fuse which is the supply point to the Alpine Energy Limited power network.

The maintenance contractor provides Council with reports as requested and keeps records of the extent of the asset components.

Maintenance of streetlights covers regular inspections, the replacement of failed bulbs, and repair of damage. Maintenance works are undertaken to:

- ensure safety to the public
- protect the investment in assets by extending the life of the assets
- minimise repair costs

As NetCon Limited also maintains streetlights for the neighbouring districts of Timaru and Mackenzie it is cost effective to standardise on lanterns and fittings common to all three districts. This has largely been achieved with the majority of lanterns being either Goughlite or Sylvania.

Current Condition, Capacity and Performance Signs and Marking

The condition of signs and road markings is assessed in routine inspections undertaken by the maintenance contractor, with the results reported to the Engineer. There is no formal condition rating system for traffic services, with condition assessed visually against the relevant NZTA standards.

The extent of deterioration of road markings depends on age, traffic volume, the materials used and the condition of the road (oil and grit reduce adhesion).

Most signs are replaced as a result of damage resulting from vandalism and vehicle accidents. Loss of reflectivity through weathering is the most significant cause of deterioration. Performance issues for signs and road marking relate to coverage, accuracy of placement, visibility and conformity with standards. Overall the condition of traffic services assets is considered to be good.

Current Condition, Capacity and Performance Street Lights

As 92% of the streetlight lanterns are less than 14 years old and will not reach the end of their expected life for another 3 or more years, therefore minimal maintenance only should be required over the until 2020
Streetlight capacity and performance issues relate to light intensity, reliability and safety.

The current level of complaints is directed at light outage. The current level of maintenance and renewal is adequate and satisfies the public demand.

The Waimate District street lighting other than on the state highways has evolved from perceived need rather than being based on standard performance design requirements. Older fluorescent and mercury vapour lanterns have been upgraded (1999) to high pressure sodium. The network performance however has not been assessed.

To date the management of the street lighting asset has been largely left to the maintenance contractor. Data is held by the contractor and Council and the position of all light has been recorded on GPS

Historic Maintenance Costs

Over the years 2018-21 the annual expenditure has been $141,800 for traffic services maintenance (WC122), including pavement marking and signage.

9.13.2 Maintenance Decision Making Process

Signs and marking

The maintenance strategy includes:

Planned inspections: The maintenance contractor is required to routinely inspect all assets and repair any defects within the following timeframes:

- Regulatory Traffic Signs 2 days, Warnings signs 6 days, Information signs 10 days to one month.
- Road marking: markings are re-marked every 2 years

Unplanned Maintenance: The Contractor is required to maintain an effective communication system, level of preparedness and stocks to ensure emergency works are undertaken within the specified response timeframes.

Street Lights

All replacement lamps shall be compatible with the lantern and control gear, and shall have characteristics compatible with the original lamp.

All maintenance work must comply with the current Electricity Act and Regulations.

The current maintenance strategy is:

- Identify failed assets through inspections by contractors, staff observations, and customer complaints.
- Repair on demand and within the specified response timeframes faulty, accident damaged or vandalised lanterns, lamps, control gear columns and associated equipment, providing an immediate response to hazards. WDC seeks to recover the cost of accident damage from those responsible.
- Develop maintenance programmes from the schedules of defects identified during routine inspections.

9.13.3 Strategy to Meet Levels of Service

All traffic services maintenance is competitively tendered. NZTA specifications and standards have been adopted for maintenance work.

Traffic Signs

RSMA "Standard for the Manufacture and Maintenance of Traffic Signs, Posts and Fittings".
NZTA "Manual of Traffic Signs and Markings" Part 1.
NZTA Specification M/14: Marker Posts
NZS 5414: 1977 “Specification for Construction of Traffic Signs”
NZTA Specification P/12: Paint Application - Signs.

Road Markings

NZTA "Manual of Traffic Signs and Markings" Part 2.
NZTA Specification P/22: Road Markings

9.13.4 How Tasks Are Prioritised

The mechanism for prioritisation used by Contractors as outlined in the road maintenance contract specification is outlined in Table 9.5. Obsolete, damaged, sub-standard and non-conforming assets identified during routine inspections are programmed for replacement according to the following additional priority:

- public safety
- traffic volumes
- convenience of road users

9.13.5 Summary of Future Costs

The maintenance budget is primarily based on historical levels of expenditure.

122 Traffic Service Maintenance	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Pavement Marking	$45,000		**$45,000**	**$45,000**	**$46,395**	**$47,790**	**$139,185**
Sign Repairs							
Sign Inspection & Routine maintenance cleaning etc.	12	$2,604.40	$31,253				
Repairs signs, markers etc.	$12,000	1	$12,000				
Post and Sight Rail Painting m	$300	$15.01	$4,502				
Share of Monthly Costs inspection Programming Etc.	0.05	$297,216.67	$14,861				
Administration	0.03	$90,000.00	$2,700				
			$65,315	**$65,315**	**$67,340**	**$69,365**	**$202,020**
Carriageway Lighting							
Maintenance			$18,000	$18,000	**$18,558**	**$19,116**	**$55,674**
Power	$21,334	$13,227.08	$13,000	$13,000	**$13,403**	**$13,806**	**$40,209**
			$31,000	**$31,000**	**$31,961**	**$32,922**	**$95,883**
122 Traffic Service Maintenance Total			**$141,315**	**$141,315**	**$145,696**	**$150,077**	**$437,088**

131 Level Crossing Total	Estimate Annual Quantity		Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Kiwi rail Maintenance & Inspection		$10,500	**$10,500**	**$10,500**	**$10,826**	**$11,150**	**$32,476**

9.13.6 Deferred Maintenance and Associated Risks

Current maintenance funding levels appear adequate and there is no significant backlog of routine maintenance.

9.14 TRAFFIC SERVICES RENEWAL/REPLACEMENT PLAN (WC 222)

9.14.1 End of Life Projections

Signs and Marking

Signs have an assumed life of 15 years There are over 5,000 individual signs, which based on a 15-year life cycle would require 300 replacements each year due to overall sign deterioration. However, much of the sign replacement in the district is due to damage rather than deterioration, vandalism of signs often results in their replacement ahead of their usual renewal requirements.

Street Lights

Waimate District Council is converting all 70w high-pressure sodium vapour street light luminaires on the local road network to LED luminaires to be completed in 2021.

Asset renewal is undertaken when a streetlight, or significant component of a light, has reached the end of its economic life. Renewal works involve the replacement of either the complete pole and lantern or individual components (e.g. lantern, controllers or pole).

The assumed average economic life for streetlights is:

- all lanterns 25 years
- light columns 30 years
- streetlight outreach 50 years

9.14.2 Renewal Decision Making Process

Signs will be renewed where they are found to be missing or ineffective (due to damage or deterioration).

The installation of additional street lights will be assessed on the basis of road safety benefits, together with an amenity value related to security in townships. New subdivisions are to install lighting to AS/NZS 1158:2005 Road Lighting.

9.14.3 Renewals Strategies to Meet Levels of Service

Council also has a current strategy for making sure that all intersections have appropriate destination signs. A list of intersections has been included in RAMM, which is being used to review and check if signs are present. Replacement or installation of new signs will form part of ongoing programme.

The strategy relating to the renewal of streetlight assets, or components of those assets, is to:

- Replace faulty or damaged assets when replacement is more economic than repair.
- Replace faulty or damaged lanterns which cannot be repaired because of obsolescence or replacement parts are unobtainable.
- Replace existing asset that does not meet current design/safety standards.

The required level of renewal will depend on:

- the age profile of streetlights
- the condition profile of streetlights
- the level of ongoing maintenance
- the economical lives of the materials and components used
  In order to save energy and maintenance costs Council is considering moving to LED lights in future. Changes to existing lanterns will be made when they next need to be replaced, but any significant savings are not likely to be realised within the next 10 years

9.14.4 Identification and Prioritisation of Work

Identification and prioritisation are specified in the Road Maintenance contract and as outlined in the Operations and Maintenance Plan.

9.14.5 Replacement Standards

Sign Replacement standards are specified in the Road Maintenance contract.
Streetlight replacement standard use appropriate AS/NZ standards

9.14.6 Summary of Future Costs

The renewals budget for signs renewals is based on historical levels of expenditure. This amount has been escalated to produce the annual budgets for the 10-year period.

222 Traffic Services Renewal	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Sign Renewal							
Edge & Culvert Marker post replacement	800	$12.72	$10,175				
Sign posts & Poles	100	$77.99	$7,799				
Signs new & replacement	$40,000	1	$40,000				
Professional Services	$2,000	1	$2,000				
Administration	0.01	$90,000.00	$900				
			$60,874	**$60,874**	**$62,761**	**$64,648**	**$188,283**
Lighting Renewal					**$0**	**$0**	**$0**
222 Traffic Services Renewal Total				**$60,874**	**$62,761**	**$64,648**	**$188,283**

9.15 ENVIRONMENTAL MAINTENANCE (WC121)

9.15.1 Current Trends and Issues

This work category is operations focussed, and keeps other assets in service.

The Case for Change

The sight line corridor is crucial to ensure road user safety by allowing an unobstructed view of oncoming hazards. Trees on the road reserve have been identified as a safety and resilience issue.

Costs associated with vegetation control; and managing events such as flooding have increased and larger budgets need to be sought.

Historic Maintenance Cost

Over the years 2015-18 the average expenditure has been $172,000 for environmental maintenance category WC121. In the period 2021/24 the average annual expenditure is projected to be $195,800 which reflects current identified work and costs.

Preferred Programme

Vegetation management needs and responding to environmental events are difficult to predict. With climate change there is a risk of a greater frequency and severity of storms. Trees have been identified for removal to improve the safety and resilience of the network. Some trees are quite large and require specialist arborists.

Summary of Future costs

Future costs have been based on estimated mowing quantities and lump sum amounts from the network maintenance contract.

121 Environmental Maintenance	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Normal care of the road corridor to maintain the safety , aesthetic and environmental Standards							
Vegetation Control							
Vegetation Control Roadside Furniture	12	$1,809.57	$21,715				
Vegetation Control Bridge Approaches/Railway Cros	12	$166.60	$1,999				
Vegetation Control Bridge Wilding Trees	12	$183.99	$2,208				
Vegetation Control Rural Intersections	12	$82.81	$994				
Removal of vegetation hazards includes trees	$20,000	1	$20,000				
Plant pests including , control after Road Works	$20,000	1	$20,000				
Shoulder Mowing 176 km 4 x per year, 241 km 2 x	2250	$18.53	$41,694				
Vegetation Control Sub Total			$108,610	**$108,610**	**$111,977**	**$115,344**	**$335,931**
Rural Detritus/litter removal	12	$195.11	$2,341				
Remove mud etc.	$5,000	1	$5,000				
Rock Fall slips	$10,000	1	$10,000				
Sub Total Debris Litter			$17,341	**$17,341**	**$17,879**	**$18,416**	**$53,637**
Snow and Ice Control ,Signs (Subject to weather)	$15,000	1	$15,000				
Emergency Preparedness & Winter Monitoring	12	$447.33	$5,368				
Sub Total Winter			$20,368	**$20,368**	**$20,999**	**$21,631**	**$62,998**
Flood patrol Signs (subject to Storms 5 days)	$10,000	1	$10,000				
Share of Monthly Costs inspection Programming Etc.	0.1	$297,216.67	$29,722				
Administration	0.04	$90,000.00	$3,600				
Sub Total Balance			$43,322	**$43,322**	**$44,665**	**$46,008**	**$133,994**
121 Environmental Maintenance Total			**$189,641**	**$189,641**	**$195,520**	**$201,399**	**$586,560**

9.16 NETWORK & ASSET MANAGEMENT (WC 151)

9.16.1 Current Trends and Issues

Currently work is undertaken using a combination of in-house and out-sourced resources.

Professional Services In-House
- Strategy
- Asset Management Part
- Network Management
- Network Maintenance Contract
- Traffic Management
- Traffic Counting
- Some design & Contract management

Professional Outsourced
- Bridge inspections
- Pavement condition rating
- Pavement roughness rating
- Asset Management
- Capital works design and contract management

Historic Maintenance Cost

Over the years 2015-18 the average expenditure has been $422,000 for Network & Asset Management

The Case for Change

WDC is benefitting from the Aoraki Roading Collaboration and this is strengthening the resource available. At the same time the reliance on evidence is increasing and this means investment in better data

Preferred Programme

The programme proposed allows an increase resource to that currently in place and but focusses on data improvements. A continued commitment to better data collection and RAMM management is proposed as part of the 2021-24 programme.

Summary of Future costs

	151 Network & Asset Management				Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
	General management & control of the road network & management of road assets								
	In-house Roading Technical Unit.								
411047801	Network Management & inspections				$285,000				
	Asset inventory system, Data Improvement,ONF				$110,000				
	Temporary Traffic Management Approval/Audit				$25,000				
					$420,000	**$420,000**	**$433,020**	**$446,040**	**$1,299,060**
411047802	**Consultant**								
	Seal Road Condition Rating/ Valuations				$30,000				
	Bridge Inspection				$30,000				
	Road Collaboration				$20,000				
					$80,000	**$80,000**	**$82,480**	**$84,960**	**$247,440**
	151 Network & Asset Management Total					**$500,000**	**$515,500**	**$531,000**	**$1,546,500**

9.17 FOOTPATH MAINTENANCE (NEW WC 125)

9.17.1 Current Trends and Issues

Scope and Nature of Asset

The purpose of footpaths is to provide a safe and efficient network of accessways catering for the movement of pedestrians. The need to provide footpaths is based on a combination of the traffic volume, road/seal width and pedestrian demand. They also fulfil a social function providing areas with a sense of community.

Footpaths on State Highways are included in this asset as they are the maintenance responsibility of the Waimate District Council.

The key issues relating to footpath management are:

- Accuracy of footpath age profile
- Condition of existing asset
- Adequacy of pedestrian facilities near schools, shopping centres, residential and recreational areas
- Adequate provision of safety footpaths

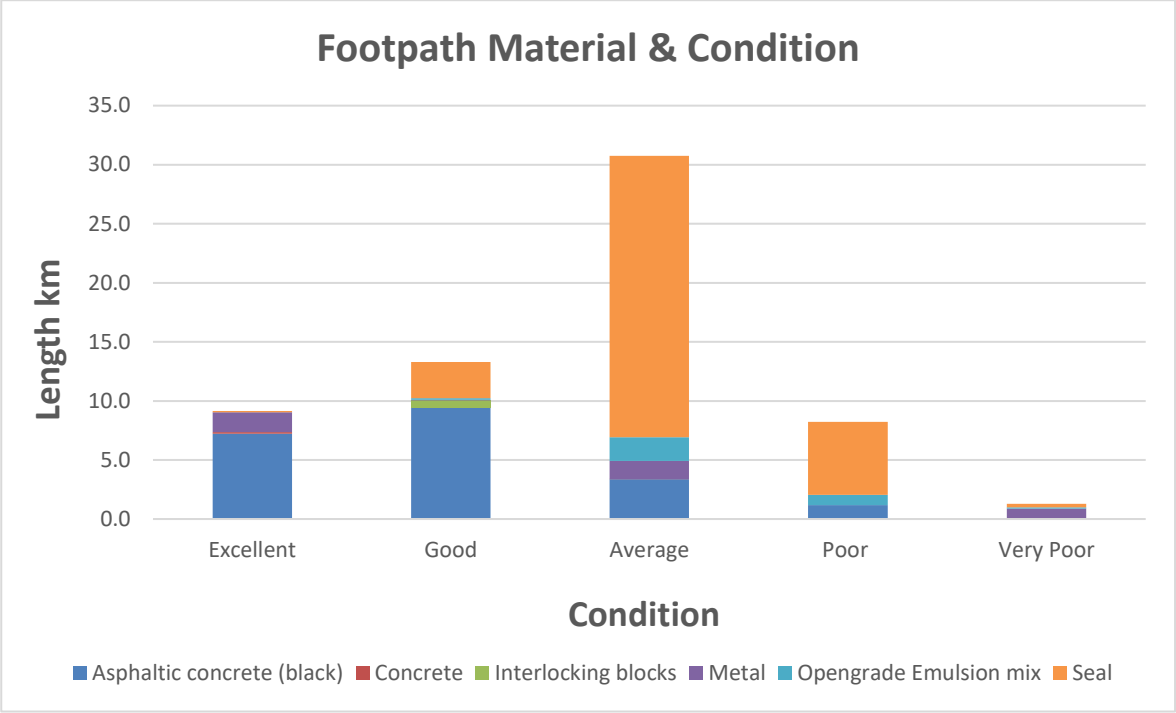
There is around 63km of footpaths, predominantly in Waimate town, with small quantities in St.Andrews, Makikihi and Glenavy townships.

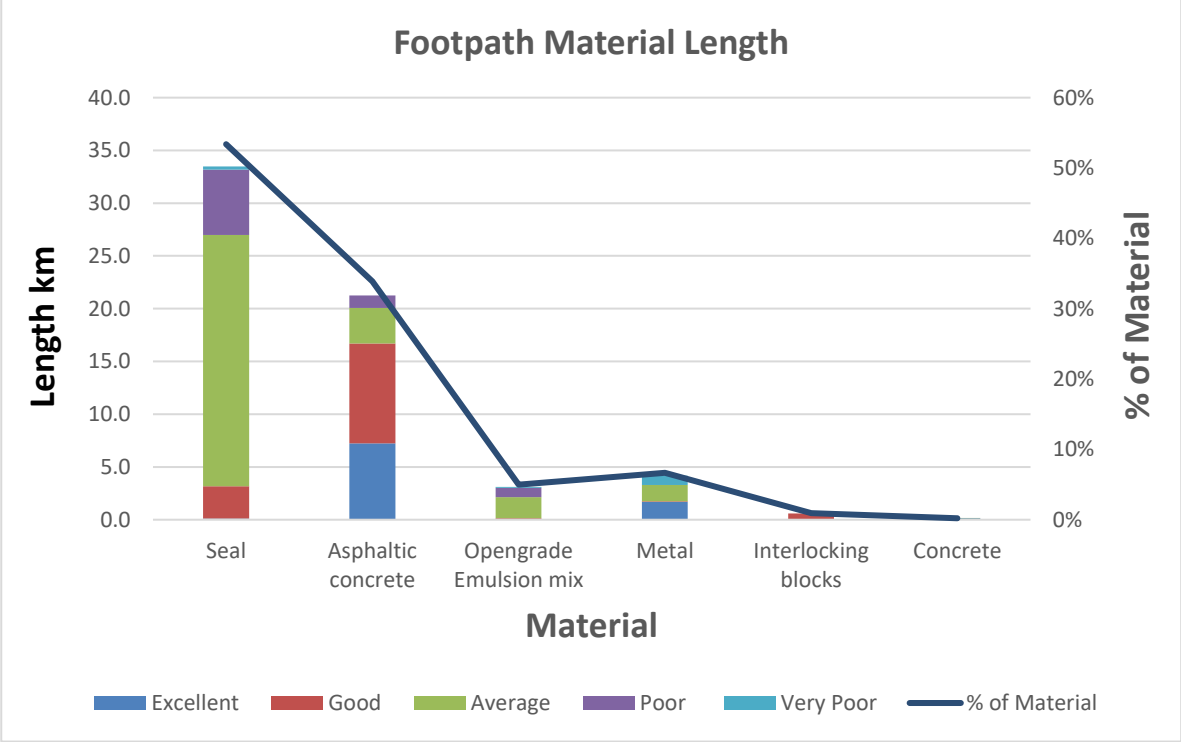
Footpath Material	Length km	Area m²
Asphaltic concrete (black)	22.2	45,672
Concrete	0.1	302
Interlocking blocks	0.6	878
Metal	4	7,161
Opengrade Emulsion mix	3	7,682
Seal	35	66,610
Total	**62.7**	**128,308**

Current Condition

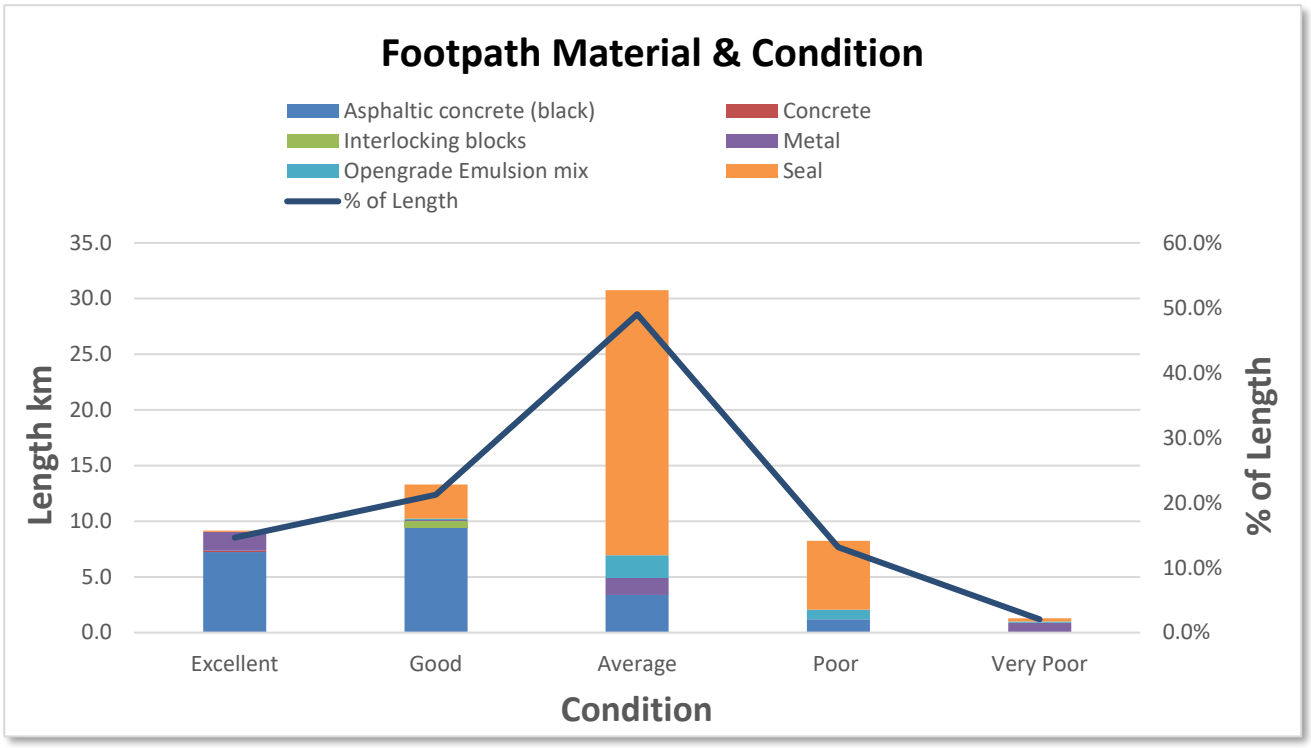
The footpath network has been inspected to determine condition. It is council's intention to undertake inspections every year, to ensure they are safe and to inform the renewal programme. The following graph illustrates the distribution of materials and condition as at 2020.

Condition rating is carried out for all footpaths with a condition scale of 1 to 5, 1 being excellent and 5 being very poor.





The level of service relates to the condition of the footpath assets. The following graph illustrates both condition and material, as well as the combined percentage of footpath length that is at or worse than that condition level (e.g. 15.1% of the network is poor or very poor)



Current Capacity and Performance

New and replacement Footpaths construction in urban residential areas 1.5- 1.8m wide and surfaced in AC. However, due to poor performance of AC overlays due to subbase quality (not achieving required life) there is now full AC reconstruction for footpath renewal.
Footpaths in the urban/Rural fringe will be 1.5m wide with a chip sealed or gravel surface.

Historic Maintenance Work and Costs

Over the years 2018/21 the average annual expenditure was $28,600 for footpath maintenance. For the period 2021/24 the forecast average annual expenditure is $69,900 and reflects the current commitment for an improved level of maintenance performance.

9.17.2 Maintenance Decision Making Process

Repairs are undertaken on an as required basis by the road maintenance contractor.

Footpath maintenance includes:

- Repairing damaged sections of footpath, usually broken by heavy vehicles
- Pothole repair on sealed paths
- Relaying uneven pavers
- Repairs around utility services
- Old trench repairs
- Removing weed or grass growth from the footpaths

The maintenance standards to be achieved are set out in WDC's specifications contained in the main road maintenance contract. The consequences of lowering these standards are:

- Reduced safety
- Accelerated footpath deterioration and additional consequential costs

- Lower level of service (ease of use, appearance)

9.17.3 Strategy to Meet Levels of Service

A 24-hour customer complaints service is provided. The maintenance contract requires the contractor to maintain a suitable level of preparedness for prompt and effective response to asset failures and emergencies and specifies maximum response times.

Asset failures are responded to with the initial objective of making safe as quickly as possible by the most economic method available and/or making temporary repairs if major repairs or renewals are required. Temporary repairs are made when an asset renewal is programme or is more cost effective
Level of service achievement is a combination of overall footpath provisions and the management of the asset on the ground

9.17.4 How Tasks Are Prioritised

The mechanism for prioritisation used by Contractors as outlined in the road maintenance contract specification is outlined in Table 9.5.
The priorities are:

- Priority 1: Urgent Maintenance
- Priority 2: Essential Maintenance
- Priority 3: Less Essential Maintenance
- Priority 4: Desirable Maintenance Works

Works are also prioritised using the following additional criteria;

- The safety of pedestrians may be compromised (Priority 1 or 2)
- If it is likely that the area of distress may expand or the methods of repair change such that the cost of any repair will increase (Priority 3)
- Subsequent maintenance or renewal work depends on the completion of the maintenance repair
- Aesthetics (e.g. minor water ponding/untidy appearance)

9.17.5 Summary of Future Costs

The maintenance budget is primarily based on assessment of required repairs required This amount has been escalated to produce the annual budgets for the 10-year period

125 Footpath Maintenance	Estimate Annual Quantity		Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Footpaths Maintenance							
Footpaths Pavement repairs	$50,000	1	$50,000				
Vegetation control footpaths	12	$497.82	$5,974				
125 Footpath Maintenance Total			**$55,974**	**$55,974**	**$57,709**	**$59,444**	**$173,127**

Deferred Maintenance and Associated Risks

Current maintenance expenditure appears inadequate and there is a backlog of routine maintenance.

9.18 FOOTPATH RENEWAL/REPLACEMENT PLAN

The types of renewal work undertaken to restore footpaths to the required condition are;

- Resurfacing to provide a smooth waterproof surface by overlaying with a thin layer of asphaltic concrete, chip or sand seal coat OR removing the existing surfacing and laying new surface (where the footpath profile is such that the surface level can't be built up with an overlay).

- Reconstruction: Reconstruct new basecourse and surfacing

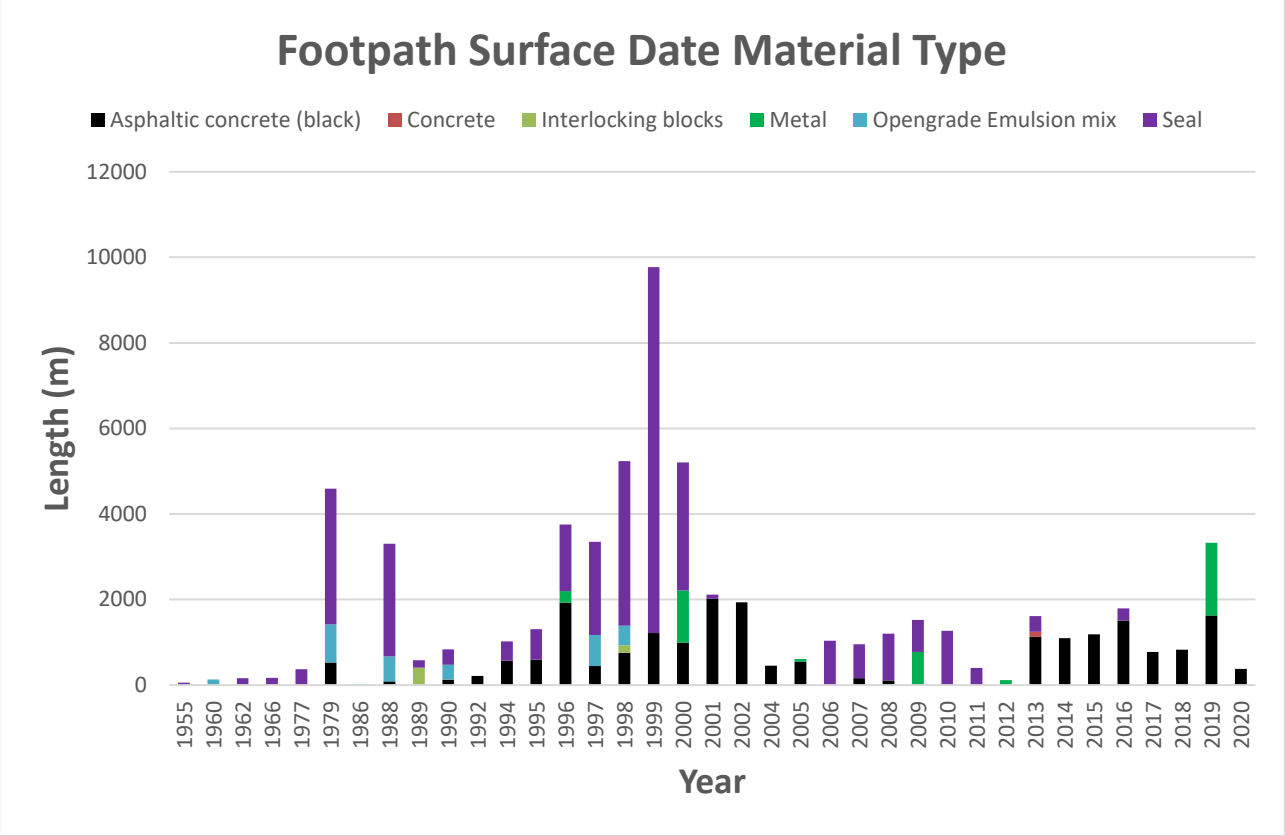
Historic Renewal Work and Costs

Footpath resurfacing and reconstruction is undertaken through direct appointment, where possible this is integrated with other work such as Kerb & Channel replacement to optimise the expenditure.

Over the years 2018/21 average annual expenditure was $176,500 for footpath reconstruction.

9.18.1 End of Life Projections

Figure 9.21 – Footpath surface date & Remaining Useful Life of Footpath



Reviewing the asset lives for different materials as well as the condition, enables Council to develop a logical renewal programme
Chipseal is the most common surfacing (approx 50%), and while relatively inexpensive to construct the asset life is shorter, meaning more regular renewal actions. Council now requires the smoother AC surface especially with increased use of mobility scooters by the elderly.

From the age of footpaths and expected life of the different materials, the remaining useful life of footpaths can be modelled. This a theoretical approach that does not include the actual condition of the assets in the network**.**

Actual footpath construction dates are shown recorded in RAMM.
There is spike in the RUL in 6 years' time. Strategies for replacement of this area of footpath should be considered, especially if 3m wide footpath on some streets are still required.
The theoretical renewal model can be tested against the depreciation calculation. This ensures that the investment in the asset through renewals is appropriate, and that it is not being consumed at a rate greater than that of renewals. This is discussed in section 10,3

9.18.2 Renewal Decision Making Process

Reconstruction is completed when the footpath structure has deteriorated to an extent where resurfacing is not practical. Justification for work is based on the condition of the kerb and channel or the condition of the carriageway rather than the footpath condition (particularly where the footpath is to be reconstructed on a new alignment).

9.18.3 Renewals Strategies to Meet Levels of Service

As mentioned in 9.17.3, level of service achievement is a combination of overall footpath provisions and the management of the asset on the ground. While the existing assets need to be renewed in a timely manner this can cause some tension when compared to areas with no footpath. Accordingly, Council has programmes for new footpaths as well and maintenance of and renewal of existing footpaths.

Levels of service requirements are for all footpaths to be a minimum of 1.5m wide. They are optional in rural roads, Footpaths are required on both sides along collector street where the vacant sites are 25% or less and one side on other streets if the vacant sites between 25to 50 % if the street is a school walking route. (See Appendix Footpath Periodization flowchart)
These requirements are applied to renewals as well as new paths,

Asphalt is the preferred surface material used for new construction because of its longer life and superior surface.

9.18.4 Identification and Prioritisation of Work

Work needs are identified through inspections by staff and contractors with improvements programmed. Priorities are based on condition, pedestrian volume, and location to schools and public areas. In residential areas each street is to have a good footpath on at least one side.

Kerb and channel replacement requirements are used to drive footpath replacement, the priority being set by consideration of existing standards and pedestrian volumes.

Council notifies residents in the street before any works are undertaken to confirm requirements.

9.18.5 Replacement Standards

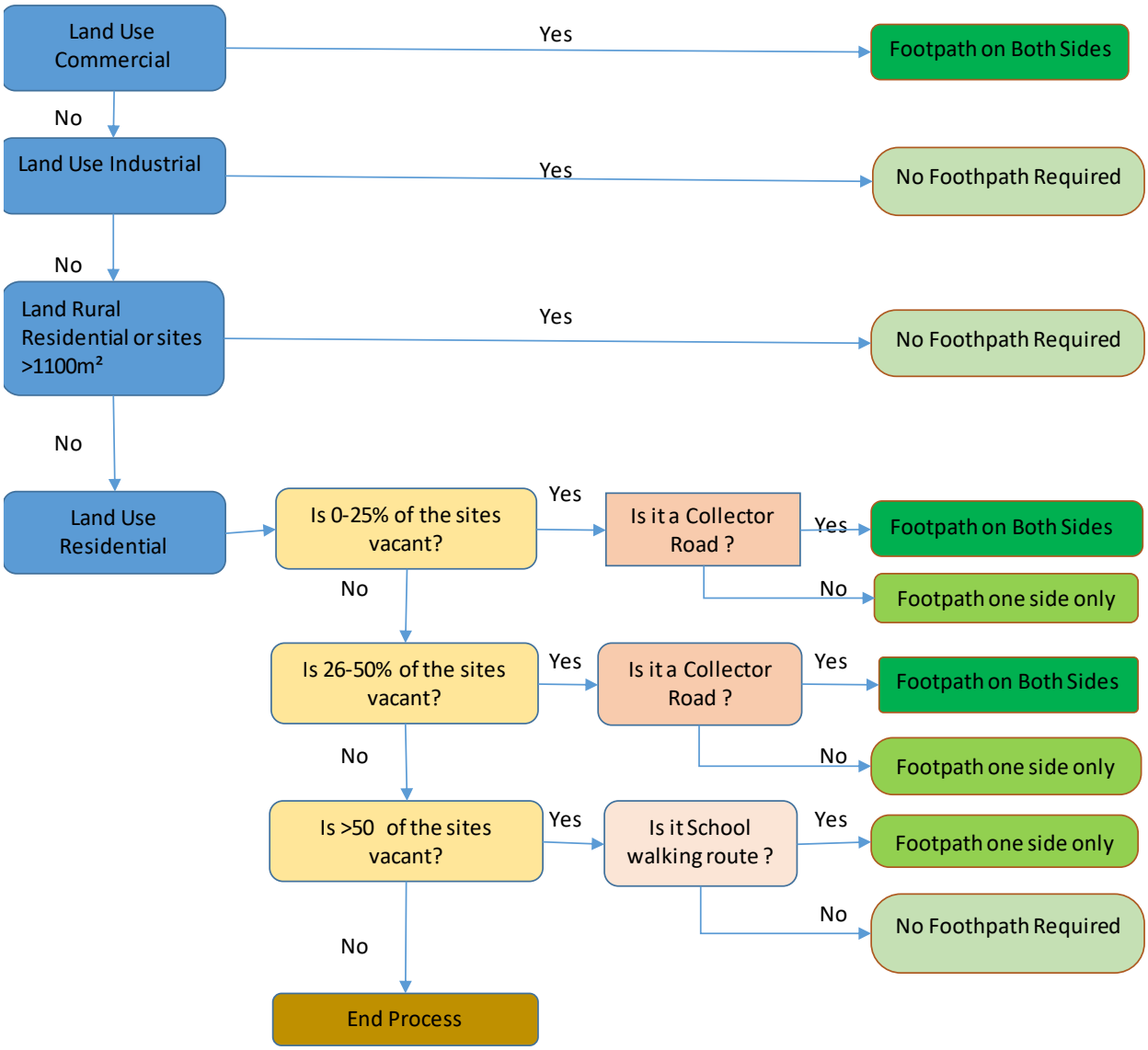
Asphalt is the preferred surface material used for new construction because of its longer life and superior surface, especially with increased use of mobility scooters by the elderly.

Replacement standards are detailed in construction contract specifications.

9.18.6 Summary of Future Costs

225 Footpath Renewal	Estimate Annual Quantity	Rate Estimate	Estimate	2021-22	2022-23	2023-24	3 year Programme Totals
Footpath Renewal	3500	$60.00	$210,000				
Administration	0.06	$90,000.00	$5,400				
225 Footpath Renewal Total			**$215,400**	**$215,400**	**$222,077**	**$228,755**	**$666,232**

Footpath Priorisation Flowchart



9.19 ASSET DEVELOPMENT PLAN

This section of the plan covers the creation of new assets (including those created through subdivision and other development) or works which upgrade or improve an existing asset beyond its existing capacity or performance in response to changes in usage or customer expectations (e.g. forestry harvesting routes).

9.19.1 Selection criteria

Asset development projects are generally justified and prioritised using NZTA Benefit/Cost Ratio (BCR) procedures which accounts for:

- The benefit to the road user for reducing delays in the time to travel along a given route
- Vehicle operating savings
- Safety benefits
- Maintenance cost savings
- Intangible benefits including community dislocation, environmental issues (including noise and vibrations) and other possible local, regional and national issues.

Roads which may meet the benefit conditions usually have high heavy traffic volumes such as the major routes to production forests or roads which have high maintenance costs (e.g. due to steep grades).

Generally, only those projects meeting NZTA criteria and attracting subsidy are carried out. Occasionally there is some input from Council where roads are considered to have a community benefit above that identified through the BCR analysis and this may result in non-subsidised works being progressed by Council without NZTA subsidy.

9.19.2 Capital Investment Strategies

NZTA documented project management procedures are used as a guide but no specific procedures are formally documented for WDC. However, there is confidence that suitable procedures are used during the project evaluation and design phase. Project design is standardised by use of the Pavement Design Manual and Road Geometric Design Manual recognised nationally and internationally and backed by long term research.

Developer Created Assets

Waimate District Council uses the Land Subdivision Standard NZS4404: 2010.

The construction of roads within new subdivisions is generally funded by the developers and must be constructed in accordance with the Council's Engineering Standards. On completion, provided the roads and associated assets comply with the Engineering Standards, they are vested in the Council (i.e. Council takes over ownership). There are few capital expenditure implications with this type of asset creation; the more significant implications are maintenance and renewal related.

The supervision of assets constructed within sub-divisional development and subsequently taken over by WDC should be reviewed and processes formally documented. This is included in the improvement programme.

Capital investment Strategies by Asset Types

Council's investment strategies for capital investment are detailed in table 9.8.

Table 9.8 – Capital Investment Strategies

Asset Description	Type of Project	Summary & Investment Strategy
Sealed roads	**Low Cost Low Risk Improvement**	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 $2,000,000 Typically, they include: • small, isolated geometric road and intersection improvements • traffic calming measures • lighting improvements for safety • installation of new traffic signs and pavement markings, • provision of guard-railing • sight benching to improve visibility • walking facilities • Seal widening
	Seal Widening	Widening of existing seals where this is the least cost maintenance treatment necessary to overcome edge break or to reduce shoulder maintenance. Seal widening may also be promoted as a safety improvement project where crashes can be attributed to the narrow width of a road
	Road reconstruction	The road reconstruction category provides for the reconstruction of existing pavements within the existing or widened road reserve or deviations onto a new road reserve where the original road is closed. Examples of qualifying work include: • Realignment • Regrading • Widening • Intersection improvements • Approaches to bridge renewals costing in excess of $50,000. This category includes retaining structures, tunnels, all signs, pavement markings, traffic signals, lighting etc., necessary to bring the improved facility into service.
	New or upgraded roads for development (excluding private subdivision developments)	This can be an issue in Waimate District especially with development involving clusters of life style units. It is recognised that development within the District adds to the demands on the infrastructure of the District. The provision of major capital works ahead of developments, presents difficulties in who should provide the funding. Council in communication with the community needs to formulate a policy to provide a guiding framework for road improvement decisions and funding within the Waimate District.

Asset Description	Type of Project	Summary & Investment Strategy
Unsealed roads	**Seal extensions**	The District has a large number of unsealed roads and there is continual pressure to seal them, predominantly by the rural community. The policy to invest in seal extensions changes over time depending on the community and land use. WDC should consider adopting a ranking system to determine the relative priority for seal extension options. The advantages of a ranking system are: • it can take into account many factors with a weighting solely applicable to the Waimate District • provides relativity to assist in deciding the seal extension priorities Subsidised Seal Extensions are subject to NZTA benefit/cost procedures that must show benefit to the road user. Benefits include safety, travel time cost savings, reduced roughness, reduced vehicle operating costs and maintenance cost savings. Roads which may meet the benefit conditions usually have high heavy traffic volumes such as the major routes to production forests or roads which have high maintenance costs (e.g. due to steep grades). Dust Suppression Seal WDC will consider written applications for seal extending a maximum of 200 metres to suppress dust in front of dwellings. To gain approval the work must: • applicant to fund 50% of the remaining cost • WDC must have funds available Applicants will be prioritised by the severity of the nuisance and preference will be given to cases where the use of the road has markedly changed. WDC will undertake seal extensions when NZTA funding can be secured and the local share of the funding is available. Non-Subsidised Seal Extensions do not qualify for NZTA financial assistance will require 100% rate funding. Sealing can provide tangible (for which a monetary value can be assessed) and intangible (cannot usually be easily quantified in monetary terms e.g. improvements to air and water quality etc.) benefits. Tangible benefits generally fit into four main categories: • productivity gains for properties alongside the road to be sealed • improvements to ride for driver and passengers • vehicle operating cost savings • travel time savings
Bridges	**Bridge replacement**	Bridge development funding when and if required is included Bridge Renewal Budget.
Drainage	**General**	The cost of drainage renewal and development works is included in the Council structural renewal programme.
	Kerb and Channel	The construction of new kerb and channels is driven by the urban services stormwater upgrading programme and, to a lesser extent, in response to customer/resident requests.
Traffic Services	**New Signs**	All renewals and minor improvements are funded under 'Traffic Services Renewal'.

Asset Description	Type of Project	Summary & Investment Strategy

Footpaths	**Footpath construction**	The addition to the network of footpaths and pedestrian accessways occurs in one of the following ways:
		• Extensions constructed by Council where no footpath previously existed
		  - Taking over new footpaths constructed within sub divisional development (constructed at the developer's expense)
		  - Upgrading work to improve the level of service (particularly in relation to special treatments in high profile commercial areas)
		• Requests form Councillors, Public, and Staff
		• Safety improvements
		• Pedestrian demand
		Council has developed a prioritisation model for determining where footpaths should be added. This will also affect if footpaths will be renewed once they have reached the end of their survivable life. (see appendix)

Street Lighting		Streetlights are acquired or upgraded as part of: • power under-grounding work • minor safety works • upgrading work to improve the level of service (e.g. spacing) • extensions constructed by Council where no streetlights previously existed • taking over new streetlights installed with sub-divisional development (constructed at the developer's expense) • in association with the street upgrading programme <u>Development Strategy</u> Candidates for minor street lighting and footpath lighting are ranked according to the criteria of: • Night time foot traffic • Night time vehicular traffic • Existing lantern spacing • Geometry of the road and intersection • Special features (trees, parks, bridges, lack of footpaths, social conditions) <u>Development Programme</u> Currently development works are included under maintenance and renewals.

9.20 LOW RISK LOW COST IMPROVEMENTS (WC 341)

9.20.1 The Case for Change

This work category now allows for Improvements less than $ 2,000,000 to address safety concerns and enhance safe travel.

This includes realignments and reshaping corners to improve sight distance; removal of vertical curves by cut or fill; and bridge improvements e.g. widening or improved approaches or exits.

With increase in project size, there greater scope to complete project such and intersection improvements and bridge works which were previously of too higher value.

A regional approach is taken in combination with the Road Safety Action Plan.

9.20.2 Preferred Programme

Seal Widening

We will continue to carry out targeted seal widening where there is a high risk of head-on crashes due to the narrow carriageway and the increased volume of heavy vehicle and over width vehicle traffic on low volume rural roads. The investment will reduce the reactive maintenance costs associated with the edge break on these carriageways.

Seal Widen Talbots Road – Blind brow

Proposed Safety Footpath on Point Bush Road Bridge

Holme Station Intersection Realignment

Princess Street Footpath

Edinburgh Street Footpath

9.20.3 Minor Safety Improvements

Minor improvements are completed to eliminate safety deficiencies. Safety deficiencies are identified by the roading team, and or the contractor and prioritised in terms of likelihood and consequences to the road user. Types of projects include:

- Clear zone improvements
- Guardrail improvements
- Intersection improvements
- Lighting improvements
- Minor geometric improvements
- Seal widening
- Sight benching
- Signage / delineation / pavement marking
- Sealing Railway Crossings and intersections
- Safety Footpaths

9.20.4 Summary of Future Costs

341 Low Risk- Low Cost Improvements		2021-22	2022-23	2023-24	3 year Programme Totals
Project	**Details**				
Holme Station Intersection Realignment	Intersection upgrade "Convert "Y" intersection to "T" intersection	$160,000			$160,000
John /Victoria Intersection	Intersection and pedestrian crossing , reconfiguration and speed reduction		$50,000		$50,000
John /Goldsmith Intersection			$50,000		$50,000
Edinburgh Street Footpath	Construct footpath for pedestrian safety and to encourage active modes.	$36,000			$36,000
John Street Footpath		$8,000			$8,000
King Street Footpath		$29,000		$59,000	$88,000
Princess Street Footpath				$70,000	$70,000
Parker Street Footpath				$16,000	$16,000
White Street Footpath				$17,000	$17,000
Talbots Road Widening	Targeted seal widening of 1.9 km section of Tabolts Road where there is a high risk of head- on crashes due to narrow seal and blind brows, Also reduction in edge repairs.		$200,000		$200,000
Mill Road Curve Realignment	Realign curve undertaken with pavement renewal	$32,000			$32,000
Parkers Bush Road Guard Rail	Install 80m of Guardrail to protect road uses from drop into stream in narrow section of road.			$20,000	$20,000
Point Bush Bridge Footpath add-on	Install 24m Footway on the side of Point Bush Bridge. The aim of the project is to improve pedestrian safety on a single lane bridge with limited sight distance.			$48,000	$48,000
Enhanced Delineation on Horizontal Curves	Improved and consistent signage and delineation to reduce crashes	$20,000	$20,000	$20,000	$60,000
Geometric improvements	Eliminate safety deficiencies. Including sight benching, clear zone, minor widening, intersection improvement and intersection sealing.	$45,000	$10,000	$80,000	$135,000
		$330,000	$330,000	$330,000	**$990,000**

9.21 DISPOSAL PLAN

For Council to dispose of an asset it must comply with the legal obligations outlined in the Local Government Act which covers:

- Public notification procedures required prior to sale
- Restrictions on the minimum value to be recovered
- Use of revenue received from asset disposal

In general Council has no specific plans for disposal of components of the roading asset. Details for specific assets are included in Table 9.10.

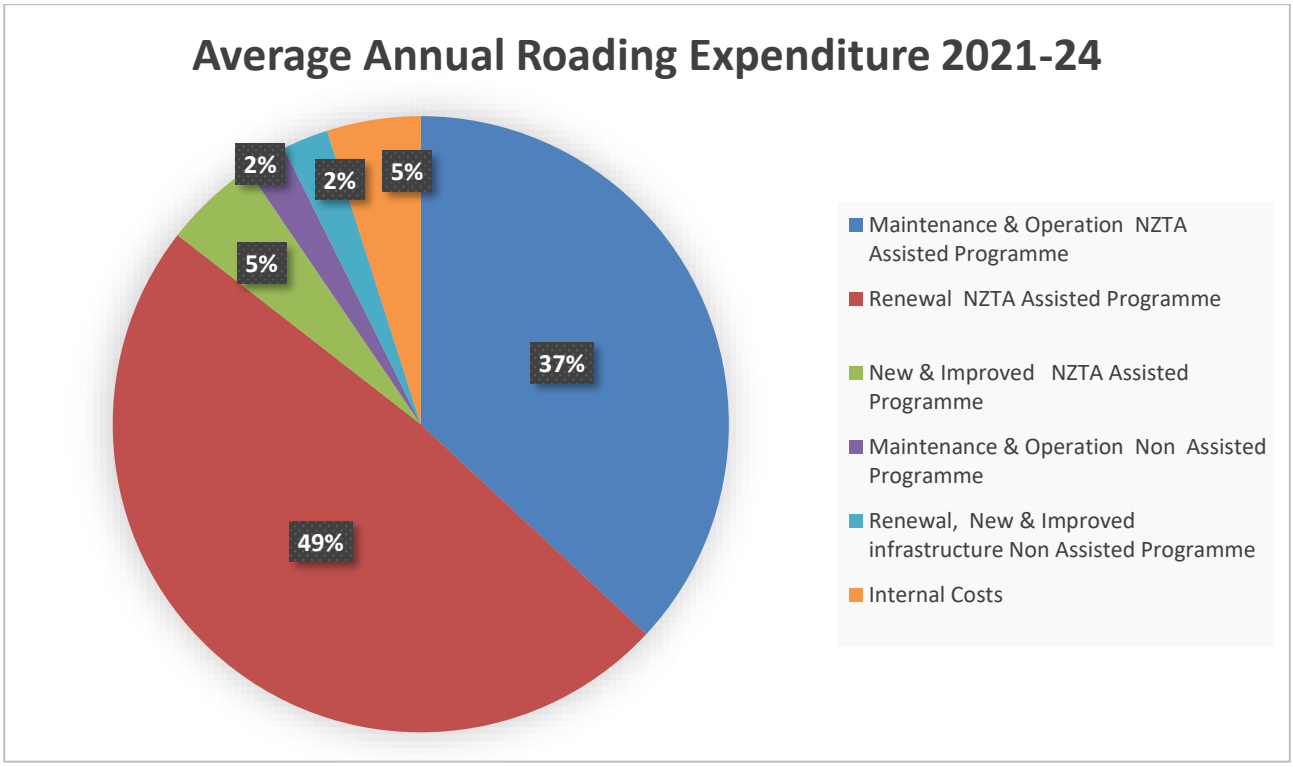
Table 9.10 – Disposal of Assets Summary

Asset Description	Disposal Plan	Comments
Land	**None**	Areas of unformed legal road reserve, berm areas surplus to requirements or areas being informally occupied by adjoining landowners may be identified for disposal in future.
Sealed Roads	**None**	Council may for financial reasons convert sealed road to an unsealed road.
Unsealed Roads	**None**	
Bridges	**None**	Bridges that are on no-exit roads, providing property access only (not to residences) that have reached the end of their economic life and that NZTA share of replacement funding is in doubt will be considered for disposal. Ownership may be transferred to the main users (local property owners).
Drainage	**None**	
Traffic Services	**None**	
Footpaths	**None**	
Street Lighting	**None**	Disposal activity for streetlights relates to lanterns, controls and poles which have been replaced with new components. Components which can be used as spare parts are retained in storage. Other surplus assets have no commercial value, and are disposed of.

10. FINANCIAL SUMMARY

10.1 FINANCIAL STRATEGY

The first priority is to maintain and operate the existing network in its current condition then allow for renewal expenditure that revitalises a component of the network that has worn out.



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Funding for the management and maintenance of the Roading network is provided from the District Roading rate and funding received from NZTA. Funding for improvements is provided from NZTA, financial contributions paid by developers and the Roading rate.

In determining the projects to be undertaken the benefit/cost ratio is the governing criteria used with preference being given to projects which can be shown to be economically justified, attract subsidy and have Council funding available.

10.2 VALUATION

10.2.1 Valuation 2020

The most recent valuation of the Roading network and associated assets was undertaken in August 2020 for all assets owned by Council as at 30 June 2020. This valuation is summarised in the table 10.1. The valuation is generally updated on a 3 yearly cycle to take into account capital works and additions to the Roading network.

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 to fund this depreciation so as to make suitable allowance for the future replacement or renewal 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 assumed effective 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.

1. **Table 10.1 – Roading Infrastructure Valuation (30 June 2020)**

Asset	Optimised Replacement Cost	Optimised Depreciated Replacement Cost	Annual Depreciation
Land	$81,285,250	$81,285,250	$0
Formation	$168,271,591	$168,271,591	$0
Unsealed Pavement Structure	$40,921,210	$40,921,210	$0
Seal Pavement Structure	$118,194,370	$66,007,099	$934,831
Sealed Pavement Surface	$18,233,189	$9,679,797	$1,052,707
Bridges	$28,080,257	$13,610,689	$293,111
Drainage	$17,156,987	$7,650,472	$171,887
Drain Fords	$2,760,930	$725,150	$61,799
Footpaths	$7,313,312	$2,426,139	$248,072
Signs	$601,565	$421,096	$35,752
Street Lighting	$419,922	$100,532	$13,206
Surface Water Channels	$12,571,669	$5,261,931	$130,309
Traffic Facilities	$80,246	$38,329	$2,687
Total Road Assets	**$495,890,498**	**$396,399,285**	**$2,944,361**

2. **Table 10.2 – Roading Infrastructure Valuation Comparison 2017-2020**

	Replacement Cost		Depreciated Replacement Cost		Annual Depreciation	
Year	**2020**	**2017**	**2020**	**2017**	**2020**	**2017**
Value	$495,890.498	$455,890,163	$396,399,285	$368,854,914	$2,944,360	$2,680,758
Increase	8.8%		7.5%		9.8%	

10.2.2 Valuation methodology

Every recorded component has been valued in terms of its replacement and depreciated replacement value. The valuation process has been performed in accordance with generally accepted accounting standards (IPSAS 17), valuation standards and NZ local authority asset management practice (NZ Infrastructure Asset - Management Manual and Valuation/Depreciation Guidelines). The RAMM valuation module has been used to complete the valuation. Continued enhancement has occurred in the RAMM module that now allows a more flexible approach to methods of depreciation reporting and the recording of assumptions during the valuation process.

10.2.3 Valuation improvement recommendations

a) Continue to maintain, develop and improve the asset component register.
b) Ensure installation/construction/replacement dates are applied to all assets. This is a critical input into determining Depreciated Replacement Cost.
c) Ensure asset owners are applied to all assets. This will ensure that all assets belonging to Council are valued and only assets belonging to Council are valued.
d) Add drainage headwalls to the drainage walls table (Inlet/Outlet tab in the drainage window) to allow valuation of drainage headwalls and wingwalls.
e) Add retaining walls to the retaining walls table to ensure these are valued also.
Add railings to the railings table to ensure these are valued also.
f) Ensure all treatment lengths have terrain assigned as this is used as a selection criterion for the valuation of formation.
g) Ensure all carriageways have reserve width populated as this is used in the calculation for the valuation of land.
h) Update treatment lengths that are bridges to Pavement Type 'Bridge' so that these sections do not have an allowance for pavement as well.
i) Where assets are recorded as side 'Both', separate into 2 records – one for each side, so that these assets are valued as 2 assets instead of 1. (This is preferred over the other option of updating the selection criteria in the valuation module as it will make other interrogations of the data clearer.)

10.3 ESTIMATED REQUIRED ASSET EXPENDITURE

When assessing the expected annual renewal expenditure an indication of the appropriate level of expenditure required can be gauged by comparing the estimated renewal requirement against the Annual Depreciation for each asset component in light of the average age of that asset component. If the asset is "young" then an amount less than the Annual Depreciation (AD) would be a likely requirement and as the asset ages a larger amount, probably greater than the AD would be likely. The 30 June 2020 WDC Valuation report is summarised in table 10.1.

The AD is an amount of money which represents the estimated annual renewal needs of the asset. It does not include the amount required to cover routine or unplanned reactive maintenance or running costs such as electricity for streetlights. On this basis, the AD will always be less than the theoretical total maintenance and renewal cost.

In considering the above it is possible to identify whether the current renewal expenditure is:

- approximately matching the theoretical renewal requirement
- less than the theoretical renewal requirement
- greater than the theoretical renewal requirement

Each Roading Asset component has been looked at to determine the outcome in relation to its budgeted expenditure. A comparison between forecast expenditure for 2021-24 and the Annual Depreciation for each asset type is shown in Table 10.3.

Table 10.3 – Comparison between Forecast Expenditure and Annual Depreciation

Asset	Annual Depreciation Consumption of the Asset	2021-24 Renewals	Annual Renewal	% renewals vs. Annual Depreciation
Seal Pavement Structure	$934,831	$1,203,022	$401,007	43%
Sealed Pavement Surface	$1,052,707	$3,848,927	$1,282,976	122%
Bridges	$293,111	$549,626	$183,209	63%
Drainage	$171,887	$578,053	$192,684	112%
Drain Fords	$61,799	$139,185	$46,395	75%
Footpaths	$248,072	$666,232	$222,077	90%
Signs	$35,752	$188,283	$62,761	176%
Street Lighting	$13,206	$0	$0	0%
Surface Water Channels (K&C)	$130,309	$402,090	$134,030	103%
Traffic Facilities	$2,687		$0	0%
Total Road Assets	**$2,944,361**	**$7,575,418**	**$2,525,139**	**86%**

From the comparison shown in Table 10.3, it can be seen that expenditure is probably appropriate for most assets in relation to the Annual Depreciation. However, underinvestment is indicated for Footpath assets. Council and roading staff will also need to assess the budgeted expenditure level and ascertain whether this is an appropriate level given the current age and condition of the network components.

10.4 HOW WE FUND OUR ACTIVITY

Waka Kotahi NZ Transport Agency Board have set the Funding Assistance Rates (FAR) for the 2021-National Land Transport Programme. The Waimate District rate is 64%. This is a 4% increase from the 2018-21 National Land Transport Programme.
The Board has provided certainty about funding arrangements so Council can complete the planning and budgeting required by the Regional Land Transport Plans (RLTPs), and Long Term Plan.
NZTA use the following inputs for each council to calculate FAR rates:

- Centreline kilometres divided by net equalised capital value provides a measure for the core transport task faced by a council relative to a measure of the asset base from which local authorities raise local share.
- Inverse of rating units identifies local authorities that have the smallest number of ratepayers from which to source local share.
- Index of deprivation is a demographic index published by the University of Otago and used by the Ministry of Health, which provides a measure of the relative wealth of communities.
- Total cost of all activities for a recent period is the actual total costs incurred by approved organisations for the last three to five years.

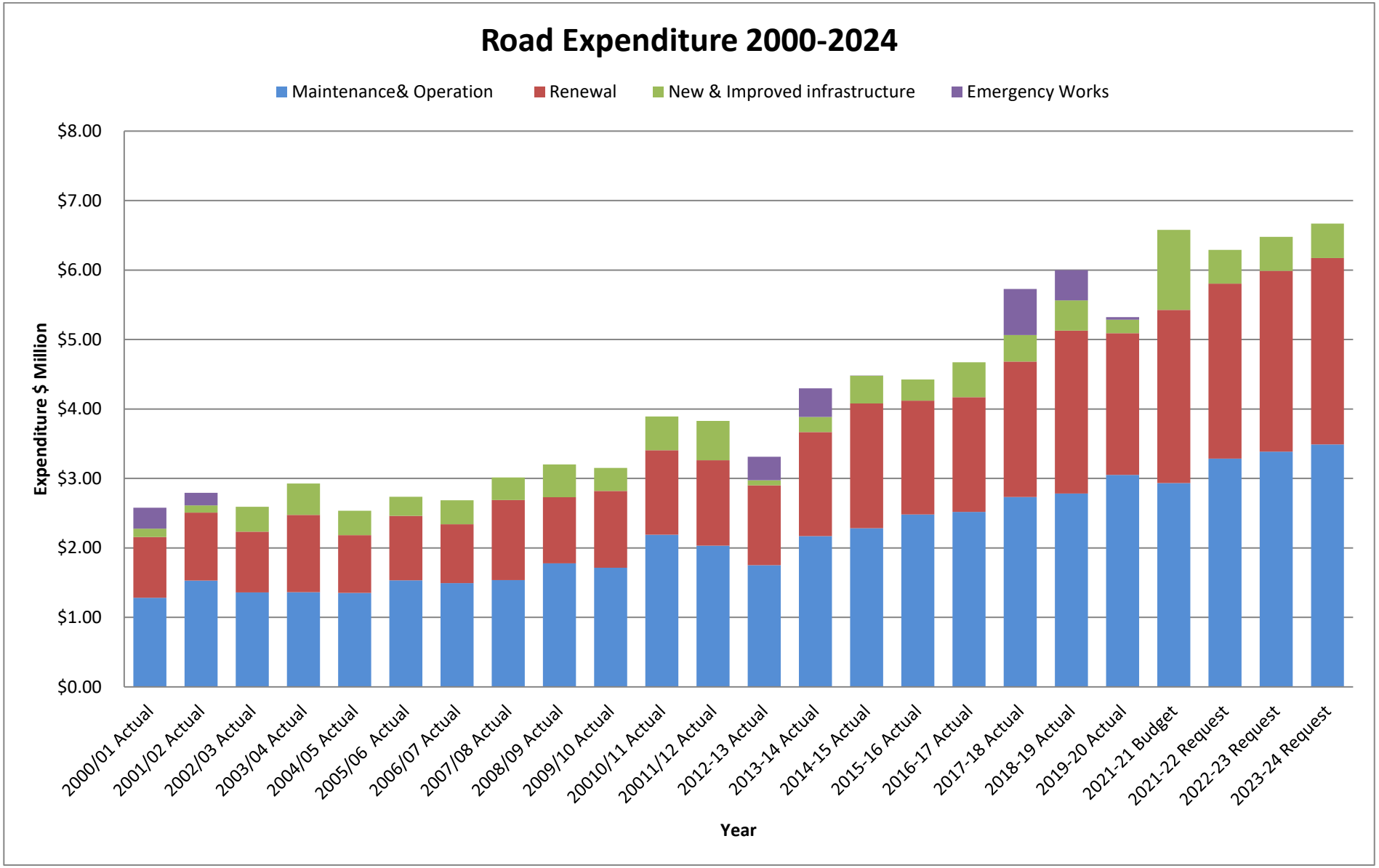
10.5 ROADING EXPENDITURE 2021-31

Waimate District Council Forecast Expenditure for 2021-31

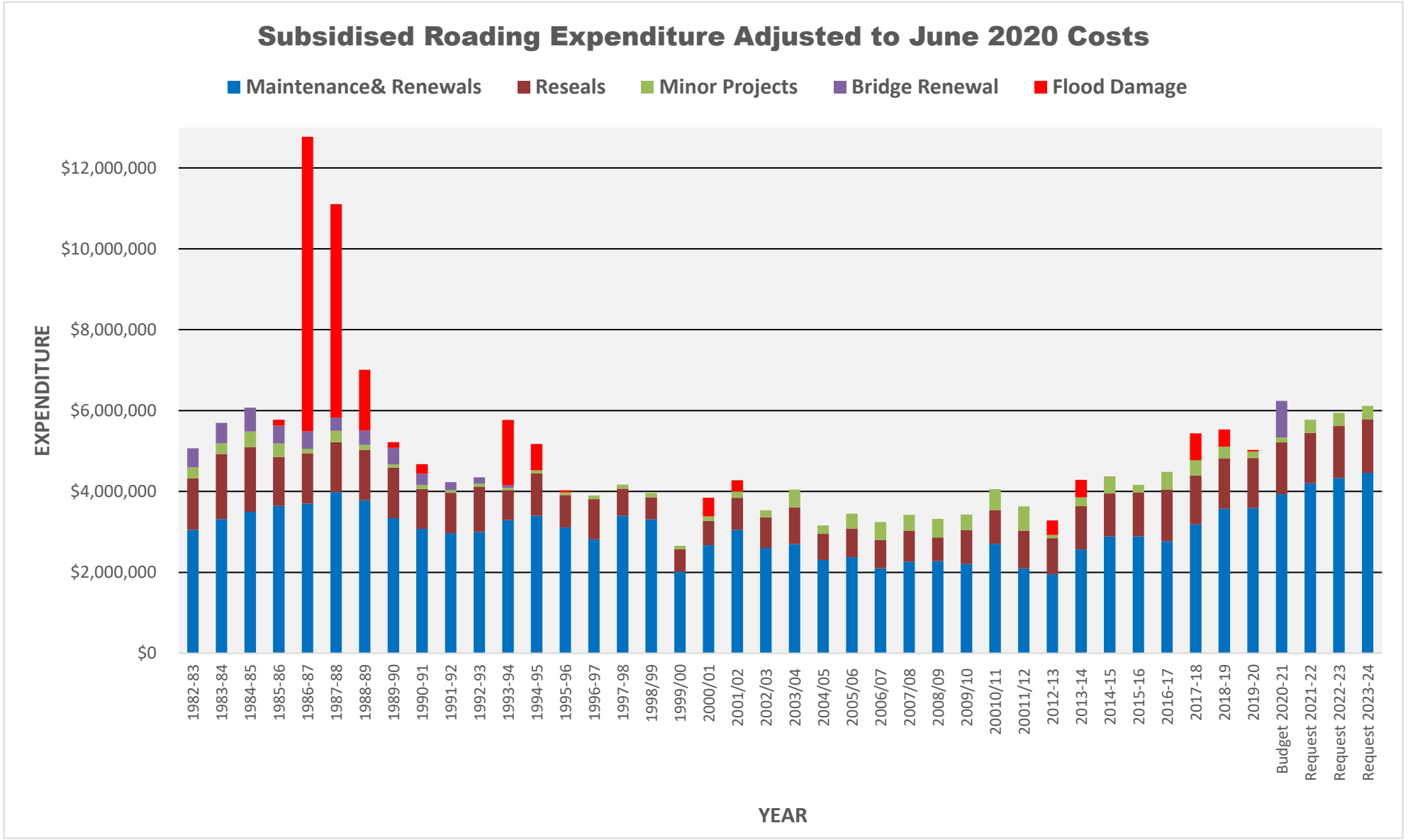
WC	Activities	Expenditure Category	GL Code	2021-22	2022-23	2023-24	3 year Programme Totals	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Maintenance, Operation & Renewal of Local Roads NZTA assisted Programme													
111	Seal Pavement Maintenance	Seal Pavement Maintenance	411047001	$561,537	$578,945	$596,352	$1,736,834	$613,760	$631,168	$649,698	$668,791	$682,268	$708,098
112	Unsealed pavement maintenance	Grading	411047101	$215,789	$222,478	$229,168	$667,435	$235,857	$242,547	$249,668	$257,005	$262,183	$272,110
		Unsealed Pavement Repairs	411047102	$87,600	$90,316	$93,032	$270,948	$95,747	$98,463	$101,354	$104,332	$106,434	$110,464
113	Routine Drainage Maintenance	Culvert Maintenance	411047201	$98,969	$102,037	$105,105	$306,110	$108,173	$111,241	$114,507	$117,872	$120,247	$124,799
		Drainage Maintenance	411047202	$280,896	$289,603	$298,311	$868,810	$307,019	$315,727	$324,996	$334,547	$341,288	$354,209
		K&C Cleaning	411047203	$24,000	$24,744	$25,488	$74,232	$26,232	$26,976	$27,768	$28,584	$29,160	$30,264
114	Structures Maintenance	Structures Maintenance	4110473	$153,703	$158,468	$163,232	$475,403	$167,997	$172,762	$177,834	$183,060	$186,749	$193,819
121	Environmental maintenance	Environmental maintenance	4110474	$189,641	$195,520	$201,399	$586,560	$234,201	$240,844	$247,915	$255,200	$260,343	$270,199
122	Traffic Service Maintenance	Pavement Marking	411047501	$45,000	$46,395	$47,790	$139,185	$45,906	$47,208	$48,594	$50,022	$51,030	$52,962
		Sign Repairs	411047502	$65,315	$67,340	$69,365	$202,020	$71,390	$73,414	$75,570	$77,791	$79,358	$82,363
		Carriageway Lighting	411047503	$31,000	$31,961	$32,922	$95,883	$37,818	$38,890	$40,032	$41,209	$42,039	$43,631
125	Footpath Maintenance	Footpath Maintenance		$55,974	$57,709	$59,444	$173,127	$61,179	$62,915	$64,762	$66,665	$68,008	$70,583
131	Level Crossing Warning Devices	Level Crossing Warning Devices	4110476	$10,500	$10,826	$11,150	$32,476	$13,116	$13,488	$13,884	$14,292	$14,580	$15,132
140	Minor Events	Minor Events	4110477	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
151	Network & Asset Management & 003 Asset Planning	Council Prof.Services	411047801	$420,000	$433,020	$446,040	$1,299,060	$448,130	$460,840	$474,370	$488,310	$498,150	$517,010
		Consultant	411047802	$80,000	$82,480	$84,960	$247,440	$98,370	$101,160	$104,130	$107,190	$109,350	$113,490
Sub Total Maintenance, Operation				$2,319,923	$2,391,841	$2,463,758	$7,175,522	$2,564,895	$2,637,642	$2,715,081	$2,794,868	$2,851,187	$2,959,133
211	Unsealed Road Metalling	Unsealed Rd Metalling	4110480	$411,498	$424,255	$437,011	$1,272,764	$449,767	$462,524	$476,103	$490,094	$499,970	$518,899
212	Sealed Road Resurfacing	Sealed Rd Resurfacing	4110481	$1,244,399	$1,282,976	$1,321,552	$3,848,927	$1,246,457	$1,281,810	$1,319,443	$1,358,216	$1,385,586	$1,438,044
213	Drainage Renewals	Drainage Construction	411048201	$265,783	$274,022	$282,262	$822,067	$334,850	$344,347	$354,457	$364,873	$372,226	$386,318
		Culvert Renewal	411048202	$186,891	$192,684	$198,478	$578,053	$214,881	$220,976	$227,464	$234,148	$238,866	$247,910
		K&C Renewal	411048203	$130,000	$134,030	$138,060	$402,090	$196,740	$202,320	$208,260	$214,380	$218,700	$226,980
		Concrete Ford Renewal	411048204	$45,000	$46,395	$47,790	$139,185	$49,185	$50,580	$52,065	$53,595	$54,675	$56,745
214	Sealed Rd Pavement Rehabilitation	Sealed Road Pavement Rehabilitation	4110483	$388,950	$401,007	$413,065	$1,203,022	$737,556	$758,475	$780,744	$803,687	$819,882	$850,923
215	Structures component replacement	Structures component replacement	4110484	$177,700	$183,209	$188,717	$549,626	$194,226	$199,735	$205,599	$211,641	$215,906	$224,080
222	Traffic Service Renewal	Sign Renewal	411048501	$60,874	$62,761	$64,648	$188,283	$66,535	$68,422	$70,431	$72,501	$73,962	$76,762
		Lighting Renewal	411048502	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
225	Footpath Renewal	Footpath Renewal		$215,400	$222,077	$228,755	$666,232	$235,432	$242,110	$249,218	$256,541	$261,711	$271,619
Sub Total Renewal of Local Roads NZTA assisted				$3,126,495	$3,223,416	$3,320,338	$9,670,249	$3,725,631	$3,831,299	$3,943,783	$4,059,677	$4,141,484	$4,298,281
Total Maintenance, Operation & Renewal				$5,446,419	$5,615,258	$5,784,096	$16,845,772	$6,290,526	$6,468,940	$6,658,864	$6,854,544	$6,992,671	$7,257,414
New & Improved infrastructure for Local Roads NZTA Assisted Programme													
341		Minor Improvements	411048701	$330,000	$330,000	$330,000	$990,000	$360,690	$370,920	$381,810	$393,030	$400,950	$416,130
		Replacement of Bridges	411048702	*$0*	*$0*	*$0*	*$0*	*$0*	$0	$0	$0	$0	$0
Sub Total New & Improved infrastructure				$330,000	$330,000	$330,000	$990,000	$360,690	$370,920	$381,810	$393,030	$400,950	$416,130
Total Local Roads NZTA assisted Programme				**$5,776,419**	**$5,945,258**	**$6,114,096**	**$17,835,772**	**$6,651,216**	**$6,839,860**	**$7,040,674**	**$7,247,574**	**$7,393,621**	**$7,673,544**
		NZTA Subsidy		**64%**	**64%**	**64%**		**64%**	**64%**	**64%**	**64%**	**64%**	**64%**
				$3,696,908	$3,804,965	$3,913,021	$11,414,894	$4,256,778	$4,377,510	$4,506,032	$4,638,447	$4,731,917	$4,911,068

WC Activities	Expenditure Category	GL Code	2021-22	2022-23	2023-24	3 year Programme Totals	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31
Maintenance & Operation of Local Roads Non Assisted Programme													
	Street Cleaning	411049001	$90,000	$92,790	$95,580	$278,370	$98,370	$101,160	$104,130	$107,190	$109,350	$113,490	$116,730
	Car parks ,Street furniture	new	$4,000	$4,124	$4,248	$12,372	$4,372	$4,496	$4,628	$4,764	$4,860	$5,044	$5,188
	Road Safety TDC	411019003	$40,000	$41,240	$42,480	$123,720	$43,720	$44,960	$46,280	$47,640	$48,600	$50,440	$51,880
	Stock Effluent Disposal Scheme	411019004	$6,000	$6,186	$6,372	$18,558	$6,558	$6,744	$6,942	$7,146	$7,290	$7,566	$7,782
			$140,000	$144,340	$148,680	$433,020	$153,020	$157,360	$161,980	$166,740	$170,100	$176,540	$181,580
Renewal, New & Improved infrastructure for Local Roads Non Assisted Programme													
	Development	411090202	$50,000	$51,550	$53,100	$154,650	$54,650	$56,200	$57,850	$59,550	$60,750	$63,050	$64,850
	Seal Extension	411090203	$60,000	$61,860	$63,720	$185,580	$65,580	$67,440	$69,420	$71,460	$72,900	$75,660	$77,820
	Minor Improvements N/S	411090204	$45,000	$46,395	$47,790	$139,185	$49,185	$50,580	$52,065	$53,595	$54,675	$56,745	$58,365
			$155,000	$159,805	$164,610	$479,415	$169,415	$174,220	$179,335	$184,605	$188,325	$195,455	$201,035
Administration & Internal Costs													
			$390,121	$411,838	$412,619	$1,214,577	$425,598	$434,306	$440,092	$449,643	$459,753	$467,288	$485,307
Rechargeable Works													
	Recharge General	411049301	$30,000	$30,930	$31,860	$92,790	$32,790	$33,720	$34,710	$35,730	$36,450	$37,830	$38,910
Rechargeable Works	SH street lighting	411049302	$25,500	$26,291	$27,081	$78,872	$27,872	$28,662	$29,504	$30,371	$30,983	$32,156	$33,074
	SH street cleaning	411049303	$5,500	$5,671	$5,841	$17,012	$6,012	$6,182	$6,364	$6,551	$6,683	$6,936	$7,134
			$61,000	$62,891	$64,782	$188,673	$66,673	$68,564	$70,577	$72,651	$74,115	$76,921	$79,117
Total Local Roads Non Assisted Programme			$746,121	$778,874	$790,691	$2,315,685	$814,706	$834,450	$851,984	$873,639	$892,293	$916,204	$947,039
Total Roading Programme			**$6,522,539**	**$6,724,132**	**$6,904,786**	**$20,151,457**	**$7,465,922**	**$7,674,310**	**$7,892,658**	**$8,121,213**	**$8,285,914**	**$8,589,748**	**$8,839,653**

10.6 ROADING EXPENDITURE 2000/01 COMPARED WITH PROPOSED 2021/24



10.7 SUBSIDISED ROADING EXPENDITURE 1982-2020



10.8 KEY FINANCIAL FORECASTS ASSUMPTIONS

ASSUMPTION	SOURCE	RISK	LEVEL OF UNCERTAINTY	IMPACT OF VARIATION	MANAGEMENT OF RISK	ACTIVITY
POPULATION CHANGE						
The Waimate District population will observe a gradual increase by 4.38% between 2020-2030. It is assumed that this increase will generate a relative impact on population-related metrics, such as the quantity of rateable properties.	Rationale	Population growth either significantly exceeds that of the projected percentage, or is significantly below the projected percentage.	Low	If population accelerates significantly above the given assumption, existing infrastructure may not be suitable to cope with the extra demand.	Council will monitor population measures provided for the district, and will respond to significant variations to assumptions, where possible.	All activity groups
DEMOGRAPHIC CHANGES						
Between 2020-2030, the district's population retains its comparatively high mean age, while observing a gradual and mild reduction in the mean age level, with the age group of 45-49 years likely to be the most frequent by 2030.	Rationale	The demographic make-up of the Waimate District changes significantly.	Low	If the district's demographic changes significantly from the predicted range, the existing infrastructure may not meet the needs of the relevant demographic classes.	Council will monitor demographic measures provided for the district and respond to significant variations to assumptions, where possible.	All activity groups
OIL PRICE						
Due to the instability of the international petroleum market (as caused by the effects of the COVID-19 pandemic), fuel prices are likely to fluctuate for a period of time. However, it is assumed the time period will be relatively short, as the petroleum market has historically demonstrated a tendency to stabilise rapidly, where possible.	WDC	There is a risk that fuel demand will be different to that assumed, and that significant changes in market price occur with greater frequency and/or greater severity.	Moderate	Increased fuel costs would have a particular impact on the costs of road maintenance, renewal, and improvement. This may affect Council's ability to carry out planned work without additional funding. It may also increase demand for alternative methods of transport.	Council will monitor the impact of fuel price on spending and aim to optimise spending.	All activity groups

ASSUMPTION	SOURCE	RISK	LEVEL OF UNCERTAINTY	IMPACT OF VARIATION	MANAGEMENT OF RISK	ACTIVITY
CLIMATE CHANGE						
The effects of climate change are expected to manifest in three categories: a) gradual change in meteorological conditions (for example, change in temperature, more severe weather conditions and events, rising of sea level, coastal and inland erosion, among others), and b) general socio-economic consequences of such changes, and c) socio-economic consequences of policies/ measures designed to curb the adverse effects of climate change.	WDC	Environmental changes may accelerate at a rate higher than predicted, and/or the socio-economic consequences of adaptation measures may exceed the anticipated range.	Moderate	If environmental changes were to accelerate, Council's infrastructure assets would be significantly impacted. This would result in further modifications or more regular repairs to relevant assets.	Council will monitor the operational and socio-economic effects of environmental changes and adapt its response where required, if possible.	All activity groups
The Emissions Trading Scheme (ETS) became law in September 2008, resulting in minor cost increases. As the ETS grows, Council anticipates that the introduction of new areas will continue to have increases and that those increases are recognised in Council's inflation figures.	Ministry for the Environment	There is a risk of legislative change, which could result in costs being higher or lower than assumed.	Moderate	Should the impact of the scheme exceed significantly from the given assumption, budget for additional cost may need to be considered.	Council will monitor the development of relevant legislation and review the impact of any significant changes in the Annual Plan.	Property, Roading and Footpaths, Rural Water Supply, Urban Water Supply

ASSUMPTION	SOURCE	RISK	LEVEL OF UNCERTAINTY	IMPACT OF VARIATION	MANAGEMENT OF RISK	ACTIVITY
WAKA KOTAHI NEW ZEALAND TRANSPORT AGENCY (NZTA) REVENUE						
Roading expenditure comprises a significant portion of Waimate District Council's total expenditure, therefore using a significant portion of Council's overall rate take. The majority of Council's expenditure on the district's roads is eligible to attract an assistance rate from the Waka Kotahi New Zealand Transport Agency (NZTA). It is further assumed that the funding assistance rate received by Council for qualifying roading expenditure for maintenance and improvement projects is set at 64% for 2020/21 onwards.	NZTA	The subsidy rate may be subject to change, along with any variation in criteria for inclusion in subsidized works programmes.	Moderate	Changes to the funding priorities of NZTA remain outside Council control. Minor variations would impact significantly on forecasted financials.	Any impact of changes to the NZTA funding assistance rate will be applied to the relevant Annual Plan.	Roading and Footpaths
GRANTS AND SUBSIDIES						
It is assumed that all projects funded, or partially funded, from grants and subsidies will be available in the year the expenditure is planned. If the funding is not received, it is most likely that the project will not proceed in that year. Examples of projects where funding is assumed are roading maintenance and improvements, and bridge renewals.	WDC	Subsidies are not received and projects do not go ahead.	Moderate	Some projects have a more significant impact than others if they do not proceed in the planned year. The roading projects where Council rely on NZTA funding may result in reduced level of service.	Build robust business cases and regular liaison with the relevant funding bodies to ensure projects (with a high likelihood of receiving funding) are included in the Long Term Plan.	Roading and Footpaths, Property

ASSUMPTION	SOURCE	RISK	LEVEL OF UNCERTAINTY	IMPACT OF VARIATION	MANAGEMENT OF RISK	ACTIVITY
NEW ZEALAND DRINKING WATER STANDARDS & SERVICE DELIVERY						
While it is assumed that that there will be change to the ownership and delivery of Three Waters in the next ten years, Council is not able to predict with absolute certainty what those changes will be. It is unlikely that details will be known earlier than mid-to-late 2021. This LTP has been developed on a business-as-usual basis for the delivery of Three Waters; but the change is very likely to occur over the mid-term (3-5 years).	WDC Central Government	Legislation changes under urgency in Parliament that must be implemented immediately.	Moderate	Changes are required to be implemented more quickly than anticipated, and/or changes are mandatory rather than voluntary.	Council closely monitors any and all developments, and responds accordingly.	Rural Water Supply, Urban Water Supply
RESOURCE CONSETS						
The conditions of resource consents held by Council may be changed, and that Council will obtain the necessary resource consents for planned projects.	WDC	There is a risk that resource consent conditions are altered significantly.	Moderate	Advanced warning of likely changes is expected. The financial effect of any change to resource consent requirements would depend on the change.	Council will monitor the development of relevant standards and review the impact of any significant changes.	Roading and Footpaths, Sewerage, Stormwater, Waste Management, Urban Water Supply, Rural Water Supply
WATER IRRIGATION SCHEMES						
Council does not expect major irrigation schemes to be introduced into the district over the period of the Long Term Plan.	WDC	New major schemes are introduced.	Low	The introduction of a major irrigation scheme is likely to produce minimal impact on Council, but a more considerable impact on the district's agricultural sector.	Council will monitor the environment in regard to any potential development, and seeks to remain involved in discussions/proposals.	Roading and Footpaths, Rural Water Supply, Sewerage

ASSUMPTION	SOURCE	RISK	LEVEL OF UNCERTAINTY	IMPACT OF VARIATION	MANAGEMENT OF RISK	ACTIVITY
EMERGENCY EVENT						
Disruptive or destructive emergency events such as earthquakes, extreme weather events, and pandemics may occur to damage, disable, or destroy community infrastructure (for example, district roads, bridges, water supplies, among others), or community activities. It is further assumed that the cost of correcting such damage is met either by Council or its insurance providers, or by possible special government grants.	WDC	Inability to recover or continue business following a major event.	Moderate	If a major emergency event did occur, Council have some insurance for its infrastructure, and assistance would be offered from Central Government. To pay for additional emergency work not covered by the above, Council would increase internal/external borrowings.	Council undertakes business continuity plans for its own operation, and coordinates Civil Defence planning for the district. In doing so, Council attempts to prepare itself and the district for such events.	All activity groups
DEVELOPMENT CONTRIBUTIONS						
With the Resource Management Act 1991 able to revoke Council's ability to levy financial contributions (effective 18 April 2022), it is expected that Council will still be able to recover development contributions from that date onwards. It is further assumed that the level of funding recoverable under each system will be broadly similar.	WDC	There is a risk this change will result in significantly different funding levels.	Low	If the available funding levels change, this will have an impact on the rates required to address any shortfall/surplus.	Council will review its funding requirements prior to 18 April 2022 and ensure funding requirements match to demand.	All activity groups

ASSUMPTION	SOURCE	RISK	LEVEL OF UNCERTAINTY	IMPACT OF VARIATION	MANAGEMENT OF RISK	ACTIVITY
DISTRICT ECONOMY						
Despite the major impact of the COVID-19 crisis on the national economy, the Waimate District's economy is comparatively less negatively impacted, due to its specific characteristics as an area reliant on essential services and production.	WDC	Any significant reduction in income stream for any sector poses a risk.	Moderate	Drop in commodity prices - disposable spending cut back, loss of employment, closure of business. Increase in commodity prices- the reverse of the above occurs.	Council will consider the state of the district's economy when reviewing its Annual Plan and how this compares to the position assumed in the Long Term Plan.	All activity groups
USEFUL LIVES OF SIGNIFICANT ASSETS AND DEPRECIATION						
It is assumed reassessments of the useful lives of significant assets during the ten year period covered by this Long Term Plan will continue every three years. The detail of useful lives for each asset category is covered in the Statement of Accounting Policies.	New Zealand Asset Management Support WDC asset revaluations	There is a risk that assets will wear out more quickly than forecasted and require replacement earlier than planned.	Moderate	If assets require replacement earlier than first considered, capital expenditure projects may need to be brought forward.	Regular review of the useful life of each asset category reduces the risk of significant inaccuracies.	Roading and Footpaths, Rural Water Supply, Urban Water Supply
REVALUATION OF NON-CURRENT ASSETS						
Council conducts asset revaluations every three years. The Long Term Plan assumes the following percentage increases to book value, for each of the following class of assets: Land: +10% Buildings: +10% Utilities (Water Schemes, wastewater, stormwater, Sanitation): +8% Roading: +6%	WDC	Revaluations will somewhat differ from those projected carrying values of the assets and depreciation expense.	Moderate	Variation in values is expected to be low unless the valuation methodology changes.	Regular revaluation of non-current assets reduces the risk of significant valuation shifts.	Roading and Footpaths, Rural Water Supply, Urban Water Supply, Sewerage, Property

ASSUMPTION	SOURCE	RISK	LEVEL OF UNCERTAINTY	IMPACT OF VARIATION	MANAGEMENT OF RISK	ACTIVITY
FUNDS FOR FUTURE REPLACEMENT OF SIGNIFICANT ASSETS						
In general, councils have some flexibility in the policies they may set with regard to sources of funds for the future replacement of significant assets. Council's flexibility centres on whether we should collect depreciation monies from ratepayers during the lifetime of the asset to build up a reserve that can fund the replacement of the asset when it comes to the end of its useful life, or when the asset comes to the end of its useful life which would compel Council to rely on borrowed money to replace it. Council considers that the most sensible approach is to collect depreciation during the life of an asset, therefore having reserve funds on hand at the time replacement is needed. See Council's 'Revenue and Financing Policy' and the 'Financial Strategy'.	WDC	Sufficient funds may not be available to pay for planned asset replacement.	Low	Funds may need to be borrowed or rated for, which may be a burden to either the Council or ratepayers in the future.	Council develops Asset Management Plans that determine the timing of asset replacements. Council uses these to forecast and prepare for future funding requirements.	Property, Roading and Footpaths, Rural Water Supply, Urban Water Supply, Sewerage
RETURN ON INVESTMENT- ALPINE ENERGY						
Alpine Energy returns will be in line with the company's FY2022-2024 Statement of Corporate Intent which includes a Dividend Policy of 6c per share, through to 31 March 2024. Thereafter it is assumed the dividend will remain at 6c.	WDC (in conjunction with its respective advisors)	There is a risk that returns on investments will be higher or lower than forecasted.	Low	Council is aware of the factors contributing to the changing nature of Alpine Energy's overall profit. If revenues are depressed for a sustained period, the company will be unlikely to maintain dividends at the proposed level.	Council plans to reduce its reliance on any dividend income that presently supports core operational activity.	Investments and Finance

ASSUMPTION	SOURCE	RISK	LEVEL OF UNCERTAINTY	IMPACT OF VARIATION	MANAGEMENT OF RISK	ACTIVITY
FORESTRY ASSETS VALUES						
It is assumed that the forestry asset values will increase annually over a rotation cycle of 30 years.	WDC	The value of forestry assets may sharply increase or decrease.	Low	A change in the value of the forestry asset will change Council's financial performance in the year of change occurring. However, it will not have a direct impact on the level of rates or expenditure.	Annual revaluation of forestry reduces the risk of significant valuation shifts.	Investments and Finance
CAPITAL DELIVERY						
Council plan to deliver 100% of all capital projects over the life of the Long Term Plan. The financial model was developed based on this assumption.	WDC	There is a risk that improved levels of service in the Water Supply area will be delayed. There is a risk that the capital projects will not be completed in any given year, and carried over to subsequent years.	Moderate	Variation to planned improved levels of service for the Water Supply area, where any delay in projects relating to Drinking Water Standards New Zealand compliance will result in maintaining current levels of service. If projects are not completed on time, or are deferred, there may be reduced operational costs and depreciation expense impacts. There could also be an increase in required budget to complete the project if delayed.	Additional resourcing (1.5 FTE) has been engaged to ensure the timely delivery of proposed LTP and Stimulus Fund projects. All capital works have been scheduled for 2020/21 and 2021/22 and local contractors have been made aware of the timing. Council is aware of material sourcing and has addressed this issue by sourcing materials early and maintaining stock levels. Procurement is now completed through the Government Electronic Tenders System (GETS), notifying the wider contracting / consulting market of upcoming projects. In anticipation of a large capital programme in Year 1 (2022), a portion of these projects are likely to be tendered by 30 June 2021, or very early in the 2021/22 financial year. Due to the nature of the rates smoothing profile for the Water Supply activity, any delay in project completion will have no effect on the funding and rates required as planned.	Water Supply & all other activities

ASSUMPTION	SOURCE	RISK	LEVEL OF UNCERTAINTY	IMPACT OF VARIATION	MANAGEMENT OF RISK	ACTIVITY
RETURN ON INVESTMENTS- OTHER						
It is assumed that Council's cash investments will generate a 1% return based on the current economic climate. It is further assumed that the returns from Council's forestry investments for the duration of the Long Term Plan will be reflective of market conditions present at the time of preparation of this document.	WDC (in conjunction with its advisors)	Returns on investments will be higher or lower than forecasted.	Moderate	Higher interest rates received on cash investments or increased investment income could result in positive cash-flow enabling consideration of higher levels of service or reduced expenditure. Council does not heavily rely on interest revenue for running its operations, therefore the impact of lower investment returns on delivery of Council services would be minimal. Similarly, Council does not use its forestry investment returns to fund other Council operations or activities.	Council sets and maintains its internal interest to provide certainty to internal capital reserves. Council will manage its external investments to optimise returns (as described in the Council's Investment Policy). Council will monitor the forestry market's conditions and review the impact of any significant change in forecasted returns through each subsequent Annual Plan process.	Investments and Finance
INFLATION						
Council, along with many other New Zealand Councils, calculates and applies inflation factors to its 10-year budget forecast, using predictions of future inflation levels from New Zealand [economic research company] Business and Economic Research Ltd (BERL).	Business and Economic Research Ltd.	Inflation will be higher or lower than anticipated.	Moderate	A difference between the inflation rates experienced and those assumed will change the cost base of Council, and therefore impact funding requirements.	Council has endorsed the rates produced by BERL as the most appropriate basis for accounting for the impact of inflation and preparing the Long Term Plan. In the event of significant changes to the underlying costs supporting	All activity groups

Year	Roading %	Property and Parks %	Water %	Staff %	Other %	Wastewater %	Capital Expenditure %
June 2022	3.3	1.7	7.2	4.8	1.7	7.2	4.0
June 2023	3.1	2.0	3.4	2.4	2.0	3.4	3.0
June 2024	3.0	2.0	2.1	1.5	2.0	2.1	2.6
June 2025	2.9	1.9	2.3	1.7	1.9	2.3	2.6
June 2026	2.9	1.8	2.6	2.0	1.8	2.6	2.7
June 2027	2.9	1.8	2.3	2.2	1.8	2.3	2.6
June 2028	2.9	1.7	3.0	2.3	1.7	3.0	2.8
June 2029	2.9	1.7	3.3	2.4	1.7	3.3	2.8
June 2030	2.9	1.7	3.3	2.6	1.7	3.3	2.9
June 2031	2.9	1.6	2.7	2.7	1.6	2.7	2.7

					work in the activity areas, mitigation planning will feature in the Annual Plan.	

ASSUMPTION	SOURCE	RISK	LEVEL OF UNCERTAINTY	IMPACT OF VARIATION	MANAGEMENT OF RISK	ACTIVITY
BORROWING COSTS						
Interest costs are estimated to be 3%. This refers to the internal cost of borrowing, along with the expected external cost of debt facilities (for example, Waimate Event Centre public debt) where costs are not known, and are required to be projected.	WDC (in conjunction with its financial advisors)	Interest rates will differ significantly from those estimated.	Low	If borrowing costs are greater than those assumed, Council may need to increase its rates or reduce its expenditure. Conversely, lower costs may mean rates are lower than they would otherwise have been.	Council will monitor its applicable rate and adjust it through the Annual Plan process to reflect a level best aligned to its external borrowing rate and ability to generate returns on internal debt.	Investment and Finance
UNIDENTIFIED LIABILITIES						
It is assumed that Council does not have any unidentified liabilities.	WDC	There is a risk of an unexpected liability occurring. For example, a claim against Council.	Low	If an unidentified liability arises it may increase Council's expenditure. This risk is mitigated by the Council's Risk Management and Insurance Policies.	Regular review of liabilities reduces against the risk of items being unidentified.	N/A

10.9 CONFIDENCE LEVELS

The 10-year funding forecast has been based on current contract rates tendered September 2015.

The confidence level of the first three years of the programme is high as this is based on actual assessed need on the network, which is unlikely to change significantly over this period. The forecast for the remainder of the 10-year period is based on general annual quantity projections and not a robust forward works programme, so the confidence level is lower.

11. PROCESSES AND ASSET MANAGEMENT PRACTICES

This section outlines the information available on the assets, information systems used and process used to make decisions on how the asset will be managed. It also provides details on planning for monitoring the performance of the AMP.

11.1 ORGANISATION STRUCTURE

Council's organisation structure is shown in Figure 11.1. The Roading Group structure is included in Figure 11.2.

Figure 11.1 – Waimate District Council Organisation Structure

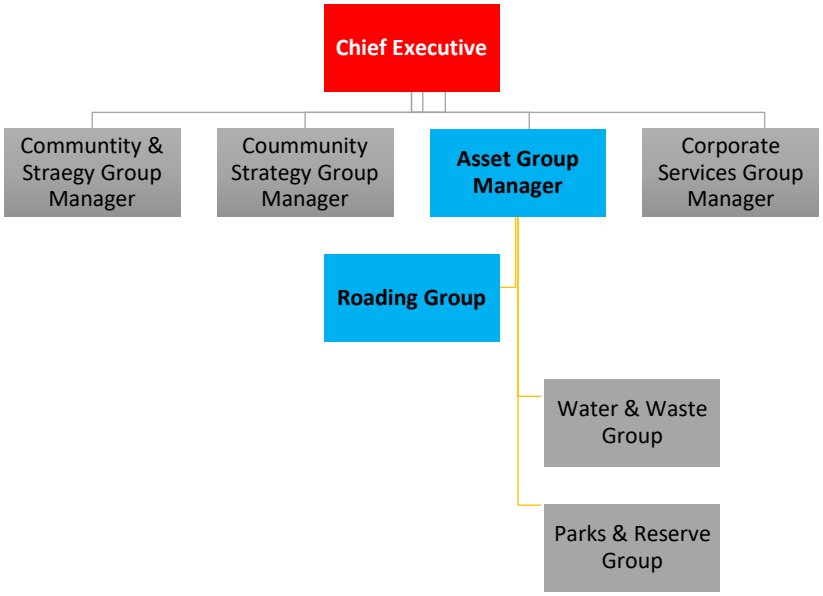
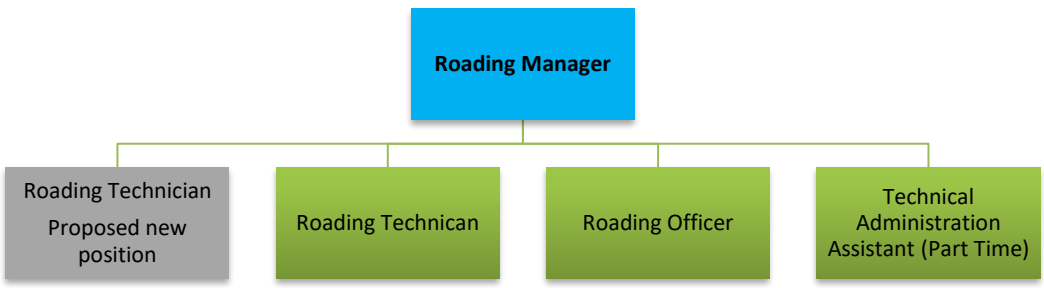


Figure 11.2 – Waimate District Council Roading Group Structure



WDC employ a Roading Manager, a Roading Technician and Roading Officer who are responsible for the management of the road asset. The Roading manager is responsible for the maintenance management of the Roading network. Occasionally some elements of the work are competitively tendered to consultancy services to manage (e.g. AMP preparation, bridging asset management). Council Roading Staff and the Road Maintenance Contractor regularly inspect and monitor the network. It is proposed to employ an additional Roading Technician.

11.2 PLAN REVIEW AND MONITORING

11.2.1 Monitoring Approach

Waimate District Council has developed this AMP based on its current knowledge of customer requirements, the configuration of the existing and future network to meet customer requirements, current asset information and the strategies to achieve customer requirements.

To further develop a meaningful AMP, including supporting processes, systems and data, Council recognise the need for a more structured approach. This approach includes:

- Council's firm commitment to implement and develop the AMP
- Incorporate this AMP as a tactical plan within Council's planning framework
- Review of the plans by internal staff and suitably qualified external consultants
- Aiming to produce an AMP that meets the requirements of the community
- Benchmarking key performance indicators against similar external TLAs
- A corporate commitment to implementing and maintaining suitable AM information systems
- Adopting a team approach to the preparation of future AMPs in order to maximise the buy-in of internal staff and sharing of specialised knowledge
- On-going dialogue with NZTA to ensure the plan reflects NZTA priorities and expectations

11.2.2 Timetable for Audit and Review

The programme for future AM reviews of this plan is in Table 11.1 below:

Table 11.1 - Timetable for Audit and Review

Activity	Target Date
Improvement Plan reviewed annually by all staff directly involved and focusing on key business issues	30 June each year
Report on Improvement Plan	30 June each year
AMP updates involving members of staff involved in preparing specific aspects of the AMP	30 July each year
Internal AMP peer review by staff not directly involved in preparation of AMP	30 August each year
Adoption of AMP by Council	Determined by LTP programme, typically December the year preceding LTP consultation
External benchmarking by internal staff	Annually
Audit NZ external audit	As required by Audit NZ

11.2.3 Utilisation of AMP

Historically Asset Management Plans have been carried out for regulatory requirements and not used on an on-going basis. Table 11.2 details the methodologies for the on-going implementation and updating of the AMP within WDC to ensure the Roading Activity Management Plan is used to its full potential.

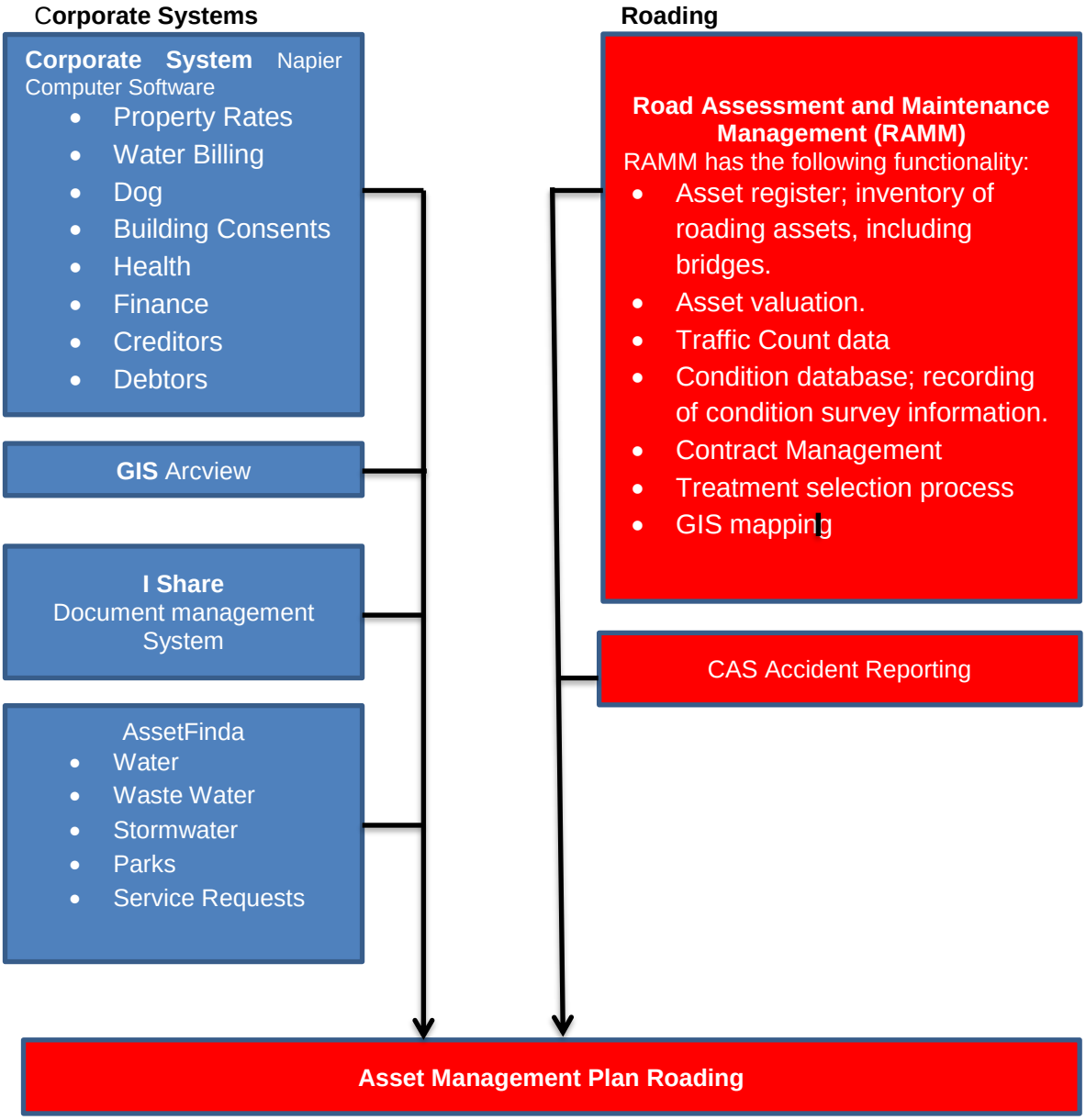
Table 11.2 - Methodologies for the On-going Implementation and Updating of AMP's

Methodologies	Output
Continuation of the organisational culture of asset management	The asset management culture needs be supported by the Chief Executive and senior managers in conjunction with the elected Council. Effective stewardship and management of WDC major investment (assets) will not occur in the long term without a culture of asset management.
Resourcing of Asset Management Programmes	Activity management programmes must be adequately resourced
Roles and Responsibilities of Council Staff	The roles and responsibilities of Council staff as they relate to the AMP's implementation need to be defined in respect to the ongoing use of the plans as this will assist the Plan to remain relevant and current. To enable this to occur the following is required • The Activity Management Plans adopted/accepted by staff down to a defined level • Council Staff to know what's in the plans and how it could affect their day to day work • Council Staff to understand the reasons for the plan and the implications for the long term use of them • Understand all the reporting requirements for Levels of Service and Internal Benchmarking • Training required in the use of the Plan (what's in it, how work is done, on-going requirements for monitoring, review and updating) • Instigation of processes to encourage Council Staff to use the Plan

11.3 BUSINESS PROCESSES

Figure 11.3 details the data systems that are presently used within WDC and their relationship with other systems.

Figure 11.3 - WDC Data Systems



Data management systems used to assist in the decision making process for Roading network issues are detailed below.

11.3.1 Road Assessment and Maintenance Management System (RAMM)

The use of RAMM or an equivalent asset management system is mandatory to obtain financial assistance from NZTA. The RAMM system is the main information systems used in the management of the Roading network. 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 drainage facilities, footpaths, bridges, Streetlights and signs is also stored on the RAMM system.

The information held on RAMM is continually being updated and improved following the completion of roading maintenance and renewal treatments, capital improvements, traffic counts and road rating condition assessments.

General maintenance and renewal work is continuous throughout the year and responds to the needs of the network. The data from the maintenance carried out is entered into RAMM on a regular basis. Traffic count data is entered into the RAMM database as it become available.

Confidence levels used to assess the accuracy of the Waimate District Council RAMM data tables are described in the 2020 Roading Asset Valuation report and shown in Table 11.3. These confidence ratings are assigned to the source data and unit cost rates and to other items as appropriate. Data from the RAMM database was generally considered to have a **confidence rating of B**

Table 11.3 – Data Confidence Ratings

Grade	Label	Description	Accuracy
A	Highly Reliable	Data based on sound records, procedures, investigation, and analysis which is properly documented and recognised as the best method of assessment.	± 5-10%
B	Reliable	Data based on sound records, procedures, investigation and analysis which is properly documented but has minor shortcomings, for example, the data is old, some documentation is missing, and reliance is placed on unconfirmed reports or some extrapolation.	± 10-15%
C	Uncertain	Data based on sound records, procedures, investigation, and analysis which is incomplete or unsupported, or extrapolation from a limited sample for which grade A or B data is available.	± 15-25%
D	Very Uncertain	Data based on unconfirmed verbal reports and/or cursory inspection and analysis.	± 25-40%
E	Unknown	Based on a best guess from an experienced person.	± 50-60%

Our judgment of the overall accuracy of the data used in this valuation is tabulated below.

Confidence Grading					
Asset	ORC		ODRC		Overall Value
	Quantity	Unit Cost	Life	Remaining Life	
Land	B	A	-	-	A-B
Formation	B	B	-	-	B
Unsealed Pavement Structure	B	B	-	-	B
Sealed Pavement Structure	B	B	B	B	B
Sealed Pavement Surface	B	A	B	B	B
Bridges	A	B	A	B	A-B
Drainage	B	B	B	B	B
Drain Fords	B	A	B	B	B
Footpath	B	B	B	B	B
Signs	B	A	B	B	B
Street Lights	B	B	B	B	B
Surface Water Channel	B	A	B	B	B
Traffic Facilities	B	B	B	B	B
Overall					B

Data on road condition is collected through the carrying out of road roughness and condition rating surveys.

Roughness surveys that measure the quality of ride experienced by motorists when travelling on the road are undertaken bi-annually. 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 and IRI 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 undertaken bi-annually over the sealed network. They involve a detailed walkover and identification of defects on the carriageway over 100% of the roads. Drainage assets are not rated. 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.

11.3.2 Road Efficiency Group DATA QUALITY REPORT

The Road Efficiency Group (REG) Data Quality Report provides a useful insight into the standard of the asset data.
A copy of the latest report is available at https://www.nzta.govt.nz/resources/rca-data-quality-reports/waimate/

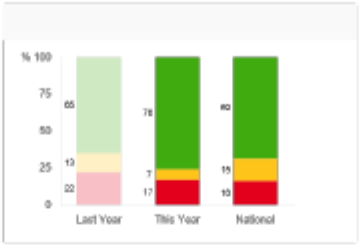
The report indicates the network data is reasonably good, improvement in traffic Counts and traffic loading are being implemented and well as centre line mapping.
.

2019/20 Waimate District Council Data Quality

● Major Issues ● Minor Issues ● Expected Standard

Score

Overall Results



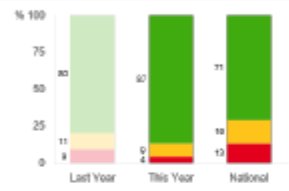
2019/20 Provisional Results are now available

The 2019/20 results will be finalised and the annual reports will be produced when data sourced from the Waka Kotahi Transport Investment Online is finalised for the three metrics PAVE1, SURF1a and SURF1b.

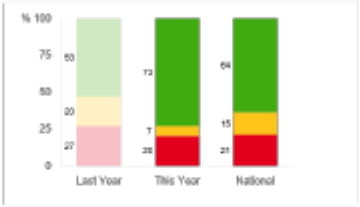
Changes to the 2019/20 calculations include the exclusion of road sections which are not required for ONRC and identifying RCA ownership of minor assets. Refer to the RAMM sql for more information about the metric changes.

Results by Importance

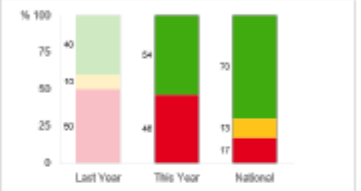
High



Moderate

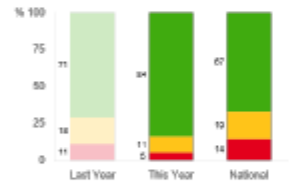


Low

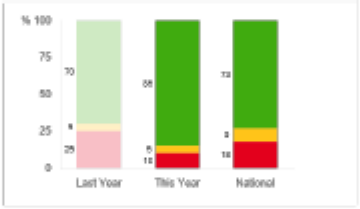


Results by Quality Dimension

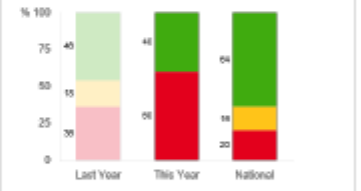
Accuracy



Completeness

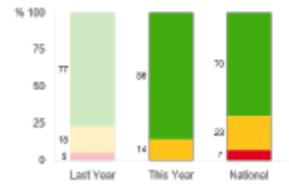


Timeliness

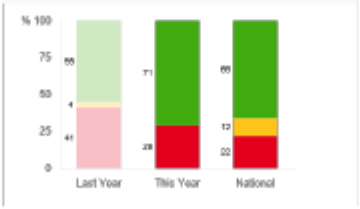


Results by Data Category

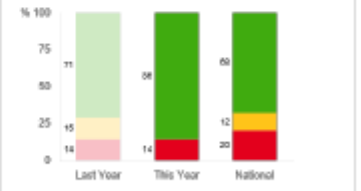
Network



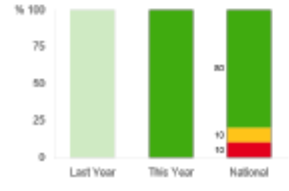
Asset Inventory



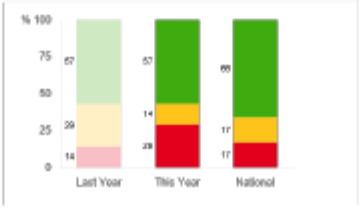
Maintenance Activity



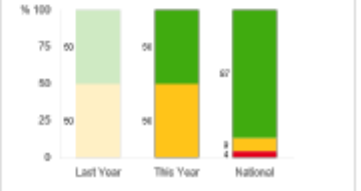
Condition



Demand/Use



Crash



Date imported: **3rd August 2020**

11.3.3 RAMM -Treatment Selection Algorithm (TSA)

The RAMM system contains a treatment selection algorithm that utilises the condition data and other road inventory data to make recommendations as to preferred treatments on the network. The outputs from the treatment selection are utilised at a network level and also at an individual treatment section level.

At a network level the treatment selection summary report identifies the length of the network recommended for resealing in the current and following year and also makes recommendations as to the length of the network requiring major treatments such as smoothing or strengthening. The treatment selection algorithm undertakes an economic analysis of the maintenance options for each treatment length to identify the most cost-effective treatment option. This is based on the ongoing cost of maintenance and the unit costs of the various maintenance and renewal treatments.

The treatment selection summary report is a useful tool in assessing the effectiveness of the maintenance and renewal strategies being followed and is an indicator of the future maintenance needs of the network. The treatment selection output identifies sections of road with various faults and makes recommendations as to which specific road sections should undergo resealing or rehabilitation. These outputs are used in the preparation of the annual resealing and rehabilitation programmes.

The treatment selection algorithm is run after updating of the RAMM database to reflect completed physical work.

11.3.4 GIS

GIS is used as a tool to present roading asset management data as required. For example, bridges, signs, and culvert locations can be mapped. The systems also allow for mapping of other information such as State Highway detours etc.
RAMM also includes a GIS mapping function.

11.3.5 CAS Database

CAS is an online NZTA live database of official crash data and includes sophisticated spatial, analysis and reporting capability. Access to this data is available by direct enquiry to NZTA.

11.3.6 Bridge Data

Sufficient bridge data is currently held in the RAMM database such that the bridge valuation using RAMM Valuation module can be undertaken. Waimate District Council has more bridge information in a separate spreadsheet database and files including a large number of engineering drawings.

Processes for regularly monitoring the performance of bridges are well documented and the information is used for identifying and prioritising upgrading and development of projects.

11.3.7 Complaints and Service Requests Database

The Council operates a Complaints and Service Requests database (a module within AssetFinda). This records all complaints and service requests associated with the Roading activity and provides useful information for trending and analysis of system performance and highlights issues.

11.3.8 Accounting Processes

Waimate District Council accounts for revenue and expenditure on an accrual basis. All work under the Works Programme is identified through a General ledger code. The costs are summarised into where operational/maintenance costs are identified separately to capital/renewal items. Valuations are currently based on straight line depreciation and assumed effective life's.

There are a range of reports prepared in order to comply with the requirements of Council, NZTA and the Auditors. All reports are prepared in compliance with Generally Accepted Accounting Principles (GAAP)

11.3.9 Contracts

All contract works are claimed monthly against each of the contract item numbers by the physical works and professional services contractors. Waimate District Council and/or consultants confirm the payment value for all physical works and the Waimate District Council confirms the payment of any professional services. The accounts codes are included on the payment certificate. These certificates are forwarded to Waimate District Council for payment.

11.3.10 As-Built Data

The process of capturing as-built records for the on-going enhancement of asset registers is included as a requirement of the maintenance contract. The information is supplied to Council staff for them to upgrade the relevant registers. Projects undertaken outside the maintenance contract have a requirement within the contract for the relevant information to be collected and forwarded to Council for them to upgrade the registers.

Asset data is collected for New subdivisions and recorded in the appropriate location (e.g. RAMM) and available for ongoing effective Roading asset management.

11.3.11 Smart Buyer Principles

11.3.12 Future Improvements

RAMM database
The current status of the WDC RAMM database should also be reviewed and reported accordingly in the "Confidence Ratings for Roading Asset Data".
Improve Data Quality in RAMM to Grade 1 level

Traffic Counting
Implement traffic counting strategy.

Systems
Develop and Implement information storage system,
Improve service requests
Provide Roading information for the public on Council Web site.

11.4 SERVICE DELIVERY REVIEWS

Service Delivery Reviews are a legislative requirement for local authorities under Section 17A of the Local Government Act (2002) (the Act). This states:
"A local authority must review the cost-effectiveness of current arrangements for meeting the needs of communities within its district or region for good-quality local infrastructure, local public services and performance of regulatory functions."

The Act goes on to specify that a review must be undertaken in the following circumstances:

- When a significant change to the level of service is proposed
- Within two years of a contract or binding agreement expiring
- At any other time, but no less than six years following the last review.

A Review has been completed in2017 and again in August 2020 prior to The Maintenance contract renewal in 2021

Roading service delivery
Council manages roading activity through a mixture of in-house and contracted professional services providers. All Physical works are completed by a long term maintenance contract some projects by project contracts for capital works.

Service delivery Review Recommendation 2020
The service delivery options were assessed as part of the 2017 service delivery review. WDC decided to pursue the enhanced status quo for professional services delivery. There have been no changes in the internal or external environment since 2017 that would have a material impact on the most effective and efficient service delivery option. In the physical works space, delivery by another agency (private sector) remains the only option for physical works delivery under the LTMA.

12. IMPROVEMENT PLAN

12.1 ASSET MANAGEMENT IMPROVEMENT PROCESS

This section provides details of how Council plans to improve this version of the Roading AMP.

This AMP has previously been reviewed and updates incorporated including improvements to move towards "Core" level Asset Management. Council is committed to a continual improvement as outlined in this section of the AMP. A key objective is to dovetail the asset management planning process with the other key planning processes particularly the Community Plan (LTP).

Council has undertaken a structured assessment of the appropriate level of asset management practice for the Roading assets. This assessment follows the guidance provided in Section 2.2.4 of the international Infrastructure Management Manual (IIMM). The results of this assessment are shown in Table 3.3. **Analysis of factors suggests that asset management practice should be 'Core'.** This has been adopted by Council through Council's Asset Management Policy Statement for Roading states that the following principles will be used by Council to guide asset management planning and decision making:

- Effective consultation to determine appropriate Levels of Service
- Ensuring service delivery needs form the basis of asset management
- Integration of asset management with corporate, financial, business and budgetary planning using Asset management plans and Council's LTP to demonstrate this
- Integration with neighbouring authorities and other agencies including NZ Transport Strategy, National Land Transport Programme, and the Regional Land Transport Strategy
- Integration of asset management within Council's strategic, tactical and operational planning frameworks
- Informed decision making taking a lifecycle management and inter-generational approach to asset planning
- Transparent and accountable asset management decision making
- Sustainable management providing for present needs whilst sustaining resources for future generations

12.2 MONITORING AND REVIEW PROCEDURES

12.2.1 Three Year Review

This AMP is to be reviewed on a 3-yearly basis, with the next full review taking place as part of the development of the 2021 LTP. During the three-year period leading up to this review, the items in the Improvement Programme should be addressed within the timeframes provided. These improvements can then be incorporated into the next review of the AMP.

This AMP is also audited externally with the review including process, data integrity and Levels of Service.

12.2.2 Annual Review

At the completion of each annual budgeting period the financial forecasts are to be updated to include the new Year 10 figures and any changes made to the intervening budgets by the Council.

By the end of July each year asset inventory data to be updated in RAMM to reflect the previous financial year's maintenance and renewal activities. Data accuracy is to be verified by completing a random 10% audit.

12.3 AMP IMPROVEMENT PROGRAMME

The review and improvement of this AMP requires resource and budget in order to complete the selected improvement tasks. Table 12.1 outlines the items for improvement, relative urgency, resource, priority, budget and the authority sought to give approval to complete each item.

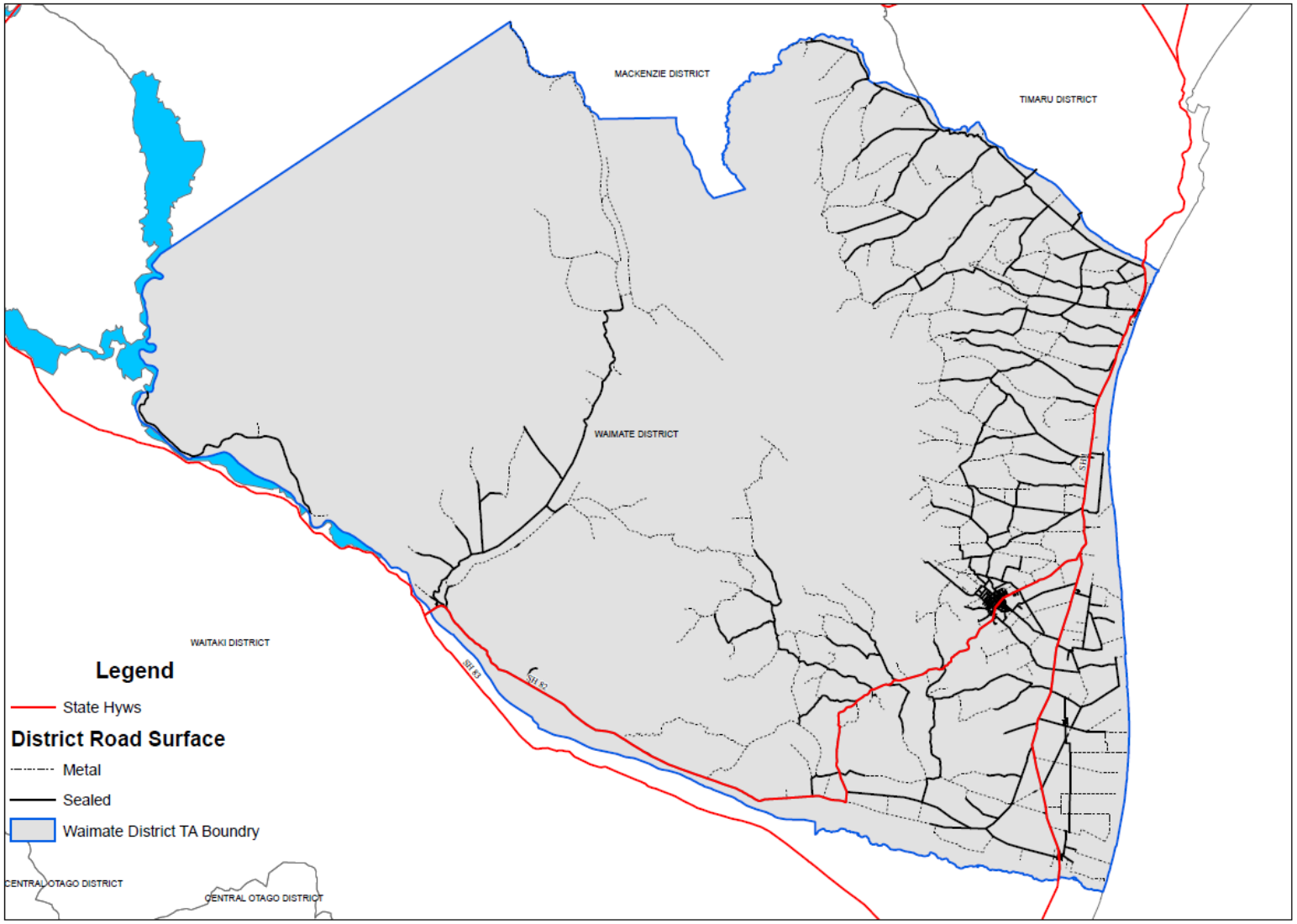
Table 12.1 –Improvement Programme (Yet to be updated Sept 2020)

Task Description	Action	Resource	Priority	Estimated Cost	Timing
One Network performance Measures Reporting	Data collection plan to be established for reporting against ONRC performance measures.	Roading Team	**High**		31/06/2018
Data Quality	Implement traffic counting strategy	Roading Team	**High**		31/06/2018
	Improve Data Quality in RAMM to Grade 1 level	Roading Team	**High**		31/06/2018
Sealed Pavement Management	Carry out further falling weight deflectometer (FWD) testing	External	**Medium**	**$20k**	30/01/2020
	Consider limited dTIMS modelling subject to business Case	External	**Medium**	**$20k**	30/06/2020
	Consider HSD if this is being done by other agencies in the area subject to business Case	External	**Medium**	**$20k**	30/06/2020
	Monitor land use changes and impact on network performance	Roading Team	**Medium**		Ongoing
	Model drainage issues and pavement performance	Roading Team	**Medium**	**$5k**	Ongoing
Maintenance Contract	ONRC implemented in contract	Aoraki Roading Collaboration	**High**		30/01/20
	ONRC based maintenance intervention strategy	Aoraki Roading Collaboration	**High**		31/12/2018

Task Description	Action	Resource	Priority	Estimated Cost	Timing
	Develop Strategy for renewal of Maintenance Contracts. Including engagement with contractors	Aoraki Roading Collaboration	**High**		30/01/2020
Risk Assessment	Complete risk assessment of culvert assets	Roading Team	**Medium**	**$10k**	1/12/2020
Bridge Evaluations	Review valuation data and confirm actual value of bridge assets	Roading Team External	**Medium**	**$10k**	1/12/2019
Review existing communications plans for managing emergency events	Review communication protocols and procedures with respect to keeping the public and emergency services informed of road closures and the management of emergency events	Roading Team Council	**Medium**		
Forward Works Programme	A full 10 year forward Works Programme needs to be developed for renewals especially sealed road surfacing, drainage assets, sealed pavement and footpaths.	Roading Team	**Medium**		1/12/2020
Systems	Develop information storage, service requests and communication systems	Roading Team Asset Group Council	**Medium**		1/12/2020

13. APPENDICES

13.1 ROAD MAP



Road Safety Strategy and Action Plan

South Canterbury, July 2021 – June 2024

Our Call to Action - ***"Despite previous efforts, there have been no material improvements to road safety over the past two decades. Loss of life and serious injury should not be an inevitable cost of travelling through South Canterbury."***

Introduction

South Canterbury includes over 3,700 kilometres of roads, providing the primary transportation linkage through the Waimate, Mackenzie and Timaru Districts. This road network is largely rural, much of it unsealed and characterised by many long, straight roads.

From 2010 – 2019, there were on average 8 fatal crashes and 30 serious injury crashes every year.

In 2020, there were 7 fatal crashes and 25 fatal injury crashes in our region – even though there was a marked reduction in traffic during the nationwide COVID-19 lockdown.

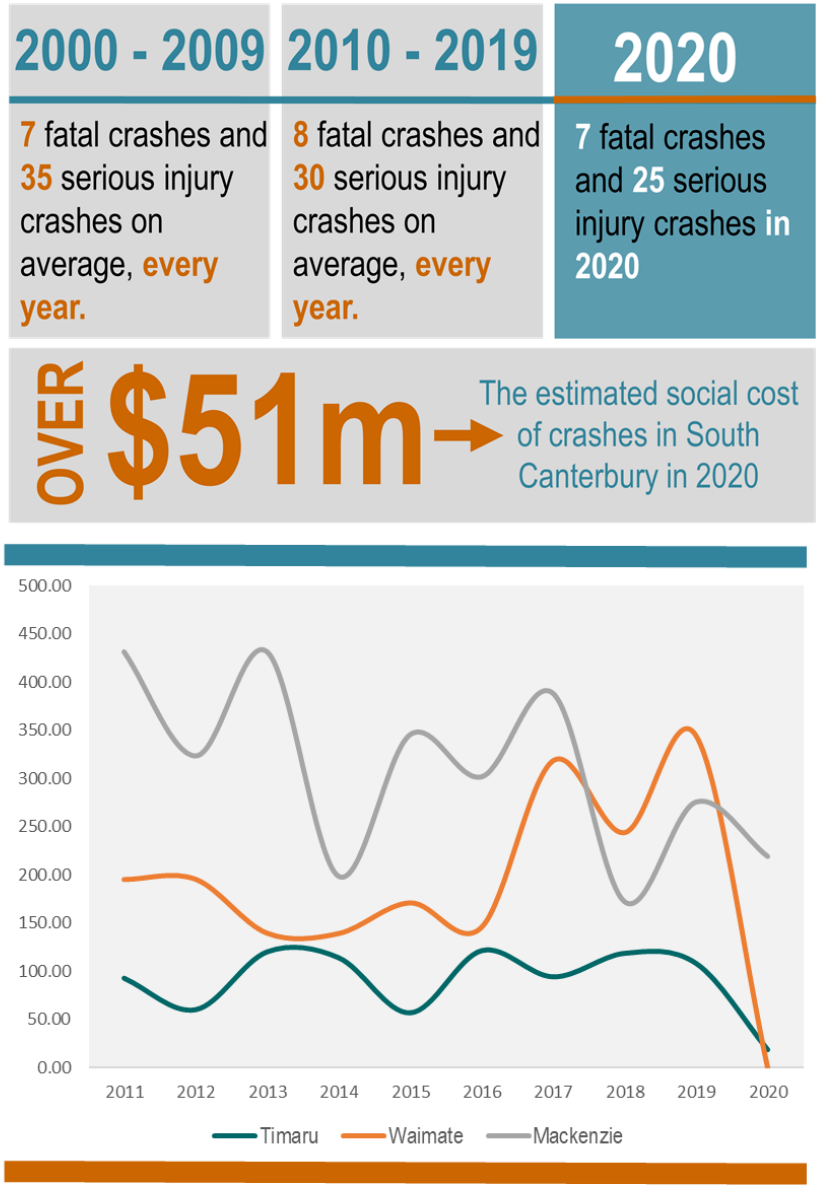
Despite previous efforts to improve road safety, there have been no material improvements to road safety over the past two de cades. Loss of life and serious injury should not be an inevitable cost of travelling through South Canterbury.

With new national targets to reduce fatal and serious injury crashes by 40% over the next decade, South Canterbury needs to be bold and take a high level of responsibility for improving local road safety.

In the rear view – the case for change

Reflecting on South Canterbury's road safety track record, the following is clear:

- Road safety is not improving
- South Canterbury experiences more than its fair share of New Zealand's fatal and serious injury crashes
- The same key factors are contributing to fatal and serious injury crashes year upon year
- Certain demographics are more at risk than others
- We need a step change in our road safety activity, reinforced by improved collaboration on, accountability for and commitment to road safety targets.



Key Facts

Road safety is not improving in South Canterbury

In Timaru and Mackenzie Districts, crash trends have peaked and troughed over various years between 2010 and 2019, but over the decade have remained at a relatively constant level - 2019 metrics show little change from those recorded in 2010.

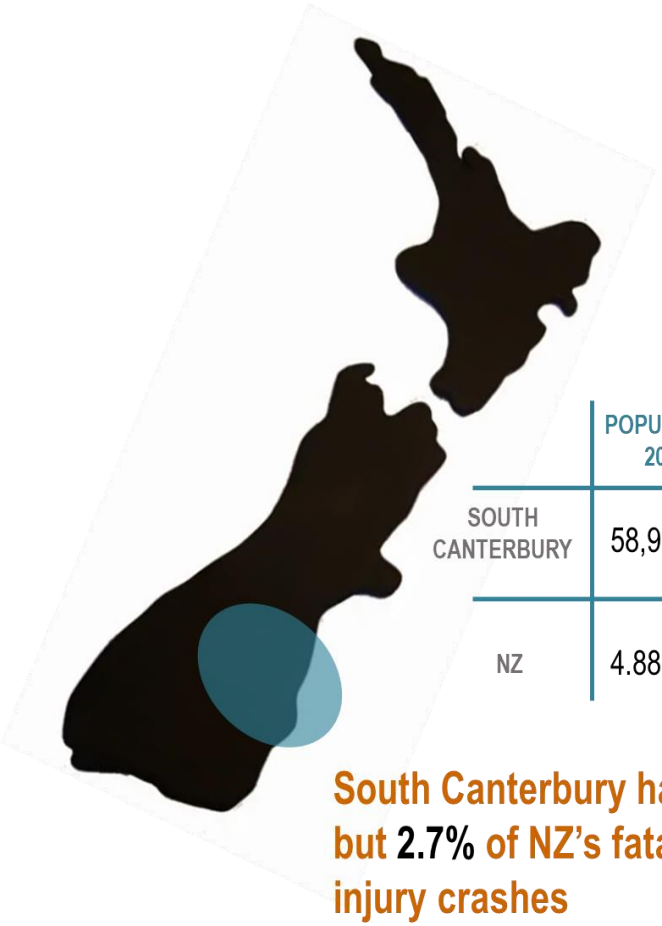
In Waimate District, the number of fatal and serious injury crashes has increased approximately twofold since 2010, though this dropped in 2020 with no fatal or serious injury crashes recorded.

Last year alone the estimated social cost of crashes in South Canterbury was over $51Million

The social cost of crashes and injuries is huge, with an estimated cost of $51Million in 2020. This is based on an estimated average social cost of $5,374,100 per fatal crash, $551,700 per serious injury crash and $30,800 per minor injury crash. [1]

[1] https://www.transport.govt.nz/assets/Uploads/Report/SocialCostof-RoadCrashesandInjuries2019.pdf

South Canterbury experiences more than its fair share of New Zealand's fatal and serious injury crashes



	POPULATION 2018	DSI CRASHES EVERY YEAR ON AVERAGE 2010-2019
SOUTH CANTERBURY	58,977	8 fatal crashes 30 serious injury crashes
NZ	4.886m	283 fatal crashes 1932 serious injury crashes

South Canterbury has 1.2% of NZ's population, but 2.7% of NZ's fatal crashes and 1.7% serious injury crashes

A disproportionate number of people are dying or being seriously injured on our roads.

We're not learning

The same group of contributing factors are repeatedly recorded in relation to crashes in our region. In other words, we are making the same mistakes over and over.

Strong contributing factors to crashes in South Canterbury include:

- Loss of control around bends
- Loss of control on stationary roads
- Alcohol/drugs
- Failure to give way
- Speed
- Road position
- A strong portion of fatalities are attributed to head on crashes. [5]

Certain demographics are more at risk than others

Male drivers aged 15-29 are overrepresented in nearly all crash types in all Districts of South Canterbury.

In the Waimate District, male drivers aged 45-49 also show a stronger correlation with DSI crashes compared to other age/gender groups.

Only 29.7% of crashes are attributed to females on average across all Districts, compared to 70.3% attributed to males on ave rage across all Districts. [6]

[5] Daniel has these stats
[6] Daniel has these stats

We need a step change in our road safety activity, reinforced by improved collaboration on, accountability for and commitment to road safety targets

A South Canterbury Road Safety Co-ordinator has been appointed since the 1990s to coordinate, facilitate and manage local efforts to reduce identified road safety issues across the region. Supported by the coordinator, the Waimate, Mackenzie and Timaru District Councils have collaborated in recent years to promote road safety with particular focuses on rural driving, speed, fatigue and education on intersection safety.

Despite these strong efforts, road safety in our region has not improved.

A workshop held in December 2020 identified that while engagement and collaboration on road safety in South Canterbury has been successful, there is a need for a step change in the level and form of road safety activity undertaken. In particular, there is a need to:

- Incorporate more engineering and enforcement interventions alongside existing education interventions
- Critically analyse audiences and stakeholders for/to road safety activity, and tailor activity, communications and communications channels to those particular groups (acknowledging that one size doesn't fit all)
- Align strategically with national road safety initiatives
- Actively monitor and report on progress of road safety activity
- Focus on engagement, and not just awareness, of the community in road safety activity – with a view to shifting community perception of road safety.

A coordinated programme for delivering engineering, education and enforcement for road safety needs to be developed, including a framework for accountability. Limited funding is available to support implementation of community road safety programmes, so collaboration across the region is essential to ensure best use of resources and optimal positive impact from activity.

National context

Nationally, the New Zealand statistics show that while some progress has been made, there is still a long way to go. In the past 20 years there has not been a significant reduction in deaths and injuries:

- 2000 – 2009 – 372 fatal crashes, 2070 serious injury crashes[7] *is this 372 per year, or for the total nine year period?*
- 2010 – 2019 – 293 fatal crashes, 1932 serious injury crashes *same question*

In 2019 the NZ government announced its new road safety strategy, *Road to Zero: New Zealand's Road Safety Strategy 2020 -2030*. The strategy sets out the Government's vision for a New Zealand where no one is killed or seriously injured in road crashes. It includes principles for designing the road network, making road safety decisions and sets national targets for 2030. It contains 5 key focus areas:

  - Infrastructure improvements and speed management
  - Vehicle safety
  - Work-related road safety
  - Road user choices
  - System management

The strategy targets an overall 40% national reduction in fatal and injury crashes by 2030, using 2018 figures as the starting threshold.

The challenge for South Canterbury is to take responsibility for the part local crashes play in the national statistics and be accountable for achieving the 40% reduction target.

The road ahead – our vision

"South Canterbury road users demand high standards of road safety and are fully supported by road safety agencies on the Road to Zero target."

How we will get there?

The goal of the Road Safety Strategy is to enable collaborative planning across road safety partner agencies to reduce deaths and serious injuries on South Canterbury roads.

The South Canterbury Road Safety Working Group has contributing members representing the Timaru, Mackenzie and Waimate District Councils, Canterbury Road Policing, Waka Kotahi NZ Transport Agency, Fire and Emergency NZ and the Automobile Association.

The Road Safety Action Plan (see page 9) is our vehicle for implementation of the strategy across the South Canterbury district councils and various road safety agencies. This provides the mechanism to ensure co-ordination initiatives to target road safety problems at a local level. Our three focus areas are:

- Education and engagement
- Engineering
- Enforcement

Target for 2029

- **South Canterbury has a Road to Zero target of reducing the number of fatal and serious injury crashes by 40% by 2029.**
- **South Canterbury need to have three less fatal crashes and 12 fewer serious injury crashed every year for the next nine years.***

  *Based on average annual figures from 2010-2019.

Graph of target against National target – need raw data from CAS

Road Safety Action Plan

Focus area 1: Education and Engagement

Education and Engagement activities include awareness raising, formal education and training to ensure that all road users have the appropriate attitudes, knowledge and skills to ensure safe road behaviours and reduce the chance of committing errors.

Through the Road Safety Action Plan we will support South Canterbury communities to demand high standard for local road safety.

Achieving this goal will require focus on four key focus areas chosen because of their impact on improving South Canterbury Road Safety. These will include:

- *Providing thought leadership for achieving Road to Zero in South Canterbury.*
- *Integrating with NZ Police national media and enforcement campaigns.*
- *Targeting the 15-29 and 40-44 year age groups.*
- *Developing safe road behaviours in younger people.*

Initiatives will include:

Thought leadership – This programme will be key to raising local awareness of the importance of safe driving behaviours, ensuring local drivers are aware of how South Canterbury is progressing on the Road to Zero. This will include:

- Road to Zero updates, including an annual report and progress reports throughout the year. Explains our goals and how we are progressing in those areas.
- Also sharing road safety updates and related current affairs. Implemented via multiple channels, *including* regional online social media, radio and local media advertising.

Current Year	Action	Lead Agency	Support Agency	Timing
1. Provide thought leadership for Road to Zero in South Canterbury				
Target: • **Growing commitment to South Canterbury's progress in Road to Zero** – *Council survey.*				
a.	Road to Zero updates	SC Road Safety Co-ordinator	District Councils	3x a year
b.	Identify one thought leadership event annually 2021 – High School VR technology launch, rally driver Haydon Paddon.	SC Road Safety Co-ordinator	District Councils	Annual
2. Integrate South Canterbury public education and awareness activities with NZ Police national media and enforcement campaigns				
Target • **Annual campaigns to align with national campaigns**				
a.	Campaigns for three current year: - Drink driving - Driving distractions - Safe speeds	SC Road Safety Committee	NZ Police	14-30 April 2021 1-26 July 2021 4-30 October 2021

Current Year	Action	Lead Agency	Support Agency	Timing
3. Deliver education programmes targeting the 15-29 and 40-44 year age groups				
Targets • **Implement … VR.. in all South Canterbury high schools** • **Car safety rating programme reaches ..** • **XX number restricted/learner drivers participate in Leading Learners programme annually**				
2021	Senior high school VR in x schools reaching x pupils			
	Car safety rating programme			
	Leading Learners Restricted/learner driver education programme for x drivers			
	Work places VR game for 40-44 year olds			
	Drug driving…			
4. Develop safe road behaviours in the next generation				
Targets				
	Punch and Judy for x children – numbers in MDC< TDC, WDC			
c.				
d.				

Focus area 2: Engineering

Engineering activities cover the work undertaken to maintain and improve the roading network. Much of the opportunity for working in this area involves collaboration across the different stakeholders involved. Land transport work is carried out by the three District Councils and Waka Kotahi NZ Transport Agency. Multiple other agencies are also involved in engineering initiatives, including NZ Police.

Our three priority areas for action will include:

- *Focus on the leading causes of crashes in South Canterbury.*
- *Proactive engagement with Council planning and regulatory functions and funding processes.*
- *Fostering a road safety culture across Council and Waka Kotahi contractors.*

Current Year	Action	Lead Agency	Support Agency	Timing
1. Focus on leading causes of crashes in South Canterbury				
Target: • *Co-ordinated engineering initiatives supported by community engagement in key areas.*				
a.	Response to crashes on bends - Joint Delineation and Signage Strategy developed and implemented across South Canterbury	Council Engineers, Comms	Aoraki Roading Collaboration, Waka Kotahi NZ Transport Agency	July 2021 for Joint Project Plan – Suzy/Josie Implementation in next three years
b.	Visibility – identify joint maintenance programmes to target problem areas e.g. drop offs, vegetation, planting to meet visibility standards, sight benchmarking treatments	Council Engineers, Road Safety Co-ordinator, Comms	NZ Police	July 2021 for Joint Project Plan - Kevin
c.	Identifying hazardous faults and marking hazards	Councils, Road Safety Co-ordinator	Automobile Association, NZ Police	
2. Proactive engagement with Council planning and regulatory functions and funding processes				
Target • *Better co-ordination between engineering and other council functions*				

Current Year	Action	Lead Agency	Support Agency	Timing
a.	Work collaboratively with council regulatory units, with joint focus areas identified across the three councils e.g. verge and roadside activities	Councils' engineering and regulatory units		July 2021 for Joint Project Plan – Selina and council staff x3
b.	Improve district plan linkages with road safety e.g. new house requirements for driveways, rural mail access, school bus stops	Councils' engineering and planning units		July 2021 for Joint Project Plan – Kevin and council staff x3
3. Fostering a road safety culture across Council and Waka Kotahi roading contractors				
Target • *Staged approach to bringing Council and State Highway contractors on board*				
a.	Council Road Maintenance contracts have Health and Safety KRAs with measures for logging network hazards and contributing to safe road use	Council Engineers, Waka Kotahi		Starts 1 July 2021 with new contracts
b.	Development of network Health and Safety focus for other Council contracts – introducing KPIs to monitor	Council engineers – land transport, utilities		Ongoing
c.	Temporary Traffic Management contributes to road safety outcomes	Council TMCs, Waka Kotahi		July 2021 for Joint Project Plan
d.	Review safety pre-renewals and improvements to ensure safer network e.g. culvert length safety review			

Focus area 2: Enforcement

- Recognition that Police activities are not the only levers for enforcing road safety
- Recognition that enforcement, along with education, changes behaviour. Need to align enforcement activity with education activity to maximise effectiveness
- Investigate use of local bylaws to enforce safer roadsides. The foundation for change can be laid now, and should include all four Councils in the South Canterbury Aoraki Roading Collaboration
- Speed
    - Boldness of Senior Leadership/elected members to support lower speeds
    - Opportunity to be a national leader in speed management
- Delineation as a form of enforcement (low volume roads are the most unsafe)

Current Year	Action	Lead Agency	Support Agency	Timing
4. Provide thought leadership for Road to Zero in South Canterbury				
Target: • .				
d.				
e.				
f.				
5. Integrate South Canterbury public education and awareness activities with NZ Police national media and enforcement campaigns				
Target •				
	-			
6. Deliver education programmes targeting the 15-29 and 40-44 year age groups				
Targets				

Current Year	Action	Lead Agency	Support Agency	Timing
•				
2021				