Roading and Footpaths Activity & Asset Management Plan 2024-2034

TIMARU DISTRICT COUNCIL
Te Kaunihera ā-Rohe o Te Tihi o Maru

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ASSOCIATED DOCUMENTS: Timaru District Council Long Term Plan, Infrastructure Strategy, Financial Strategy District Plan

Contents

Executive Summary

Welcome to the Timaru District Council Activity and Asset Management Plan (AMP) 2024-2034 for roading and footpaths. This document provides the blueprint for our management of roads and footpaths in the District over the next ten years. The AMP will:

- Ensure that investment in roading and footpaths is aligned with Timaru District Council's Community Outcomes and the Ministry of Transport's Transport Outcomes Framework, supporting prudent stewardship of land transport assets for multiple generations.
- Provide inputs to the two main funding sources for this activity, Timaru District Council's Long Term Plan 2024-34 and Waka Kotahi – NZ Transport Agency's National Land Transport Programme, which will be reviewed in 2024.

This AMP outlines a reviewed and refreshed strategic direction for investment in our District, underpinned by our commitment to fostering an efficient, sustainable, and resilient land transport network.

As we navigate local, national and global challenges, our focus remains on addressing key issues and driving opportunities to improve the overall mobility and connectivity within the Timaru District.

What we manage

Timaru District Council is the steward of over $1 billion land transport assets including:

- Roads with a replacement value of approximately $600 million - over 1700 kilometres of roads, 57% sealed and 43% unsealed
- Bridges/structures worth $160 million - 176 bridges, 147 large culverts, 25 retaining walls, 57 concrete fords and 12,700m of railings
- Over 350 kilometres of footpaths worth $77 million
- Drainage assets worth $145 million – including catchpits, soak pits, sumps, culverts, fords, drains, stormwater channels, kerb and channel
- Over $40 million worth of street furniture, street and traffic lights, street signs and markings

Strategic drivers

Preparation of this plan is guided by key national/regional strategy and policy documents, including:

- Government Policy Statement (GPS) on Land Transport
- Ministry of Transport Outcomes Framework
- Government's Road to Zero Strategy
- National Land Transport Programme (NLTP)
- Regional Land Transport Plan (RLTP)
- Timaru District Council Long Term Plan and Community Wellbeing Outcomes
- One Network Framework (ONF)

Our Programme Business Case aligns to local context and several other internal Council strategies and policies that influence asset management delivery. Our activities are supported by robust procurement, stakeholder engagement/communications, data collection and partnering/knowledge sharing strategies and approaches.

Key issues

The programme of works in this AMP is built on a robust investment logic that reflects key problems affecting the network, the priorities of our Elected Members/benefits sought for community and corresponding strategic responses. Core issues include:

- **Ageing and deteriorating infrastructure -** consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction.
- **Resilience -** the roading network lacks resilience against natural and human-related hazards, decreasing accessibility and increasing costs.
- **Safety -** road network deficiencies, inappropriate speed environments and poor driver attitudes result in deaths and serious injuries on our roads.
- **Mode choice -** a lack of appropriate infrastructure to support mobility alternatives is limiting transport options within our community, slowing transition to a lower carbon transport system and sustainable urban environments.

Specific investment challenges and responses

Timaru's economic resilience and growth are key drivers for proactive investment in land transport assets. Our District's thriving agriculture, manufacturing, and distribution industries contribute to economic expansion, and continue to strain transport infrastructure. Recognising this, Council has opted to invest above and beyond the low Waka Kotahi approved levels to maintain our network in optimal condition. This has helped us keep up with demands to date.

Our tailored approach to maintenance of the network has positioned us as a leader among counterparts for cost-efficiency. We employ differential levels of service, using data to drive decision-making on maintenance interventions that suit the type of asset, demand/use and a range of other environmental factors. This approach means we get the best bang for buck and channel budgets into the parts of the network that need it most.

We continue to invest in well-maintained pedestrian and cycling infrastructure, promoting safer and environmentally friendly travel. This sustainable focus aligns with national and regional efforts to reduce the carbon footprint associated with transportation.

Timaru faces the challenge of balancing the needs of its rural and urban areas. Now more than ever, there seems to be little understanding in the community that unsealed roads are dynamic and conditions can change quickly - rain causes increased potholes, and in the summer dust nuisance can be prevalent. Our team considers that there are some 90km of the 731km unsealed network that would benefit from a proactive seal extension programme, if this was an issue that Council would like to resolve. Seal extensions are unfunded by Waka Kotahi so would require full investment by Council. Managing drainage maintenance requires a delicate balance between functionality and aesthetics, presenting an ongoing challenge for the Council in devising effective solutions that satisfy both urban and rural residents.

We continue to grapple with aging structures, street light cable lifespans, unstable seals, and weather-related road and bridge issues. Adequate funding and strategic planning are deemed imperative to address these challenges effectively and ensure the ongoing maintenance and renewal of critical infrastructure for ratepayer and road user access, safety and economic growth.

Environmental changes, such as unstable river flows and increased roadside growth due to climate-induced alterations, necessitate augmented funding for maintenance and visibility measures. This includes initiatives like tree pruning and amenity mowing to manage these changes effectively and ensure road safety in evolving environmental conditions.

The upcoming decade and beyond brings a surge in bridge renewals, demanding increased budgets to meet safety standards.

Concerns over loss of control crashes highlight the need for enhanced road marking, signage, and intersection treatments. This underscores the Council's commitment to ensuring the safety of roads and bridges, aligning with broader objectives for a secure and reliable transportation network.

Despite investments and efforts, road user satisfaction has experienced a minor decline, emphasizing the need for prudent fund allocation. A dedicated staff member undertakes stakeholder engagement, focusing on continuous community education, targeted campaigns, and fostering a sense of ownership among residents to bridge the satisfaction gap and enhance overall community engagement with transport initiatives.

Financial summary

This AMP will be refined as we work through the Long Term Plan process for Council. The content supplied reflects budget requests at the time of writing. Should Waka Kotahi or Council choose not to meet this funding level, further options assessment will need to be completed to reduce levels of service, understand corresponding residual risk for the programme, and reduce asset management improvement activities.

Operational programme

The proposed operational programme in this AMP comprises approximately $10,900,000.00 of annual spending. It is anticipated that investment in maintenance and operations will remain steady for the foreseeable future, with some increases to improve resilience and address areas of the network where we are seeing accelerated deterioration.

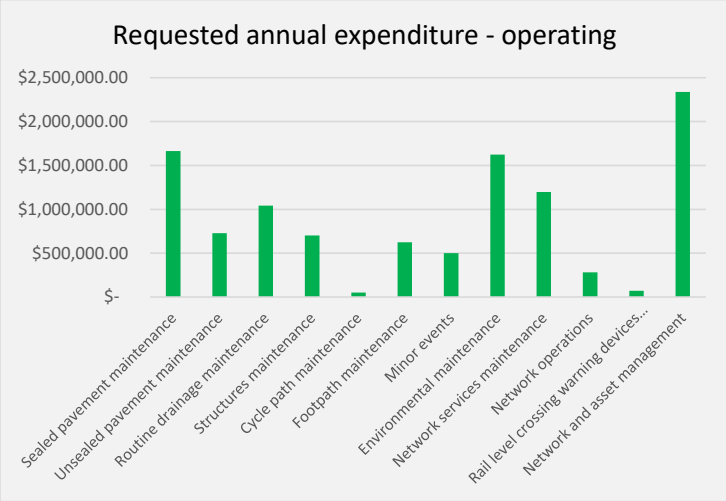

Fig 1: Summary of requested annual operating expenditure

Capital programme

The proposed capital programme in this AMP comprises approximately $16,200,000.00 of annual spending, an increase of approximately $4 million on 2023 Council budgets. Increases here are largely influenced by ongoing cost escalations, as well as the large wave of bridges and structures on the network coming up for renewal over the next 10 years and the need to maximise remaining life of these assets.

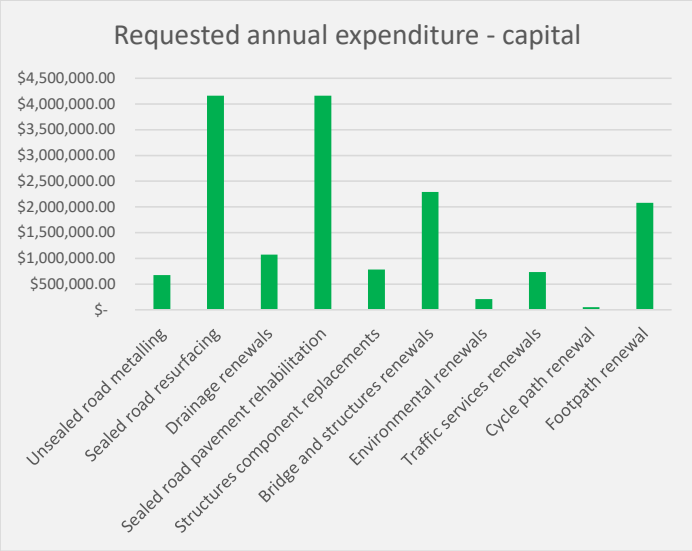

Fig 2: Summary of requested annual capital expenditure

Risk and improvements

This AMP also addresses our operational risks including key mitigations and programme responses. Our improvement plan addresses specific opportunities to continuously improve asset management and build on existing risk mitigations. We consider this AMP to be a living document, fostering a proactive approach to managing assets ongoing, and encouraging growth, resilience, and community involvement in ensuring robust transportation infrastructure for future generations.

Fig 3: Timaru city centre

Introduction

Purpose of the plan

The purpose of this Activity and Asset Management Plan (AMP) is to provide an update to the 2021-31 Activity Management Plan. This is within the cycle for the 2021-31 Long Term Plan, which is undergoing a three yearly review in the same timeframe.

It takes into account changes to the major drivers for asset management e.g. changes to demand, impacts of changes to the Government Policy Statement for Land Transport.

In response to recommendations from the Roading Efficiency Group (now Te Ringa Maimoa) the Strategic Case has been reviewed to improve alignment with the Programme Business Case in the second half of the document.

The previous plan has also been updated by members of the Land Transport Unit to strengthen the linkage between the AMP and actual operational activity. There has been a focus on involvement of relevant staff as SMEs from across the unit in order to grow overall capability in asset management.

The two main functions of the AMP are:

- Ensuring prudent stewardship of land transport assets for multiple generations, in alignment with the district's Community Outcomes and the Ministry of Transport's Transport Outcomes Framework.
- Providing inputs to the two main funding sources for this activity, TDC's Long Term Plan and Waka Kotahi – NZ Transport Agency's National Land Transport Programme.

Our overarching purpose is to identify the options for investment in TDC's land transport assets and justify the choices made in the best interests of the wider community.

The principal outputs from this AMP are:

- To provide an overview of the land transportation assets, activities and intended outcomes
- A strategic assessment of the problems and opportunities that face our transport system
- Discussion on the balance of demand, levels of service and cost
- A proposed investment programme for the next 10 years
- Identifying any requirements for Council Policy for implementation and review.
- Identification and prioritisation of opportunities continuous improvement where allocated funding allows.

AMP structure

To ensure we deliver on the above outputs, the structure of this AMP is aligned with the NZ Treasury Business Case approach, as follows:

AMP sections	Key Focus	Audience
Part A: Strategic Case	Introduction to the Activity & Asset Management Plan, strategic context, assumptions and demand, levels of service, financial summary and risk.	Timaru District Council, Waka Kotahi, Community
Part B: Programme Case	Describes the assets we own, managing the activity, options analysis, work programmes and activity-based financial summaries.	Same as above, but also internal stakeholders, including the Land Transport Unit and other Council teams.

PART A: STRATEGIC CASE

1. Strategic context

This section provides the strategic context for the management of roading activities and assets in the Timaru District, which is determined by:

- Government direction
- Council frameworks
- The local land transport network
- Stakeholder inputs and outcomes
- Funding

Included is a summary of legislative requirements and the relevant national, regional and local contexts that influence the AMP, associated Levels of Service and service delivery.

1.1 Strategic Outcomes Framework and Key Legislation

Government strategy, legislation and policy setting all play a significant role in the direction of national and local transport management and planning.

The Ministry of Transport Strategic Outcomes Framework (see Figure 4) sets out the long term, national vision for transportation and infrastructure development. The framework is centred around wellbeing and liveability and is aligned with the Treasury's Living Standards Framework.

Central Government's direction to Road Controlling Authorities, including Timaru District Council, is through the Land Transport Management Act 2003 and the triennial Government Policy Statement on Land Transport. These documents provide strategic direction to New Zealand's land transport networks.

Fig 4: Strategic Outcomes Framework

1.2 Government Policy Statement

The Government Policy Statement on land transport (GPS) takes into account the Ministry of Transport Outcomes and outlines the Government's strategy to guide land transport investments over the next 10 years and guidance on where Government will focus resources.

Strategic Priorities from the Draft GPS are:

- **Maintaining and operating the system** - The condition of the existing transport system is efficiently maintained at a level that meets the current and future needs of users.
- **Increasing resilience** - The transport system is better able to cope with natural and anthropogenic hazards.
- **Reducing emissions -** Transitioning to a lower carbon transport system.

- **Safety -** The primary focus of this priority is to make transport substantially safer for all.
- **Sustainable urban and regional development** - People can readily and reliably access social, cultural, and economic opportunities through a variety of transport options. Sustainable urban and regional development is focused on developing resilient and productive towns and cities that have a range of low-emission transport options and low congestion.
- **Integrated freight system -** Well-designed and operated transport corridors and hubs that provide efficient, reliable, resilient, multi-modal, and low-carbon connections to support productive economic activity.

For Timaru District Council, the GPS is key to investment in the district through the National Land Transport Programme. In order to be able to access this funding, the district needs to be able to show:

- Alignment – Does the proposed investment align with the strategic priorities of the GPS?
- Effectiveness – To what extent does the proposal achieve the priorities of the GPS?
- Efficiency – Is this being achieved at the best cost for the results being delivered?

An important change in the 2023 GPS which has influenced this Activity Management Plan is the increased focus on resilience.

We acknowledge that a review of the GPS will be undertaken during 2023/24 by the new Government, and that this may result in a change to strategic priorities. This business case responds to the operative draft GPS until such time an update is issued.

1.3 Road to Zero

The Road to Zero 2020 -2030 Strategy sets out Government's blue print for improving safety across the road system.

The Road to Zero vision is:

"A New Zealand where no one is killed or seriously injured in road crashes. This means that no death or serious injury while travelling on our roads is acceptable".

The Vision Zero model is an overview of how the strategy is to be implemented, providing the basic framework for road safety campaigns, promotions and advertising in New Zealand. See https://www.transport.govt.nz/area-of-interest/safety/road-to-zero/ .

Timaru District has adopted Government's Vision Zero model, and has an aligned, active road safety programme to ensure Timaru District contributes to the vision for all of New Zealand.

1.4 National Land Transport Programme (NLTP)

The NLTP (2021-24) is a three-year programme of planned activities and a ten-year forecast of revenue and expenditure prepared by the NZ Transport Agency – Waka Kotahi to give effect to the GPS. The NLTP is a partnership between Waka Kotahi, which invests NLTF funding on behalf of the Crown, and local government, which invests local funding on behalf of ratepayers. The NLTP is comprised of locally led activities put forward by Regional Transport Committees in their Regional Land Transport Plans and activities included in the Transport Agency Investment Proposal.

Timaru District contributes to the Canterbury Regional Land Transport Plan (RLTP), which provides the basis for Waka Kotahi's investment in the district. This sets out:

- The current state of the Canterbury's transport network
- Priorities for investment
- A 10-year programme.

The current Regional Land Transport Plan 2021-31 has been in effect since 1 July 2021 and has been reviewed in 2024, but can be changed by variation before then e.g. to align better with changes in the Government Policy Statement.

1.5 Regional Land Transport Plan (RLTP)

The Canterbury Regional Land Transport Plan 2021-31 is prepared by the Regional Transport Committee, a collaboration of the region's Councils and Waka Kotahi NZ Transport Agency.

The RLTP sets out the current state of our transport network, the challenges we face, and the priorities for future investment. This includes:

- The context in which the transport system operates
- The vision and strategic objectives for the transport system
- The priorities for investment – key areas where further investment is required in order to achieve the vision and objectives
- A prioritised regional programme of transport activities.

Activities must be included in the RLTP in order to be eligible for National Land Transport Funding. The RLTP is reviewed every three years and will be updated in 2024.

The draft vision for the 2024 RLTP is: "An innovative low emissions transport system that helps Canterbury thrive for generations."

Regional Land Transport Plan – 30-year vision

An innovative, resilient, low emissions transport system that helps Canterbury thrive for generations

Strategic objectives we will deliver our vision with

Maintenance Strengthen the maintenance of the current network, so the network continues to underpin the outcomes across the region	**Resilience** Develop a resilient transport network that can better cope with unknown stresses, natural disasters and climate change impacts	**Emissions** Develop a range of transport emission reduction solutions across Canterbury to reduce negative environmental and health impacts
Growth Develop the transport network to support well-planned, quality urban environments in areas of high growth	**Safety** Reduce harm on our roads	**Freight** Transition to a low emission freight system that is more resilient, productive, and innovative

Headline targets

Number of deaths and serious injuries on Canterbury's roads: 40% reduction in deaths and serious injuries on Canterbury roads by 2030	**Greenhouse gas emissions from land transport in Canterbury:** 41% reduction in greenhouse gas emissions from land transport in Canterbury by 2035	**Tonnage of freight moved by rail in Canterbury:** 100% increase in tonnage of freight moved by rail in Canterbury by 2034

Ten-year transport investment priorities

Create a well-maintained network	**Manage risk of exposure to extreme events**	**Support and develop connected public transport and active transport networks**	**Implementing safer systems**	**Support and develop freight systems connecting to air, rail, and sea**

Fig 5: Draft 2024-34 Canterbury Regional Land Transport Plan, vision, targets and investment priorities.

1.6 Council framework and network context

The Activity Management Plan takes into account key Council strategies and planning documents. In particular:

- The 30 year Infrastructure Strategy is at the nucleus of TDC infrastructure planning. This document identifies the emerging issues and opportunities for service delivery over the longer term.
- The Long Term Plan is the document and process whereby the Council reaches agreement with the community about the strategic direction and priorities for all Council activities. It demonstrates how the services contribute to achieving the community outcomes both the community and council are working towards for our district.

Both of these documents provide direction for roading activity management. As shown in Figure 6, the Activity Management Plan is aligned with the Long Term Plan cycle, with a ten year plan and a three yearly review cycle. This current plan is part of that three yearly review. It will then form part of the Council's reviewed Long Term Plan.

1.6.1 Council Long Term Plan 2021-31

In 2021 Timaru District Council adopted the 2021-31 Long Term Plan, which defines the work programme over that period. Our overall strategic direction is guided by the District's Vision and Community Wellbeing Outcomes. Land Transport plays an active role in delivery of the vision and all of the community outcomes.

Fig 6: Overview of TDC planning framework and Timaru District Council Vision, Values and Community Wellbeing Outcomes 2021-2031 LTP (2024 LTP currently in development).

1.6.2 Land Transport Programme – benefit, cost and risk profile

The diagram below outlines the division of Land Transport activities in relation to Council's Community Wellbeing outcomes, relative cost and risk profiles. Along with the broader considerations included in our strategic case, this context underpins the development of our programme business case. Generally, activities associated with foundational infrastructure are high cost and carry a greater level of operational risk. However, these activities are the largest contributors to Council's community wellbeing outcomes and are critical in particular to maintaining community connections, enabling our diverse economy and supporting resilience. Funding of the preferred options for these activities is vital to managing risk on the network, and to delivering levels of service that meet the community outcomes sought by Council.

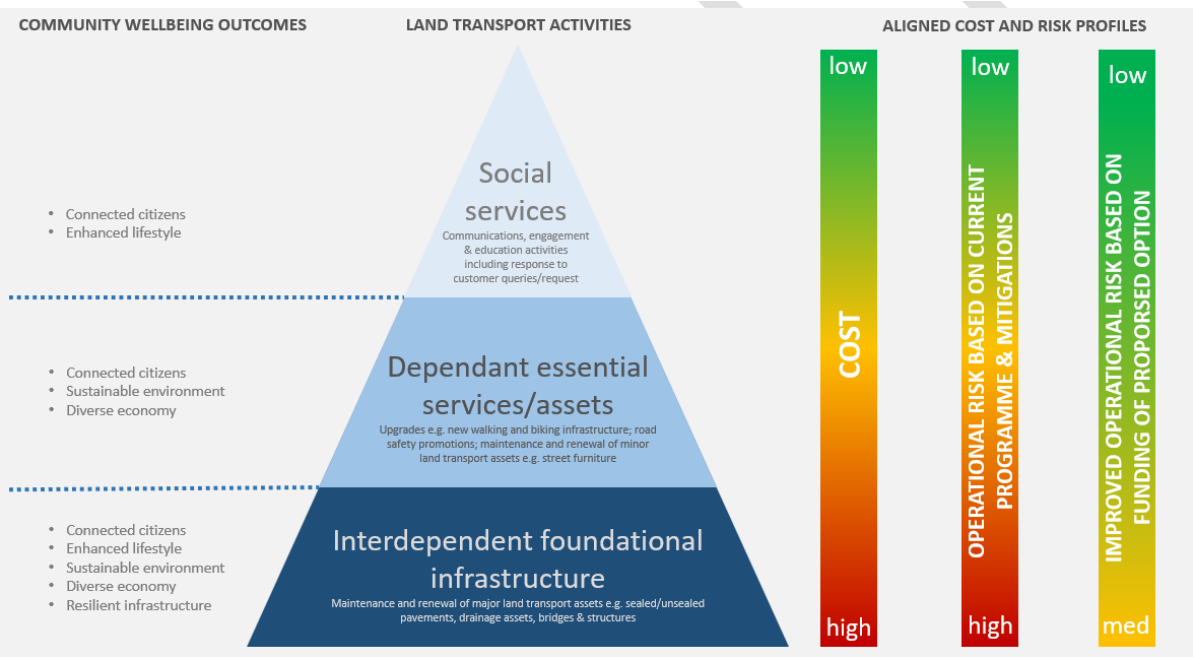

Fig 7: Land Transport Programme, Benefit, Cost, Risk Profile

1.6.3 Activity Management Planning Policy

This policy drives Timaru District's approach to activity management across council activities. For roading and footpaths, this requires assessment against the International Infrastructure Maintenance Manual (IIMM) Maturity Index prior to preparation of the AMP. This provides an indication of areas where there needs to be a focus on increasing asset management capability.

Note there are some areas where the size and scale of the district does not warrant used of the level of advanced asset management recommended by the IIMM. In these cases a development level appropriate to the size of the operation is chosen. Other initiatives have also been identified as the AMP has been prepared, noted throughout the document and within the Improvement Plan (Section 9).

Asset Management Maturity Improvement Initiatives: Throughout the development of this AMP there have been a number of areas that have been identified for improving our capability in asset management. These are identified in blue text throughout the document. In each case, the improvement proposed and the benefits of that initiative are identified. The initiatives are prioritised in the Improvement Plan, in Part B. Note that this work is dependent on resourcing being available from Timaru District Council and/or Waka Kotahi.

1.6.4 Other relevant Council strategies and policies

The Council has several other strategies and policies that influence asset management delivery, including:

- The Active Transport Strategy, which has been reviewed and is out for consultation with community in November/December 2023. The review takes into account the increased focus on reducing VKT to reduce climate change emissions, and also introduces a destination approach, creating and connecting small cyclable communities for tourism.
- Timaru District Council Transportation Vision 2006
- Timaru District Off-Road Walking and Biking Strategy, 2012 to 2032 (this will be superseded by the Active Transport Strategy refresh, however does attract different funding to Land Transport activities e.g. rates funding for local recreation)
- Geraldine Transport Strategy, 2021
- The draft Timaru District Climate Strategy, which is scheduled to be finalised later in 2023.
- Policies: Footpath Policy, Road Bridge Policy, Naming of Roads Policy, Parking Policy, Procurement Policy, Road Seal Extension Policy, Sealed Road Extension Policy, Urban Street Trees Policy, Vehicle Crossing Policy. Further policy development may be required pending available investment levels.
- Code Compliance Certificates (CCC) and NZS4404 are used for managing works and services constructed on the TDC network, including vested assets.
- Timaru District Backfill and Reinstatement Guidelines – to ensure quality reinstatement by utilities providers and their contractors.

1.6.5 Multiple planning cycles

Figure 8 gives an overview of the planning context for the Asset Management Plan across the various planning horizons from annual plans through to the longer term 30 year strategic planning documents. This illustrates how the Timaru District Council plans and central government's plans are linked through the overarching planning process. This is all underpinned by legislation and the Council's policies and bylaws.

Due to political cycles, national and local planning timelines do not always align. We consider there would be merit in a more integrated investment system for transport in New Zealand to improve the robustness and proactiveness of forward planning and enable continuity of funding through political cycles.

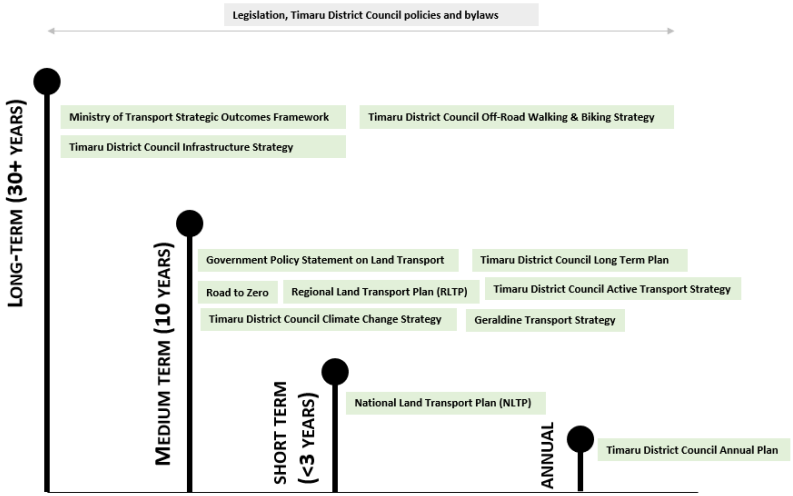

Fig 8: Timeframes for key strategies and plans underpinning the development of the Timaru District Council AMP.

1.7 Other key responses

1.7.1. Procurement Strategy

Contracts with suppliers are implemented in accordance with Council's Waka Kotahi-approved Procurement Strategy. Effective systems are in place, with compulsory approved procurement plans required for all contracts and use of qualified tender evaluators. Recent tenders have been well supported by suppliers e.g. the recent South Street bridge contract had eight tenders, with the price coming in under the Engineer's Estimate.

1.7.2 Stakeholder Communications and Engagement Strategy

A Communications and Engagement Strategy was developed and adopted in 2020, along with a suite of templates and tools to assist with implementation. The Strategy provides a frame for communicating with and educating the community on our activities, impacts and levels of service. With the support of a dedicated in-house Community Engagement Advisor, the result has been a significant uplift in the quality and frequency of communications, received well by the community. A recent project coordinated with Council's Water and Drainage Unit saw four months of significant disruption for one road in Timaru's

Fig 9: The focus of stakeholder engagement activity is to keep our community connected.

business centre, with very minimal complaint from tenants or residents. The focus of this activity is on keeping our community connected, both to our team and to the benefits of the projects we undertake.

As demand grows for increasing levels of service, there will be a need to build community understanding of the Council's need to balance affordability with providing acceptable levels of service, to achieve the best possible outcome for all network users.

1.7.3 Emphasis on robust evidence

Fit for purpose data collection and robust information management underpins sound decision-making. We have committed to strong data collection and this is continually helping improve knowledge and evidence-based decisions. We are pleased to see Te Ringa Maimoa drive national adoption of consistent data collection and the further development of analytical tools to support improved investment decisions.

1.7.4 Partnering and knowledge sharing

Staff work collaboratively with our partners, actively pursuing good working relationships and facilitating a strong culture of knowledge sharing with other Councils and contractors. Sharing of a cadet with maintenance contractor Fulton Hogan (commenced in January 2023) is helping to increase cross-pollination of knowledge and operations between teams and foster a dynamic working environment for up and coming talent. As a regional centre Timaru knows the challenges of recruiting skilled staff and is committed to supporting the development of the next generation of talent for the transport sector.

The Mid and South Canterbury councils' roading teams work together via the Aoraki Roading Collaboration, meeting monthly to promote knowledge sharing of the deep industry experience available across the councils and identify joint learnings. This means the councils can test ideas on multiple contracts and networks, and provides opportunity to align planning and policy for a more seamless network for road users.

We currently operate a joint resurfacing contract with Waimate District Council, and Mackenzie District Council has indicated a willingness to rejoin partnership for future resurfacing contracts.

1.7.5 Holistic options assessment approach

Our team is deliberate about testing options for programming against the outcomes sought, levels of service and community needs. Where relevant, we also carefully consider non-asset options such as policy or process advancement, appreciating that continuous improvement helps to keep us at the cutting edge of cost/resourcing efficiency, which ultimately ensures that our programme evolves with the changing needs of asset users.

1.8 Network overview, One Network Framework and One Network Road Classification

The One Network Framework (ONF) is a tool introduced in February 2023 to help consistently categorise all roads and streets in New Zealand based on their function and the ways that people use them. It's designed to support those managing and investing in the land transport system to better consider different ways people travel, land use, community wellbeing, economic activity and future growth.

Where the historic approach has been for investment to be driven by the movement of goods and people, the ONF acknowledges that roads and streets are also places where people spend time. It also aligns with Government's wellbeing and environmental outcomes and recognises that roads and streets are used by a mix of people including pedestrians, cyclists, public transport users, light vehicle traffic and freight operators.

Implications for Timaru District Council:

- ONF is effective for our rural roads with higher traffic volumes, as well as urban streets and peri-urban roads. It informs our review of the Active Transport strategy, planning for the CityTown network and streetscape enhancements to support businesses and urban development.
- ONF guides a more forward-facing approach to our network, particularly as we are looking to launch the development of a Network Operating Plan. This plan aims to define the roles of streets and facilitate a transition to a neighbourhood-focused network. The goal is to foster stronger community connections, enhance safety, and encourage greater use of active and public transportation options.
- Where previously, traffic volume was the main driver of TDC investment, the shift towards ONF thinking has driven our efforts to create more people-centric spaces in the urban Timaru. This shift has been supported by securing funding through successful applications to initiatives like the Streets for People and Transport Choices Packages. This approach has begun showcasing varying service levels within the Timaru urban centre, but further work is needed to extend this approach to smaller townships within the district. Pleasant Point is going to be the first township piloted, with Timaru District Council pleased to receive further Streets for People funding to connect the Central South Cycle Trail through the township. Drop in sessions have seen the plan received well so far by community.

While ONF adequately addresses most road types, we find that its "Rural Roads" category lacks the granularity required for prioritizing investment in rural roads. For such cases, we revert to ONRC. We propose introducing classifications such as Secondary Collector, Access, and Access Low Volume, which would include Type A, B, C and D roads. For instance:

- Type A roads have up to 50 vehicles per day (VPD) and light heavy commercial vehicle (HCV) usage
- Type B roads have less than 20 VPD and minimal HCV usage
- Type C roads have less than 10 VPD and negligible HCV usage
- Type D roads are generally low volume in nature but access Department of Conservation Te Papa Atawhai estates so will have variable access requirements pending on local and international visitor trends.

This refined classification would aid in more transparent level of service conversations with the road user and ratepayer explaining the need for prioritization of investment on the rural road network.

1.8.1 Network overview

The diverse landscapes of the Timaru District include rolling downlands, tussock land, coastal plains and wetlands, forest remnants, river gorges and rugged mountain ranges.

The coastal plains to the north and downlands to the south are highly modified for intensive cropping, meat, wool and dairy production.

The district is a regional transportation hub, servicing significant agricultural areas, associated processing plants and a significant port operation.

Key land transport linkages include:

- The Waka Kotahi NZ Transport Agency Network, with State Highway One from Ashburton through to Oamaru in the south; State Highway 73 through Geraldine to Fairlie in the west; and State Highway 8 from Timaru through Pleasant Point to Fairlie.
- Boundaries with other district council networks, with Ashburton District to the north, Mackenzie District to the west, and Waimate District to the south.
- PrimePort Timaru, a major South Island cargo and logging port, is less than 1km off State Highway 1 in Timaru.
- The Richard Pearse Timaru Airport is also located close to State Highway 1, 4km north of Washdyke.

The main trunk railway line runs parallel with State Highway 1. The network includes 1726km of roads, comprising of 976km in sealed roads and 750km in unsealed roads. Overall the network is made up of 14% of urban roads and 86% of rural roads. It also includes 354km of footpaths, over 4000 streetlights, 258 bridges, over 7,600 signs and over 4000 culverts.

As shown in the graphic below and tables overleaf, most of the travel on the network is on higher volume urban and heavy vehicle travel routes, which is where investment is prioritised.

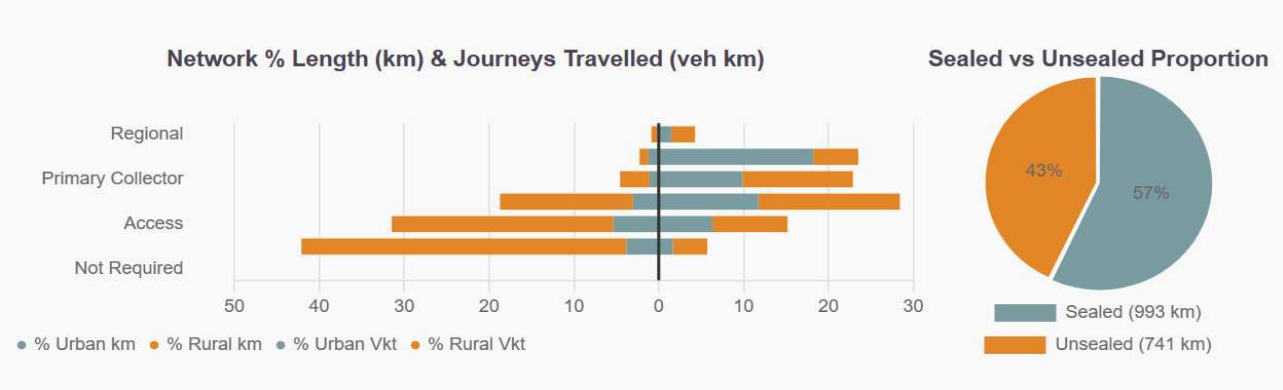

Fig 10: Network overview – a high number of trips are taken on our arterial and above roads. However with 43% of the network unsealed, there is still a large number of ratepayers that access these unsealed low volume roads, and as a result this impacts their perception of levels of service provided across the network. This trend is discussed in further detail later in this document.

ONF CATEGORY	TOTAL LENGTH (KM)	TOTAL LENGTH (%)	SEALED (KM)	UNSEALED (KM)	LANE (KM)	VEHICLE JOURNEY (MVKT)
Transit Corridors	0.4	0%	0.4	0	0.8	0.4
Urban Connectors	47.5	2.7%	47.5	0	94.8	64.5
City Hubs	1	0.1%	1	0	2	1.5
Activity Streets	18	1%	18	0	36	15
Main Streets	1.7	0.1%	1.7	0	3.2	2.1
Local Streets	166.4	96%	165.1	1.3	328.9	34.1
Civic Spaces	1.5	0.1%	1.5	0	2.6	0.8
Total Urban Network	236.4	13.6%	235.2	1.3	468.3	118.3
Stopping Places	3.1	0.2%	3.1	0	6.3	0.4
Rural Connectors	333.1	19.2%	284.6	48.6	664.9	76.5
Peri-urban Roads	77.1	4.4%	68.8	8.3	158.1	11.6
Rural Roads	1072.5	61.8%	392	680.5	1939.4	29.3
Total Rural Network	1485.9	85.6%	748.5	737.4	2760.6	119.9
Unclassified	14.4	0.3%	12.5	1.9	26	1.3
Total Network	1736.8	100%	996.2	740.6	3254.9	239.4

Fig 11: ONF Categories for the network.

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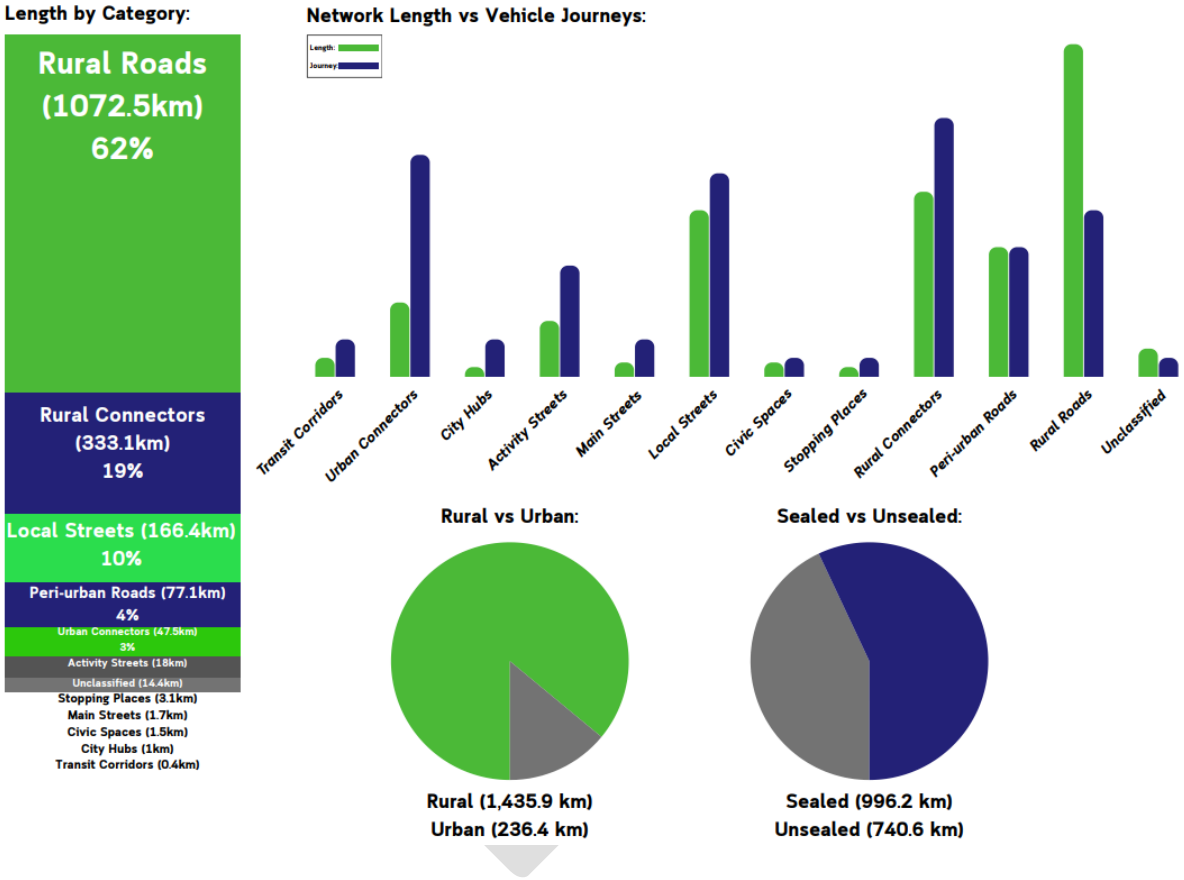


Fig 12: ONF Categories for the network.

2. Strategic links

A key purpose of the AMP is to link the Government's priorities identified in the Government Policy Statement and Regional Land Transport Strategies with Timaru District Council's own Long Term Plan, the One Network Roading Classification and One Network Framework Outcomes with our proposed Levels of Service. See table overleaf.

Strategic Priorities		*Link to Outcomes and Benefits*				Levels of Service
GPS Priorities & Outcomes	**RLTP Strategic Objectives**	**LTP Community Wellbeing Outcomes**	**TDC Asset Management Plan Benefits**	**ONRC Service Outcomes**	**ONF Service Outcomes**	**Council Levels of Service Statements**
Maintaining and operating the system - the condition of the existing transport system is efficiently maintained at a level that meets the current and future needs of users	**Maintenance - Strengthen the maintenance of the current network, so the network continues to underpin the outcomes across the region**	Connected citizens Enhanced lifestyle Diverse economy	A transport network that meets the needs of the community and freight sector An affordable network that is economically sustainable	The smoothness of the journey reflects the ONRC classification of the road. Manage the number of faults that detract from the customer experience (e.g. litter, graffiti, damaged or non-functioning furniture). The trucks that need to use roads with restrictions can do so. That traffic throughput is maximised on arterials and higher classifications in metropolitan areas to best satisfy demand.	5.3: Everyone has assurance that the work we do is necessary, is co-ordinated and is delivering value for money. Accessibility 10.1b: The transport system meets the needs of users	Rural and urban transport networks are designed to road user needs and maintained to nationally acceptable standards. Land transport assets are managed on budget, for longevity, utilizing innovation and circular models of product use.
Increasing resilience - The transport system is better able to cope with natural and anthropogenic hazards.	**Resilience** **Develop a resilient transport network that can better cope with unknown stresses, natural disasters and climate change impacts**	Resilient Infrastructure	Increased network resilience	The impact of unplanned events on journeys is minimised. Access to properties is available whenever practicable.	System Resilience 4.1a: People using the transport system can access social and economic opportunities, with limited disruption from unexpected outages Community Resilience 4.1b: Communities can respond and recover from an emergency event because they are well connected through the transport system	The transport system connects our communities, with limited disruption from unexpected outages/emergency events.
Reducing emissions - Transitioning to a lower car system.	**Emissions** **Develop a range of transport emission reduction solutions across Canterbury to reduce negative environmental and health impacts**	Sustainable environment	A transport network that supports sustainable urban and regional development		Health 3.2: Everyone can benefit from a transport system that limits harmful air emissions Environmental Sustainability 7.1: Everyone can benefit from a transport system that supports water quality (te mana o te wai) Environmental Sustainability 7.2: Everyone can benefit from a transport system that supports New Zealand's biodiversity Environmental Sustainability 8.1: Everyone can benefit from a transport system that limits greenhouse gas emissions Environmental Sustainability 9.1: Everyone can benefit from a transport system that makes efficient use of resources and limits waste	Infrastructure to support active and public transport is provided and maintained to nationally acceptable standards.

GPS Priorities & Outcomes	RLTP Strategic Objectives	LTP Community Wellbeing Outcomes	TDC Asset Management Plan Benefits	ONRC Service Outcomes	ONF Service Outcomes	Council Levels of Service
Safety - The primary focus of this priority is to make transport substantially safer for all.	**Safety** Reduce harm on our roads	Connected citizens	Substantially safer transport	Customer Outcome 1: the number of fatal and serious injuries on the network (Aim: The road and roadside are becoming safer for road users.) Customer Outcome 2: collective risk (fatal and serious injury rate per kilometre) Customer Outcome 3: personal risk (fatal and serious injury rate by traffic volume) Permanent hazards: Permanent hazards are marked consistently across New Zealand. Temporary hazards - Workers and people participating in events on roads are kept safe. Sight distances: Drivers are able to navigate safely because they can see hazards, warning signs or delineation in time to respond. Reduce the number of fatal and serious injuries through loss of driver control. Reduce the number of fatal and serious injuries in night time crashes. Reduce the number of fatal and serious injuries at intersections. Reduce the number of maintenance related hazards on roads requiring evasive action by road users (e.g. detritus, ponding water, pot holes). Reduce the number of maintenance related hazards on cycle paths requiring evasive action by cyclists (e.g. detritus, ponding water, pot holes, broken glass). Reduce the number of fatal and serious injuries involving vulnerable users. Roadside areas are maintained free from unauthorised obstructions and new hazards are prevented from developing.	Safety 1.1: People using the transport system are kept safe so that everyone is protected from the impacts of deaths and serious injuries Safety 1.2: People using the transport system are protected, can travel a safe speed and have desirable opportunities to stop and rest. Safety 2.1: People using the transport system feel secure and are comfortable with the level of associated risk	Road safety initiatives (engineering and education) build community awareness of road safety and assist in the reduction of harm on our roads.

GPS Priorities & Outcomes	RLTP Strategic Objectives	LTP Community Wellbeing Outcomes	TDC Asset Management Plan Benefits	ONRC Service Outcomes	ONF Service Outcomes	Council Levels of Service
Sustainable urban and regional development - People can readily and reliably access social, cultural, and economic opportunities through a variety of transport options. Sustainable urban and regional development is focused on developing resilient and productive towns and cities that have a range of low-emission transport options and low congestion.	**Growth** Develop the transport network to support well-planned, quality urban environments in areas of high growth	Connected citizens Enhanced lifestyle	A transport network that supports sustainable urban and regional development	Signage is fit for purpose in providing direction and guidance to road users. That traffic throughput is maximised on arterials and higher classifications in metropolitan areas to best satisfy demand.	Health 3.1: People using the transport system can choose transport options that support their physical and mental health and well being Health 3.3: Everyone can benefit from a transport system that limits noise and vibration Reliability 5.1: People using the transport system can count on reliable travel times and experience Efficiency 5.2b: People using the transport system can access their place of work, education and healthcare Efficiency 5.2c: People have access to quality infrastructure, information and mode connectivity so they use the transport system efficiently Accessibility 10.1a: People can access the transport system Accessibility 10.2: People have access to viable transport options to get where they want to go Accessibility 10.3: Everyone has access to community services and social interaction through the transport system Accessibility 10.4: Social cohesion within and between communities is enabled through the transport system Liveability 11.2: Everyone can enjoy the natural environment and views within the rural transport network Liveability 11.1: Everyone can experience a deeper cultural connection and experience of the places within the transport system Liveability 11.3a: Everyone can enjoy pleasant and attractive streets in the urban transport network Liveability 11.3b: People can use appropriate spaces within the transport system to safely play and recreate Te Ao Māori values 12.1: Māori culture is valued and incorporated within transport system	Transport infrastructure enables continued urban, commercial and industrial growth. Infrastructure to support active and public transport is provided and maintained to nationally acceptable standards.
Integrated freight system - Well-designed and operated transport corridors and hubs that provide efficient, reliable, resilient, multi-modal, and low-carbon connections to support productive economic activity.	**Freight** Transition to a low emission freight system that is more resilient, productive, and innovative	Diverse economy	A transport network that meets the needs of the community and freight sector	The trucks that need to use roads with restrictions can do so. Signage is fit for purpose in providing direction and guidance to road users. That traffic throughput is maximised on arterials and higher classifications in metropolitan areas to best satisfy demand.	Efficiency 5.2a: Users of transport system can transport goods efficiently Economic Prosperity	Transport infrastructure enables continued urban, commercial and industrial growth. Rural and urban transport networks are designed to road user needs and maintained to nationally acceptable standards. The transport system connects our communities, with limited disruption from unexpected outages/emergency events.

3. Demand and growth

Demand and growth are both key drivers of service provision. They create an ongoing challenge for land transport investment decisions, with the need to balance the lifecycle costs of the existing assets with demands for new services.

Factors influencing demand

Timaru District Council needs to consider the following factors in order to predict the future demand:

- Population
- Economic and industry growth
- Transport demand and usage
- Land use
- Climate change and seasonal factors
- Continual demand for improvements in levels of service resulting from:
    - Advances in available technology
    - Increasing customer expectations
- Everchanging legislative/regulatory requirements (such as Temporary Traffic Management requirements, urban development through Resource Management Act reforms and water quality)
- Funding organisations setting higher standards.
- Strategic linkages with other significant transport assets in the District, such as PrimePort Timaru.

3.1 Demand Drivers

3.1.1 Population

Based on the medium population predictions from Statistics NZ (2018 census data updated in December 2022), Timaru's population is projected to increase to 49,700 by 2033, reaching 51,600 in 2053 (0.2% average annual increase).

Key features of our population include:

- Growth has been slow, with an increase of 5,000 people over the past 27 years. After peaking at 1.6% in 2016, growth has slowed significantly from 2021-23 due to COVID-19 impacts, resulting in zero growth for the 2022 calendar year.
- From 2023 onwards, as immigration picks up, population growth is projected to resume but will likely be at a slower rate than previous projections. A lower rate of growth is projected in the 2040s as employment growth wanes, reaching an estimated population of 51,600 in 2053. (Population projections do not represent forecasts but indicate what the future size and structure will be if the underlying assumptions regarding births, deaths and migration prevail.)

Timaru's population will age significantly and become more ethnically diverse over the next 30 years:

- Timaru District has a higher than average aging population compared to all of New Zealand, showing a projected 30 year increase of close to 30% of the population being seniors aged 65 and over. The consecutive decrease of younger people, particularly those in the workforce from ages 15-39, has implications for delayed retirements and burdens on aged care services, including housing stock, healthcare, and pensions. Ethnic diversity will increase; however increases in ethnic populations will not change their minority status – 85% of the population in 2053 is projected to be European or other. This is based on

medium population projections from Stats NZ (2018 Census data updated in December 2022).

The number of households in the District is projected to increase from 21,000 in 2023 to 23,800 in 2043. The average household size will decrease from 2.34 individuals per household in 2023 to 2.30 in 2043**:**

- Timaru district household change forecasts have historically demonstrated steady growth, with pockets of stronger growth in the urban centres of Timaru, Geraldine, Temuka and Pleasant Point. Household size is declining due to a combination of factors including an ageing population, increasing life expectancy and societal trends including couples having fewer children. Household projections do not represent forecasts, but indicate what future households will be if the underlying assumptions prevail.

Venture Timaru, the Council's Economic Development Agency, recently commissioned a report modelling several future growth scenarios for the District, the most ambitious of which has a goal of a population of 75,000 by 2050. If this scenario played out, it would disrupt the Statistic NZ forecasts.

Implications for land transport:

- A significant and consistent decline in population may adversely affect the ability of Council to set rates at a level that is affordable to the community. A stable population with no significant or consistent growth may impact on future service provisions, requiring Council to consider changes in service levels to maintain affordable rates for the existing population. A significant and consistent rise in population may adversely affect the ability of Council to deliver some services to existing service levels.
- A survey conducted by Timaru District Council during the development of the draft Age-Friendly Strategy found that transport is by far the most pressing issue for seniors (caused by loss of licence, loss of a spouse or partner who drove, declining mobility and lack of suitable public transport). There is expected to be a growing need for transport infrastructure to support mobility alternatives and support ease of access to public transport options- better footpaths, dropdown crossings. Affordability of implementing these measures is yet to be determined. The survey also found there was enthusiastic support for walking and cycling paths across the District. E-bikes have opened opportunities for older age groups, meaning the demand for more cycle trails and tracks will continue to increase as people live longer, are fitter and more capable for longer.
- There is also an increase in the number of refugee families in the district, with many of these families facing barriers in terms of private vehicle transport, making it important that there is easy access to walking and biking infrastructure to help to increase mobility, access, and participation within our community, especially and including access to urban centres, parks and reserves.
- Land transport infrastructure is currently being managed to address specific growth factors associated with activities e.g. traffic demand, which may be linked to household size. Household changes will need to be monitored over time by Council to ensure the balance is struck between over-capacity and under-capacity infrastructure provision. Travel time reliability (TTR) is consistent in Timaru, and at current growth rates there is capacity on the network to continue to provide TTR, with many commutes being under 5 minutes (though this makes offering mode choice challenging!).
- The difference between the census data trends and the Venture Timaru projections will also need careful monitoring, due to the impacts of population numbers on the network.

3.1.2 Economic and industry growth

Economic growth is projected continue, driven by local industry and this

will also contribute to low unemployment levels. Primary industries and manufacturing are expected to continue to contribute to the most growth. There is some uncertainty around the impacts of environmental regulations on agriculture after 2030, but this is outside the scope of this AMP.

Longer term the evolution of industry in our District will have flow on effects on employment, education and training needs. We are also likely to see projected growth in the health industry with an ageing population.

In 2022, Timaru's GDP growth was greater than the NZ national figures, up 5.8% from the previous year. Unemployment figures were lower than the national average, with a 14.3% drop in 2023 from the previous year to a low of 3.4% on the job seeker support.

This information is based on projections from Infometrics 2020 Timaru Report, Venture Timaru's Economic Development Strategy 2021, and the Dot Loves Data Community Compass Quarterly Report for Timaru District (March 2023).

Implications for land transport:

The transport network will need to ensure that it can support the expected short to medium term economic growth for the 2024-34 period this AMP covers. This includes:

- Responding to weather events in order to be able to provide a reliable network for transport operators.
- Ensuring the network is able to support economic development and subsequent increases in heavy transport requirements.
- Providing strong linkages to the State Highway Network, the Port of Timaru and the Timaru Richard Pearce Airport.

3.1.3 Transport demand and usage

Demand for active transport is expected to grow as residents age and impacts of climate change become more apparent.

The network includes 1726km of roads, comprising of 976km in sealed roads and 750km in unsealed roads. Overall the network is made up of 14% of urban roads and 86% of rural roads. It also includes 354km of footpaths, over 4000 streetlights, 258 bridges, over 7,600 signs and over 4000 culverts. State Highway One connects Timaru with Ashburton to the north and Oamaru to the south. Inland, there is State Highway 8 through to Fairlie and State Highway 79 connects Geraldine with Rangitata and Fairlie. Overall the district has good capacity for expected increases in volume for traffic demand.

Continual deterioration and other infrastructure works on State Highway 1 through Timaru have altered traffic volumes on local roads in recent years, as residents have trended to detour off the Highway for faster and smoother travel. In the past three years, GPS data has consistently showed that travel times have increased on major local roads, indicating that local roads are absorbing demand from the highways.

Household travel in the district is based on private motor vehicle use, with 39,812 passenger cars and vans, 16,465 trailers and caravans, 12,359 goods vans, trucks and utes, and 2,584 motorcycles registered in the Timaru District. The most common method for commuting to work is by private vehicle, with only an estimated 5% of residents commuting to work by active modes.

However, road user survey results demonstrate that on a regular basis 80% of residents walk, 25% cycle and 15% utilise public transport, showing the keenness of residents to uptake more affordable and health conscious travel choices.

Implications for land transport:

- Response to climate change is expected to drive a shift in household travel patterns and the aging population is also predicted to increase the need for mobility alternatives and better links to public transport. It is expected there will be an increase in walking and cycling, creating additional demands for footpaths and cycleway networks.

3.1.4 Land use

As a rural district, changes in land use impact on the roading network. As

shown below, there are a number of effects on the network:

Land use	Trends affecting roading network
Urban settlements	Rural subdivisions increasing community expectations for level of service on rural roads; Urban boundary growth impacting on peri urban roads where there is currently no funding allocation to upgrade.
Industrial, pastoral farming + Horticulture	Increases in heavy traffic placing more pressure on network, resulting in earlier than anticipated deterioration. Waka Kotahi funding levels not aligned to economic output/development needs.
Forestry	Increases in heavy traffic during harvesting placing more pressure on network, TDC current strategy is minimal maintenance completed to maintain basic access until harvesting complete.

3.1.5 Climate change and seasonal factors

There will be an increase of extreme weather events that will challenge traditional expectations and responses. Council will integrate the risks of climate change and mitigating actions in its infrastructure management. Timaru's climate is changing with warmer temperatures (including the warmest average temperature in autumn for the past 40 years on record in 2023, and further warmer weather expected as shown on NIWA projections, increased heavy rainfall events. We have introduced a new system to categorise lifeline infrastructure across the District, to assist with prioritisation of works during emergencies:

Priority Level	Infrastructure
Critical	Essential infrastructure (hospitals, medical centres, utilities, fuel supply, food supply, transport hubs, emergency services, CDEM facilities, welfare centres), Key State Highway Detours, Strategic Links (e.g. Clandeboye/ Factory Roads), Key Freight Routes
High	High use commercial and industrial, Key tanker routes and Food Processing, Some Secondary detour routes, Access for secondary responders (contractors etc), Intertownship links (50 or more properties) (e.g Rangitata Huts, Milford Huts, Waipopo, Woodbury, Cave), Community Facilities (e.g cemeteries)
Medium	Some Secondary detour routes, Sole access (remote areas, 10 or more properties), Difficult to establish temporary access
Low	Sole access (<10 properties, close to urban areas), 4WD accessible, temporary access can be achieved easily

Implications for land transport:

- Timaru District is susceptible to infrastructure damage to bridges, roads and public utilities, along with disruption to core services during extreme weather events because of climate change.
- Coastal communities, farmland and infrastructure are also under threat due to sea level rise which will lead to increased coastal inundation. Recent flooding events in the past few years have seen damage to bridges and roads, effectively disrupting transport throughout the District and creating limited access across the Rangitata River and causing issues with coastal inundation.
- Requests for 'build back better' on all routes, or level of service updates benefitting few but impacting many. While upgrades would provide greater resilience overall, prioritisation and affordability have to be carefully considered.
- Increased reliance on remote households to be more self-sufficient for longer periods due to network outages.

3.1.6 Continual demand for levels of service improvements

In trying to meet/understand customer expectations, Timaru has consistently conducted road user satisfaction surveys for over 15 years. While we are proud of the strides made in maintaining our network's excellent condition through extra Council investments, recent surveys indicate a modest downtrend in general satisfaction with both sealed and unsealed road conditions. At the same time, condition data and monitoring activities are telling us that network condition is reasonably stable – indicating a mismatch between customer expectations and the levels of service being provided. This situation shows the difficulty of balancing ratepayer expectations today with prudent ratepayer funding utilisation across generations.

The team are working to enhance existing customer request management tools to track the nature of complaints received about the network. Initial measurements on unsealed roads have indicated that 70% of complaints received are regarding dissatisfaction with the level of service provided, as opposed to not meeting the agreed level of service, safety or faults.

3.2 Demand management

The demands identified in the previous section have been summarised, with the response identified in the table below.

Demand driver	Impact	Response
Population (Stats NZ estimates)	Mild	Review District Plan against current network and network operating framework (yet to be developed), develop investment improvement programme i.e. Pages Road upgrade, Elm Street development, Meadows Road/Aorangi Road upgrade.
Population (Venture Timaru estimates)	Severe	Identify opportunities to support Council Planning and Development Units, and Venture Timaru to encourage urban living in Timaru, reducing demand on urban sprawl. E.g. provide more infrastructure to support active transport/liveable streets.
Economic/District growth	Moderate	Ensure strong asset management and prioritisation continues, formalise pavement and surfacing strategy including differential levels of service and treatment selection frameworks, explore development contributions policy.
Transport demand	Moderate	Implement Active Transport Strategy including at least $1m per annum delivery programme.
Land use	Moderate	Ensure strong asset management and prioritisation continues, formalise pavement and servicing strategy including differential levels of service and treatment selection frameworks, explore development contributions policy, early engagement with consent applicants to look at maintenance/improvement agreement and co-funding.
Climate change	Severe	Further review of critical assets and lifelines, prioritised bridge replacement and 'build back better' programme developed in collaboration with other Council units and external agencies to improve integration for community benefit. `
Increased community expectation	Moderate	Measures to align affordability with demand: Better capture of CRM data to support analysis of customer expectations, development of Council Policy to clearly define Levels of Service and what is provided, stakeholder engagement initiatives.

4. Investment logic

Given that there had been no major change to priorities and the cyclic nature of road maintenance activities, a decision was made to refresh the previous Investment Logic Map (rather than prepare an entirely new one). This took into account changes in the Draft 2024 Government Policy Statement on Land Transport, with elected members providing input into the identification and weightings of problems affecting the network. This section covers the updated Problems, Benefits and Strategic Responses. See Figure 13.

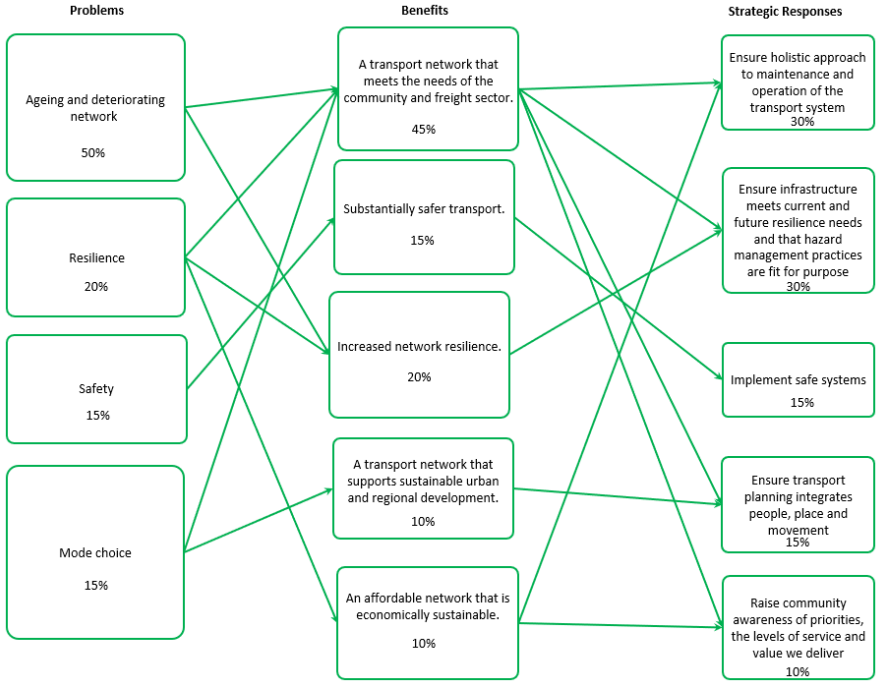


Fig. 13: Investment Logic Map – overview of the Strategic Case. The weighting of each of the problems is show in percentages. Following the update to the problem statements, the benefits of investment, KPIs and strategic responses were also reviewed.

4.1 Problem statements

This resulted in the following key problem areas being established:

Problem 1: Ageing and deteriorating network
Consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction.

Problem 2: Resilience
The roading network lacks resilience against natural anthropogenic hazards, decreasing accessibility and increasing costs.

Problem 3: Safety
Road network deficiencies, inappropriate speed environments and poor driver attitudes result in deaths and serious injuries on our roads.

Problem 4: Mode choice
A lack of appropriate infrastructure to support mobility alternatives is limiting transport options within our community, slowing transition to a lower carbon transport system and sustainable urban environments.

4.1.1 Problem One: Ageing and deteriorating network

Statement: Consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction.		
Cause(s) of the problem:	**How the problem affects our activities and assets:**	**Consequences:**
• 2015 changes in legislation, such as 50MAX, HPMVs, VDAM, have increased the allowable heavy vehicle weight. As a result, transport firms have invested in larger trucks and request open access to the network. • Changes in farming management practices have increased the dimensions and weight of farm machinery and increased the distances these vehicles travel between farms (often on narrow 5.4m or less sealed roads). • Continued economic growth including increases in freight movements to and from Washdyke and Timaru Port is increasing the number of heavy vehicle movements. • Supermarkets and large stores have limited local storage and utilise a 'just in time' delivery model requiring the road network to be accessible at all times. • The road structure does not have sufficient capacity to withstand the current and increased loading due to very thin pavement layers.	• Continuation and possible extension of restricted or closed routes for heavy vehicles and HPMVs. • An increase in maintenance costs, renewal and rehabilitation costs, and road pavement deterioration • A reduction in the level or service we can provide, reliability of the network, and resilience of the network • An increase in traffic congestion, customer complaints, and vehicle operating cost (RUC) • Reductions in accessibility • Pavements are not built for the current vehicle demands i.e they are not fit for purpose and any rehabs must include strengthening components where we have insufficient pavement depth to meet standards, often resulting in less km renewed for available budgets. • Increase in safety risks and possibly leading to increases in crash statistics. • Reputational risk	• The transport network fails to meet the needs of the community and freight sector • Lack of transport network resilience
Key benefits of solving this problem: • A transport network that meets the needs of the community and freight sector • Increased network resilience and economic growth support		

Detailed Definition and evidence

Transport infrastructure in the Timaru District is ageing and was not built to handle the increasing loads of heavy traffic that we see today, driven by continued economic growth.

Timaru's economy has demonstrated a 2.7% year-on-year expansion up to June 2023, as indicated by Infometrics GDP estimates. Our economic performance is strongly influenced by our agricultural heritage, with horticulture, intensive cropping, meat and wool also playing an important role. Significant manufacturing, processing, engineering and distribution operations contribute to extensive export and domestic supply of a wide range of goods and services, supported by our freight network including PrimePort Timaru. Our reported GDP per capita (which is lower than actual GDP generated by the region, as portions of our economy that are not locally owned are accounted for in other regions) is significantly higher than the regional and national averages, however we are not funded proportionately for maintenance and renewal of transport assets. It is predicted that these economic trends will continue, with freight levels increasing in alignment.

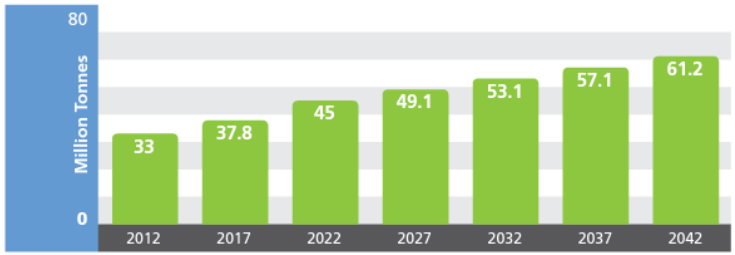


Fig. 14: The South Island Freight Plan predicts significant growth in freight levels carried on the Canterbury transport network.

Coupled with increasing economic demands, our average pavement thickness is not sufficient to cope with modern day traffic loads. At the time of writing, only 40% of the network is available to HPMV traffic, and 24 out of 142 recent HPMV permit requests have been declined due to bridge or pavement capacity related issues.

As the graph below shows, 50km of pavements have only 50mm of material, while the typical pavement thickness ranges from 50-130mm. When designing pavement treatments to match traffic demands today, the typical overlay depth required is 150-200mm – this helps demonstrate why we are starting to see early deterioration.

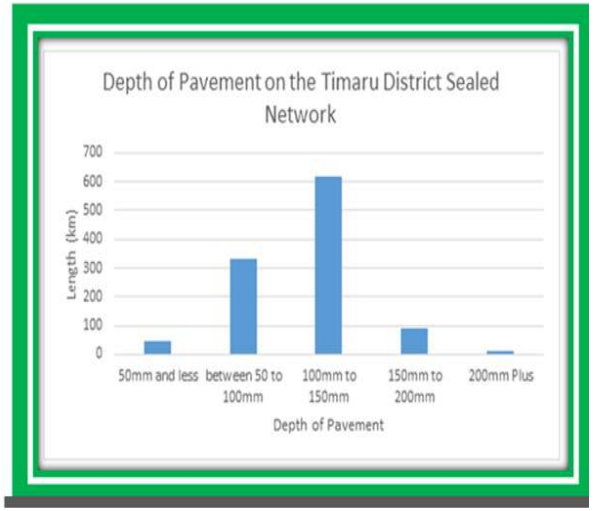


Fig. 15: Depth of pavement on sealed network.

Council have recognised the impact this has on our sealed network for a number of years, funding $2-5M per annum above Waka Kotahi approved funding levels. While condition data is showing us that the sealed network is (just) keeping up with the pace of change, the wider network is vulnerable to the demands of increasing economic activities, and without our activities proportionately increasing, we will continue to see

deterioration of assets, compounded by:

- Recent changes in legislation, such as 50MAX, HPMVs, VDAM, increasing the allowable heavy vehicle weight.
- Changes in farming management practices, increasing the dimensions and weight of farm machinery.
- Supermarkets and large stores limiting local storage and utilising a 'just in time' delivery model requiring the road network to be accessible at all times.

Council were pleased to receive additional MOR funding for 23/24 and hope this continues.

Our pavements have a 30 year design life as per Waka Kotahi guidance, and for the past 5 years we have renewed approximately 8km (or 1%) of the sealed network each year. Prior to this we renewed 0.05% of the network each year and were seeing increasing network deficiencies, requiring more reactive maintenance.

At current rate of investment/replacement it will take us 100 years to renew the existing sealed network. Assuming no drastic shifts in traffic demand over the next 10 years, maintaining our current level of renewals should hold the tide of deterioration issues, but won't solve the issue long term. Any drop in renewals budget or level of service would see increase asset degradation over time and increase the need for reactive maintenance (and associated expenditure).

It should be noted that poor asset condition and maintenance works impact on the safety of the network, reliability of the network for freight, increased vehicle operating costs and increased emissions.

Case study – Badham Road

Badham Road (pictured below) is part of the freight route for milk tankers to and from Fonterra Clandeboye Dairy Factory – the largest milk production facility in the South Island. It is also an access route to a strategically significant gravel producing quarry. The final 2km was reconstructed in 2021 in response to significant deterioration caused by traffic weights and volumes.

Fig. 16: Badham Road Rehabilitation Project

4.1.2 Problem Two: Resilience

Statement: The roading network lacks resilience against natural and anthropogenic hazards, decreasing accessibility and increasing costs.		
Cause(s) of the problem:	**How the problem affects our activities and assets:**	**Consequences:**
• Increased frequency of extreme and adverse weather events. • Exposure of the network to known hazards and risks e.g. flood zones • Lack of alternate routes and/or restricted access across the network, particularly in rural areas • Lack of integration between transport assets, land use, District planning and other infrastructure • Lack of braided river maintenance in rated and non-rated river Districts by Environment Canterbury	• Unavailability of the network during extreme and adverse weather events • Damage to infrastructure/ transport assets with significant costs to remedy • Loss of connection to isolated communities • Increased safety risk e.g. where people attempt access through unsafe conditions • Accelerated deterioration of defects associated with poor/inadequate drainage (saturated pavements) • Cost, efficiency and reputational disbenefits due to lack of integrated planning between the public and private sector • Risk that other works (general maintenance, resealing, rehabs, projects) are unable to be undertaken or completed on time. • Increased stream training required around structures that doesn't last • Longer term closures on low volume roads where there is alternative access (i.e. Clay Road).	• Transport network unable to meet the needs of the community or freight sector (increased/unreliable travel time, loss of access to/operation of essential services) • Lack of network resilience • Increased costs, not sustainable within current funding constraints • Increased isolation for longer duration • Lack of delivery for essential services such as food and health • Significant failure of bridge approaches.
Key benefits of solving this problem: • A transport sector that meets the needs of the community and freight sector • Increased network resilience • An affordable network that is economically sustainable		

Detailed Definition and Evidence

The Timaru District faces increasing vulnerability to a combination of natural and anthropogenic hazards. These manifest in decreased accessibility and rising costs for maintenance and recovery efforts. Several key factors contribute to this problem, including the heightened frequency of extreme weather events, exposure of the network to known hazards, limited alternate routes, and a lack of integration between transport assets, land use, District Planning, and other infrastructure.

Natural hazards

Climate change projections show that the Canterbury region can expect to see warmer temperatures over time, increased frequency of extreme weather events, drought and sea level rises. These changes are likely to exacerbate natural hazards such as flooding, wildfires and wind damage.

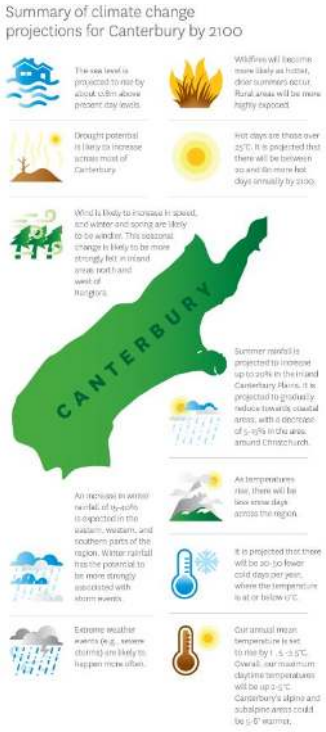


Fig. 17: Summary of climate change projections for Canterbury

Our network is particularly vulnerable to flooding, coastal erosion and slips, and the impacts are particularly acute in rural areas due to a lack of alternate routes and travel distances to townships and urban centres. Rainfall events in 2021 and 2022 caused widespread surface flooding and consequential damage to our network, requiring ongoing work and repairs and placing significant pressure on capacity and resources to respond. The accelerated deterioration of defects associated with poor or inadequate drainage, such as saturated pavements, compounds the problem. The financial burden of repairing and maintaining the network increases as these vulnerabilities persist.

Recovery costs over the past three years have been in excess of $8.5m, an over 500% increase on costs from climate related events ten years previous. The impact of these events on contractor and staff workloads is also increasingly prolonged – when the 2022 flood event occurred, our maintenance contractor was still engaged in repairs from the previous year's flood.

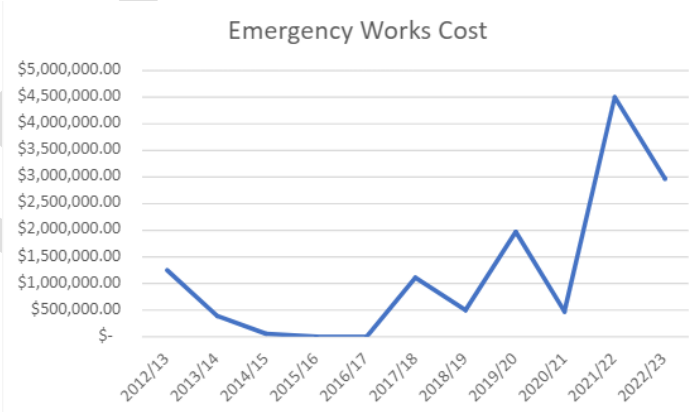


Fig. 18: Emergency works costs 2012/13 – 2022/23

A key risk area for the District is the overlap of our transport network with Canterbury's braided river network. With increased weather intensity, we are seeing more movement of the braided rivers and a greater need for more stream training works than would be required by our other regional counterparts.

Fig. 19: Ferry Road – Arundel – During the 2019 flood event that closed all connecting bridges across the Rangitata River and temporarily severed the south island in two, the Rangitata River flow diverted onto road reserve and forced the abandonment of a large section of Ferry Road.

At a regional level, there are many rivers and therefore crossings that do not sit within a rating district, meaning there is a huge lack of general river training maintenance, impacting resilience of our network at these locations, with no detours available.

Recently we have seen that untrained river flows are outflanking many bridges on the network, meaning the bridge only spans a small portion of the actual waterway. The result is high exposure during future flood events and increased risk to the resilience of this infrastructure. Te Moana River offers a prime example, where one crossing point at School Road (a significant detour route for SH79), has recently lost an abutment due to lack of river training. Many bridges on the Rangitata River are nearing end of life and have significant detours. As witnessed in December 2019, the loss of these lifelines can sever the South Island for long durations, causing health and food security concerns for the lower South Island (the centralisation of packing warehouses for food supply in Christchurch also contributes to this issue).

Our team is working to identify a strategy for prioritization of local road lifeline assets to support improved resiliency during significant future events.

Anthropogenic hazards

The Land Transport Unit undertakes advanced asset management, considering the strategic and operational links between our assets, land use planning and assets belonging to other utilities providers. While this positions us to undertake transportation planning and projects with maximum coordination, efficiency and benefit, our existing network is vulnerable to changes in demand caused by private land use/productivity changes. Without scalable development contribution funding, we are also lacking the means to fund new infrastructure associated with development – causing gaps in resiliency on the network and downstream impacts on network safety. Utilities works and subsequent reinstatement can also considerably reduce the life of our assets and contribute to community dissatisfaction. We have put considerable effort into developing a backfill and reinstatement guide for industry and have upscaled the monitoring and compliance work we undertake around reinstatement works, but ongoing attention and industry education is needed.

Fig. 20: Waihi Terrace, Geraldine - poor reinstatement jobs reduce the life of roading assets.

4.1.3 Problem Three: Safety

Statement: Road network deficiencies, inappropriate speed environments and poor driver attitudes result in deaths and serious injuries on our roads.		
Cause(s) of the problem:	**How the problem affects our activities and assets:**	**Consequences:**
• Driver behaviour and attitudes • Inadequate signage, markings, road dimensions, structure and composition, pavement faults or roadside hazards • Law enforcement on local roads • Restrictive Road to Zero funding resulting in fewer rural network improvements.	• A continuing increase in fatal and serious injury crashes, with corresponding increase in social costs • Failure to meet road to zero targets • Poor attitudes to speed management changes • Demands for action at individual locations following crashes, as opposed to a network wide strategic approach.	• Reduced transport safety • Negative perception of Timaru roads and roading management • Increased death in our community.
Key benefits of solving this problem: • Substantially safer transport		

Detailed Definition and Evidence

Timaru experiences more than its fair share of death and serious injury crashes, and despite our commitment to Government's Road to Zero strategy, crash rates have continued to climb in recent years.

Following a peak of 29 crashes in 2018/19, numbers were declining over 2019/20 and 2020/21, but both 2021/22 and 2022/23 have seen increases in the number of crashes.

Fig. 21: Crash numbers in the Timaru District 2009/10 – 2022/23

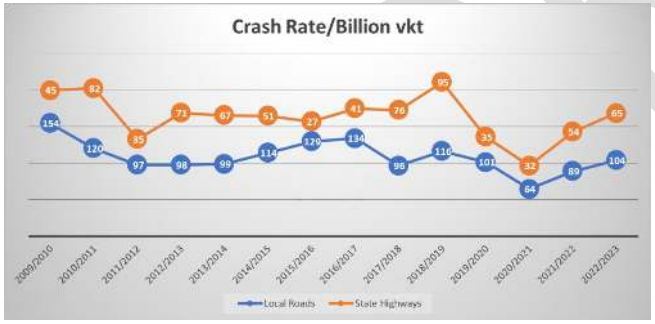


Fig. 22 Crash rate per billion VKT in the Timaru District

We are continually finding that the same factors are contributing to crashes year on year, and that certain demographics are more at risk than others. The top five contributors to crashes in the District are:

- Alcohol or drugs
- Road position
- Loss of control
- Inappropriate speed
- Not seeing another party until too late.

Male drivers aged 15-29 are overrepresented in nearly all crash types.

Fig. 23: the vehicle involved in the August 2021 crash at Seadown/Meadows Road intersection, in which five Timaru teenagers were killed.

For almost two decades Timaru District Council has partnered with the Waimate and Mackenzie District Councils, Waka Kotahi – NZ Transport

Agency, NZ Police and the Accident Compensation Corporation (ACC) to form the South Canterbury Road Safety Coordinating Committee. The committee is charged with responding to the need for coordinated engineering, education and enforcement initiatives to address road safety issues and achieve Government's Vision Zero targets.

While there is good community awareness of road safety activity, there is a continued need to generate awareness that we all have individual contributions to make to improving road safety. Developing and undertaking targeted programmes or work to address known problem areas is a continued focus and a balanced proactive programme has been supplied to Waka Kotahi in the Road Safety Promotion funding bid for the South Canterbury Councils.

4.1.4 Problem Three: Mode choice

Statement: A lack of appropriate infrastructure to support mobility alternatives is limiting transport options within our community, slowing transition to a lower carbon transport system and sustainable urban environments.		
Cause(s) of the problem:	**How the problem affects our activities and assets:**	**Consequences:**
• Changing demographics • Disestablishment of scheduled public bus services, replaced by on demand public transport trial • Lack of connected infrastructure for walking, biking and other mobility modes in both rural and urban areas • Changes in technology (increase in uptake of electric vehicles and e-bikes) • Distance and lack of public/active transport infrastructure between the main urban centre of Timaru, and smaller/rural townships • Uncertainty of the continuation of MyWay and limited operational hours of this service.	• Lack of access for mobility modes and members of the community with disabilities • Community severance – lack of connection within and between townships and urban centres • Slow uptake in active modes of transport • Reliance on light vehicle transport • Missed opportunity to leverage value proposition of active transport for urban development • Redundancy of existing public transport infrastructure/ opportunity to refresh to meet current and future needs • Missed opportunity to leverage technology advances to increase active transport uptake	• Transport network does not support sustainable urban and regional development, or transition to a lower carbon transport system • Transport network does not meet the changing needs of the community
Key benefits of solving this problem: • A transport network that meets the needs of the community and freight sector • A transport network that supports sustainable urban and regional development • A transport network that supports a lower carbon transport system.		

Detailed Definition and Evidence

Timaru is a regional district with communities dispersed across the main urban centre of Timaru, the smaller townships of Geraldine, Pleasant Point and Temuka; as well as a significant rural cohort.

Historically, transport infrastructure has favoured light vehicle use and investment in multi-modal infrastructure has been limited. With changes in our communities occurring alongside the stimulus to transition to a lower carbon transport system, there is a need for investment in new infrastructure that enables greater transport choice for our communities.

Timaru District has a higher than average ageing population compared to all of New Zealand, showing a projected increase of close to 30% of seniors aged 65+ by 2053. At the same time, ethnic diversity in our communities continues to increase, with increases in refugee and immigrant populations in recent years also.

Addressing transportation challenges is a critical concern for Timaru's ageing population, stemming from factors such as the loss of ability to drive, the absence of a spouse or partner who used to drive, diminishing mobility, and limited public transport options. There is an escalating demand for robust transport infrastructure to facilitate alternative mobility solutions and enhance accessibility to public transportation. Concurrently, there is continuing and growing support for the development of pedestrian and cycling pathways throughout the District. The advent of e-bikes has created new possibilities for older individuals, indicating a sustained need for additional cycling trails and tracks, as people continue to live longer, maintain better fitness, and remain capable for extended periods.

Increases in the number of refugee families in the Timaru District also poses opportunities for the transport system to be responsive to changing community needs. Large number of refugees to the Timaru District are children and have a need for safe and efficient travel through and around urban centres. Refugee families often face barriers in terms of private vehicle transport so walking and biking infrastructure can help to increase mobility, access, and participation within our community, especially and including access to urban centres, parks and reserves.

Council funds nearly $2 million per annum for renewal of the footpath network: this has enabled a timely renewal of the asset and encourages uptake of short active journeys, however Timaru's existing walking and cycling infrastructure is disconnected and does not enable safe, active mobility to and from key destinations or between townships. This results in a reliance on vehicle transport and low use of active modes. There is a significant opportunity to design an on and off-road integrated active transport system for the District, with defined priorities and projects, to develop a genuine alternative to travelling by car – this is the aim of an Active Transport Strategy refresh being undertaken by Council in 2023.

Fig. 24: Lack of cycling infrastructure causes uncomfortable tension between active transport users and vehicles.

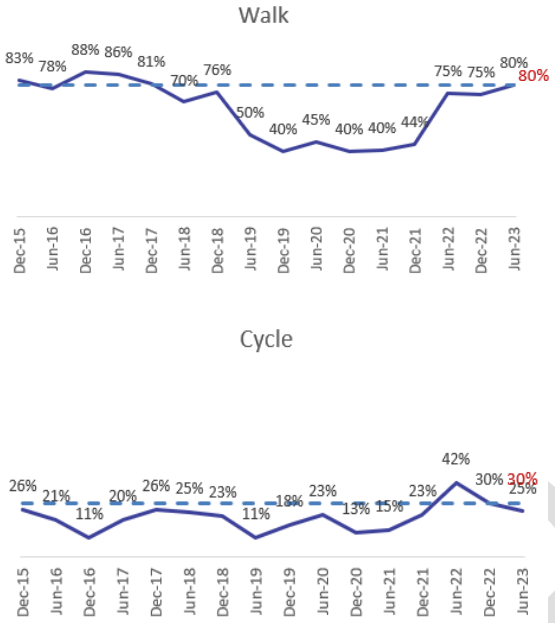


Fig. 25: Latest road user survey results show us that we are not meeting targets for the proportion of residents who regularly cycle in the District.

A trial of the MyWay by Metro on demand public transport service commenced in Timaru in 2019, and has subsequently replaced all fixed route bus services. The innovative service uses app technology and smart scheduling to deliver ride share services in urban Timaru. Rather than using fixed bus stop locations, the technology enables pick up from anywhere in the city, even a driveway to driveway service for the mobility impaired. MyWay has been highly successful, seeing public service patronage continue to grow in Timaru far above national levels, even during the COVID-19 pandemic. It has increased accessibility across the network but also requires Council to reconsider what infrastructure is required to support public transport (removal of fixed route services has rendered many of our District's existing bus shelters redundant). An opportunity to trial a modern shelter structure via the Transport Choices programme in 2023 has been successful and helped to lift the profile of the service.

Fig. 26: Parklet structure for the MyWay service, funded by the Transport Choices programme.

Fig. 27: Port Loop Road – cycleway trial funded by the Streets for People programme. This project supports safer access for cyclists in the Port area which is traditionally dominated by heavy vehicles.

4.2 Benefits

In response to the Benefits identified in the Investment Logic Map (Figure 14), the following Measures and Targets have been identified (measures with an asterisk* are compulsory DIA measures; shaded measures are included in Council's Long Term Plan):

Benefit	Measures	Targets
A transport network that meets the needs of the community and freight sector	Resident satisfaction Does the transport network meet your needs? Is our level of service for maintenance about right, too low or too high?	Across the network – 60% residents feel that the transport network meets their needs Sealed – 60% think maintenance is about right or too high Unsealed – 50% think maintenance is about right or too high
	Response to customer service requests*	70% of customer service requests are responded to within 15 working days*
	Road condition – Average quality of ride on sealed local road network % smooth travel exposure index *	Average Smooth Travel Exposure Index on all sealed district roads – 92%*
	Resurfacing of road network*	6% of the sealed road network is resurfaced annually*
	# bridges that allow Class 1 loading	Maintain the current level of bridges that can carry Class 1 traffic loadings
	# bridges that are capable of HPMV loading	Maintain the current level of bridges capable of HPMV loading
	% of network in acceptable condition/for which failure is predicted within 5 years (using MSD data)	*Indicative targets:* 95% of the rural sealed network is in an acceptable condition 5% of the network is predicted for failure within 5 years
	Rehabilitation of sealed road network	1% of the sealed pavement network is rehabilitated annually

Benefit	Measures	Targets
Substantially safer transport	Resident satisfaction - with safety of road network (annual resident survey) - Road safety awareness	85% residents believe the road network is safe 60% of residents are aware of road safety programmes or advertisements
	Road fatalities and serious injury crashes*	Number of fatalities and serious injury crashes on the local road network is less than the previous financial year on an annual basis*
	Implementation of Delineation Strategy	Delineation Programme focus areas completed as per programme.
	Development and implementation of Speed Management Plan	Speed limit changes implemented as per programme.
	Implementation of TDC actions in South Canterbury Road Safety Action Plan	Projects completed as per programme.

Benefit	Measures	Targets
Increased network resilience	Critical routes identified and criticality assessment completed for network assets on these routes, building a resilience works programme. (2024-2027 only)	Resilience works programme developed including identification of critical routes.
	Resilience works programme implementation (maintenance and upgrades) (2027 -)	Projects completed as per programme.
	Implementation of roadside drainage programme	Projects completed as per programme.
	Continuity of travel during emergency events	Targets to be developed.

Benefit	Measures	Targets
A transport network that supports sustainable urban and regional development	**Resident satisfaction** • Does walking (footpaths), biking and mobility infrastructure meet your needs? • Does provision of car parking meet your needs?	Across the network - 60% residents feel that the active transport network meets their needs 75% of residents are satisfied that access to Council provided car parking meets their needs

	Resident satisfaction Is our level of service for maintenance for footpaths and biking assets about right, too low or too high?	Footpaths – 60% satisfied that maintenance is about right or too high Biking – 60% satisfied that maintenance is about right or too high
	Footpath condition*	75% of footpaths to be average or better condition*
	Footpath network resurfaced	4% of the footpath network is resurfaced annually
	Urban walking programme – identification of key connector routes and associated footpath upgrades programme	Projects implemented as per programme.
	Percentage of residents using sustainable transport	50% of residents regularly walk, 30% of residents regularly cycle and 5% of residents use public transport
	School travel plans completed or reviewed annually	1 school travel plan completed or reviewed annually
	Delivery of active transport strategy for District	Projects implemented as per programme.
	Completion of new or upgraded land transport infrastructure, or maintenance, associated with new urban, commercial, industrial development in the District.	Projects completed as per local road improvements programme.

Benefit	Measures	Targets
An affordable network that is economically sustainable	<u>Resident satisfaction</u> % residents that feel level of service is about right % residents that would support increased expenditure to improve the level of service	60% satisfied that LOS is about right or too high No target for supporting increased expenditure.
	Number of LOS related CRMs	Targets to be developed once baseline determined.
	Spend against budget/delivery of programme	Projects/BAU delivered as per programme, to scope, quality and budget.

4.3 Strategic Responses

Taking the Investment Logic Map a step further, the Strategic Responses have been developed into five Activity Classes, showing which activities apply to each response.

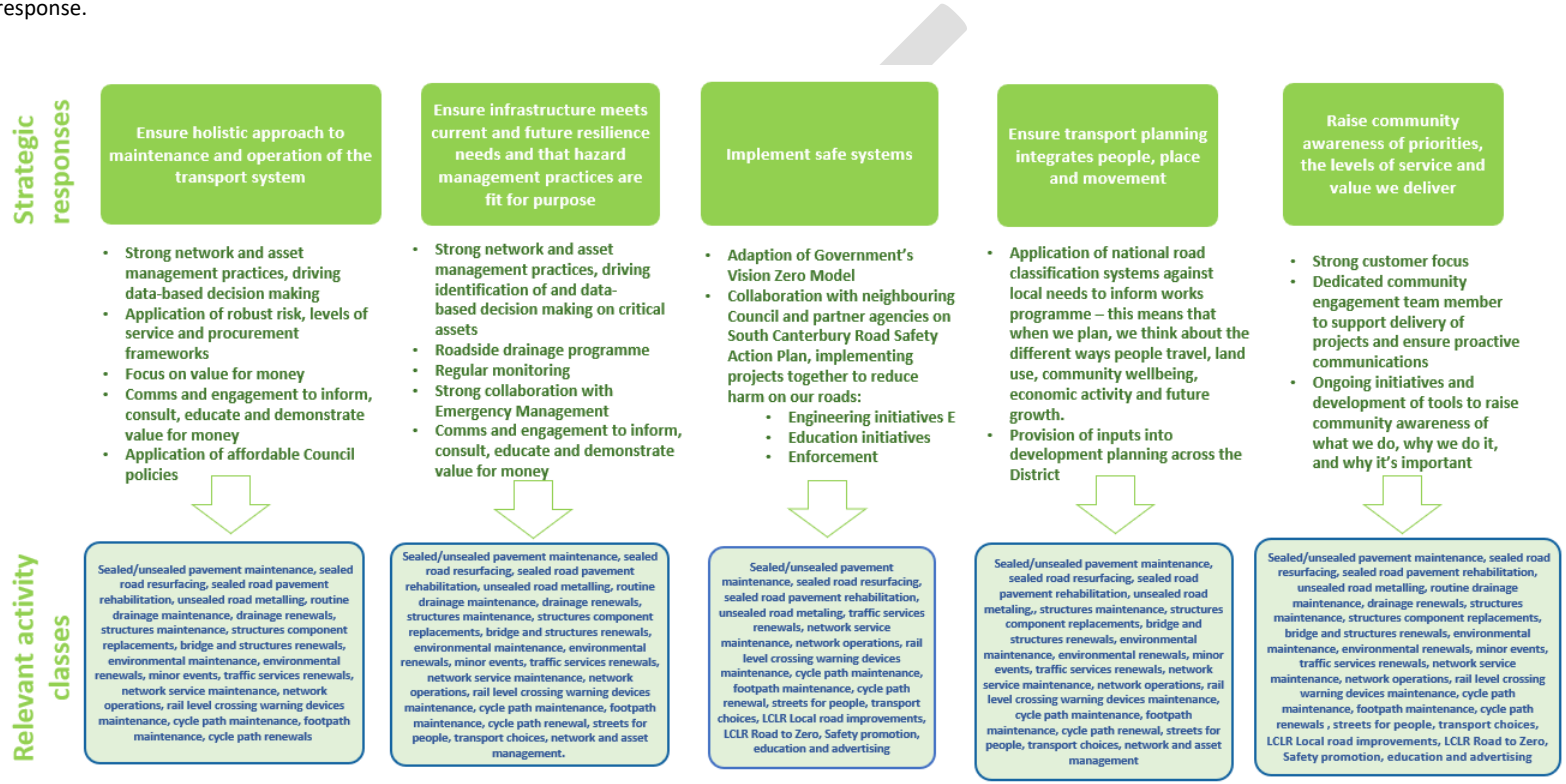


Fig 28: Overarching view of strategic response and corresponding activities.

5. Levels of Service

5.1 Levels of Service Overview

The AMP sets out to match the levels of service that assets provide with the expectations of customers, known financial, technical and legislative constraints and with the benefits outlined in the investment logic map for Land Transport Activities (see Figure 14). We strive to demonstrate to our customers that the services we provide are being delivered in the most effective manner, our implementation of strong asset management practices enable us to:

- Understand available options for level of service, including requirements
- Understand minimum life cycle (long term) costs for an agreed level of service
- Better understand and forecast asset related management options and costs
- Manage risk of asset failure
- Improve decision making based on costs and benefits of alternatives
- Provide clear justification for forward works programmes and funding requirements
- Improve transparency over the use of public resources
- Improve customer understanding and organisational reputation

This section of the AMP presents the updated levels of service for the range of significant assets the Council operates on the community's behalf. It outlines:

- A service statement – a short definitive statement explaining the level of service provided
- How we measure performance – the measures used within each key service area including performance targets
- The contribution of the service to the strategic benefits sought in the investment logic map.

Subsequent sections of the AMP (in the Programme Business Case) outline for each asset/activity type:

- How we provide the service – the principal means by which we achieve the provision of the service
- Service standards – the levels of service the customer can expect
- Response standards – the type and level of response that can be expected from a request for service
- How much the service costs – the net operating and capital costs and rates requirements for each activity.

Further consideration of options will follow to vary the level of service reported therein, ultimately resulting in the presentation of a series of possible options for future maintenance or improvement.

TDC is committed to achieving a balanced level of service that prioritises both enhancing the transport network and maintaining its condition, all while being mindful of affordability.

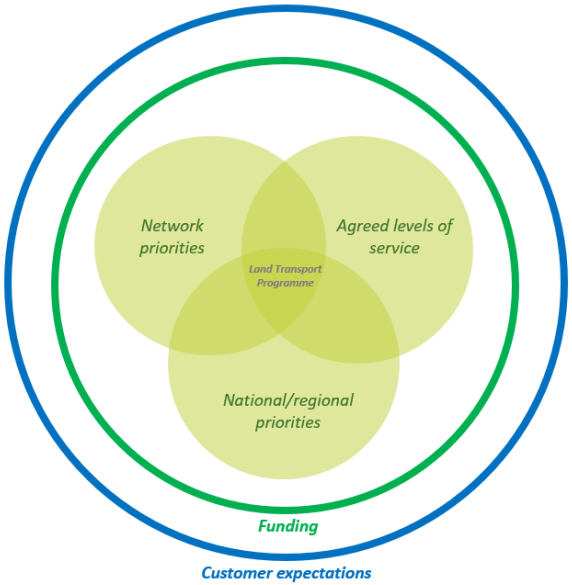


Fig 29: Levels of service, funding and customer expectations – we strive to achieve levels of service that align with network and national priorities, and that are achievable within the available funding envelope. We are seeing increasingly that customer expectations for levels of service are greater than what is affordable for the District.

While our roads and urban streets consistently meet nationally accepted standards and often achieve positive Smooth Travel Exposure (STE) results across the network, we recognize that STE is not the sole indicator of actual road condition. In response, we've made substantial investments in the past 3-6 years, employing advanced techniques like High-Speed Data Capture, comprehensive fault inspections, Multi-Speed Deflectometer testing, Falling Weight Deflectometer testing, and enhanced visual condition assessments conducted by independent experts. These insights are then analysed using JunoViewer modelling, helping us to develop deeper and more nuanced understanding compared to historical DTIMS data.

Our commitment extends to providing adequate bridges, culverts, surface water channels, streetlights in urban areas, and clear signage and markings to ensure an efficient and accessible road network. Urban streets and surrounding areas are kept clean, and street furniture is maintained in usable condition.

Furthermore, our renewal of roads and bridges are constructed to a standard that ensures a level of safety acceptable for all road users. We remain dedicated to creating safe, accessible, and efficient footpaths that cater to pedestrians and mobility users, reflecting our holistic approach to transportation infrastructure.

5.2 Legislative Requirements

The Department of Internal Affairs (DIA) specifies mandatory performance measure that should be reported on each year. We have incorporated these measures into levels of service where applicable.

5.3 Customer Expectations

There are a wide range of customers and stakeholders. These include rate payers and residents through to the various government agencies and other councils involved in land transport.

Council's knowledge of customer expectations is based on:

- Road user surveys (quarterly)
- Consultation via Long Term Plan process
- Engagement on specific projects
- Customer requests (CRMs)
- Feedback from education campaigns

5.4 Stakeholder Consultation Process

The Council's priorities and the quality of services we provide are determined through discussions with stakeholders and the community and linked to indications given through Te Ringa Maimoa and ONF, this occurs during the comprehensive review of our Long-Term Plan every three years. Given the significant scope of the funding request to maintain existing service levels, it is probable that further and more in-depth discussions with elected representatives and the community will be necessary. This situation arises due to the pattern observed in previous rounds of the National Land Transport Programme (NLTP), where Waka Kotahi has not consistently allocated sufficient funds to meet the current needs of Timaru District Council community while also safeguarding these assets for the benefit of future generations.

We were pleased to receive additional 2023/24 MOR funding from Waka Kotahi in December 2023 and it is our hope this funding can be sustained.

5.5 Road user survey results

Road user survey results for 2022/23 indicate that customers are satisfied that:

- The road network is efficient and safe
- The quality of major roads is sufficient
- Active transport, street furniture and street lighting provision is satisfactory.

Survey results also consistently show that road safety education campaign awareness is increasing and that there is growing use of active and public transport modes.

That said, recent survey results are showing a decline in community satisfaction with road maintenance (both on the sealed and unsealed networks), and a decline in overall satisfaction that the road network meets their needs. These results are somewhat at odds with the actual condition of our network, highlighting what we consider a mismatch between customer expectations and the levels of service we are funded to provide. Ongoing education is needed to help bridge this gap.

Verbatim survey records also indicate that the deteriorating condition of State Highway 1 through Timaru is having a considerable bearing on the survey results for local roads.

5.6 Levels of Service Statements, including changes from 2021 AMP

Following update of our investment logic map, our level of service statements have been refreshed to ensure alignment. The table below summarises the changes.

New LOS Statements	2021 AMP LOS Statements	Commentary
Rural and urban transport networks are designed to user needs and maintained to nationally acceptable standards	Roads are designed and maintained to community expectations Roads and bridges are fit for purpose and provide for comfortable and efficient travel Car parks are available, fit for purpose and easy to access	*Consolidation of level of service statements to reflect network view.* *Less reliance on community expectations as sole measure for provision and maintenance of the network.*
Road safety initiatives build community awareness of road safety and assist in the reduction of harm on our roads	Roading works and road safety initiatives help promote district road safety and awareness	*Wording change to reflect shift to Vision Zero model/thinking*
The transport system connects our communities, with limited disruption from unexpected outages/emergency events		*New level of service statement in alignment with benefit sought for the network – improved resilience.*
Infrastructure to support active and public transport is provided and maintained to nationally acceptable standards	Footpaths are safe, well designed and maintained Sustainable transport options are facilitated and provided	*Consolidation of level of service statements to reflect network view.*
Transport infrastructure enables continued urban, commercial and industrial growth		*New level of service statement in alignment with benefit sought for the network – a transport network that supports sustainable urban and regional development.*
Land Transport assets are managed on budget, factoring in whole of life costs, depreciation and inflation		*New level of service statement in alignment with benefit sought for the network – affordable, economically sustainable transport network.*

5.7 Levels of Service measures and link to benefits sought

The following table shows how the Levels of Service measures and targets link to the benefits sought (measures with an asterisk* are compulsory DIA measures; shaded measures are included in Council's Long Term Plan)

Benefits	Measures	Targets	Proposed 2024 Level of Service Statement(s)
A transport network that meets the needs of the community and freight sector	Resident satisfaction Does the transport network meet your needs? Is our level of service for maintenance about right, too low or too high?	Across the network - 60% residents feel that the transport network meets their needs Sealed – 60% think maintenance is about right or too high Unsealed – 50% think maintenance is about right or too high	Rural and urban transport networks are designed to road user needs and maintained to nationally acceptable standards.
	Response to customer service requests*	70% of customer service requests are responded to within 15 working days*	
	Road condition - Average quality of ride on sealed local road network % smooth travel exposure index *	Average Smooth Travel Exposure Index on all sealed district roads – 92%*	
	Resurfacing of road network*	6% of the sealed road network is resurfaced annually*	
	# bridges that allow Class 1 loading	Maintain the current level of bridges that can carry Class 1 traffic loadings	
	# bridges that are capable of HPMV loading	Maintain the current level of bridges capable of HPMV loading	
	% of network in acceptable condition/for which failure is predicted within 5 years (using MSD data)	*Indicative targets:* 95% of the rural sealed network is in an acceptable condition 5% of the network is predicted for failure within 5 years	
	Rehabilitation of sealed road network	1% of the sealed pavement network is rehabilitated annually	

Benefits	Measures	Targets	Level of Service Statement(s)
Substantially safer transport	Resident satisfaction - with safety of road network (annual resident survey) - Road safety awareness	85% residents believe the road network is safe 60% of residents are aware of road safety programmes or advertisements	Road safety initiatives (engineering and education) build community awareness of road safety and assist in the reduction of harm on our roads.
	Road fatalities and serious injury crashes*	Number of fatalities and serious injury crashes on the local road network is less than the previous financial year on an annual basis*	
	Implementation of Delineation Strategy	Delineation Programme focus areas completed as per programme.	
	Development and implementation of Speed Management Plan	Speed limit changes implemented as per programme.	
	Implementation of TDC actions in South Canterbury Road Safety Action Plan	Projects completed as per programme.	
Benefits	**Measures**	**Targets**	**Level of Service Statement(s)**
Increased network resilience	Critical routes identified and criticality assessment completed for network assets on these routes, building a resilience works programme. (2024-2027 only)	Resilience works programme developed including identification of critical routes.	The transport system connects our communities, with limited disruption from unexpected outages/emergency events.
	Resilience works programme implementation (maintenance and upgrades) (2027 -)	Projects completed as per programme.	
	Implementation of roadside drainage programme.	Projects completed as per programme.	
	Continuity of travel during emergency events.	Targets to be developed.	

Benefits	Measures	Targets	Level of Service Statement(s)
A transport network that supports sustainable urban and regional development	Resident satisfaction Does walking (footpaths), biking and mobility and infrastructure meet your needs? Does provision of car parking meet your needs?	Across the network - 60% residents feel that the active transport network meets their needs 75% of residents are satisfied that access to Council provided car parking meets their needs	Infrastructure to support active and public transport is provided and maintained to nationally acceptable standards.
	Resident satisfaction Is our level of service for maintenance for footpaths and biking assets about right, too low or too high?	Footpaths – 60% satisfied that maintenance is about right or too high Biking – 60% satisfied that maintenance is about right or too high	
	Footpath condition*	75% of footpaths to be average or better condition*	
	Footpath network resurfaced	4% of the footpath network is resurfaced annually	
	Urban walking programme – identification of key connector routes and associated footpath upgrades programme	Projects implemented as per programme	
	Percentage of residents using sustainable transport	50% of residents regularly walk, 30% of residents regularly cycle and 5% of residents use public transport	
	School travel plans completed or reviewed annually	1 school travel plan completed or reviewed annually	
	Delivery of active transport strategy for District	Projects implemented as per programme	
	Completion of new or upgraded land transport infrastructure, or maintenance, associated with new urban, commercial, industrial development in the District	Projects completed as per local road improvements programme	Transport infrastructure enables continued urban, commercial and industrial growth.

Benefits	Measures	Targets	Level of Service Statement
An affordable network that is economically sustainable	Resident satisfaction % residents that feel level of service is about right % residents that would support increased expenditure to improve the level of service	60% satisfied that LOS is about right or too high No target for supporting increased expenditure	Land Transport assets are managed on budget and for longevity, utilising innovation and circular models of product use.
	Number of LOS related CRMs	Targets to be developed once baseline determined	
	Spend against budget/delivery of programme	Projects/BAU delivered as per programme, to scope, quality and budget	

6. Cost Implications and Funding and Delivery Strategy

6.1 Funding overview

Timaru's economic growth has its drawbacks, particularly affecting the rural and industrial segments of the network. The movement of large trucks from farm gate to Port/Manufacturing Plant, both at farm entrances and regularly in industrial areas like Washdyke, Redruth, and Primeport, poses challenges.

The Council has long acknowledged the network's strain and has consistently allocated $2-5 million annually beyond the approved funding levels by Waka Kotahi. This extra funding has enabled us to address a significant backlog of deferred maintenance.

Recognising the urgency of responding to Crown funding within tight timeframes, Timaru aims to position itself favorably for successful funding bids. Demonstrating strong delivery and aligning with criteria from both the Draft GPS and prior production and freight-focused GPS are critical. Conceptual design, early engagement with key stakeholders and alignment with robust existing strategies are essential components to ensure continued success in project implementation.

The concept of "building back better" is a key consideration under the new GPS, this will take a mind shift and funding increase for both Council and Waka Kotahi to achieve. This may be unaffordable on a large scale.

Due to insufficient maintenance and improvements on State Highways passing through our towns, we often find ourselves needing to address issues on local roads and streets. For instance, the Port to Washdyke cycleway and the New Seadown Link Road are essential projects stemming from challenges such as the non-signalized Meadows Road turn on SH1, which results in wait times exceeding 4 minutes. The advanced pavement failure on Treneglos Street is another consequence of the same situation.

Budget allocation for the maintenance of our national road network has faced constraints over an extended period. Historical funding increases from the agency have continually failed to keep pace with inflation. Despite having to adhere to Waka Kotahi regulations that necessitate higher payments to our contractors, the agency struggles to cover even the basic inflationary costs from previous funding cycles. We anticipate that the funding proposal will be evaluated within the broader context of costs across the entire network when compared to our peers. We hope the assessment will move beyond simple percentage calculations, which can be misleading for smaller councils seeking increases to meet current network needs. While a larger metropolitan council might request a lower percentage increase, the resulting investment translates into tens of millions of dollars more. In essence, the funding discussion should be more nuanced, considering the tangible impacts on investment and budgetary requirements for different councils and their track record on delivery.

Ensuring the safety of road users remains a priority as we align our efforts with the objectives outlined in the Draft Government Policy Statement on Land Transport 2024. The direction to reduce road accidents, injuries, and fatalities is the cornerstone of our road safety promotion initiative. This initiative is strategically designed to contribute to the overarching goal of creating safer, more accessible, and sustainable transportation networks across our region.

Our funding bid seeks to fortify our commitment to road safety by implementing a comprehensive and multifaceted approach. This strategy encompasses public awareness campaigns, educational programs, and infrastructure enhancements that target high-risk areas and behaviors in our South Canterbury Cluster. By closely aligning with the objectives outlined in the Draft GPS, our road safety promotion initiative seeks to contribute to the reduction of road fatalities and serious injuries, thus playing a pivotal role in creating a transport system that safeguards the lives and well-being of all road users. We are also in communication with

Ashburton District Council officers with a view to combining further as a cluster.

Furthermore, our strategy resonates with the Draft GPS's emphasis on investing in projects that promote healthier, safer, and more sustainable transportation options. We aim to create a ripple effect that not only addresses immediate road safety concerns but also lays the foundation for a culture of responsible road use. This aligns with the Draft GPS's vision for a transport system that prioritizes safety, accessibility, and environmental resilience, along with supporting efficiency of freight for local, regional and national economic growth. By securing funding for our full transport programme, we aspire to collaborate with government agencies, local communities, and stakeholders to forge a safer and more cohesive transportation landscape that reflects the core tenets of the Draft GPS, whilst also recognising the change of Government focus on reducing prolific potholes and ensuring freight efficiency/economic activity.

6.2 Finance summary

6.2.1 Operating Expenditure

GPS Expenditure reporting line	W/C	W/C description	Activity Breakdown	AO supporting commentary	Requested allocation			Annualised request 2024-27	Annual Average NZTA Approved 2023/2024	Increase requested between Previous Approved NLTP and Request	Current TDC Budget 2023/2024	Difference between Council 2023 budgets and current Request
					2024/25	2025/26	2026/27					
Maintain	111	Sealed pavement maintenance	Total Cost	**Council currently funds a total of over $1.7M Per annum, this figure accounts for current network needs, completing only Priority one and approximately 50% of P2. P3 and P4 are only considered on higher volume pre reseal roads. Current Maintenance contract escalations are over 15% - for a contract starting 1/7/2021**	$1,600,000.00	$1,664,000.00	$1,730,560.00	$1,664,853.33	$1,335,100.67	$62,732.53	$2,034,093.00	$(369,239.67)
	112	Unsealed pavement maintenance	Total Cost	**the unsealed network has been managed at $500,000 per annum for a number of NLTPs, complaints and potholes/peak roughness is increasing, with road user satisfaction decreasing. The requested figures reflect this and also add current and future cost fluctuations**	$700,000.00	$728,000.00	$757,120.00	$728,373.33	$529,690.67	$92,744.53	$632,820.00	$95,553.33
	113	Routine drainage maintenance	Total Cost	**Increases for rural swale maintenance is required to address increasingly saturated pavements and verbal recommendations following most recent technical audit.**	$1,000,000.00	$1,040,000.00	$1,081,600.00	$1,040,533.33	$477,702.33	$371,750.07	$670,789.20	$369,744.13
	114	Structures maintenance	Total Cost	**Our bridge stock is getting old and needing increasing maintenance to ensure as much life is achieved as possible while maintaining safe access. There is a large bow wave of bridges coming at us over the next 1-30 years so the need to keep up with maintenance is required**	$650,000.00	$704,000.00	$748,960.00	$700,986.67	$155,506.67	$514,378.67	$227,815.20	$473,171.47
	124	Cycle path maintenance	Total cost	**increasing requests for maintenance and sweeping of existing and new cycleways/shared paths mean the increased maintenance is required**	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$19,854.67	$26,174.40	$19,854.67	$30,145.33
	125	Footpath maintenance	Total cost	**With an increased focus on mode shift, ensuring effective and timely maintenance and renewal of our footpath network is imperative to assist reduction in VKT.**	$600,000.00	$624,000.00	$648,960.00	$624,320.00	$392,505.00	$74,813.00	$418,152.00	$206,168.00

	140	Minor events	Total cost	**Due to increased rainfall events means we need to budget for more mid-scale events. We generally receive one event per year that costs over $2M to remediate**	$500,000.00	$500,000.00	$500,000.00	$500,000.00	$13,872.00	$400,000.00	$40,000.00	$460,000.00
Operate	121	Environmental maintenance	Total Cost	**Increasing growth due to anthropgenic events means that we need to control sight distances as signs, intersections and edgemarker posts more frequently. Increased snow fall in high country areas mean regular snow clearance is required. Detritus and spills on roads remain constant so the need for clean up has had cost escalations only applied to the figures. Our current maintenance contract does not allow for amenity mowing, and there are currently no plans to change this. However, there are a number of urban street tree that add to amenity, help to encourage uptake of active mode and serve a purpose as carbon sinks that are aged and costing more to keep pruned. We have improved our early maintenance and form pruning on younger trees to reduce this burden long term however there is a cost of $330,000 each year for the next 5years to prune our older trees. To replace the street trees along with our footpath renewals would be in the order of $500,000 per annum.**	$1,560,000.00	$1,622,400.00	$1,687,296.00	$1,623,232.00	$632,161.33	$738,206.13	$759,384.00	$863,848.00
	122	Network services maintenance	Total Cost	**Our highest cause of DSI crashes is loss of control on bends, and intersection crashes are over represented. As such increased road marking for both edgelines, centre lines and limit lines need marking more regularly, and high wear intersections also need cold applied plastic applied to ensure limit lines are visible for longer periods.**	$1,150,000.00	$1,196,000.00	$1,243,840.00	$1,196,613.33	$785,046.33	$254,557.73	$877,340.50	$319,272.83
	123	Network operations	Total Cost	**Increases for inflation.**	$270,000.00	$280,000.00	$290,400.00	$280,133.33	$147,491.33	$103,143.73	$150,000.00	$130,133.33
	131	Rail level crossing warning devices maintenance	Total cost	**Increases for inflation.**	$70,000.00	$70,000.00	$70,000.00	$70,000.00	$32,072.00	$31,513.60	$50,625.60	$19,374.40
	151	Network and asset management	Network management (incl inspections)	**Increasing demands and implementation of initives from both Waka Kotahi and Te Ringa Miamoa require resourcing both internally and extrenally. The contestable funds that regularly appear also require projects to be close to shovel ready, and increase in these areas would ensure TDC remain ready to respond and ensure strong delivery, road network management, various condition assessments, deteriation monitoring, Road user education, to bridge the gap between demands and understanding affordability.**	$2,250,000.00	$2,338,000.00	$2,429,520.00	$2,339,173.33	$1,164,968.00	$941,211.73	$2,984,657.35	$(645,484.02)
			Total Operational Increase						**$5,685,971.00**	**$3,611,226.13**	**$8,865,531.52**	**$1,952,687.15**

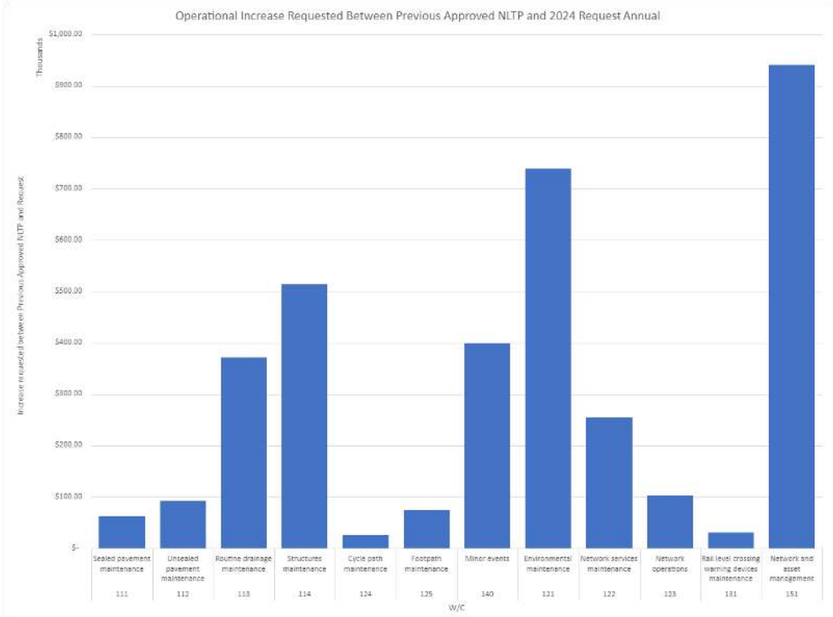


Fig. 30: Operational increase requested between previous approved NLTP and 2024 request annual

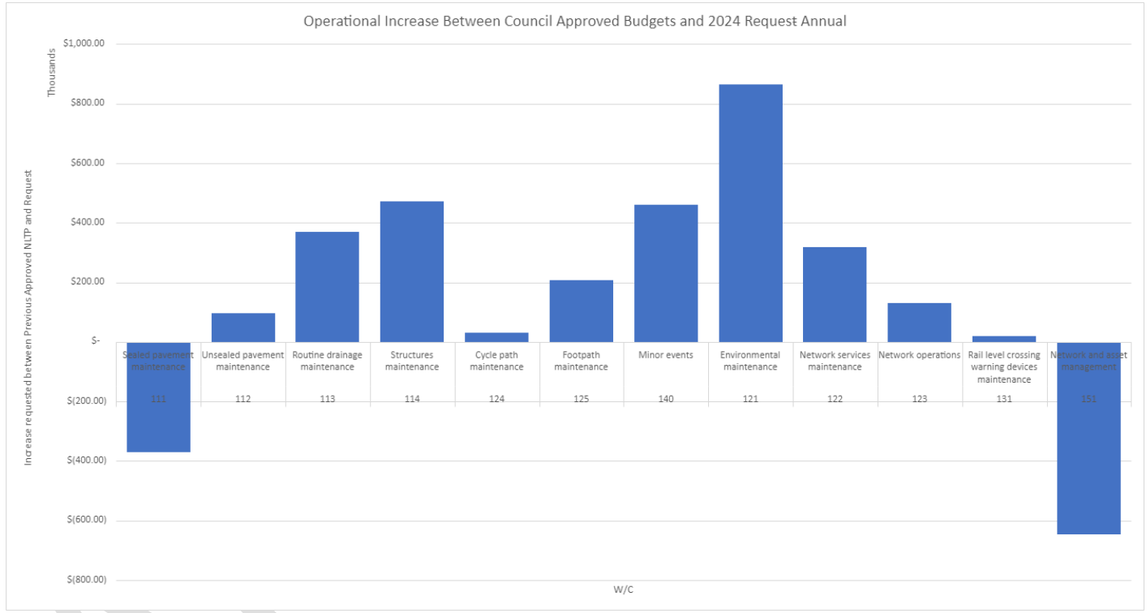


Fig. 31: Operational increase requested between Council approved budgets and 2024 request annual

6.2.2 Capital Expenditure

MOR Funding

GPS Expenditure reporting line	W/C	W/C description	Activity Breakdown	AO supporting commentary	Requested allocation 2024/25	2025/26	2026/27	Annualised request 2024-27	Annual Average NZTA Approved 2023/2024	Increase requested between Previous Approved NLTP and Request	Current TDC Budget 2023/2024	Difference between Council 2023 budgets and current Request
Renew	211	Unsealed road metalling	Total cost	**Minor increases to covers cost escalations has been included**	$650,000.00	$676,000.00	$703,040.00	$676,346.67	$296,211.00	$320,893.47	$500,000.00	$176,346.67
	212	Sealed road resurfacing	Total cost	**Currently Council reseal about 6-8% of the network annually, this is inline with best practice and these figures reflect that need. There are a number of aged and cracked urban AC sites that are being held for renewal, to enable coordination of underground works to occur prior to resurfacing with Asphalt. We carefully consider the function of each AC road prior to selecting AC/Chipseal or Slurry.**	$4,000,000.00	$4,160,000.00	$4,326,400.00	$4,162,133.33	$3,873,480.00	$(486,042.67)	$3,500,000.00	$662,133.33
	213	Drainage renewals	Total cost	**Generally, our Kerb and Channel stock is in relatively good condition and we are able to do small scale renewals to extend the life of long sections of the network. Increases are to meet cost fluctuations/indices increases. There is a large increase for culvert renewals to meet GPS and 'build back better'; and also reflect a number of culverts on the rural network that are at end-of-life assets.**	$1,050,000.00	$1,074,000.00	$1,098,960.00	$1,074,320.00	$1,009,616.00	$(137,219.20)	$810,000.00	$264,320.00
	214	Sealed road pavement rehabilitation	Total cost	**As we are a primary industry and manufacturing district, with a busy port, we need to ensure any pavement renewals in high truck areas, in braking zones mean we need to install SAC when the existing thin AC surfacing in these key Port and manufacturing areas (Washdyke/Fonterra Factory).** **We also need to renew our rural roads due to failure of thin unbound pavements that were never designed for the HMPV and general HCV use they are getting. Council currently fund $4M per annum for road renewals, which is a rate of renewal of approximately 100-150 years for the sealed network.**	$4,000,000.00	$4,160,000.00	$4,326,400.00	$4,162,133.33	$2,084,805.67	$1,660,366.53	$4,000,000.00	$162,133.33
	215	Structures component replacements	Total cost	**Our bridge stock is getting old and needing increasing maintenance to ensure as much life is achieved as possible while maintaining safe access. There is a large bow wave of bridges coming at us over the next 1-30 years so the need to keep up with maintenance is required.**	$750,000.00	$780,000.00	$811,200.00	$780,400.00	$524,960.67	$150,447.20	$300,000.00	$480,400.00
	216	Bridge and structures renewals	Total cost	**Year 1 - Landsborough Road Bridge, Harrison Road, Maori Gulley Road, Fox Street.** **Year 2 - Sowerby Road, Palk Road, Flaxburn Road, Huirapa Street** **Year 3 - Guild Road, Mill Road, Mowat Road, Plamer Road, Rice Road, Sercombe Road, Wilks Road, Boiling Down Road**	$3,725,000.00	$909,480.00	$2,240,160.00	$2,291,546.67	$333,333.33	$1,891,546.67	$1,000,000.00	$1,291,546.67

GPS Expenditure reporting line	W/C	W/C description	Activity Breakdown	AO supporting commentary	Requested allocation			Annualised request 2024-27	Annual Average NZTA Approved 2023/2024	Increase requested between Previous Approved NLTP and Request	Current TDC Budget 2023/2024	Difference between Council 2023 budgets and current Request
					2024/25	2025/26	2026/27					
	221	Environmental renewals	Total cost	**Increasing need to consider stormwater treatment when undertaking kerb and channel renewals and other road renewals is meaning we need to request further funding here to meet Stormwater management plans**	$200,000.00	$208,000.00	$216,320.00	$208,106.67	$6,666.67	$200,106.67	$20,000.00	$188,106.67
	222	Traffic services renewals	Total cost	**Ensuring timely renewal of old signs that no long meet standards, or have good visibility will help TDC meet Road To Zero Targets, reducing death of community members and visitors. Increase in year one for renewal of Selwyn/Wai-iti Intersection traffic signals $500,000 Year 2 - upgrade of Strathallan and Stafford Street intersection signals. Both are running on old second hand replacement parts and do not meet current signal standards.**	$1,000,000.00	$700,000.00	$500,000.00	$733,333.33	$326,624.67	$341,383.73	$491,296.00	$733,333.33
	224	Cycle path renewal	Total cost	**We have a low number of existing cycleways, so the renewal need is currently low**	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$-	$50,000.00	$50,000.00	$-
	225	Footpath renewal	Total cost	**With an increased focus on mode shift, ensuring effective and timely maintenance and renewal of our footpath network is imperative to assist reduction in VKT. Council currently fund $1,9M PA for footpath renewals**	$2,000,000.00	$2,080,000.00	$2,163,200.00	$2,081,066.67	$938,378.33	$955,012.67	$1,991,070.00	$89,996.67
		Total Capital Increase							**$9,394,076.33**	**$4,946,495.07**	**$12,662,366.00**	**$4,048,316.67.00**

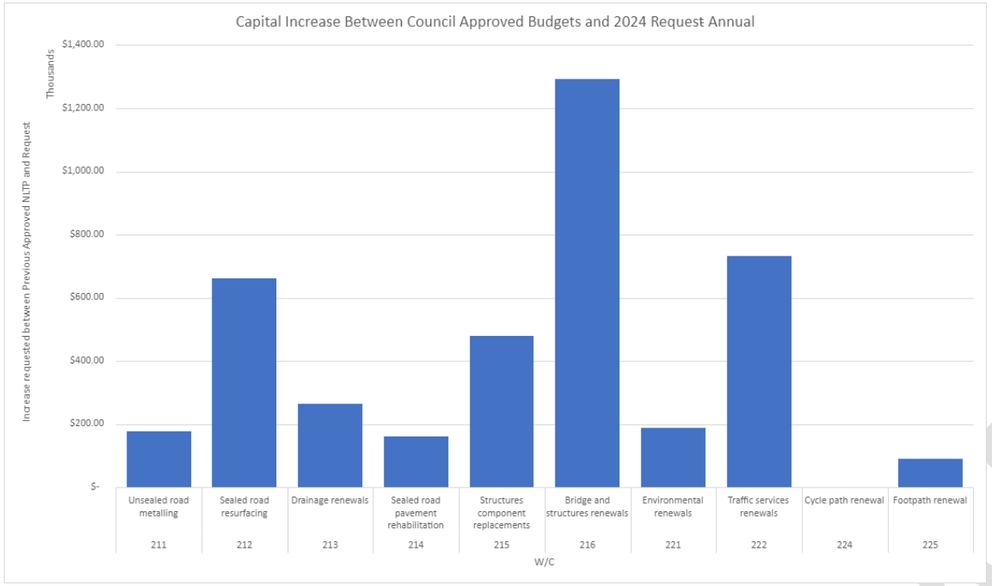


Fig. 32: Capital increase requested between Council approved budgets and 2024 request annual (MOR)

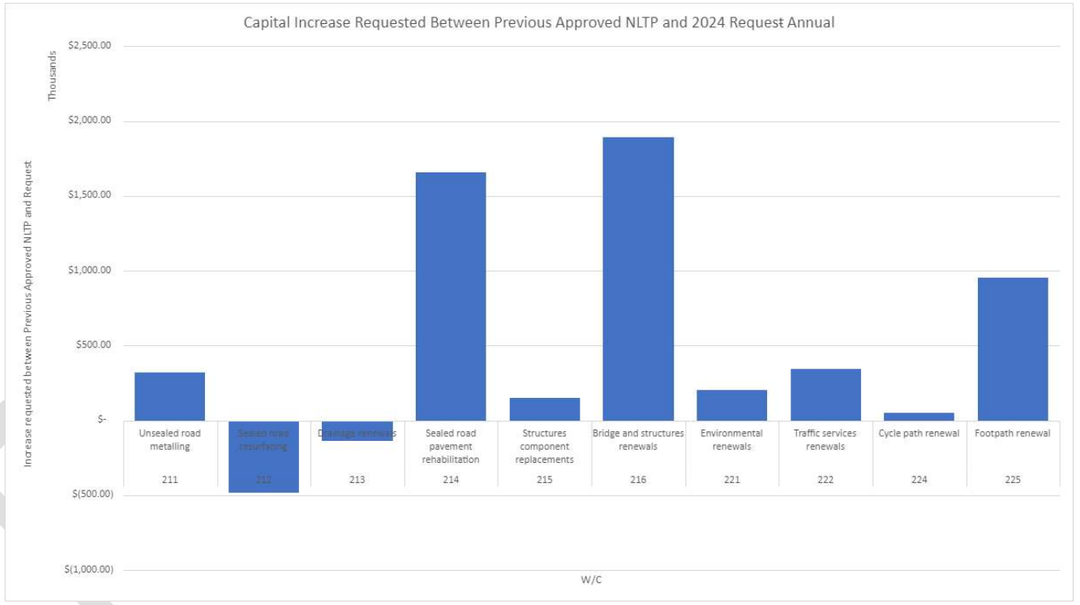


Fig. 33: Capital increase requested between previous approved NLTP and 2024 request annual (MOR)

Low cost low risk funding (for local road improvements

Small scale network improvements			
Activity type	**Year 1 2024/25**	**Year 2 2025/26**	**Year 3 2026/27**
Active transport	$ 1,210,000.00	$ 900,000.00	$ 1,525,000.00
Freight	$ 3,480,000.00	$ 2,594,000.00	$ 550,000.00
Resilience	$ 629,000.00	$ 965,000.00	$ 790,000.00
Safety	$ 1,639,000.00	$ 2,250,000.00	$ 2,965,000.00
Urban development	$ 2,033,000.00	$ 1,410,000.00	$ 2,176,000.00
TOTAL	**$ 8,991,000.00**	**$ 8,119,000.00**	**$ 8,006,000.00**
Regionally significant projects			
Washdyke – new link road	***$4,400,000***		
Heaton/Hayes Resilience - South Port Access	***$4,000,000***		
Implementation of active transport strategy	***$1,000,000 per annum***		

7. Risk

7.1 Risk overview

LTU understands the purpose of risk management is the creation and protection of value. It improves performance, encourages innovation, and supports the achievement of TDC's strategic objectives and agreed Levels of Service.

It is also understood that good risk management is iterative, dynamic and forward-looking. Although it is impossible to remove all uncertainties, the aim of LTU is to provide assurance that operational risks are being prudently and soundly managed and that mitigations are considered effective to the best of everyone's knowledge and experience.

The risk management process undertaken in identifying LTU's operational risks follows the process as represented in ISO31000:2018 Risk management – Principle and guidelines. It involves the systematic application of policies, procedures and practices to the activities of communicating and consulting, establishing the context and assessing, treating, monitoring, reviewing, recording and reporting risk.

Also completed but not provided in this document is an overall Council organisational risk assessment that covers staffing and succession planning, procurement, community engagement and several other operational and strategic risk factors. This can be provided to Waka Kotahi on request.

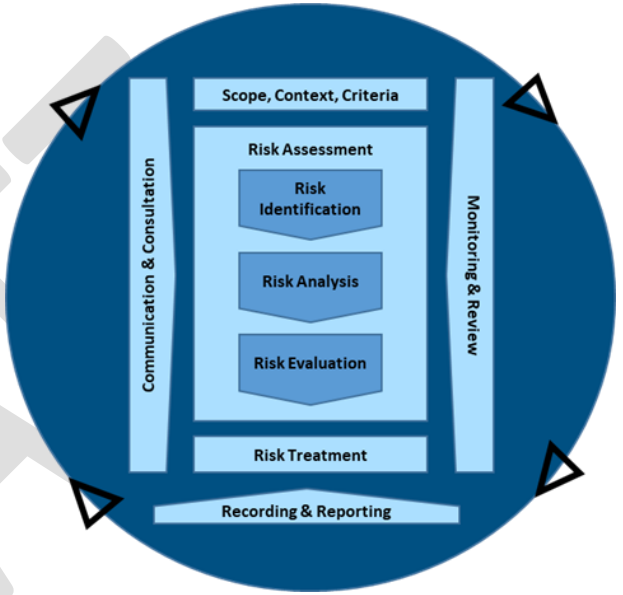


Fig 34: TDC Risk Framework

7.2 Risk review 2023

In 2023, LTU completed a complete risk review of its operational risks. The risk management review process included:

- A review of the existing risk register
- Risk profiling workshops with LTU employees where they:
  - Identified risks considering the following factors:
  - Tangible and intangible sources of risk
  - Causes and events

  - Threats and opportunities
  - Vulnerabilities and capabilities
  - Changes in the external and internal context
  - The nature and value of assets and resources
  - Consequences and their impact on objectives
  - Limitations of knowledge and reliability of information
  - Time-related factors
  - Biases, assumptions and beliefs of those involved
- Used a semi-quantitative matrix that included the requirement to:
  - Identify the causes/sources and impacts of a risk
  - Assess the inherent risk
  - Identify mitigations
  - Assess mitigation effectiveness
  - Assess the residual risk
- Categorised mitigations that were not assessed as Effective into the categories of either Preventative, Recovery or Administrative to assist in prioritising where resources and effort was required
- A meeting between the Business Unit Manager and their Group Manager to review and discuss conclusions and agree priorities moving forward

As part of TDC's requirement for continual improvement, a quarterly risk review is undertaken to provide an update on the status of those mitigations not assessed as Effective and add and assess any new operational risks that may have been identified in the last quarter.

7.3 Risk register update

The existing risk register was further developed to capture the following key components:

1. Risk ID
2. Description of the risk
3. Source/cause of the risk
4. Possible impact to the LTU should the risk materialise
5. Inherent risk assessment
6. Mitigations (existing and new)
7. Assessed effectiveness of mitigations
8. Residual risk assessment
9. Improved risk assessment assuming funding availability

7.4 LTU operational key risk summary

The Heat Map (overleaf) represents the status of the key risks to LTU at the point of time in writing this AMP. It was recognised at the time of starting the risk review that all would not be perfect and further work was required to ensure risks were being managed. As mentioned already, good risk management is iterative, dynamic and forward-looking, hence the requirement for quarterly reviews and updates.

It is also worth noting that many risks are currently being addressed so the current or improved risk may change with each version of this document. The latest update was completed in November 2023.

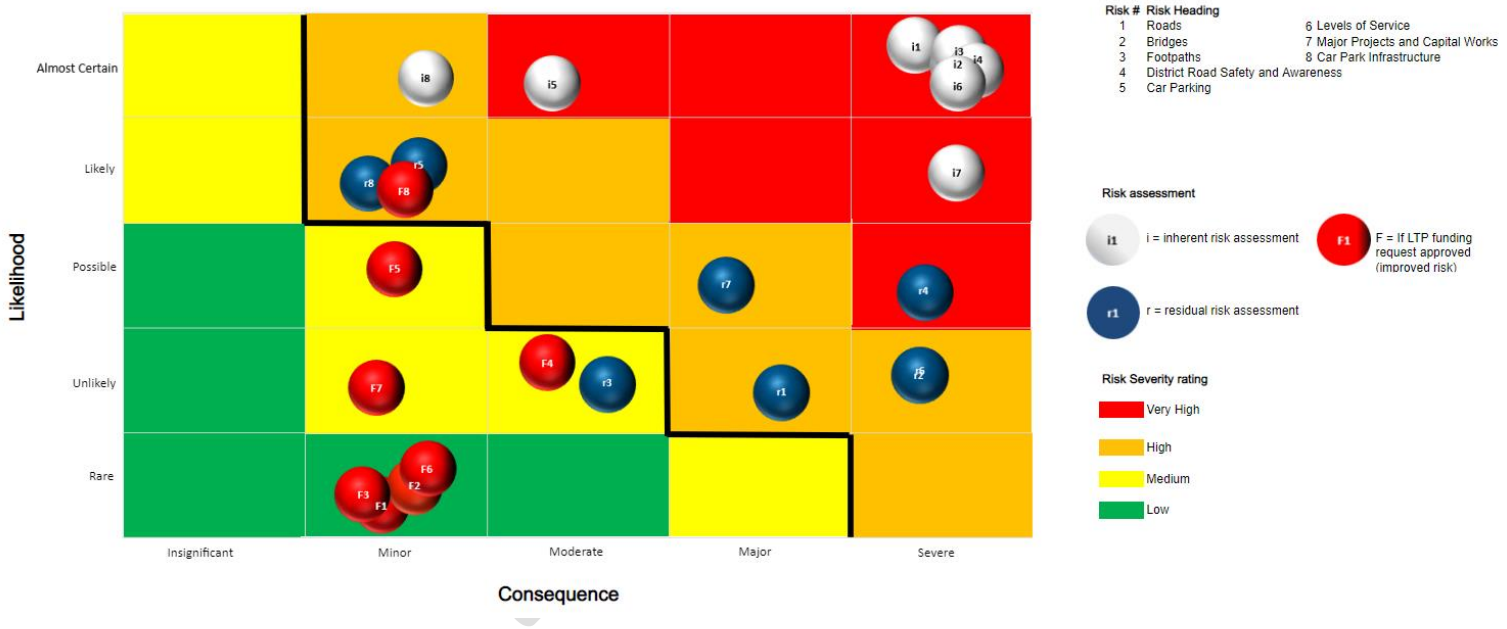


Fig. 35: TDC Operational risk summary – inherent, residual and improved risk assessments

Risk Identification				Inherent risk assessment	Mitigations/Treatments	Residual risk assessment (based on current implementation and effectiveness of mitigations)	Assumed change to risk categorisation if funding for preferred option approved through LTP (Improved risk assessment)
Risk ID	**Risk Description**	**Source/Cause**	**Impact**	**Risk Category**	**Description (key mitigations/treatments)**	**Risk Category**	**Risk Category**
r1	Roads not designed, constructed and maintained to community expectations	● Reduction in Waka Kotahi funding ● Pressure to reduce rate increases, or other council priorities ● Increased frequency of natural hazard events ● Land use changes ● Increased economic activity ● Changing regulations ● Increased traffic loading ● Detritus on road ● Poor quality of work by contractor ● Renewals are not completed ● Unaffordable community expectations ● Lack of resources	● Network deterioration ● Uncomfortable and inefficient travel ● Resident dissatisfaction reflected in annual survey ● Increased wear and associated costs ● Projects delayed or scrapped ● Funding obtained from alternative sources ● Work Programme adjusted ● Reduction in road safety ● Reduced resiliency and accessibility of network ● Negative economic activity	Very High	Maintenance contracts Stock/herd driving policy Collection of biennium rating data (HSD, RAMM, dTIMS) Truck effluent disposal facilities Identify roads at risk Remedial works planned Optimised allocated funding Condition monitoring of assets Targeted investment e.g. business case, ONCR customer outcomes Customer education and communications Maintaining appropriate staff capability	High	Low

					Emergency response planning		
					Speed management plan		
					Section 17A reviews		
					Regular reviews of Levels of Service with elected members		
					Contract audits		
					Applicable Waka Kotahi standards		
					Timely renewals and forward planning of works		
r2	Bridges are not fit for purpose	● Increased frequency of natural hazard events ● Land use changes ● Increased economic activity ● Changing regulations ● Increased traffic loading ● Collapse, damage, deterioration, erosion and/or blockage of bridges ● Reduction in Waka Kotahi funding ● Poor quality of work by contractor ● Aging bridge stock ● Lack of maintenance ● Lack of maintenance in river beds	● Uncomfortable travel ● Unsafe travel ● Inefficient travel ● Impassable routes ● Increased disaster recovery costs ● Restriction of vehicle movement ● Restriction on HPMV ● Economic impact ● Resident dissatisfaction reflected in annual survey	Very High	Maintain structure's LoS by way of repairs	High	Low
					Scheduled inspections to identify 'at risk' structures and monitor		
					Bridge Management Strategy		
					Bridge Management Plan		
					Three yearly structural inspection		
					Annual visual inspection of structures		
					Weight restrictions posted		
					Overweight permit procedure		

					Advertising of weight restriction structures		
					Road bridge Policy		
					Independent engineering structural assessment on requested HMPV routes		
					Asset register of structures		
					Waka Kotahi bridge manual		
					Contractor Waka Kotahi prequal		
					Safety inspections following significant natural events		
					Valuation of assets annually		
					Customer communications		
					Global resource consent		
					Asset Management Plan		
r3	Footpaths are not safe, well designed and maintained	● Poor design ● Inferior material used ● Poor quality of work by contractor ● Poor reinstatement of work by third parties ● Increased frequency of	● Footpaths are not safe to walk on resulting in slips, trips and falls ● Resident dissatisfaction reflected in annual	Very High	Maintenance contracts	Medium	Low
					Inspections of high usage footpaths in CBD		
					Footpath condition assessment		

		natural hazard events ● Weak inspection schedules ●Increased heavy vehicle traffic ● Lack of investment ● Incomplete condition assessment data ● Lack of forward works planning	survey ● Negative publicity ● Unrealistic expectation on level of service		Deep cleaning of CBD tiles four times per year Footpaths maintained and renewed to contract specification Customer communications Forward work programme On-site audits of third party works Corridor Access Request system including reinstatement guidelines		
r4	Roading works and road safety initiatives fail to help promote district road safety and awareness	● Transport network deficiencies ● Inappropriate speed limits ● Poor driver attitude and behaviour ● Lack of road safety programmes and advertisements in place ● Inappropriate use of temporary speed limits ● Lack of Waka Kotahi funding ● Lack of enforcement ● Messaging not understood/ineffective ● Decision maker commitment challenges	● No reduction in fatalities or serious injury crashes ● Loss of life or serious injury ● Negative publicity ● Increased demand on first responders, health services and ACC ● Loss productivity in district ● Confused driving behaviour ● Social cost ● No change to support meeting performance targets	Very High	TMP audits Road safety programmes and advertisements Deficiency register Signage and delineation strategy Road users satisfaction survey Contractor education Partner collaboration SC Road Safety Action Plan Speed management plan	Very High	Medium

		● Poor contractor compliance			Messaging peer review District Police collaboration		
r5	Car parks are not available, fit for purpose or easy to access	● Lack of approved strategy and management plans ● Lack of understanding by members of the public of parking options and transport choices ● Lack of Way finding ● Reduced capacity in high profile areas ● Lack of willingness to park further away ● Lack of standardisation on parking size and specifications ● Conflicting land user requirements ● Car parks are too expensive	● Ratepayer dissatisfaction ● Negative publicity ● Perceived economic downturn ● Increased staff demand	Very High	Parking restrictions in selected locations District Parking Strategy Township Parking Management Plan Parking study of Timaru CBD Parking monitored and enforced Development contributions for future development Parking education Parking Way finding Master plan and integration of city town Adherence to NZS4404 Road User satisfaction surveys Integration with Active transport strategies	High	Medium

r6	LTU does not achieve its Levels of Service performance measure targets	● Lack of Waka Kotahi funding ● Pandemics ● Population change ● Unrealistic expectations ● Reluctance to increase rates ● Increased constructions costs ● Cost escalation differences ● Urban sprawl ● Change in use e.g. land use changes ● Intensive farming practices ● Climate change ● Increased regulatory and compliance demands ● Key material variability ● Lack of meaningful Level of service performance measures	● Residents dissatisfied with the level of service provided by TDC ● Increased debt levels ● Significant rate increases ● Increased frequency of severe weather events ● Degraded asset life ● Diverted resources in order to manage customer expectations ● Lack of political commitment to affordable level of service	Very High	Prioritising roading improvement and maintenance work Reduction in performance measure targets Community consultation Targeted community engagement Land transport FAQ's and comms toolkit Land transport education Waka Kotahi engagement Asset management plans Network condition rating Lifecycle modelling Asset data management Regular reviews of Levels of Service with elected members	High	Low
r7	Failure to successfully complete a major project or	● Lack of embedded fit for purpose project framework ● Lack of/Inadequate financial controls or	● Budget and scope overruns ● Substandard construction	Very High	Detailed works programme Project Communications and engagement framework	High	Medium

	capital works programme	financial system that provide up-to-date reporting ability ● Ineffective monitoring, review and challenge ● Lack of/uncertainty around funding ● Lack of resources and/or capability of staff e.g. do not understand the fundamentals of a project life cycle ● Time delays ● Cost overruns ● Disruption to, or cessation of supply of, key input components in the supply chain ● Poor performing contractor ● Designs not completed on time ● Pandemic ● Poor governance and sponsorship oversight ● Scope creep ● Descoping ● Lack of clarity and depth to the original specification document ● Poor project risk management ● Poor stakeholder engagement ● Resource diverted to other priorities e.g. emergency event ● Poor procurement	● Adverse environmental effects ●Financial loss (incl. ROI/benefit realisation not met) ● Reputation damage ● Projects deliverables not met ● Reprioritising works programme ● Dissatisfied ratepayers ● Councillor disquiet		Infrastructure standards/CoP Workflow management Asset Management Plan Infrastructure Strategy Early procurement mechanisms Conducting “health-checks” on project delivery Post-completion reviews Project risk framework Customer survey feedback Contractor Management system to record projects and maintain clear gates between project phases Early contractor engagement Agreed reporting timeframes against project progress to the relevant Project sponsor Project Management training Cross pollination of skills		

		process ● Lack of coordination with other utilities ● SPOF ● Lack of a Programme Delivery team ● Not adequately funding depreciation			Fully funding depreciation Investment Delivery Framework		
r8	Car park infrastructure not future proofed	● Lack of investment in infrastructure ● Mismatch between two business units ● Not a high priority for LTU ● Lack of robust maintenance schedules ● Lack of an asset management plan for one specific carpark ● Is specific carpark correctly assigned to right BU for operational oversight ● Inability to update metres	● Reduction in parking income ● Loss of revenue for affected parties e.g. CBD ● Carparks inaccessible ● Failure of asset ● Unable to increase on- street fees and parking charges in the manual	High	Invest in new parking infrastructure e.g. upgrading meters Asset Management Planning Community Engagement Review of parking ownership	High	High

PART B – PROGRAMME BUSINESS CASE

Part B – Programme Business Case, including sections 8, 9 and 10 of the Timaru District Council Asset Management Plan 2024/34 are continued in the attached second document.

PART B: PROGRAMME BUSINESS CASE

This document follows and should be read in conjunction with Part A of the Timaru District Council Asset Management Plan 2024/34.

Contents

8. Problem and Response Summary

From the strategic case, the appropriate responses have been developed and ranked within the Programme Business Case section; the table below summarises these. For background, refer to Part A.

8.1 Link between problems, benefits, strategic responses, relevant activity classes and levels of service

Problem	Benefits if addressed	Trend	Strategic responses	Activity classes	Associated level of service statements
Consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction.	A transport network that meets the needs of the community and freight sector. Substantially safer transport. Increased network resilience.	Getting worse	• Ensure holistic approach to maintenance and operation of the transport system • Ensure infrastructure meets current and future resilience needs and that hazard management practices are fit for purpose • Implement safe systems • Raise community awareness of priorities, the levels of service and value we deliver • Ensure transport planning integrates people, place and movement	111/112 sealed/unsealed pavement maintenance, 212 sealed road resurfacing, 214 sealed road pavement rehabilitation, 211 unsealed road metalling, 113 routine drainage maintenance, 213 drainage renewals, 114 structures maintenance, 215 structures component replacements, 216 bridge and structures renewals, 121 environmental maintenance, 221 environmental renewals, 140 minor events, 222 traffic services renewals, 122 network service maintenance, 123 network operations, 131 rail level crossing warning devices maintenance, 124 cycle path maintenance, 125 footpath maintenance, 224 cycle path renewal, 151 network and asset management, 341 LCLR local road improvements, 432 safety promotion, education and advertising	• Rural and urban transport networks are designed to user needs and maintained to nationally acceptable standards. • Road safety initiatives build community awareness of road safety and assist in the reduction of harm on our roads. • The transport system connects our communities, with limited disruption from unexpected outages/emergency events. • Infrastructure to support active and public transport is provided and maintained to nationally acceptable standards. • Transport infrastructure enables continued urban, commercial and industrial growth. • Land Transport assets are managed on budget and for longevity, utilising innovation and circular models of product use.

Problem	Benefits if addressed	Trend	Strategic responses	Activity classes	Associated level of service statements
The roading network lacks resilience against natural and anthropogenic hazards, decreasing accessibility and increasing costs.	A transport network that meets the needs of the community and freight sector. Increased network resilience. An affordable network that is economically sustainable.	Getting worse	• Ensure infrastructure meets current and future resilience needs and that hazard management practices are fit for purpose • Ensure holistic approach to maintenance and operation of the transport system • Ensure transport planning integrates people, place and movement • Raise community awareness of priorities, the levels of service and value we deliver	111/112 sealed/unsealed pavement maintenance, 212 sealed road resurfacing, 214 sealed road pavement rehabilitation, 211 unsealed road metalling, 114 structures maintenance, 113 routine drainage maintenance, 213 drainage renewals, 215 structures component replacements, 216 bridge and structures renewals, 121 environmental maintenance, 221 environmental renewals, 140 minor events, 222 traffic services renewals, 122 network service maintenance, 123 network operations, 131 rail level crossing warning devices maintenance, 151 network and asset management	• Rural and urban transport networks are designed to meet user needs and maintained to nationally acceptable standards. • The transport system connects our communities, with limited disruption from unexpected outages/emergency events • Transport infrastructure enables continued urban, commercial and industrial growth • Land Transport assets are managed on budget and for longevity, utilising innovation and circular models of product use.

Problem	Benefits if addressed	Trend	Strategic responses	Activity classes	Associated level of service statements
Road network deficiencies, inappropriate speed environments and poor driver attitudes result in deaths and serious injuries on our roads	Substantially safer transport.	About the same	• Implement safe systems	111/112 sealed/unsealed pavement maintenance, 212 sealed road resurfacing, 214 sealed road pavement rehabilitation, 211 unsealed road metaling, 222 traffic services renewals, 122 network service maintenance, 123 network operations, 131 rail level crossing warning devices maintenance, 124 cycle path maintenance, 125 footpath maintenance, 224 cycle path renewal, 341 LCLR local road improvements, 432 safety promotion, education and advertising, 151 network and asset management	• Road safety initiatives build community awareness of road safety and assist in the reduction of harm on our roads.
A lack of appropriate infrastructure to support mobility alternatives is limiting transport options within our community, slowing transition to a lower carbon transport system and sustainable urban environments.	A transport network that meets the needs of the community and freight sector. A transport network that supports sustainable urban and regional development.	Some progress being made through Council's 'Better off' investment and support of staff during implementation of Transport Choices projects	• Ensure transport planning integrates people, place and movement	111/112 sealed/unsealed pavement maintenance, 212 sealed road resurfacing, 214 sealed road pavement rehabilitation, 211 unsealed road metaling, 114 structures maintenance, 215 structures component replacements, 216 bridge and structures renewals, 121 environmental maintenance, 221 environmental renewals, 140 minor events, 222 traffic services renewals, 122 network service maintenance, 123 network operations, 131 rail level crossing warning devices maintenance, 124 cycle path maintenance, 125	• Rural and urban transport networks are designed to user needs and maintained to nationally acceptable standards. • Infrastructure to support active and public transport is provided and maintained to nationally acceptable standards. • Transport infrastructure enables continued urban, commercial and industrial growth.

Problem	Benefits if addressed	Trend	Strategic responses	Activity classes	Associated level of service statements
				footpath maintenance, 224 cycle path renewal, 151 network and asset management, 341 LCLR local road improvements	

8.2 Land transport programme – benefit, cost and risk profile

The diagram below outlines the hierarchy of Land Transport activities in relation to Council's Community Wellbeing outcomes, cost and risk profiles. Generally, maintenance and renewal of foundational infrastructure are the highest cost activities, but provide the greatest amenity/contribution to wellbeing outcomes for community. Funding of the proposed option outlined in this business case has a significant impact on the operational risk profile of activities.

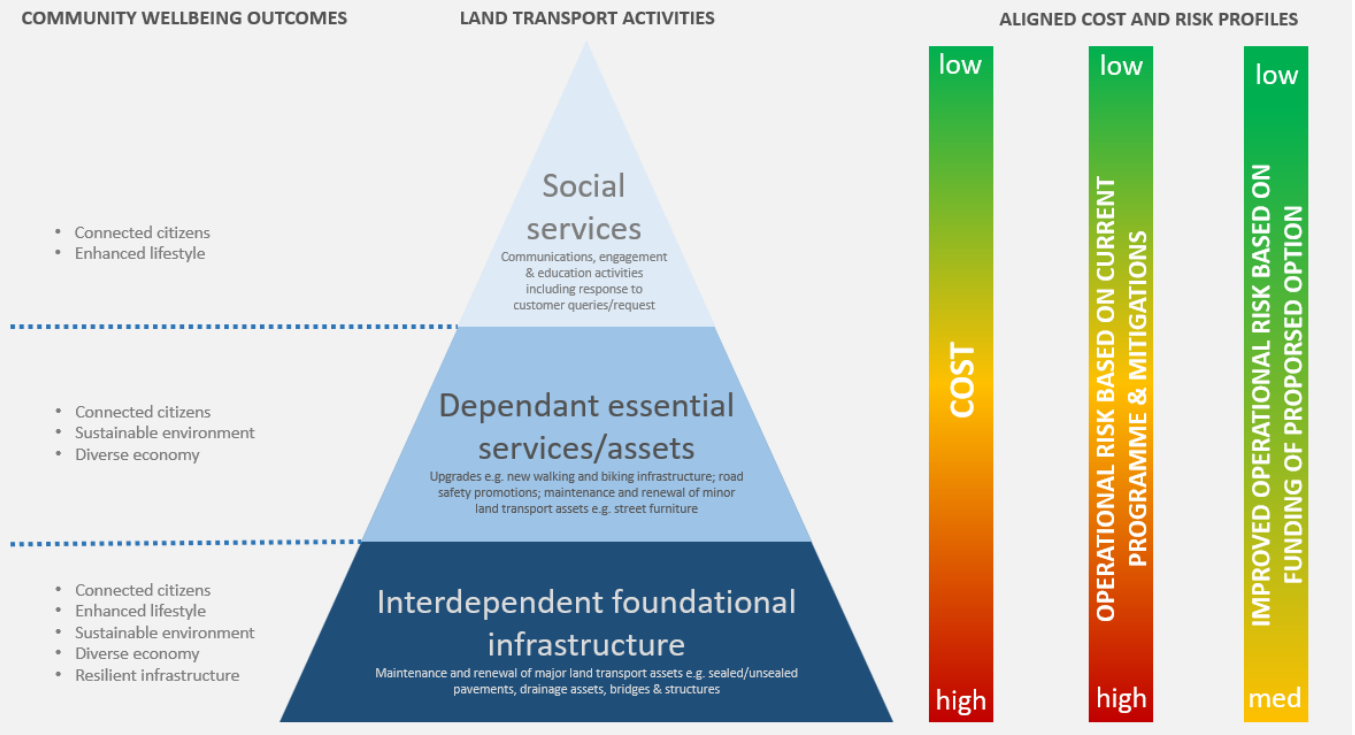


Fig. 37: Land Transport Programme, Benefit, Cost, Risk Profile

8.3 Levels of service performance summary

The table below outlines our current performance against the proposed level of service targets. Targets with an asterisk* are compulsory DIA targets.

Proposed 2024 Level of Service Statement(s)	Targets	Current performance (achieved/not achieved)
Rural and urban transport networks are designed to road user needs and maintained to nationally acceptable standards.	Across the network - 60% residents feel that the transport network meets their needs Sealed – 60% think maintenance is about right or too high Unsealed – 50% think maintenance is about right or too high	N/A - not currently being measured.
	70% of customer service requests are responded to within 15 working days*	Not achieved
	Average Smooth Travel Exposure Index on all sealed district roads – 92%*	Achieved
	6% of the sealed road network is resurfaced annually*	Achieved
	Maintain the current level of bridges that can carry Class 1 traffic loadings	Achieved
	Maintain the current level of bridges capable of HPMV loading	Achieved
	95% of the sealed rural network is in an acceptable condition 5% of the network is predicted for failure within 5 years	N/A – not currently being measured.
	1% of the sealed pavement network is rehabilitated annually	Achieved

Level of Service Statement(s)	Targets	Current performance (meeting/not meeting)
Road safety initiatives (engineering and education) build community awareness of road safety and assist in the reduction of harm on our roads.	85% residents believe the road network is safe 40% of residents are aware of road safety programmes or advertisements	Achieved
	Number of fatalities and serious injury crashes on the local road network is less than the previous financial year on an annual basis*	Not achieved
	Delineation Programme focus areas completed as per programme.	N/A – will commence in 2024
	Speed limit changes implemented as per programme.	N/A – will commence in 2024
	Road Safety Action Plan Projects completed as per programme.	Achieved
The transport system connects our communities, with limited disruption from unexpected outages/emergency events.	Resilience works programme developed including identification of critical routes.	N/A – yet to commence
	Projects in resilience works programme completed as per programme.	N/A – yet to commence
	Roadside drainage projects completed as per programme.	N/A – will commence in 2024

Level of Service Statement(s)	Targets	Current performance (meeting/not meeting)
Infrastructure to support active and public transport is provided and maintained to nationally acceptable standards.	Across the network - 60% residents feel that the active transport network meets their needs 75% of residents are satisfied that access to Council provided car parking meets their needs Footpaths – 60% satisfied that maintenance is about right or too high Biking – 60% satisfied that maintenance is about right or too high	N/A – not currently being measured.
	75% of footpaths to be average or better condition*	Achieved
	4% of the footpath network is resurfaced annually	Achieved
	Urban walking programme implemented as per programme.	Achieved
	50% of residents regularly walk, 30% of residents regularly cycle and 5% of residents use public transport	Achieved
	1 school travel plan completed or reviewed annually	Achieved
	Active Transport Strategy projects delivered as per programme.	N/A – refresh of active transport strategy to be completed 2023.
Transport infrastructure enables continued urban, commercial and industrial growth.	Projects completed as per local road improvements programme.	Achieved
Land Transport assets are managed on budget and for longevity, utilising innovation and circular models of product use.	60% residents satisfied that LOS is about right or too high	Not achieved
	CAPEX projects and BAU delivered as per programme, to scope, quality and budget.	Achieved

9. Activity Summaries

The following activity summaries were developed with relevant staff of the Timaru District Council Land Transport Unit. The following activity groups are covered:

- Sealed pavements
- Unsealed pavements
- Drainage
- Bridges and structures
- Environmental maintenance and renewals
- Network and traffic services
- Active transport
- Network and Asset management
- Local road improvements
- Road safety promotion

Each section contains a description of activities including strategic linkages, options analysis, financial and programme forecasts and improvement plans, and related asset management planning.

Procurement

All procurement activity in relation to these activities is carried out in accordance with the Land Transport Procurement Strategy. Approved by Waka Kotahi in 2023, this strategy was updated to ensure compliance with the NZ Government Procurement Rules.

9.1 Sealed pavements

Introduction

Approximately 60% (or 993km) of Timaru's roading network is sealed (with approximately 95% chipseal vs 5% thin asphalt). Use of our sealed network is diverse, requiring maintenance and renewal strategies that reflect the differences in usage and demand in different areas. There is an expectation that sealed roads:

- Meet the needs of the community and freight sector
- Support network resilience
- Support substantially safer transport
- Are economically sustainable.

While much of our sealed network is in generally good condition, we are seeing increasing levels of premature deterioration, driven by growing demand and tonnage travelling the network. Council have recognised this for a number of years, funding $2-5M per annum above Waka Kotahi approved funding levels to enable upkeep of condition. Through this prudent stewardship, we have been able to lower the level of reactive maintenance works we are completing and put effort into holding pavements nearing end of life. To do this we use a differential level of service focused maintenance intervention strategy (treatment could be compared to WC215 structural component replacements). This has improved the perceived safety of repairs, kept the 'ride' better, kept STE high and peak roughness low on higher volume or truck heavy routes.

We are performing well - our pavement and surfacing modelling shows that if we keep the current funding levels we will only notice a slight decrease in condition of the sealed network, likely not noticeable to the average road user. That said, this business case reflects the ongoing need to keep up with the pace of change.

Fig. 38: Pages Road, Timaru – resurfacing is used as a holding treatment to address cracking, in the absence of available budget for urban drainage improvements and reconstruction.

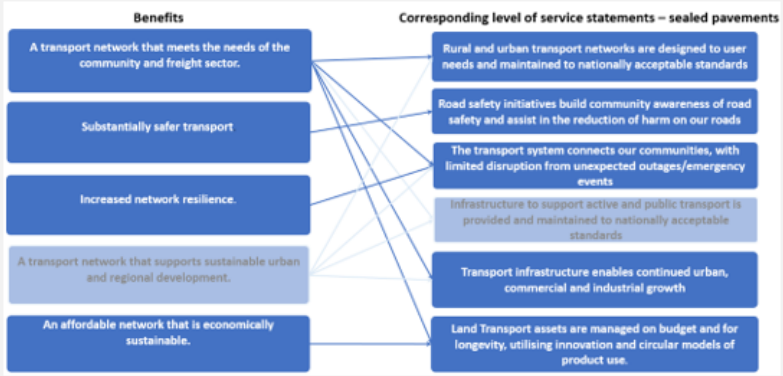
See over page for the link between this activity and the Strategic Case.

Strategic links

Sealed Pavements

Activity classes	Problem statements
111 – sealed pavement maintenance 212 – sealed road resurfacing 214 - sealed road pavement rehabilitation	• Consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction. • The roading network lacks resilience against natural and anthropogenic hazards, decreasing accessibility and increasing costs. • Road network deficiencies, inappropriate speed environments and poor driver attitudes result in deaths and serious injuries on our roads

Benefits of proposed sealed pavements activities and corresponding level of service statements



Sealed pavements activities contribute to these Council community outcomes

- Connected citizens
- Enhanced lifestyle
- Diverse economy
- Resilient Infrastructure

Strategic responses - management of sealed pavements

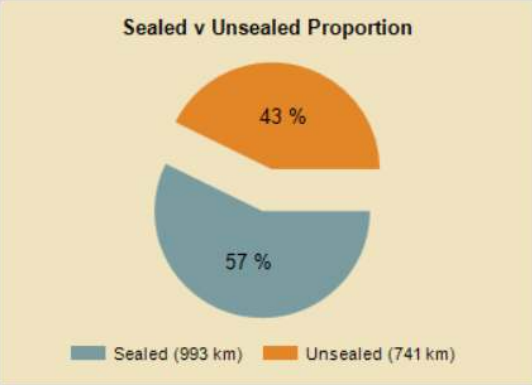
- Ensure holistic approach to maintenance and operation of the transport system
- Ensure infrastructure meets current and future resilience needs and that hazard management practices are fit for purpose
- Ensure transport planning integrates people, place and movement
- Implement safe systems
- Raise community awareness of priorities, the levels of service and value we deliver

Sealed pavements activities contribute to these GPS priorities

- Integrated freight system - Well-designed and operated transport corridors and hubs that provide efficient, reliable, resilient, multi-modal, and low-carbon connections to support productive economic activity.
- Safety - The primary focus of this priority is to make transport substantially safer for all.
- Increasing resilience - The transport system is better able to cope with natural and anthropogenic hazards.
- Maintaining and operating the system - The condition of the existing transport system is efficiently maintained at a level that meets the current and future needs of users

Sealed network asset overview

ONRC	Total Length (Km)	Urban (Km)	Rural (Km)	Sealed (Km)	Unsealed (Km)	Lane (Km)
Regional	15	3.6	11	15		30
Arterial	39	21	18	39		78
Primary Collector	79	19	60	79		158
Secondary Collector	324	52	272	285	39	646
Access	545	93	453	419	127	1,062
Low Volume	730	66	664	155	575	1,272
Not Required	1.1	1.1		1.1		1.7
TOTAL NETWORK	**1,733**	**255**	**1,478**	**993**	**741**	**3,248**



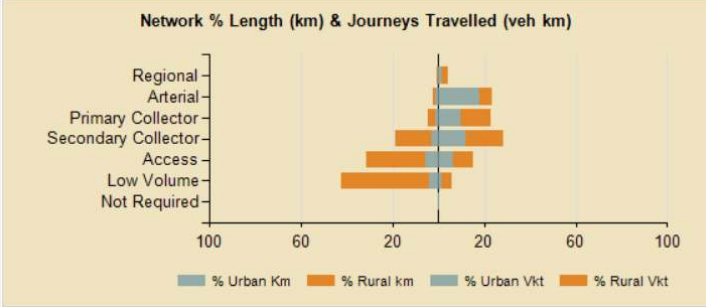


Fig 39, 40 and 41: Sealed network asset overview.

Current condition and performance

Surface condition

The condition of both chip seal and asphalt surfacing is in pretty good shape with TDC keeping pace with deterioration. The age of the sealed network is not a significant demand driver - through a focus over the last 10 years (resealing approximately 6-8% of network length annually), the vast majority of chipseal is less than 16 years old. Parts of the network that are older are generally being held to coordinate in with large scale utilities projects, meaning that works are completed in the right order and community disruption only happens once.

The annual surfacing programme is prioritised by condition, and tends to be chip seals between 15 and 19 years old. Exceptions to this often included in the programme are:

- Younger seals that are deteriorating early due to change in use and increased HCV. Resurfacing is used as a holding technique when cracking is apparent but large budgets are unavailable for extensive maintenance or rehabilitation.

- Younger seals following road maintenance repairs (preventative measure.
- Use of slurry to provide an effective 'middle-ground' treatment in some urban locations, such as turning heads where rubbish trucks can cause issues by migrating loose chip and associated damage. Slurry offers a higher level of service for community (longer lasting, and more forgiving than asphalt on flexible pavements) without the higher cost of asphalt. We are routinely achieving over 14 years of life with this treatment type.

Asphalts built on good pavements will generally provide us with over 24 years of life. Testing using FWD and MSD has revealed that most asphalt in the Timaru District is built on good pavements. We have been able to stretch some asphalts up to 28 years old, with conditions remaining acceptable until this point. Many of these aged asphalt seals are located in Timaru CBD and are being held until the Timaru CityTown (CBD regeneration) programme is implemented, as this includes significant utilities work. The George Street, Dunedin upgrades are similar in scale to the required works anticipated in our CBD over the next 10+ years.

Cracking is obvious on industrial roads and visual condition rating picks up a large number of cracks on urban asphalt. The cracks are not affecting the underlying pavement and in general urban asphalt is in average to good condition. The exception to this is in the industrial areas of Washdyke and Timaru Port where there are some high use roads now starting to need asphalt renewal. Some 300 to 1000 trucks per day travel on high use areas of the network, driven by economic development and industry in the District. The treatment for these is increasingly becoming structural asphalt as per Waka Kotahi guidance.

Over the coming years we are likely to need to increase the amount of thin asphalt replaced while reducing some of the chipseal we are doing. There is no funding allocation currently to resurface for improved skid resistance for road safety outcomes.

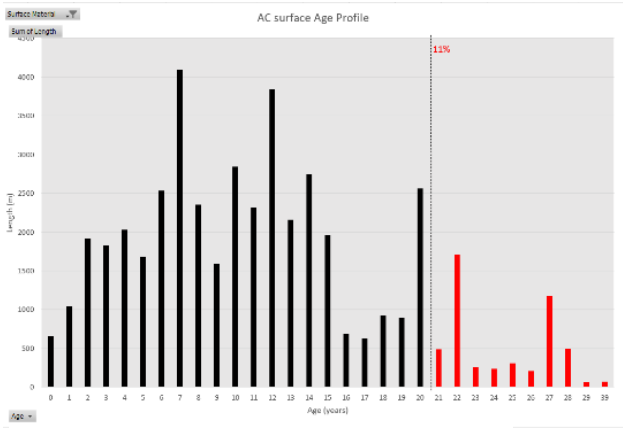


Fig. 42: AC surface age profile for the Timaru District.

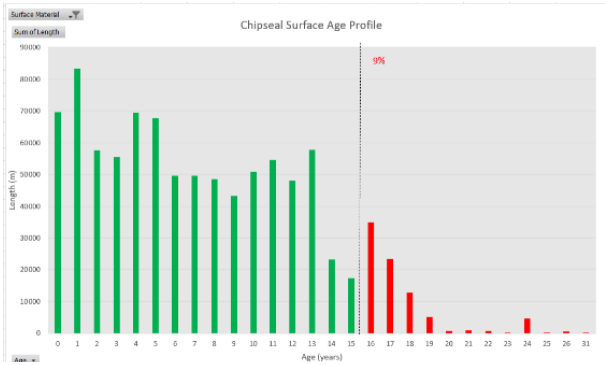


Fig. 43: Chipseal surface age profile for the Timaru District. Note – seals over the age of 25 years are often discrepancies in RAMM.

Pavement condition

41% of TDC pavements are older than 50 years (63% older than 45 years old). The majority of renewals and maintenance repairs we have undertaken are attributed to inadequate pavement strength. This is because the thickness of 50 year old pavements is not sufficient to handle the number and weight of heavy vehicles allowed on the road currently. Often these pavements were not designed or constructed to carry such loads with 50-100mm of mixed quality granular pavement atop black or clay type soils. crop

The detrimental effects are potholes, rutting, shoving and shear failures. This impacts road safety, delayed journeys, increased customer complaints and negative Council/industry reputation.

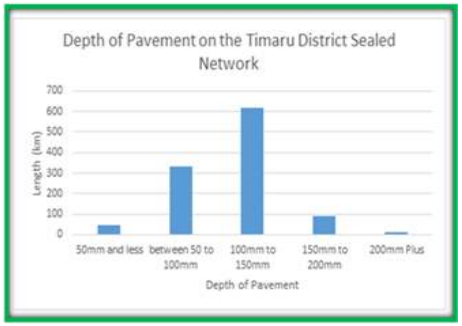


Fig. 44: Depth of pavement on sealed network.

Modelling of the network was undertaken in November 2020 and again in 2023 using JunoViewer software to help predict the consequences of our thin and aging pavements. The findings from the output model are highlighted below and support the approach TDC is taking to manage the road network. From the Return in Condition plot, it can be seen that any reduction in renewal levels has an impact in higher defects on the network and hence higher OPEX maintenance. This will result in an increase in potential safety hazards and risks on the network as well as increase travel disruptions and times to road users, and unfairly burdened ratepayers with increased financial costs.

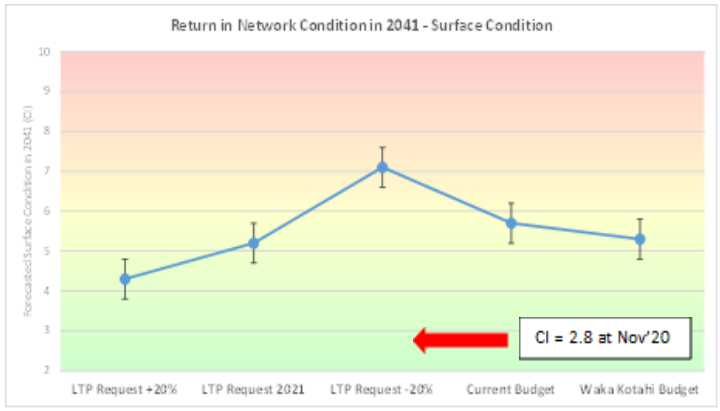


Fig. 45: Return in network condition in 2041 – surface condition – this shows that if we continued to fund at current budget we will keep our surface condition. Note: Waka Kotahi budget figure refers to the budget request amount (not received).

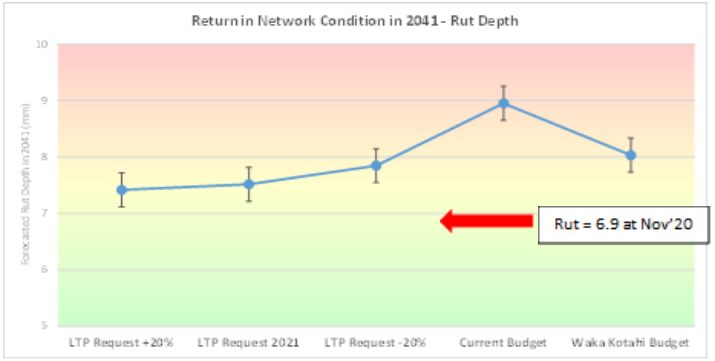


Fig. 46: Return in network condition in 2041 – rut depth – this shows that even at current funding levels our rut depth will increase over the coming years.

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Based on the model forecasts and predictions, the following is the recommend minimum road centreline length of renewal work to be undertaken for the Timaru sealed road network:

	Average Annual Qty (cl.km/year)	Annual % Network/Year	Average Asset Life*
Rehabilitation	9.0 to 10.0 km/year	1.0%	100 years
Chip Resurfacing	45.0 to 47.0 km/year	4.9%	20 years
Thin AC Resurfacing	1.8 to 2.2 km/year	5.2%	20 years

*Based on rate of renewals for the asset class

Sealed network problem statements – further discussion

Ageing and deteriorating network

Our sealed network was not initially designed for current heavy traffic loads, and it grapples with the increasing demands driven by sustained economic growth in the District. Timaru's economy continues to experience robust expansion, contributing significantly to regional and national GDP. Despite this, however, Timaru is not funded proportionately for the maintenance and renewal of the sealed network, which is critical to the movement of goods.

Economic trends project continued growth in freight levels (refer Strategic Case) exacerbating the strain on the network. Additionally, only a fraction of the network accommodates high productivity motor vehicles (HPMV), leading to declined permit requests due to capacity issues. Pavement thickness is below optimal levels, and the disparity is evident in the challenges posed by modern traffic loads. There are several locations on our urban network, for example, where increases in heavy vehicle traffic are causing early deterioration and contributing to resident dissatisfaction.

The situation demonstrates the importance of sustained investment, as any reduction in renewals budget or service levels could lead to increased asset degradation and the need for reactive maintenance, jeopardising the safety and reliability of the network for freight and other road users alike.

Safety

The regional and arterial roads within the Timaru District pose significant challenges for road safety. Most travel occurs on the sealed network, generally at higher speeds than the unsealed network and with a wider range of users including people walking, biking and using other mobility modes. Effective maintenance of road pavements plays a crucial role in reducing crashes, particularly those involving driver loss of control, and in minimizing the severity of any resulting incidents. Other critical road assets such as pathways and traffic systems are dependent with the sealed network and contribute to ensuring the safety of all road users.

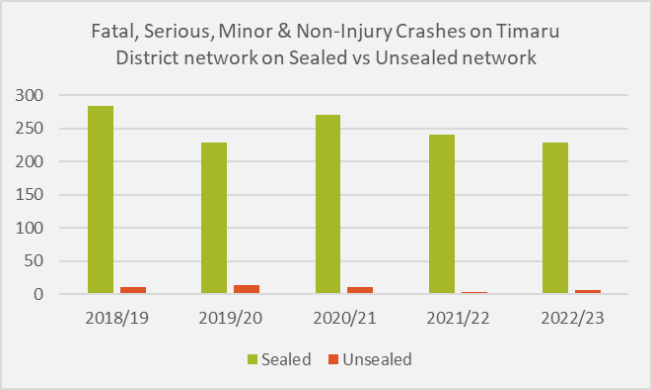

Fig. 47: Crashes on the sealed vs unsealed network

Resilience

Timaru District's sealed roads are increasing vulnerable to natural and anthropogenic hazards, hampering accessibility and escalating maintenance costs. Heightened extreme weather events and regional reliance on key routes with limited available detours means parts of our network are regionally and nationally critical for freight and food supply and warrant a higher level of service. Segments of our sealed network are at risk of flooding, coastal erosion, and slips, with poor drainage accelerating pavement deterioration. Despite advanced asset management, the sealed road network is also susceptible to shifts in demand due to private land use changes. The lack of scalable funding for development amplifies gaps in resiliency, jeopardizing network safety. Utilities works contribute to asset life reduction and community dissatisfaction. Emphasising community reliance on the sealed network is critical, necessitating ongoing attention to address these challenges promptly.

Sealed pavement maintenance

Our sealed pavement maintenance strategy is data driven and focuses on extending asset life, based on network demand and use. Maintenance involves a combination of:

- Direct remedy of defects (digouts, pothole repairs, crack sealing, stabilisation)
- Pre-reseal repairs
- Preventative maintenance

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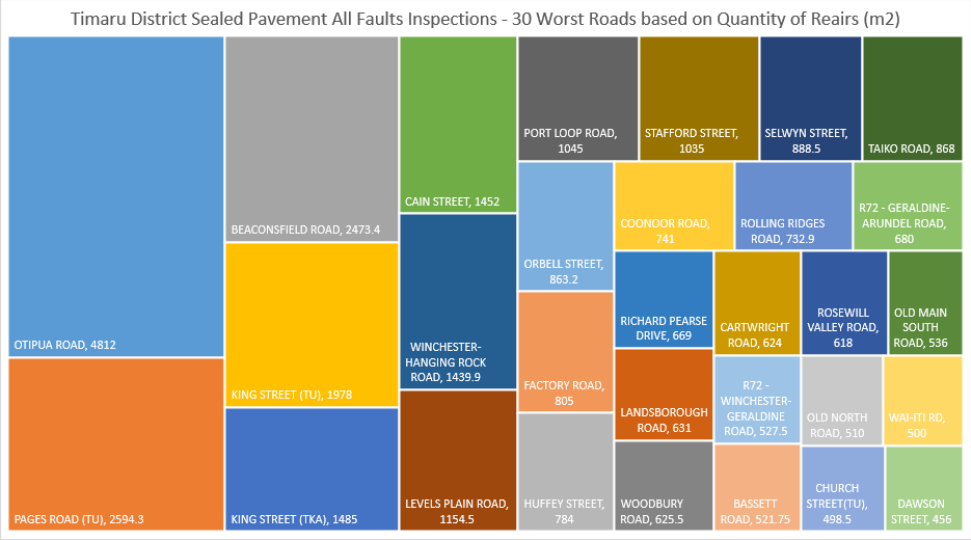


Fig. 48: Thirty worst roads on the Timaru District sealed network in 2023 as per all faults inspections. The larger the box the higher number of faults that are present.

We consider road classification and use of a road to determine the size and scale of repair, using data to inform decision making. We apply a differential level of service - looking at full lane width repairs on higher volume roads (this provides smoother travel and lessens the jarring that can occur to a pavement when trucks bound on and off repairs, increasing the future maintenance requirements). On lower volume roads and where the community impact is lesser, we scale the repair size down to absolutely necessary (meaning we can manage the sealed network on a relatively small budget when compared with our peers - our cost per kilometre rate sits us in the bottom ¼ of our peers).

Pavement repairs are prioritised and carried out in accordance with the maintenance contract specifications, which is heavily audited to ensure quality work is only paid for once. Each year a significant pre-reseal repair programme is completed. Pre-winter repairs average ~20,000m3, after wet winters this can more than double. We seek to minimise lifecycle costs and consider how safety outcomes can be optimised for road users, and success is monitored via customer feedback and annual assessment.

Annually an all faults inspection is undertaken on the sealed network, helping to identify current and future priorities

Pavement renewals and resurfacing historic work quantities

Renewal expenditure is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original capacity. Work over and above restoring an asset to original capacity is new capital expenditure. The graph below shows the Transport Asset Renewal Cycle for chipseals, asphalt, pavement and bridges.

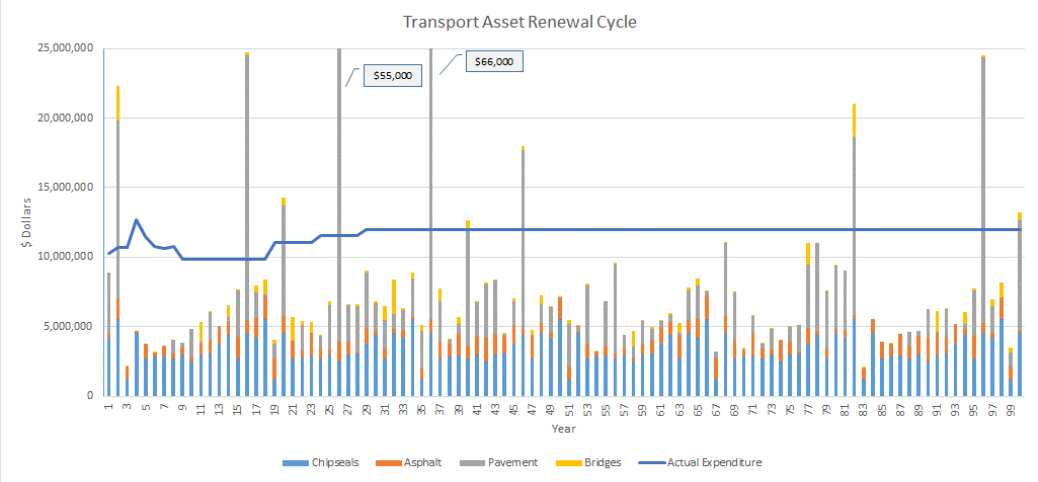


Fig. 49: Transport asset renewal cycle

Asset (or group of assets)	Renewal requirements	Description of renewal	NZTA WC
Unsealed road metalling	Replacement of Assets	Replacing wearing course, restoring pavement strength	211
Sealed road resurfacing	Replacement of Assets	Chip sealing, AC resurfacing (for waterproofing or skid resistance)	212
Sealed road pavement rehabilitation	Replacement of Assets	Granular overlays, rip and re-make, stabilisations, structural AC	214

Historic pavement rehabilitation programmes have been insufficient to stem the deterioration of the pavements. We have developed a road renewal programme which will reduce reactive maintenance, reduce faults, and seeks to increase customer satisfaction.

Fig. 50: Typical pavement thickness on a rehabilitation site (50-70mm)

Typical pavement thicknesses on the TDC road network are in the order of 50-70mm. This is no longer a sufficient thickness to withstand the increased vehicle weights and increased volume of heavy traffic on our network.

On average, the depth of material to meet NZTA standards is in the order of 150mm to 200mm of granular overlay on top of the existing roads.

Historically this has meant our rehabilitation costs per km seem high when compared to our peers as evidenced in the chart below.

The graphs below demonstrate the volumes of chipseal and asphalt resurfacing and pavement rehabilitations completed on the Timaru network, based on road classification during the past five seasons:

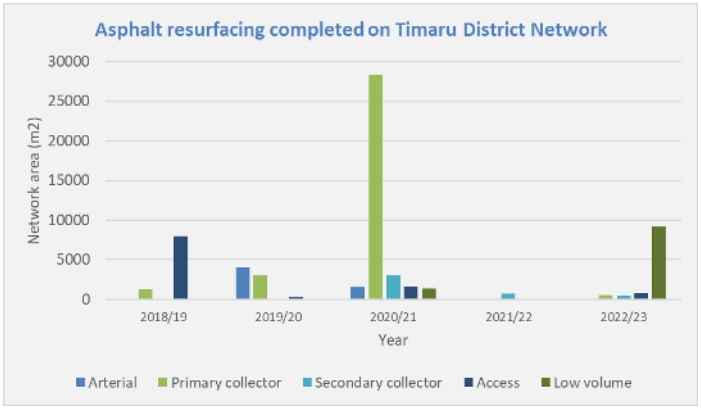


Fig 51: Asphalt resurfacing over past five years

95

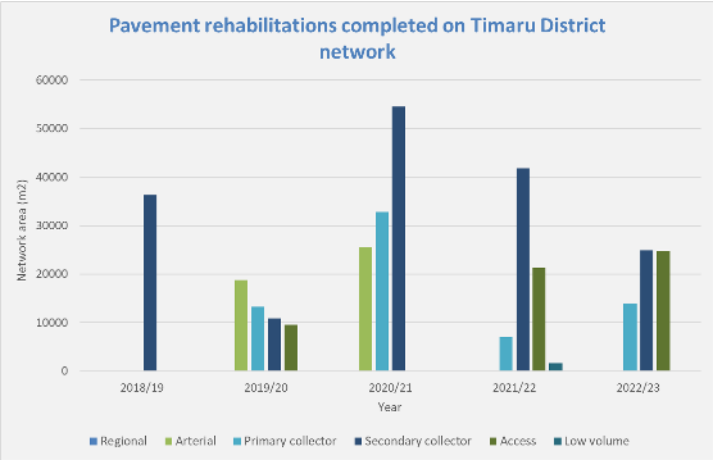


Fig 52: Historic volumes of asphalt and chipseal resurfacing

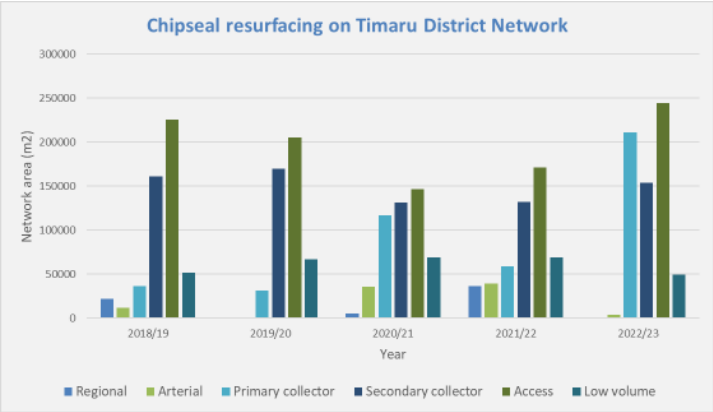


Fig 53: Historic volumes of pavement rehabilitations

Cost efficiency and peer comparison

The graphs below demonstrate our cost efficiency performance for sealed pavements activity classes, compared to regional peers.

Sealed road resurfacing

The cost of sealed road resurfacing is at the lower end of the top third of peer group councils. This is reflective of the need to hold our older pavements that are heading towards unstable seal status through resurfacing. Using slightly more expensive treatments, these are predominantly a two coat or similar seal. Two design options are required and assessed however we note that the designs implemented align with the New Zealand Chip Seal Manual.

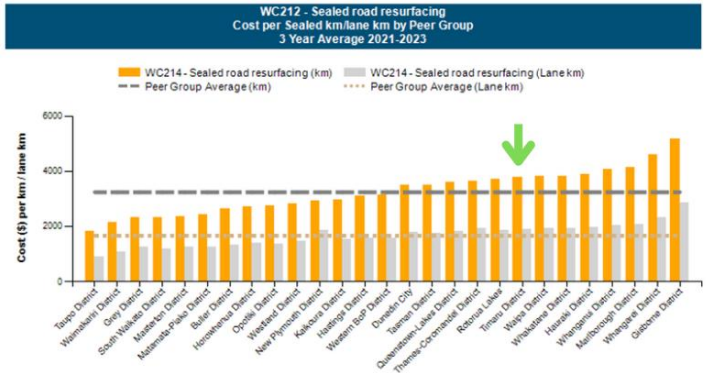


Fig. 54: Sealed road resurfacing – cost efficiency

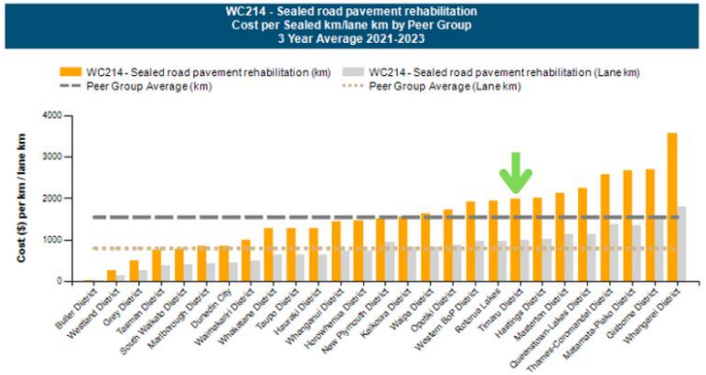


Fig. 55: Sealed road pavement rehabilitations – cost efficiency

Sealed road rehabilitations

Timaru has a higher cost per km for sealed road pavement rehabilitations than many of its peer group, but this is driven by our aim to ensure prudent stewardship of assets for multiple generations.

Treatments are tailored to specific conditions on the network and factor in long term needs. Existing pavement depths in general are low (often 50mm) and need to be reconstructed at a greater depth to meet 30 year design lives, to meet the demands of high truck volumes – this comes at a greater cost.

Structural AC is used on Timaru Port and Washdyke industrial roads to cater for vehicle weights and longevity, but also comes at a greater cost.

Sealed road maintenance

With sealed road pavement maintenance making up a high proportion of overall budgets, it is pleasing to see Timaru District ranked in the lower quartile for the cost of this activity. Smart and timely renewal investment keeps our maintenance costs affordable. Even with this low level of input we are able to maintain our STE through a differential LOS maintenance intervention strategy and implementation/auditing of backfill and reinstatement guidelines.

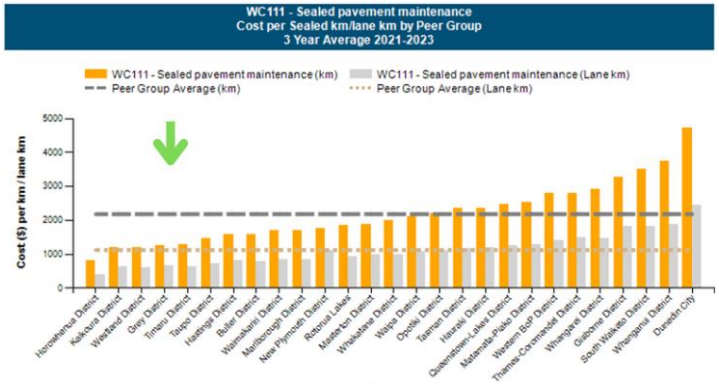


Fig. 56: Sealed pavement maintenance – cost efficiency

Design standards

Council follows Waka Kotahi standard specifications for sealed road construction, maintenance and operations:

- M/1 Roading Bitumens
- M/6 Sealing Chip
- M/10 Asphaltic Concrete
- M/13 Adhesion Agents
- P/9 Asphaltic Concrete Paving Construction
- P/12 Pavement Marking
- P/14 Installation of Raised Pavement Markers
- P/16 Installation of Edge Marker Posts
- P/17 Performance Based Bituminous Resealing
- Q/1 Quality Assurance for Chip Sealing
- Q/4 High Quality Assurance Level Contracts
- T/3 Measurement of Texture by the Sand Circle Method
- T/5 Size, Shape and Grading of Grades 1-4 Sealing Chips
- TQS1 TNZ Quality Standard
- NZGTTM New Zealand Guide for Temporary Traffic Management
- NZTA Manual of Traffic Signs and Markings Part 2
- Chip sealing in New Zealand (TNZ/RCA/Roading NZ 2005)
- Chip sealing in New Zealand practice notes (2011)

Safety

Information collated by Waka Kotahi is used by Timaru District Council, in collaboration with the South Canterbury Road Safety Committee, to inform the development of engineering, enforcement and education programmes to improve road safety.

Customer satisfaction

While the number of complaints we receive about sealed pavements is reasonably low, customer survey results demonstrate low satisfaction with the maintenance of sealed roads. Feedback trends include:

- Dissatisfaction with loose chip on intersections and chip migrating on chip-sealed turning heads (often on new reseal sites). Our resurfacing contractor has a swift response to complaints, opportunities to improve proactivity are being explored. We have been trialling slurry treatments to improve the level of service in some areas, to reduce chip seal complaints.
- Dissatisfaction with seal condition as a result of service trenches failing and poor reinstatement from external contractors. Unfortunately, there are very few ways the general public can differentiate between road maintenance works and works completed by other contractors/utilities. In this regard, our survey results tend to 'carry' complaints about both traffic management and work outputs that are not directed by Land Transport. Production of a Backfill and Reinstatement Guide for contractors and increased monitoring of this issue are contributing to improvements (refer Network and Traffic Services section 9.6).
- There are some complaints about the quality of work and the speed of pothole repair. In general we repair potholes very quickly, however in some cases multiple temporary repairs are completed in the same location until such time as a full stabilisation or digout repair is possible. If potholes are significant, we will also temporarily lower speed limits in an area. The management and frequency of works can initiate the perceptions that Council is not completing adequate repairs and generating undue ratepayer expense. In reality, we are swiftly responsive to pothole complaints and we do not pay each time a pothole is filled (we pay a lump sum fee for maintenance of the whole network). If Digouts fail, this is covered under warranty with our maintenance contractor. We consider that pothole complaints are a nationwide issue, and ongoing local and national education is needed. In particular, there are many external factors that contribute to the presence and experience of potholes that are outside of Council's/contractors' control, and/or are not within the limits of our budgets to address (see case study below).
- Dissatisfaction with the condition of State Highways through Timaru is having a negative effect on our local road user survey results (evidenced by verbatim comments recorded).

We consider there is a mismatch between the feedback trends we observe, customers' understanding of our activities (and the activities carried out by external parties on the road corridor) and the level of service we are funded to provide. This is evidenced by the fact Waka Kotahi audits are persistently demonstrating the condition of our sealed network is generally fit for purpose and managed well by an innovative, high performing team.

Case study – Peri-urban streets

Contributing factors to this pothole included large volumes of trucks hauling to/from a local quarry, insufficient pavement depths to carry the demands, and potential drainage and water asset failure/leakage. Multiple repairs and temporary speed reductions were

undertaken in advance of a full repair, including a digout and new kerb and channel installation to address drainage issues. Even though the root cause of the issue was not related to maintenance/management by Council's Land Transport team, and despite proactive and best practice responses to the issue, land transport activities were still the primary subject of complaints from the community, with many complainants attempting to seek reimbursement for vehicle damage from Council.

Critical assets

Much of the sealed network includes critical assets that are lifelines for both the District and the lower South Island. Criticality is currently determined by ONRC, ONF and road safety measures, and we have recently worked to establish a new system to categorise lifeline infrastructure to assist with prioritisation of works during emergencies. Refer to Part A, Section 3: Demand and Growth and Figure 57 adjacent.

Overview of deterioration modelling

A range of data is used to inform deterioration modelling, including:

- HSD (High Speed Data)
- FWD (Falling Weight Deflectometer, indicates pavement strength)
- MSD (Multi Speed Deflectometer – currently being trialled, see more below)

Data is inputted into Junoviewer to identify the areas of the network at greatest risk of failure. Through Junoviewer we can easily analyse trends over time, maintain visibility of where rehabs have been completed, develop budgets and analyse possible treatments for deterioration on each road segment.

Our HSD is collected on the rural roads every year and all roads have been surveyed 3 times over a period of 6 years. HSD scans a laser over

*Fig. 57: Critical assets are mapped in RAMM, indicating what part so of the network are **Critical, High, Medium** or **Low** priority*

the road surface and measures the rutting in the pavement over the profile. The team are looking forward to seeing the outputs of the nationally funded consistent data collection to even further improve model understanding an investment decisions.

Case Study – Beaconsfield Road

The following graphs (extracted from Junoviewer) indicate rapid rutting deterioration around 2020 and with some heavy maintenance the rutting has improved by February 2022. The small graph (bottom right) shows median rut depth for each HSD survey completed. The Median Rut for that length is the 2,3,7,4 data points. The whiskers show the variation in the depth of rutting.

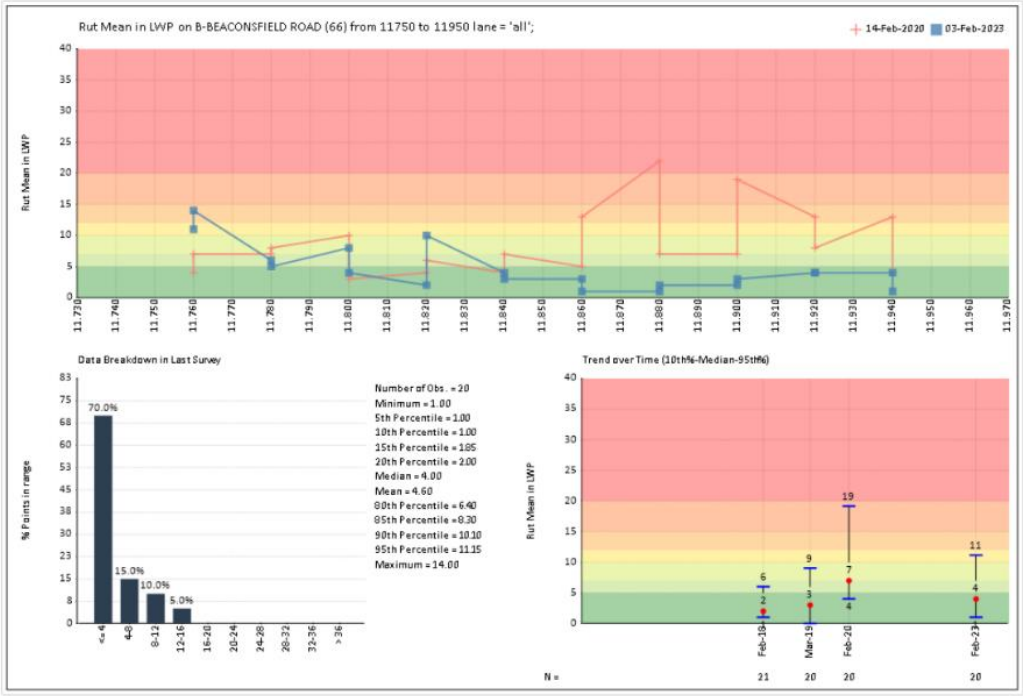


Fig. 58: Junoviewer deterioration data – Beaconsfield Road

Case Study – Hadlow Road

The graphs below indicate a need for more maintenance and potentially a rehabilitation project on Hadlow Road, as the deterio ration is increasing.

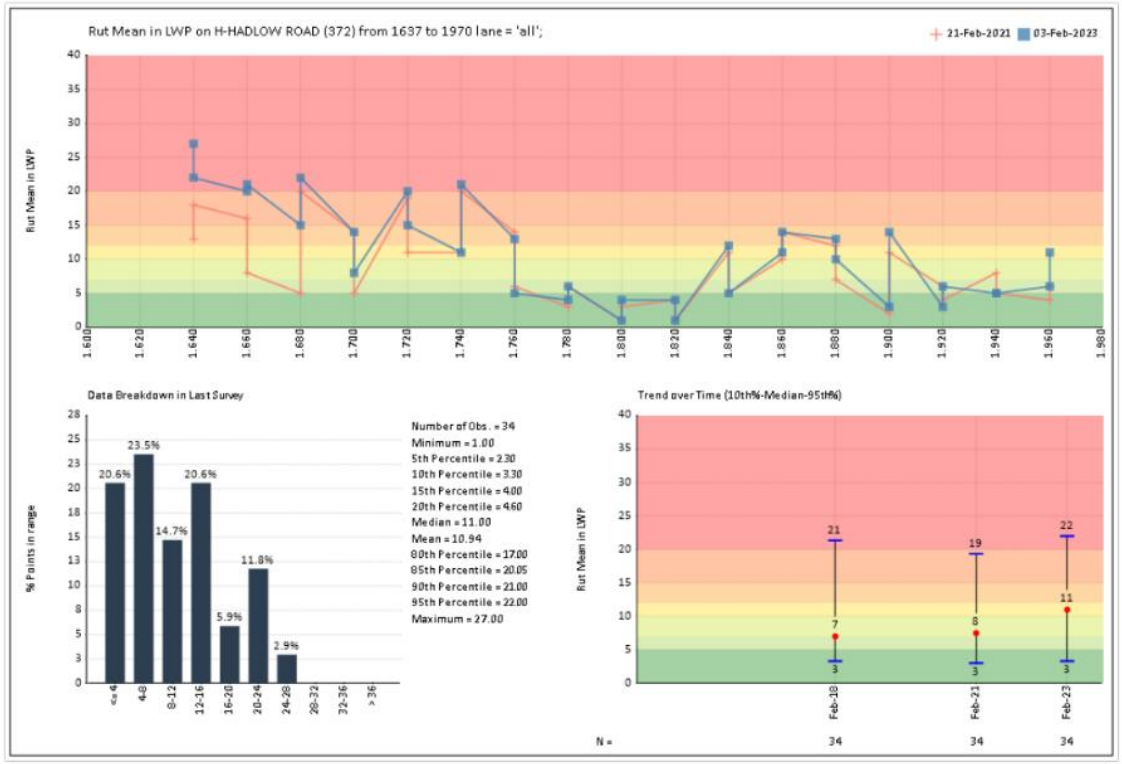


Fig. 59: Junoviewer deterioration data – Hadlow Road

We are trialling MSD which is Multi Speed Deflectometer testing. This is a device installed on the tyre of a known sized truck that measures the deflection of the road as it drives along. It can survey the whole network in a matter of days and you have information every 10m. This is an improvement to the historic FWD testing which takes weeks to survey the network at 100m spacings. The MSD testing is done by Geosolve using an in-house programme called Pavestate which displays the data and the interpretation of the data showing remaining life. Other measurements can be shown on this tool that they have picked up with the MSD collection but the primary measure is remaining life. Pavestate can also show the FWD data outputs from previous tests to compare with this more modern MSD data. The MSD data is also held in RAMM for in house analysis.

Figure 60, generated by MSD, shows pavements that are going to need reconstruction in the coming years (anything not green). The prediction model is fitting closely to what the HSD, FWD and staff assessments are telling us about the condition of pavements. Deterioration modelling to inform the resurfacing programme is completed using a similar method, and incorporates a visual condition rating to determine the deterioration rate across the network. This year we trialled video AI on our reseal roads to support decisions to do with reseal treatment types. The system uses video of the road that is put through an AI process which identifies the faults on the road.

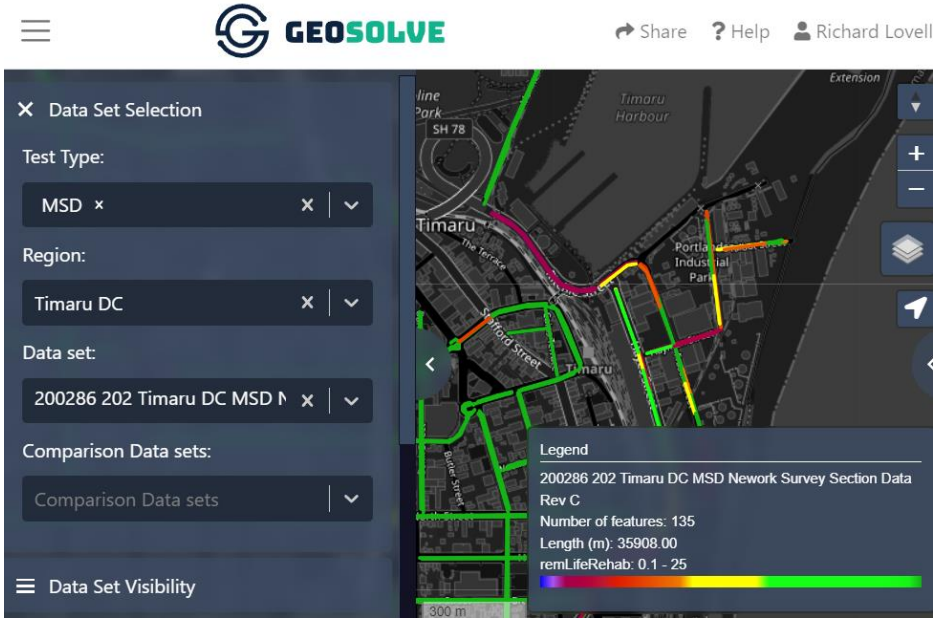


Fig. 60: Sample of MSD pavement deterioration data modelling

At the moment it requires quite a bit of checking by humans to make sure the AI is identifying faults correctly. But it automatically logs a lot of faults on the road and these are then sense-checked by an engineer. In future there will be less need for human validation as the AI learns the network. This will improve long term monitoring of fault progression and build up knowledge of network condition and further funding needs in future LTP/NLTPs.

https://www.stuff.co.nz/business/130614761/the-ai-making-finding-and-repairing-potholes-quicker

Options analysis

Option	Description / Programme responses	Average annual cost (OPEX)	Average Annual cost (CAPEX)	Will this option enable delivery of strategic responses?	Corresponding impact on delivery of LOS	Preferred option
1	Do more maintenance less resurfacing and less rehabilitations. Lower level of service provided, rougher roads, more potholes approx 25% of network in very poor/poor condition.	$3,001,526.78	$7,803,969.63	*Yes*	LOS not met with significant asset degradation expected over time - STE measure will decrease to 80-90 over time	
2	Current plus inflation - no change to level of service approx 10-15% of network in very poor/poor condition	$1,664,853.33	$8,324,266.67	*Yes*	*Mostly, though without additional funding to support new development, transport infrastructure unlikely to fully meet growth needs consistently across the District.*	*Yes*
3	Do less maintenance and more rehabilitations - higher Level of service approx 5% of network in very poor/poor condition	$1,200,610.71	$25,000,000.00	*Yes, including some increases in innovation, efficiency and effectiveness*	*Most levels of service exceeded.*	

Customer Level of Service Statements and targets for sealed pavements

1. **Rural and urban transport networks are designed to user needs and maintained to nationally acceptable standards.**
   - 60% residents feel that the transport network meets their needs
   - 60% residents think maintenance of sealed roads is about right or too high
   - 70% of customer service requests are responded to within 15 working days*
   - Average Smooth Travel Exposure Index on all sealed district roads – 92%*
   - 6% of the sealed road network is resurfaced annually*
   - 95% of the rural sealed network is in an acceptable condition as per MSD data
   - No more than 5% of the network is predicted for failure within 5 years
   - 1% of the sealed pavement is rehabilitated annually
2. **Road safety initiatives build community awareness of road safety and assist in the reduction of harm on our roads.**
   - Number of fatalities and serious injury crashes on the local road network is less than the previous financial year on an annual basis*
3. **The transport system connects our communities, with limited disruption from unexpected outages/emergency events**
   - Resilience works programme developed including identification of critical routes.
   - 2027 onwards – resilience works programme implemented as per programme
4. **Transport infrastructure enables continued urban, commercial and industrial growth.**
   - No specific targets, condition and renewal targets above are applicable.
5. **Land Transport assets are managed on budget and for longevity, utilising innovation and circular models of product use.**
   - Sealed network renewals and maintenance delivered as per programme, to scope, quality and budget.

Financial Impact

The following table shows the financial impact of the preferred option:

Work category	Preferred option – description of cost changes between Council 2023 budgets and current request	Difference between Council 2023 budgets and current request
111 – sealed pavement maintenance	Council currently funds a total of over $1.7M Per annum. This figure accounts for current network needs, completing only Priority one and approximately 50% of P2. P3 and P4 are only considered on higher volume pre reseal roads. Current Maintenance contract escalations are over 15% - for a contract starting 1/7/2021. With optimal capital input we can reduce maintenance efforts.	-$369,239.67
212 – sealed road resurfacing	$500,000 has been provided for asphalt resurfacing in Timaru CBD as part of broader regeneration works. Currently Council reseal about 6-8% of the network annually, this is in line with best practice and these figures reflect that need. There are a number of aged and cracked urban AC sites that are being held for renewal, to enable coordination of underground works to occur prior to resurfacing with Asphalt. We carefully consider the function of each AC road prior to selecting AC/Chipseal or Slurry.	+$662,133.33
214 – sealed road pavement rehabilitation	As we are a primary industry and manufacturing district, with a busy port, we need to ensure any pavement renewals in high truck areas, in braking zones mean we need to install structural asphalt when the existing thin AC surfacing in these key Port and manufacturing areas (Port/Washdyke/Fonterra Factory). We also need to renew our rural roads due to failure of thin unbound pavements that were never designed for the HMPV and general HCV use they are getting. Council currently fund $4M per annum for road renewals, which is a rate of renewal of approximately 100-150 years for the sealed network.	$162,133.33

Financial Expenditure Summary

The following table summarises the sealed pavement maintenance and renewal expenditure for the preferred option and associate d funding request.

Work category	OPEX budget (Year 1)	CAPEX budget (Year 1)	Total budget/funding request (Year 1)	Total Budget/funding request (based on years 1-3 average)
111 – sealed pavement maintenance	$1,600,000.00	-	$1,600,000.00	$1,664,853.33
212 – sealed road resurfacing	-	$4,000,000	$4,000,000.00	$4,162,133.33
214 – sealed road pavement rehabilitation	-	$4,000,000	$4,000,000.00	$4,162,133.33
TOTAL sealed pavements	**OPEX** $1,600,000.00	**CAPEX** $8,000,000.00	**Total funding request Year 1** $9,600,000.00	**Total annual average funding request (based on years 1-3 average)** $9,989,120.00

Continuous Improvement

The following improvements have been identified to improve capability in this area:

Improvement	Benefit
Continue trialling of ARI artificial intelligence modelling	Build system capability and improve scale and accuracy of available condition data.
Expand to annual MSD inspection on peri-urban and all rural sealed roads	Build system capability and improve scale and accuracy of available condition data.

9.2 Unsealed pavements

Introduction

A little over 40% of Timaru's roading network is unsealed. While most unsealed roads are predominantly lower traffic volume sections of the network, providing residential access, many unsealed roads in our District are critical for freight collection and the delivery of raw materials to the wider market, including processing facilities and export hubs for Primary industries such as agriculture, horticulture, forestry and quarries.

Traffic volumes on unsealed roads can vary depending on surrounding land use and seasonal variations. Unsealed pavements are generally exposed to higher percentages of heavy vehicles accessing forestry, dairy and other highly productive industries using the rural sealed network, without the protection of a sealed surface layer. Generally located in the more remote parts of the network, unsealed roads are also particularly vulnerable to adverse weather events.

There is an expectation that unsealed roads activities:

- Meet the needs of the community and freight sector
- Support network resilience
- Are economically sustainable.

See over page for the link between this activity and the Strategic Case.

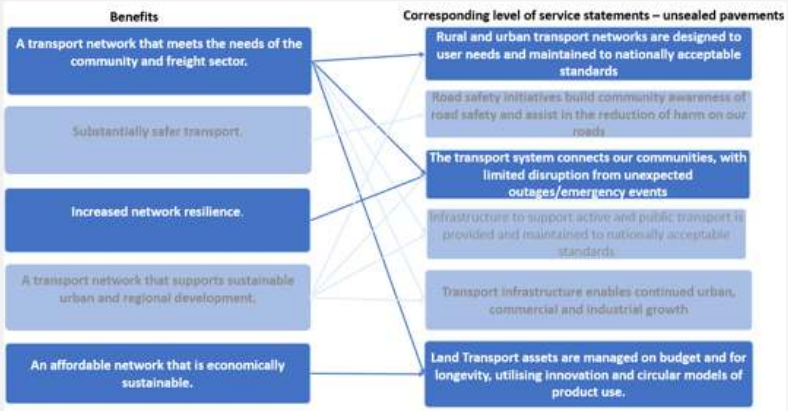
Fig. 61: Bassett Road, Timaru District

Strategic links

Unsealed Pavements

Activity classes	Problem statements
112 – unsealed pavement maintenance 211 – unsealed road metalling	• Consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction. • The roading network lacks resilience against natural and anthropogenic hazards, decreasing accessibility and increasing costs.

Benefits of proposed unsealed pavements activities and corresponding level of service statements



Unsealed pavements activities contribute to these Council community outcomes

- Connected citizens
- Enhanced lifestyle
- Diverse economy
- Resilient Infrastructure

Strategic responses - management of unsealed pavements

- Ensure holistic approach to maintenance and operation of the transport system
- Ensure infrastructure meets current and future resilience needs and that hazard management practices are fit for purpose
- Ensure transport planning integrates people, place and movement
- Raise community awareness of priorities, the levels of service and value we deliver

Unsealed pavements activities contribute to these GPS priorities

- Integrated freight system - Well-designed and operated transport corridors and hubs that provide efficient, reliable, resilient, multi-modal, and low-carbon connections to support productive economic activity.
- Increasing resilience - The transport system is better able to cope with natural and anthropogenic hazards.
- Maintaining and operating the system - The condition of the existing transport system is efficiently maintained at a level that meets the current and future needs of users

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Current Condition and Performance

The TDC Unsealed Road network is a total of 741km in length and is made up of the following pavement materials.

Unsealed Pavement Material Type	Quantity	Units
Standard Aggregate	679	km
Lime Aggregate Mix	61	km
Basalt Aggregate Mix	1	km
Total	741	km

While road user satisfaction results for maintenance on unsealed roads continues to fall, the condition of the network remains stable. Previous Waka Kotahi Technical audits have determined that they are in good condition and Council audits show we are meeting the customer level of service provided for both maintenance intervention and post grading performance criteria. Unsealed pavement condition is currently measured against defined levels of service through visual pre and post grade audits based on an assessment of the ability of the road to provide an acceptable provision for traffic at an operating speed of between 60-80kph, depending on topography. Unsealed road roughness is measured through the average International Roughness Index (IRI) reading over the length of road being audited.

We run Roadroid to monitor average roughness on the unsealed network and use a combination of standard grading with compaction, bit grading with compaction, maintenance metaling, and wearing courses – standard, lime mix and basalt mix. We believe that the dissatisfaction with the unsealed roads is the fact that they are unsealed. The regular users report dust nuisance, corrugations and narrow widths not facilitating great speeds.

A major challenge is that unsealed roads are dynamic and conditions can change quickly - rain causes increased potholes, and in the summer dust nuisance can be prevalent. Our team considers that there are some 100km of the 731km unsealed network that would benefit from a proactive seal extension programme, if this was an issue that Council would like to resolve. Seal extensions are unfunded by Waka Kotahi so would require full investment by Council, which is not currently an investment priority.

The unsealed network is currently experiencing increased demand through economic, environmental and customer level of service demands. The key factors affecting demand are:

- Increasing heavy vehicle traffic
- Impact of heavy rainfall events
- Forestry demand

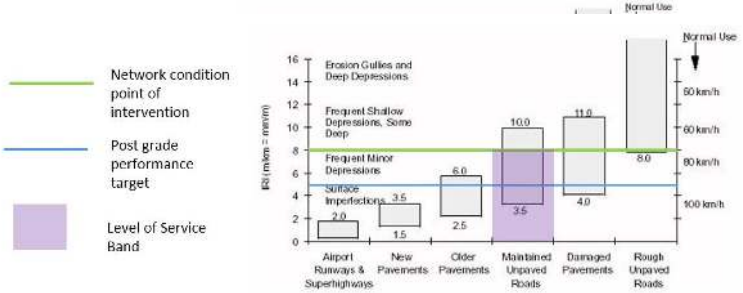

Fig. 62: The International roughness index was developed by the World Bank in the 1980s and constitutes an internationally standardized roughness measurement that can be used to assess the roughness of a particular road. The level of service band shows the target IRI for unsealed road condition under normal conditions, with maintenance intervention considered once average IRI readings exceed target levels.

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Unsealed Pavements Level of Service	Operating Speed	Target IRI
Level of Service Condition Band	60-80kph	0-8
Unsealed Road Condition Level of Intervention	60-80kph	8
Post Grade Maintenance Performance Criteria	60-80kph	5

Maintenance demand on the unsealed network can change depending on the season. Spring and Autumn generally see the network in the best condition due to optimal pavement moisture levels.

Summer and winter months require different maintenance approaches to maintain network condition.

- During summer months and extended dry periods, unsealed road pavements dry out, so grading is reduced to minimise loss of fine material and dust nuisance.
- During winter months and extended wet periods, pavements can become saturated and roadside drainage requires more maintenance to ensure water does not sit within the road carriageway, causing potholes.
- Grading frequencies are monitored and optimised where necessary based on network condition allowing for the right level of intervention.

Fig. 63: Unsealed Pavement average IRI reading worst roads ranked over the year shows one road audited was in excess of the level of service condition band and level of intervention target IRI of 8. This data shows that currently maintenance grading and

Asset Capacity/Performance

The Unsealed network is currently experiencing increased demand through economic, environmental and customer level of service demands. The key factors affecting demand are:

Increase in heavy vehicle traffic: Increased heavy vehicle movements on the unsealed network associated with primary industry activity is damaging unsealed roads. While traffic counts are lower than the sealed network for comparable road hierarchy classifications, there is a higher portion of heavy vehicle component attributed to the unsealed network compared to the sealed rural network.

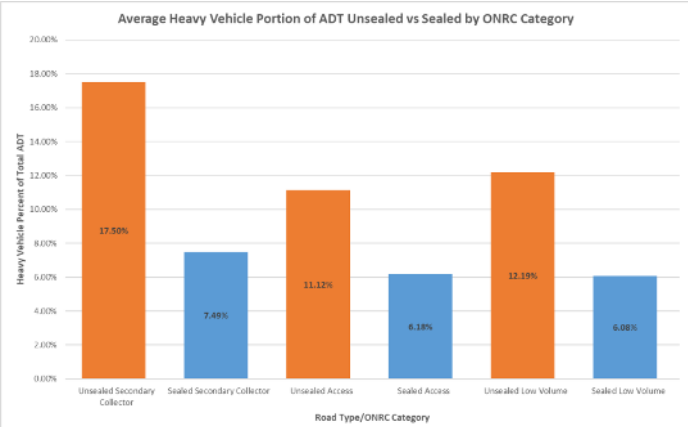


Fig 64: Graph shows the comparison of heavy vehicle portion of the Average Daily Traffic (ADT) counts of the unsealed and sealed rural networks. A larger percentage of heavy vehicles on the unsealed network is an indicator of healthy economic activity, however this comes with accelerated damage and deterioration of unsealed pavements.

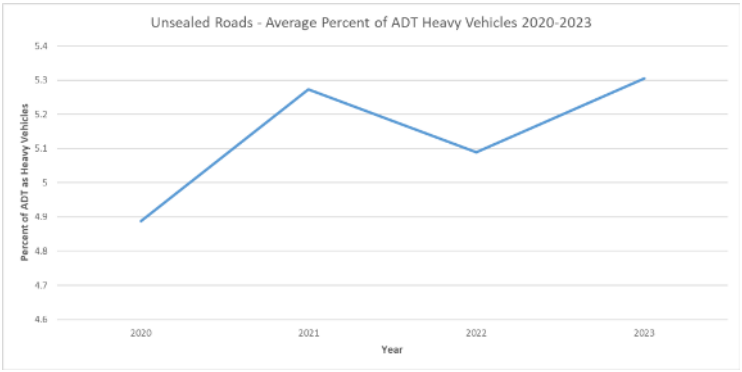


Fig 65: Graph shows recovery in heavy vehicle traffic volumes following Covid-19 lockdowns and a trend of increasing heavy vehicle portion of average daily traffic count in the following years to current levels.

Forestry Demand: The Timaru District has a high volume of forestry within the Canterbury Region. Many of these forests were planted in the early to mid-1990s and are now mature and due for harvest. Unsealed pavements have historically not had the level of heavy vehicle demand associated with harvesting of forests and lack the pavement strength to support this demand even in the medium to large scale of logging activity seen in recent years. With the significant out of context change in traffic volumes and axle weights, unsealed pavements that are affected by forestry harvesting activities receive minimal maintenance to maintain basic access and safety until harvesting is complete and traffic volumes return to the status quo – this causes complaints from forestry owners/contractors.

Territorial authority	Area (ha)	Standing volume (000m3)	Area-weighted average age (years)
Canterbury wood supply region			
Hurunui District	34,750	10,246	21.5
Waimakariri District	8,343	3,180	23.9
Christchurch City	9,891	3,837	25.1
Selwyn District	10,244	3,151	21.5
Ashburton District	3,001	954	23.6
Timaru District	12,027	3,043	21.3
Mackenzie District	5,016	1,674	26.8
Waimate District	11,585	3,294	22.6
Region total	**94,812**	**29,380**	**22.5**

Fig 66 (previous column): Data taken from the Ministry of Primary Industry showing the volume and age profile of the Canterbury Regions forests. This shows that Timaru District has a significant volume of forestry within and coming up to harvest leading to significant current and future heavy vehicle demand and damage expected to unsealed pavements. Timaru Port has a significant log export facilities and additional volumes can be expected from surrounding territorial authorities accessing the export facilities in Timaru in particular from the Ashburton, Waimate and Mackenzie Districts.

Impact of high intensity rainfall: The Timaru District is experiencing high rainfall events at more frequent intervals. Current road maintenance budgets have not kept up with the costs to repair the damage caused by these more frequent events leading to an increased reliance of emergency works funding from both Council and funding partners.

Year	Total Rainfall (mm)	Average Daily Rainfall(mm)	RANK Total	RANK Average
2022	1558.9	4.3	1	1
1986	1538.5	4.2	2	2
2018	1396.1	4.0	3	3
2000	1393.8	3.8	4	5
2021	1375.5	3.9	5	4
2013	1358.2	3.7	6	6
2012	1288.5	3.5	7	7
2017	1274.9	3.5	8	8
1974	1242.2	3.4	9	9
1983	1231.3	3.4	10	10

2012-2022
2001-2011
1990-2000
1979-1989
1973-1978

This table from the Peel Forest rain gauge and ranks the 10 highest rainfall events by year of occurrence. It shows that 6 out of the 10 highest rainfall events have occurred in the last 10 years.
The 1986 and 1974 events were historically significant events in size, scale and impact. The data shows we are experiencing these types of events more frequently.

Case Study – Arundel-Belfield Road

Arundel-Belfield Road is situated on the Eastern side of the Orari River and serves as a collector route between the Arundel Bridge that connects the Timaru and Ashburton Districts and State Highways 1 and 79. Due to its location, this road is used by many road users as a shortcut between these roads, including logging trucks. In the past, due to the Upper Orari Bridge being single laned, this road has acted as a temporary detour for State Highway 1following major flooding events in the area – this caused a large backload of traffic for a number of days.

This road experiences a consistent amount of heavy vehicle traffic regardless of being on the sealed and unsealed network, and is an typical example of how lighter traffic volumes drop off when a road transitions from a sealed to unsealed surface, but heavy vehicle numbers do not drop off at the same rate between the two surface types.

What the data is telling us: We analysed the heavy vehicle volume showed as a percentage of average daily traffic between the sealed and unsealed sections of Arundel Belfield Road. While traffic volumes are lower on the unsealed section of Arundel Belfield Road, the sealed section of the road has 22.9% heavy vehicles compared to 33.7% on the unsealed section. **This shows that the unsealed portion receives a proportionally higher amount of damage associated with heavy vehicle movements.**

Fig. 67: Ferry Road, Arundel – During the December 2019 flood event that closed all connecting bridges across the Rangitata River and temporarily severed the South Island in two, the Rangitata River flow diverted onto road reserve and forced the abandonment of a large section of Ferry Road. In the time since this event, the river has not diverted back to previous channels and this section of road remains closed.

Cost efficiency and peer comparison

The graphs below demonstrate our cost efficiency performance for sealed pavements activity classes, compared to regional peers.

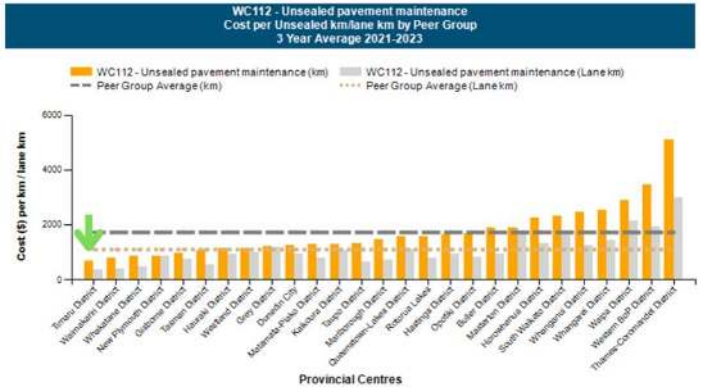


Fig. 68: Unsealed road pavement maintenance cost efficiency comparison

Timaru District is ranked as having the lowest cost of unsealed pavement maintenance per lane km across all of its peer group, however there is frustration in the rural community about condition. Regular measuring shows that generally the level of service is about right, though there is approximately 100km of the unsealed network that would benefit from being sealed (this is currently unaffordable for the community however).

Fig. 69: Unsealed road metalling cost efficiency comparison

Timaru District's cost of unsealed road metalling is at the very lower end of its peer group, however there is frustration in the rural community about condition. Regular measuring shows that generally the level of service is about right, though there is approximately 100km of the unsealed network that would benefit from being sealed (this is currently unaffordable for the community however).

Maintenance Plan

There are a number of maintenance and renewal activities that are undertaken to manage unsealed pavements, these include:

Grading with continuous compaction: Maintenance graders are fitted with the "Walk 'N' Roll" attachment, a trailer of pneumatic tyres that is attached to the back of the grader which compacts the graded surface during the grading operation.

Fig 70: Walk 'N' Roll grader attachment in action.

Alternative grader blades: The use of different grading blades to cater for the need of the unsealed pavements – in addition to the standard grader blades, the toothed "CAT Bit" blades are also used to undertake heavy grades where required that deep cut larger unsealed pavement faults and re-distribute fine materials, followed by compaction from the Walk 'N' Roll system (above).

Fig 71: CAT bit blade

Maintenance Metalling: Maintenance aggregate is applied to unsealed pavements where required to enable graders to have enough material on the road to maintain road Crossfall and reduce the risk of potholes forming. Maintenance material depth applied will generally consist of 50 cubic meters or less of aggregate is applied per kilometre of unsealed road.

Unsealed Wearing Course Renewal: Where metal loss is significant over an unsealed pavement, larger volumes of aggregate is applied and compacted to re-build the unsealed road surface. Material depth applied is generally 100-150mm over the length of the road being renewed and can be made up from the following material types:

- ***Standard Wearing Course*** – Consisting of straight crushed aggregate, the most common type of wearing course on the unsealed network.
- ***Lime Wearing Course*** – Crushed aggregate with up to 50% Lime mixed in during construction. This allows for a hard crust to form on the unsealed road surface adding extra strength to the pavement and locking in fine material that can reduce dust nuisance generated by traffic. Not all unsealed roads are suitable for a Lime wearing course as damp and shaded roads can be too saturated causing the lime to continue reacting with surrounding moisture in the road and therefore not setting properly. Where this treatment is applied, grading requirements drop significantly.

- ***Basalt Wearing Course*** – Crushed aggregate with up to 50% crushed Basalt aggregate mixed in. The Basalt offers significantly extra strength to a pavement compared to a full standard wearing course. Crushed Basalt volumes significant enough to use as a wearing course is currently only available from the Fraser Road Quarry in Timaru, and only when larger excavations generate enough spare material to crush from. This restricts the use of Basalt to a relatively small area around the Quarry to remain an economically viable option and therefore makes up the smallest portion of the unsealed network.

Intersection Seal Extensions and Traction Seals: On areas of the unsealed network where high maintenance is required, such as heavy breaking zones at the approaches to intersections or acceleration zones on slopes, limited seal extensions or lime wearing courses are considered to mitigate corrugations formed through the actions of traffic. Sealing intersection approaches are sealed within a range of 50m-130m leading up to an intersection, and slope treatments are treated to suit the needs of the slope. Both approaches selected for treatment by identifying and monitoring the site through site inspections backed up by Roadroid roughness data. This is funded through the low cost low risk programme and was recommended at a previous Waka Kotahi technical audit.

Unsealed Pavements are continually monitored both before and after grading and the grading frequency is continually monitored to ensure the Level of Service that we are funded for is being met. Monitoring consists of a visual inspection of the road measuring and scoring seven metrics;

Potholes – Assessment of the number and severity of potholes on a section of road.

Corrugations – Assessment of the number and severity of corrugations on a section of road.

Acceptable driving surface – Assessment of whether the road feels safe to drive at 70 kph.

Roadside Drainage Maintenance – Assesses the ability for surface water to shed away from the road to an appropriate discharge point.

Suitable Crossfall maintenance – Assessment of the suitability of the Crossfall of the road from the crown to edge of formation.

Aggregate levels – Assessment of the amount of aggregate on the road, is there enough material for the grader to perform an efficient grade?

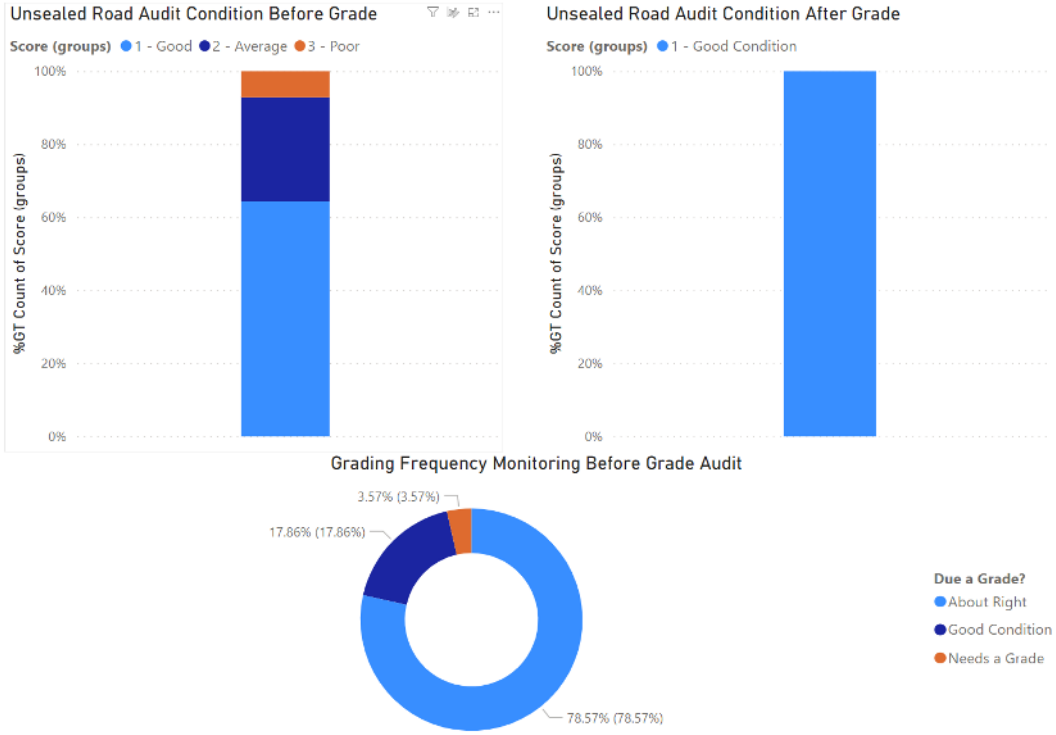
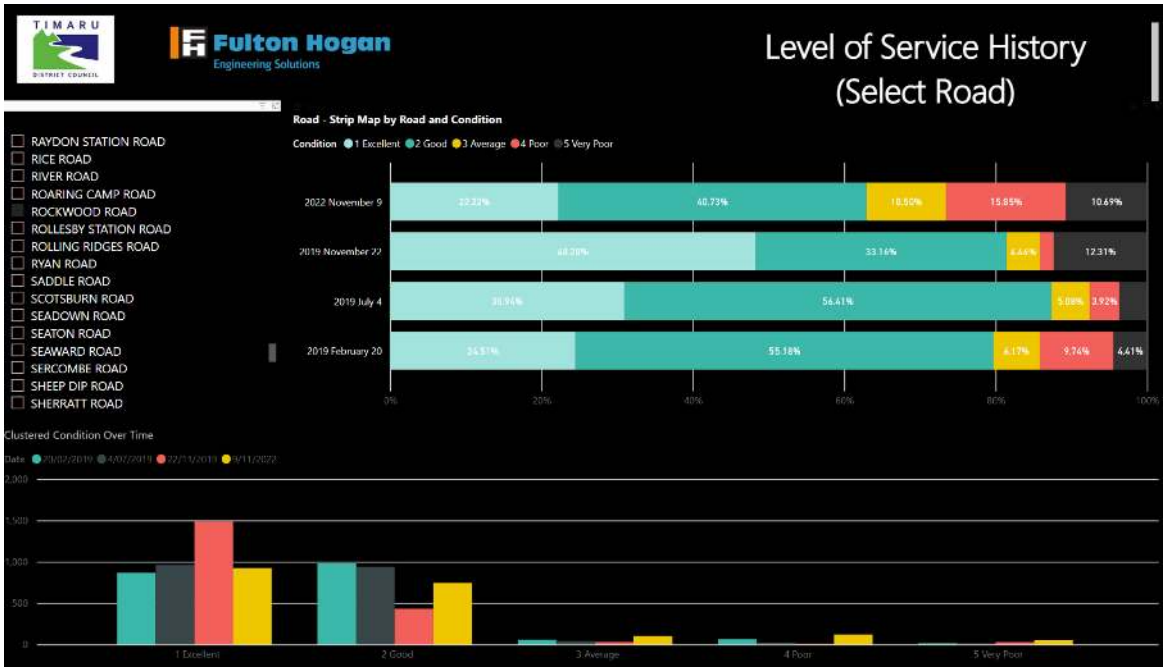
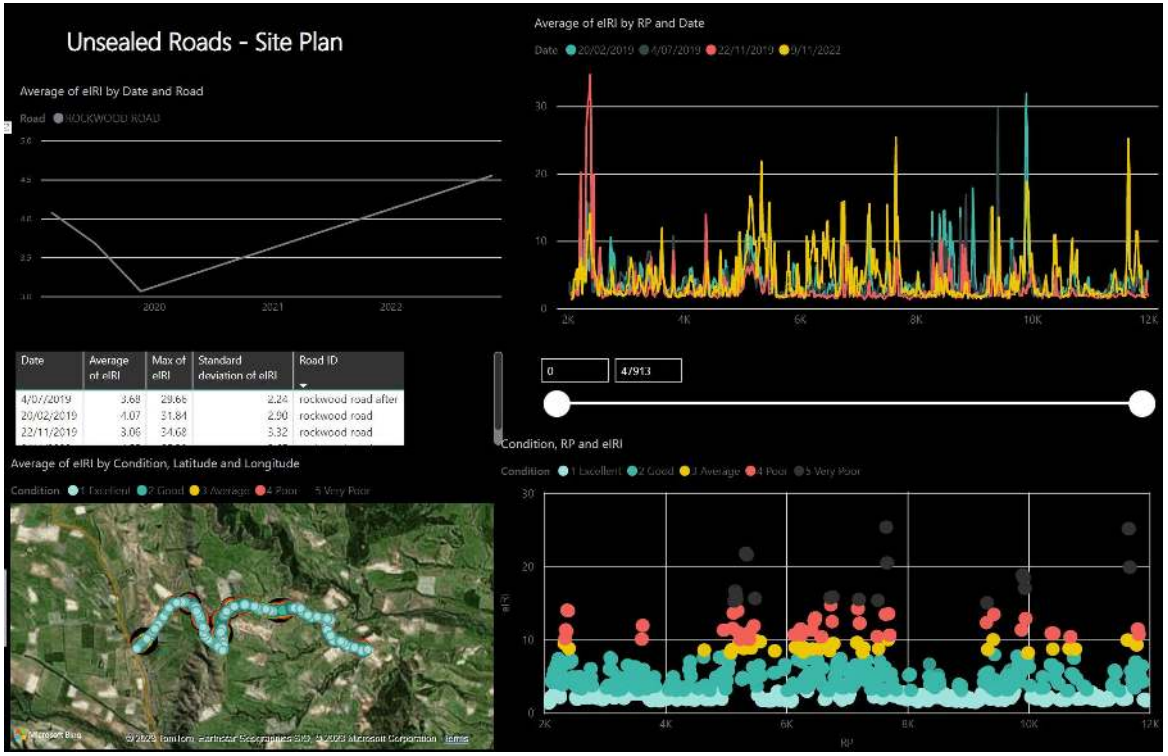


Fig. 72: Graphs (left) showing latest yearly results from both Pre and Post grading visual inspections. This indicates that the unsealed network is largely in an acceptable condition and is fit for the Level of Service that council is funded for with approximately 93% of the network in good or average condition before maintenance grading. 78% of the network has been assessed as performing to an optimal grading frequency.

Roadroid - In addition to visual monitoring, the mobile Roadroid application is used. Roadroid measures the roughness of a road and converts this into an International Roughness Index (IRI) reading. Current road maintenance budgets do not allow for maintenance of the unsealed roads to a fault free standard, so an average IRI reading consistent to the level of service in conjunction with pre and post grade audits drives decision making as to the level of intervention required on a particular unsealed pavement section.





Figs. 73 and 74: Roadroid data showing roughness results on Rockwood Road. Data visualisations allow Council staff to compare and sense check with visual inspections, and to dig into historic performance and identify areas of concern to optimise decision making in treatment selections for maintenance activities. Data shows that the network is generally in good condition, however condition can be variable following seasonal changes and following periods of sustained rainfall.

With the volatility of the unsealed network, maintenance demands can vary and network condition can change suddenly and with very little notice. Additional emergency works funding is required both during and after major events for reinstatement and recovery of the unsealed network.

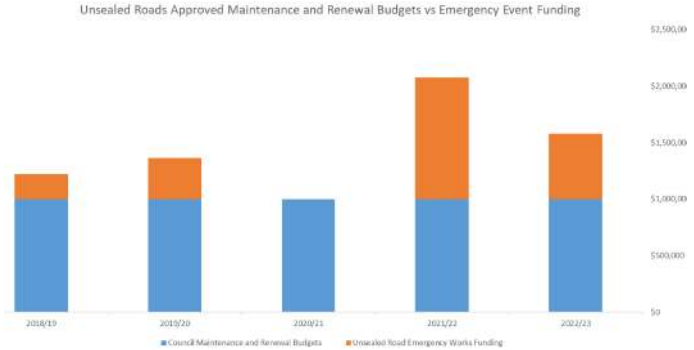


Fig. 75: Graph showing Council approved unsealed road maintenance and renewal budgets in addition to the unsealed roads portion of emergency works spend to reinstate network based on previous emergency events. This shows that major flooding events are occurring more frequency with higher impacts on the unsealed network, this requires additional funding to get the unsealed network back to the level of service that the community is willing to pay for, while delivering business as usual unsealed maintenance and renewal activities.

Dust nuisance mitigation is a common subject of feedback from customers, especially those who live in within the peri-urban areas of the unsealed network. The use of dust suppressants such as oils and specific dust suppressant products are not considered an appropriate maintenance activity as the treatment is usually a temporary solution and once a suppressant has been applied to an unsealed road, no grading can take place on the road. This is because grading the unsealed road surface will break up the suppressant. If grading does not occur, other pavement faults such as potholes and corrugations become more prevalent, leading to a rougher unsealed pavement.

There is no way to eliminate dust from an unsealed road unless the road is sealed. Waka Kotahi does not subsidise seal extensions currently so any seal extensions considered must be fully funded by the Council. A more effective and achievable within budget constraints method to approach the issue of dust on unsealed roads is to mitigate the issue through wearing course treatment selection. Lime wearing courses are an effective way to mitigate dust due to the ability of a hard crust to form on the unsealed surface that holds fine materials in place more effectively than a standard wearing course. If our Interim Speed Management Plan is accepted by Waka Kotahi we will trial lowering speeds on unsealed roads as a further measure.

The Council is looking into procuring a portable dust monitor and developing a dust monitoring programme. With data collected through the monitoring programme, Council can get a baseline on a network wide perspective as to how much dust an unsealed road of each wearing course type produces. This can help Council staff communicate with customers the realities of the nature of an unsealed road, and identify areas where dust nuisance is excessive. This will also assist in maintenance and renewal decision making as to appropriate unsealed pavement treatments. Another benefit in collecting and quantifying dust generation data on unsealed roads, this then allows Council to review the Seal Extension Policy. It is possible to identify areas of excessive dust generation outside of the norm and use dust mitigation as part of a weighted score to contribute to a more robust assessment and priority of a section of road that is being considered for a seal extension.

Customer Satisfaction

Key aspects of customer satisfaction with unsealed roads include:

- Customer satisfaction surveys are undertaken on a regular basis and satisfaction is consistently low. However the questions asked during the survey may be skewing results as many customers want their unsealed road sealed and are responding to this demand, as opposed to the satisfaction in how the unsealed road is actually managed. There is also an issue with the sample size of customers as unsealed road users have historically been under represented in survey respondent results.
- Customer level of service expectations are often at odds with the customers' willingness to pay for the level of service desired. A growing number of customers are moving out from urban areas to rural and unsealed roads and are expecting an urban level of service.
- Customer expectations can vary seasonally with the wetter months seeing customers expecting less potholes and improved roadside drainage and in the drier months customers are more concerned with dust nuisance caused by the loss of fine material in the unsealed road pavement.
- Current road maintenance budgets do not allow for the provision of unsealed roads that are completely free from faults, so an average road condition approach is adopted to provide a more realistically attainable level of service.
- Customer satisfaction can also change during high rainfall and flooding events, with customers generally accepting of a very limited temporary reduction in unsealed road condition, while expecting the network to be back in pre-flood condition within days of an event occurring.

Critical assets

Unsealed road assets do not typically feature as critical assets. However increasingly in flood events, there have been instances of unsealed roads becoming alternate routes due to other roads being closed, and often sections of unsealed roads provide the only access points to houses and farms (See Arundel case study, page 111).

Options analysis

Option	Description / Programme responses	Average annual cost (OPEX)	Average annual cost (CAPEX)	Will this option enable delivery of strategic responses?	Corresponding impact on delivery of LOS	Preferred option
1	**Existing LOS + inflation** Same grading and small increase in metalling programme	$728,373.33	$676,346.67	Mostly	LOS met or exceeded. Average eIRI of 5 (post grade)	*Yes*
2	**Existing LOS + inflation + 5km of seal extensions** Same grading , small amount more metalling - seal extensions to the value of $1,000,000 per annum.	$840,427.50	$2,101,068.75	Fully	Most LOS met or exceeded. Less Unsealed roads by approximately 4-5KM per annum and average eIRI of 5 (post grade)	
3	**Lower Level of service -** less grading and metalling	$749,181.08	$1,025,755.69	No.	Not met – likely to see significant asset deterioration over time. Average eIRI of 8 (post grade)	

Customer Level of Service Statements and targets for unsealed pavements

1. **Rural and urban transport networks are designed to user needs and maintained to nationally acceptable standards**
   - 60% of residents feel the transport network meets their needs
   - 50% residents feel that level of maintenance on the unsealed network is about right or too high
   - 70% customer service requests are responded to within 10 working days
2. **The transport system connects our communities, with limited disruption from unexpected outages/emergency events**
   - Resilience works programme developed including identification of critical routes.
   - 2027 onwards – resilience works programme implemented as per programme
3. **Land Transport assets are managed on budget and for longevity, utilising innovation and circular models of product use.**
   - Unsealed network renewals and maintenance delivered as per programme, to scope, quality and budget.

Financial Impact

The following table shows the financial impact of the preferred option:

Activity class	Preferred option – description of cost changes between Council 2023 budgets and current request	Preferred option – difference between Council 2023 budgets and current request
112 – unsealed pavement maintenance	The unsealed network has been managed at $500,000 per annum for a number of NLTPs, complaints and potholes/peak roughness is increasing, with road user satisfaction decreasing. The requested figures reflect this and also add current and future cost fluctuations.	+$95,553.33
211 – unsealed road metalling	Minor increases to covers cost escalations has been included.	+$176,346.67

Financial Expenditure Summary

The following table summarises the unsealed pavement maintenance and renewal expenditure for the preferred option and associated funding request.

Activity class	OPEX budget (Year 1)	CAPEX budget (Year 1)	Total budget/funding request (Year 1)	Total Budget/funding request (annual average based on years 1-3)
112 – unsealed pavement maintenance	$700,000.00		$700,000.00	**$728,373.33**
211 – unsealed road metalling		$650,000.00	$650,000.00	**$676,346.67**
TOTAL unsealed pavements	**OPEX** $700,000.00	**CAPEX** $650,000.00	**Total funding request Year 1** $1,350,000	**Total annual average funding request (Based on years 1-3)** $1,404,720.00

Continuous Improvement

The following improvements have been identified to improve capability in this area:

Improvement	Benefit
Develop and maintain unsealed wearing course programme	Improve budget forecasts for the unsealed network.
Continue data collection using portable dust monitor	Ability to collect baseline network condition data relating to dust generated. Able to use this data to communicate levels of service to customers and contribute to Policy reviews.
Review Seal Extension Policy	Update seal extension policy to account for more non-quantifiable benefits to undertaking seal extension, such as dust mitigation
Additional Roadroid Licence	Ability to use existing staff resource to expand the percentage of network covered for data collection.

9.3 Drainage

Introduction

Timaru District's main drainage assets consist of:

- Surface water channels and culverts in rural areas
- Kerb and channels, sumps and leader pipes in the urban areas.

Effective maintenance of drainage is critical, with significant consequences in the event of failures. Failures can result in:

- Reducing the resilience of the network to flood events, with surface water endangering structures and land.
- Compromising the design life of pavements and surfacing.
- Water sitting on the road surface in high speed areas causing a safety hazard

Other minor asset types included in this activity are soakpits, scour protection, fords and subsoil drains.

This activity is managed in collaboration with the Council's Water and Drainage Unit, with Land Transport being responsible for collection and transfer of road surface water to stormwater mains and Water and Drainage managing the reticulated stormwater mains network, with the reticulated network fulling funded by Council.

See over page for the link between this activity and the Strategic Case.

Current condition and performance

A summary of drainage assets, from the RAMM Inventory, is shown in the table below. Note that the Council's stormwater assets are covered in a separate Stormwater Asset Management Plan.

Drainage Assets	Quantity	Units
Culverts	44,994	m
Sumps	*2,681*	*ea*
Surface Water Channels (SWC)	1,452,031	m
Kerb and Channel	373,154	m

Culvert performance is essential to the functioning of the overall drainage system. Many culverts were installed by now defunct borough and county councils prior to local government amalgamations in the early 1980s, and many as-built records were not retained. As a result of this, the vast majority of culvert construction dates input as installed before the 1980's are assumed to the surrounding kerb and channel installation dates and condition assumptions are based on these assumed install dates.

As shown in Figure 76, 15% of the culvert stock has been inspected to be in poor to very poor condition. Data quality confidence is average. Historic culvert maintenance budgets have not allowed for detailed internal culvert condition data to be collected. New technologies such as CCTV pipe inspections have the potential to allow the Council to develop and work through targeted culvert condition inspections, however this is not budgeted for on a wide scale this LTP/NLTP cycle.

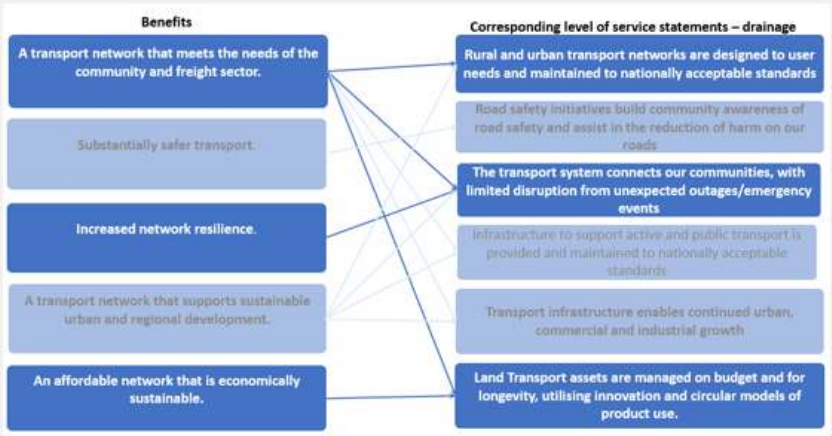
Stormwater quality management plans and consents are putting pressure on historic catch pit and channel designs. What was once acceptable is now no longer due to regulation changes, and over time will require significant and expensive replacement with stormwater treatment devices which have a higher maintenance cost and burden.

Strategic links

Drainage

Activity classes	Problem statements
113 Routine drainage maintenance 213 Drainage renewals	• Consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction. • The roading network lacks resilience against natural and anthropogenic hazards, decreasing accessibility and increasing costs.

Benefits of proposed drainage activities and corresponding level of service statements



Drainage activities contribute to these Council community outcomes:

- Resilient Infrastructure

Strategic responses - management of drainage

- Ensure holistic approach to maintenance and operation of the transport system
- Ensure infrastructure meets current and future resilience needs and that hazard management practices are fit for purpose
- Ensure transport planning integrates people, place and movement
- Raise community awareness of priorities, the levels of service and value we deliver

Drainage activities contribute to these GPS priorities

- Increasing resilience - The transport system is better able to cope with natural and anthropogenic hazards.
- Maintaining and operating the system - the condition of the existing transport system is efficiently maintained at a level that meets the current and future needs of users

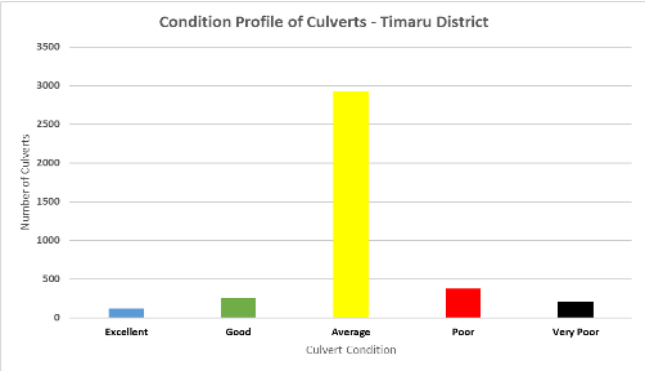


Fig. 76: Condition profile of culverts

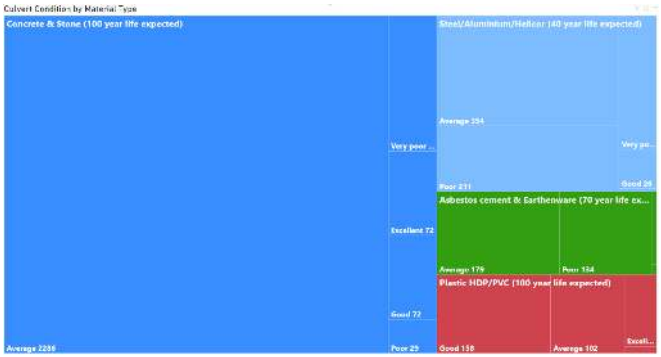


Fig. 77: Culvert condition by material type. This shows the breakdown of culvert material types linked to assumed condition and expected life. Not all culvert materials will have a uniform expected life due to the different deterioration cycles of each material used. Average condition metal pipes steel and aluminium will need replacing a lot faster than concrete or PVC culverts due to the reduced life expected due to material oxidation in saturated environments.

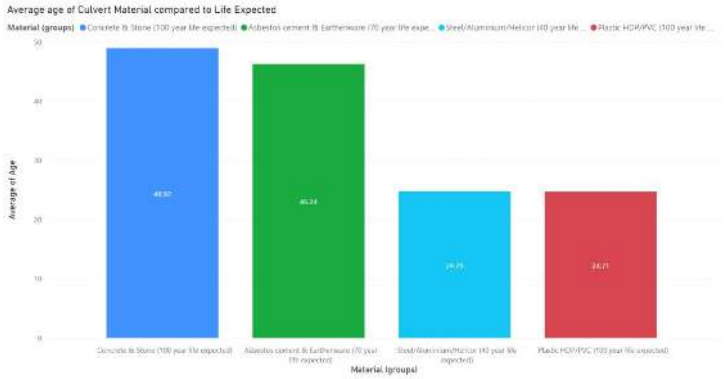


Fig. 78: Average age of culvert life. This shows that a large number of culverts are assumed to be over half way through their useful lives. A significant number of these culverts have an assumed construction date and very little historic records exist to establish an install date.

Targeted CCTV inspection of culverts in high flooding risk areas would allow council to ascertain more accurate condition data confidence and drive culvert renewal programmes to help mitigate heavy rainfall and flood impact on the road network. However, funding for this not currently being sought due to low risk and high resource/cost inputs.

Sumps/Catchpits

Sumps are a component of a much larger stormwater network and are the initial entry point of surface water into the reticulated stormwater system. The majority of stormwater mains have been installed between the 1950s to the 1990s. In the decades since, there has been a significant increase in the amount of stormwater entering into the reticulated network from increased intensity of rainfall events, intensification caused by housing infill, sealing of driveways and private landscape areas in particular which has reduced the amount of natural ground infiltration available and increased the burden of discharging stormwater into a network that was never designed to take the amount of stormwater now expected of it.

The existing sumps and leader pipes connecting the sumps to the mains on the road network can only discharge water at the rate of what the stormwater mains can handle. There is a popular misconception during heavy rainfall events that sumps that are backing up are blocked, when in fact stormwater mains are at capacity and cannot handle the volume of stormwater flowing into the catchment from outside of the road network, or streets are at a flat grade so water pools before it can discharge.

Sumps are inspected and cleaned on a cyclic basis under normal road maintenance operations based on the location of the sump in flood depression areas and well known historic flooding issue areas. In addition to the cyclic cleaning regime, sump lids are cleared prior to forecast heavy rainfall, following leaf fall, as well as monitored during and post any heavy rainfall events.

Sump renewals are predominantly reactive, however some proactive renewals do occur during kerb and channel renewal projects where any capacity improvements are considered while taking into account the limitations regarding how much additional stormwater load the existing stormwater catchment infrastructure can handle.

Fig. 79: A recent sump renewal in urban Timaru, to address flooding issues in this flooding depression area. This asset will rely on the capacity of stormwater mains at this location which were not renewed.

Kerb and Channel (K&C)

As shown in the chart below, generally kerb and channel is in average or good condition. The work in this area is integrated with the maintenance of preseal repairs and footpath replacement, which results in a very efficient approach. Regular condition ratings provide reasonably reliable data.

Many assets also have a long life so the opportunity to upgrade for stormwater quality treatment and narrowing streets for mode shift is negligible. Urban streets are a secondary flow path in high intensity or long duration events so surface water flooding can be widespread and common. This is considered as part of overall subdivision and stormwater design.

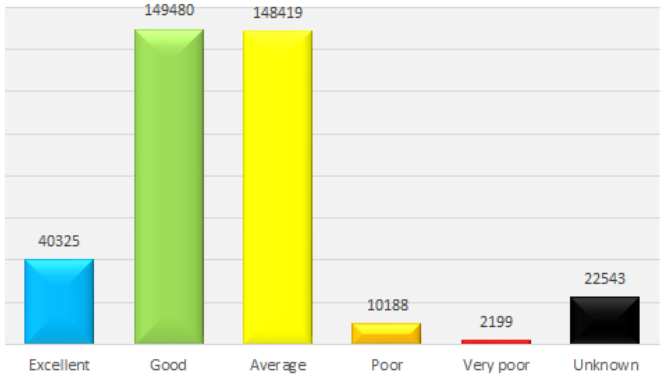


Fig 80: Kerb and channel condition ratings

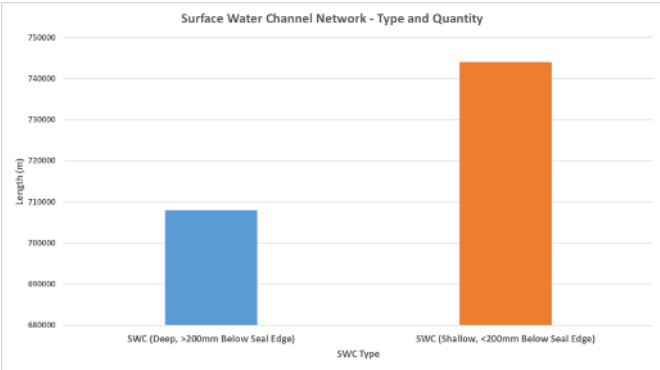
Fig 81: Age Profile of sumps. This shows that based on recorded install dates, 49% of sumps on the road network were installed between the years of 1948 to 1997. Sumps have been installed based on stormwater network assessments based on rainfall event return periods suitable to the time that they were installed. It is difficult to accommodate additional stormwater discharge capacity when renewing sumps as capacity is usually dictated by the capacity of the stormwater main. The frequency of high intensity rainfall events that are either near to or in excess of the original design of the stormwater network means that the existing reticulated network is struggling to keep up with demand and customer level of service expectations.

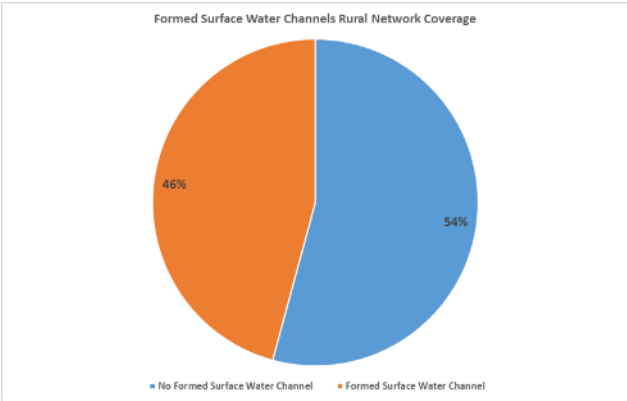
Surface Water Channels (SWC)

SWC are part of the road drainage system and typically on the rural parts of the network. An important distinction needs to be made between surface water channels and land drainage. SWC main purpose is to ensure that

surface water can get off the road and to an appropriate discharge point, whereas a land drain generally provides drainage to the surrounding land and is not funded or maintained by the Land Transport Unit.

Having adequate SWC helps keep the pavement dry whereas a saturated pavement leads to accelerated deterioration of road pavement faults, as well as shortened road surfacing and pavement lives. It should be noted that over the last 20 years land use intensification and levelling/filling has meant that historic drainage channels are no longer there or capable of moving water away from the road reserve.





Figs 82 and 83: These show that 46% of the rural road network length has formed surface water channels. Not all sections of the road network require or are suitable for a surface water channel. Many hill areas do not need long lengths of roadside drainage, strategically placed and maintained cut outs at discharge points and low points can effectively allow surface water to flow away from the road carriageway, with focus on removing high lip and detritus build up on the edge of the road a priority to enable this. In other areas of the network, the road is the low point and forming SWC in these areas will be impractical. By being selective where surface water channels are formed and located, this allows Council to utilise the limited roadside drainage maintenance budget to where the most benefit and efficiency can be achieved.

Condition data for Surface Water Channels is mainly unknown and improvement of data confidence in this area has been affected by current staff resources focusing condition data priority on higher risk areas of the drainage network.

SWC maintenance and renewals are mainly reactive and prioritised depending on seasonal damage and weather variations. Known problem areas and identified high flood risk sites are monitored at a higher level than other lower risk areas of the network. The majority of programmed maintenance and renewal works undertaken at the same time as pre reseal repairs or road rehabilitation activities.

Design standards

Timaru District Council currently requires that new drainage assets are designed for a 10 year return period. However, there are historic legacy issues with older designs that have not been designed to a consistent return period. As a result of this, suitability of sumps connecting to the reticulated stormwater network is variable depending on the location in the network and when the original construction has taken place. It is also important to note that the modelling for return periods has changed over time to reflect the impacts of climate change, so a 10 year return period now can be different to a historic 10 year return period.

Critical assets

Critical Culverts

Inspection and cleaning activities on culverts are generally aligned with the hierarchy and/or topography of road to mitigate the risk of culvert failure closing the road or the status of the road being a sole access route. Once a culvert is identified for renewal, it is then considered if increasing the culvert size is appropriate as part of the renewal work, or ‘build back better’.

Culvert Risk	Description	Inspection and Maintenance Cycle	Portion of culverts on the network
Critical Culverts	Collector roads and above, sole access routes and culverts that are identified as vulnerable to blocking	52 Weeks	20%
Non-Critical Culverts	Culverts on lower volume roads that are not identified as vulnerable to blocking	104 Weeks	80%

Critical Sumps

With the increase in frequency, intensity and impact of high rainfall events over the past 10 years, significant effort has been placed on identifying areas of the road network that are vulnerable to the effects of flooding and measures are put in place to mitigate the effects of flooding as much as is practicable and within the capacity limitations of the existing stormwater reticulation infrastructure.

Sump inspection and cleaning frequencies are prioritised within existing maintenance budgets into the following categories:

Sump Risk	Description	Inspection and Cleaning Frequency	Portion of Sumps on the network
Critical sumps	Sumps that exist in a flood depression area, where a catchment is already over design capacity or are identified as vulnerable to debris build up	26 Weeks	30%
Non-critical sumps	Sumps that at a lower risk of flooding or where stormwater catchment capacity is not an issue	52 Weeks	70%

Additional kerb and channel sweeping occurs during periods of leaf fall in autumn to mitigate the risk of leaf litter blocking sump inlets, and 26 week cycle sump cleaning is programmed to follow leaf fall season to collect and dispose of any debris missed by the additional street sweeping.

Fig 84: This is an overlay of identified flood depression areas with sump data to help identify sumps and culverts that are located in low lying areas of the district. Using this data, sump inspection and cleaning frequencies in these areas is done on a more regular basis, and during periods of high rainfall cyclic patrols undertake additional inspections to ensure that the sumps are not blocked and working to the full capacity of their design.

The lower Saltwater Creek catchment in this snapshot shows that the sumps in the depression area are maintained on a more regular frequency than those outside the depression area.

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Asset Capacity/Performance

Physical capacity and performance of the Stormwater Network

Challenges in management of drainage assets include:

- **Design standards of the original infrastructure in some of the district's urban and rural settlements may no longer be fit for purpose** - Stormwater systems, particularly in the urban areas have been designed and constructed in an era when there were less hard stand surfacing and more land available for water to naturally drain away. Council's new stormwater management plans have also introduced new requirements for pre-treatment of stormwater that will impact the network.
- **Impacts of higher frequency and intensity of rainfall events** – In addition to significant increase over the last 50 years in hard standing surfaces pushing more stormwater into the reticulated system than what was originally designed for, increased heavy rainfall events are adding significant burden on all components of the entire reticulated stormwater network from collection points to discharge points.
- **Weaknesses in traditional land drains and an expectation that all drainage can be channelled onto the road reserve** – Following local government reform in the early 1980s, a small portion of land drains that were owned and maintained by drainage boards have been vested to either local or regional authorities. However a significant amount of land drains were vested to private ownership. Many private owners consider these drains as beneficial to them, however are generally unwilling to meet the costs to maintain the assets. This leads to many instances of land owners pushing land drainage into the road reserve and expecting the wider community to cover the cost of maintain these privately owned assets that provide very little road user benefit.

Specific culvert issues:

- **The volume of aluminium Helicore culverts reaching end of life** – Aluminium helicore culverts have been found to have significantly reduced life expectancy and structural strength over time due to oxidation and rusting of metals during prolonged exposure to damp conditions.
- **Network Resilience** - As a result of more regular and high intensity rainfall events and changes to overland flow paths outside of the road reserve, higher expectations have been placed on the existing culverts, leading to many of these now being undersize for the amount of water being pushed through them. There has been very little assistance provided by Environment Canterbury in funding to maintain overland flow paths outside of rating districts or to follow up with land owners to reinstate natural overland flow paths when some land owners fill in these areas to allow for intensification of farming activities on their land, such as providing additional pasture and flattening large areas to allow for more use of pivot irrigators.

Specific drainage issues:

- **Side drains** - historically has been difficult for roadside drainage maintenance to keep pace with the need based on current road maintenance budgets. To mitigate this, there will be an increase in chemical control for high lip removal that will free up funding for more intensive digger drainage in areas where it is needed.
- **"Everyone wants water, until there is too much!" - rural drainage** - there are a lot of privately owned/created land drains, which no one technically owns (some left over from old catchment boards) where historically land has drained from one property affecting other land owners. Land owners unaware of these arrangements are pushing all drainage onto the road reserve, with the expectation that the Council will be able to resolve in a 20m wide parcel of land. There was an analysis of Timaru rainfall undertaken in the 1980/90s showing that the return periods did not reflect the increasing intensity at that time, and

rainfall intensities have increased again since then. Our commercial/industrial designs are for one in ten year events and residential designs are for one in five year events, meaning that much of the network is designed on historic pre-1980s intensities. As a result, our stormwater systems are easily overwhelmed during today's rain events.

- **Urban drainage** – a key maintenance activity is regular clearing of sumps. However a large number of sumps were built in the 1950's and were designed at a time when there was less hard stand surface than there is today, thus pushing more water into the stormwater network. While the catch pits are generally OK, but the mains infrastructure (administered by Water and Drainage) they are connecting to is now under size.
- **Old stormwater management practices existing in the network that are no longer appropriate that need rectifying**.

  Case study: In Temuka, there was recently an example of a sewer main running through a stormwater sump. The issue with this being that when storm water built up, any excess stormwater that the main could not handle was overflowing into the sewer main. This is an issue as it places additional pressure on the sewerage network and settlement ponds. In order to rectify this, the sump was replaced to separate the sewer main from the stormwater main. It is unknown how many other sumps in Temuka have this same issue.
- **The rural towns of Temuka, Pleasant Pt, Pareora, Winchester, and parts of Geraldine, have no stormwater reticulation.** This means they are reliant on the water table to discharge any surface and stormwater. With increasing rainfall, this is creating more issues with surface flooding. This is also likely to lead to potential consent issues in the future, in particular with any additional requirements that may be required associated with the wider Water Services Reform Programme. Preparatory work for water services reform is showing a large number of assets will transfer from the new entity to Land Transport/Council, such as land drains, urban soak pits and a number of rural townships with no reticulated stormwater such as Pareora, Peel Forest, Winchester, Cave and significant parts of Geraldine and Temuka.

Water Services Reform Programme – Legislation and Challenges

There is considerable uncertainty in the scope of stormwater management under the Water Services Reform Programme, driven by central government. As a result, it is not currently clear on the scope of stormwater management and reticulation. It is likely that future Stormwater Management Plans may require significant investment in stormwater pre-treatment of surface stormwater before entering into the reticulated network, however this has currently not been confirmed through the Water Services Reform Programme.

Maintenance plan

The road maintenance contractor is currently responsible for carrying out maintenance and minor renewals of drainage assets including structures and surface water channels. The specification for this work includes:

- Maintenance and repair of urban stormwater structures including kerb and channel, crossings, pipes and sumps.
- Inspection and cleaning of rural stormwater structures including culverts.
- Cleaning, maintenance and repairs of roadside drainage including swales and soakpits.
- Minor culvert and soakpit installation.

Location and quantities are found in the RAMM Drainage or Surface Water Channel tables.

Culvert Inspection Regime

Culvert inspections – contractor inspects on whether inlets and outlets are clear by assessing the culvert based on a series of prompt questions in the assessment tool in RAMM.

Council contractors undertake visual inspections of culvert inlets, outlets and as far as can visually be seen of the inside of the culvert during the routine maintenance programme as per table below.

Culvert Criticality	Inspection frequency
Critical – Culverts in flood depression areas, identified critical access routes, road hierarchy or well-known areas at risk of surface flooding.	Annual and during/post event
Non critical – Culverts not in areas mentioned above	Once every 3 years and post event – during event as required

For small to mid-size rural culverts, condition rating is checked during culvert cleaning activities. This limits condition knowledge to visual inspection of culvert condition on the inlet and outlet of the culvert pipe and as far as the inspector can visually see into the culvert. Assumed condition is based on age of the culvert in addition to basic visual checks.

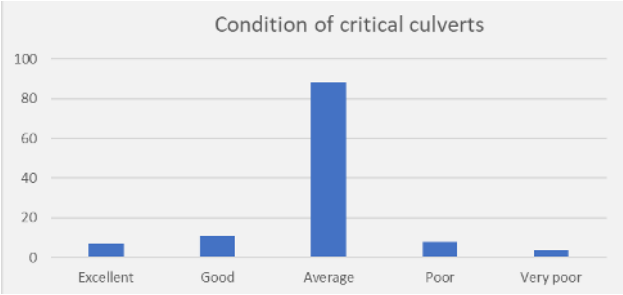


Fig. 85: Condition of critical culverts

We do not have a history of culverts collapsing however that is not to say this is not a possibility, particularly with smaller culverts that are difficult to visually inspect.

Renewal/replacement plan

Renewals for culverts are largely reactive with a limited forwards works programme, based on culvert age and locations within sealed and unsealed pavement renewal programmes.

The kerb and channel renewal programme is aligned with the footpath renewal programme where needed. Other kerb and channel renewal projects outside of the footpath renewal programme are largely reactive to address site specific issues or aligned with minor improvement works.

Minor improvement work is managed on a reactive basis or when required as part of larger rehabilitation projects.

Customer Satisfaction

Public complaints related to drainage issues are logged in the Customer Request Management System and dispatched to the road maintenance contractor to triage and either fix the issue, or if an immediate fix cannot be made, escalate to council staff to investigate further. The main areas of concern are:

- **Urban stormwater issues during heavy rainfall events** – There is a perception from the public that sumps are blocked during heavy rainfall events. In most cases the issue is not the sump being blocked. The issue is that the sumps can only discharge stormwater into the reticulated system if there is capacity. With an aging stormwater reticulation system, and increased expectations on what the network can handle, comprehensive stormwater catchment assessments need to be undertaken to establish if the network is still fit for purpose or if upgrades are required.
- **Surface flooding** – Urban streets are a secondary flow path in high intensity or long duration events so surface water flooding can be widespread and common, resulting in complaint from the community. This is considered during road design.
- **Leaf fall issues** – Many urban roads in the district have trees planted on them for aesthetic reasons, and historically the tree species have been selected for their aesthetics rather than practicality. During autumn, many of these trees, along with private trees that are in proximity of the road reserve shed their leaves. This can cause an increase in the risk of sump inlets being blocked. To mitigate this, Council undertakes additional leaf sweeping in high risk areas, and also proactively manages street tree renewals to progressively select unsuitable trees and these trees with more suitable species, to help reduce the leaf fall burden on the stormwater network.
- **Rural Drainage** – Many rural customers use the road berm for activities such as grazing and storage of winter feed. These activities have high potential to damage the existing road drainage assets and these same customers expect the community to reinstate any roadside drainage. Also, as per council rural vehicle crossing policy and levels of service provided, council does not maintain rural vehicle accesses, it is up to the land owner to keep vehicle entrances trafficable and any culverts in these crossings clear. Many do not do this and expect Council to resolve their issues. More work is required in the form of public education to help land owners understand the impacts that this is having on the network.

  When surface water channels are maintained or constructed this often leads to complaints about the tidiness/end state of the adjacent berm. Our current funding level does not allow for berm maintenance for aesthetic reasons.

Options Analysis

Option	Description / Programme responses	Average annual cost (OPEX)	Average annual cost (CAPEX)	Will this option enable delivery of strategic responses?	Corresponding impact on delivery of LOS	Preferred option
1	No change to LOS but cost escalation applied	$914,352.46	$852,433.61	*Mostly, though decreases in innovation, efficiency and effectiveness in terms of resiliency*	*LOS not met, likely to see significant asset degradation over time in some areas*	
2	Increase in Rural Drainage swale maintenance, increase to build back better for end of life rural culverts that are not meeting resilience needs, no change to urban LOS	$1,040,533.33	$1,074,320.00	*Mostly, though unlikely to meet resilience needs*	*LOS not fully met*	*Yes*
3	Increase to allow for further inspection on Stormwater Treatment Devices and looking after urban soakpits and rural drainage swales, increase to build back better for end of life rural culverts that are not meeting resilience needs	$1,440,732.85	$2,080,549.64	*Yes, with some increase in innovation, efficiency and effectiveness*	*LOS met*	

Customer Level of Service Statements and targets for drainage

1. **Rural and urban transport networks are designed to user needs and maintained to nationally acceptable standards**
   - 60% of residents feel the transport network meets their needs
   - 70% customer service requests are responded to within 15 working days
2. **The transport system connects our communities, with limited disruption from unexpected outages/emergency events**
   - Resilience works programme developed including identification of critical routes.
   - 2027 onwards – resilience works programme implemented as per programme
   - Roadside drainage projects completed as per roadside drainage programme
3. **Land Transport assets are managed on budget and for longevity, utilising innovation and circular models of product use.**
   - Drainage works delivered as per programme, to scope, quality and budget.

Financial Impact

The following table shows the financial impact of the preferred option:

Work category	Preferred option – description of cost changes between Council 2023 budgets and current request	Preferred option – difference between Council 2023 budgets and current request
113– routine drainage maintenance	Increases for rural swale maintenance is required to address increasingly saturated pavements and verbal recommendations following most recent technical audit. Includes increased rural drainage programme for resilience and extend life of pavements.	+$369,744.13
213 – drainage renewals	Generally, our Kerb and Channel stock is in relatively good condition and we are able to do small scale renewals to extend the life of long sections of the network. Increases are to meet cost fluctuations/indices increases. There is a large increase for culvert renewals to meet GPS and build back better; and also reflect a number of culverts on the rural network that are at end-of-life assets.	+$264,320.00

Financial Expenditure Summary

The following table summarises the unsealed pavement maintenance and renewal expenditure for the preferred option and associated funding request.

Activity class	OPEX budget (Year 1)	CAPEX budget (Year 1)	Total budget/funding request (Year 1)	Total Budget/funding request (annual average based on years 1-3)
113– routine drainage maintenance	$1,000,000.00		$1,000,000.00	$1,040,533.33
213 – drainage renewals		$1,050,000.00	$1,050,000.00	$1,074,320.00
TOTAL drainage	**OPEX** $1,000,000.00	**CAPEX** $1,050,000.00	**Total funding request Year 1** $2,050,000.00	**Total annual average funding request (annual average based on years 1-3)** $2,114,853.33

Continuous Improvement

The following improvements have been identified to improve capability in this area:

Improvement	Benefit
Analysis of flooding areas and look for options to reduce impacts	Reduce repeat flooding areas, extend the pavement and surfacing, keep roads open.
Culvert condition rating – CCTV interior of culverts on lifeline routes	Having visibility of the inside of culverts allows for a more robust condition rating to take place, giving us a better idea of culvert condition.
Review kerb and channel forward works programme	Better clarity and coordination of kerb and channel renewal works with other asset renewals, more planned works and less reactive works.
Increase collaboration and coordination with stormwater main asset owner	Understanding of what limits on the existing reticulated stormwater network helps to establish better outcomes when considering maintenance and renewals works that are fit for what the stormwater system can handle.

9.4 Bridges and structures

Introduction

Bridges and structures are core infrastructure, allowing safe accessible movement of people and freight around and through the Timaru district by either enabling roads to traverse rivers, allowing water to safely pass under the roads, or supporting the road formation (above and below) and protecting vehicles.

This activity is closely linked to resilience of the district. In the event of bridges and structures being inoperable the impact on the district is huge, especially where there no alternative routes. Key issues include:

- The number of bridges requiring replacement or heavy maintenance within the next 10 years which will not all be able to be funded all at the same time.
- In the longer horizon (20-50 years), there is a wave of significant structures approaching end of life that will far exceed our ability to replace given current funding levels. This will require additional planning and investment in heavy maintenance strategies to prolong the life of these assets as much as possible.
- Condition data is lacking for retaining walls and railings. Some QA of the current large culvert and bridge data is missing, making it difficult to draw effective conclusions from the data

See over page for linkage of this activity to the strategic case.

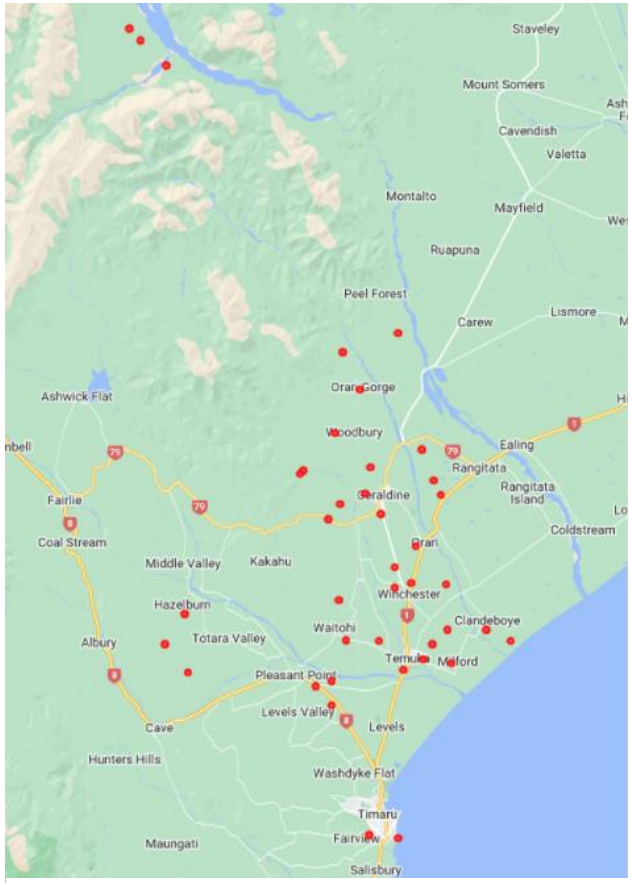


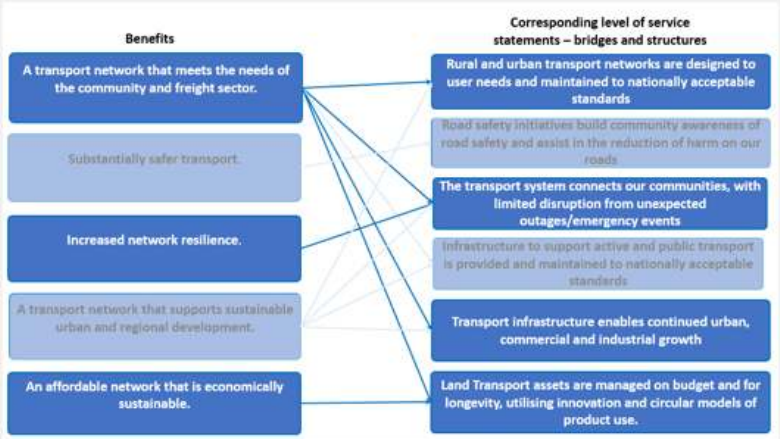
Fig. 86: Timaru District Bridge Renewals required over the next 10 Years

Strategic Links

Bridges and structures

Activity classes	Problem statements
114 Structures maintenance 215 Structures component replacements 216 Bridge and structures renewals	• Consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction. • The roading network lacks resilience against natural and anthropogenic hazards, decreasing accessibility and increasing costs.

Benefits of proposed bridges and structures activities and corresponding level of service statements



Bridges and structures activities contribute to these Council community outcomes

- Resilient Infrastructure
- Diverse economy
- Connected citizens

Strategic responses - management of bridges and structures

- Ensure holistic approach to maintenance and operation of the transport system
- Ensure infrastructure meets current and future resilience needs and that hazard management practices are fit for purpose
- Ensure transport planning integrates people, place and movement
- Raise community awareness of priorities, the levels of service and value we deliver

Bridges and structures activities contribute to these GPS priorities

- Increasing resilience - The transport system is better able to cope with natural and anthropogenic hazards.
- Integrated freight system - Well-designed and operated transport corridors and hubs that provide efficient, reliable, resilient, multi-modal, and low-carbon connections to support productive economic activity.
- Maintaining and operating the system - the condition of the existing transport system is efficiently maintained at a level that meets the current and future needs of users

Bridges and structures asset overview

TDC has 9414 structures that are covered within this category.

Assets	Quantity	Units
Bridges	176	ea
Large Culverts*	147	ea
Retaining Walls	25	ea
Concrete Fords	57	ea
Railings	12,700	m

*Large culverts are defined as having an area >3.4m2

Asset condition

Bridges

In general the bridge stock is in relatively good condition and suitable for existing traffic loading. Currently six bridges are subject to weight restrictions due age, strength and construction being unable to cope with current vehicle loadings. Generally these have alternative access although this is on longer routes. A key issue is the large number of smaller bridges which are up for replacement in the short term (10 years), particularly timber bridges. As mentioned previously, in the longer term (20-50 years) there is a big wave of significant structures approaching end of life.

Proactive renewals and heavy maintenance is going to be crucial over the medium term to spread the project peak in renewals over a manageable time period. In the short term careful consideration will have to be given to the most appropriate delivery model to achieve a large number of small structures renewals over a relatively short period. Strategic delivery of renewals given high number of small structures approaching end of life needs to be further considered so maximum cost savings can be achieved.

Of the different bridge types, the greatest number of bridges needing replacement in the next 20 years are made from timber. After year 20, this changes to predominantly steel and masonry (concrete), with a leap in the number of steel bridges needing replacement at year 40 onwards.

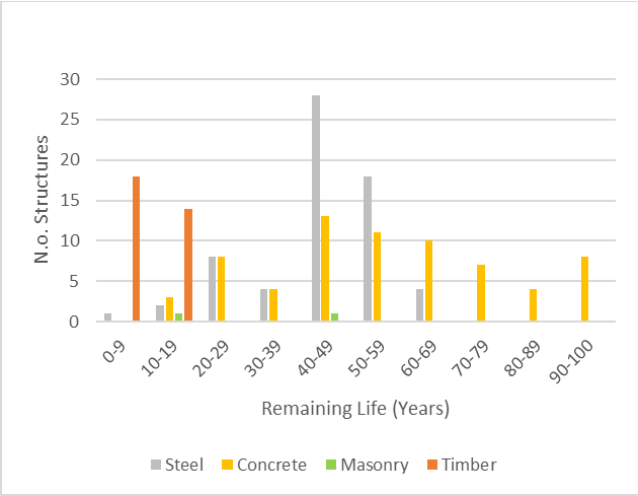


Fig. 87: Bridges - Remaining Life 2022/23

The forecasting for bridge replacement costs (see Figure 88) clearly demonstrates the increase in investment required from Year 10, which ramps up even further at Years 40 and 50. This can be compared with the red line, showing the current budget. Keeping maintenance and structural component replacement budgets at a higher level from years 1-39 is crucial in trying to extend the life of structures sitting at 40-59 years and smooth renewals from years 60-100 where there is less replacement and higher affordability.

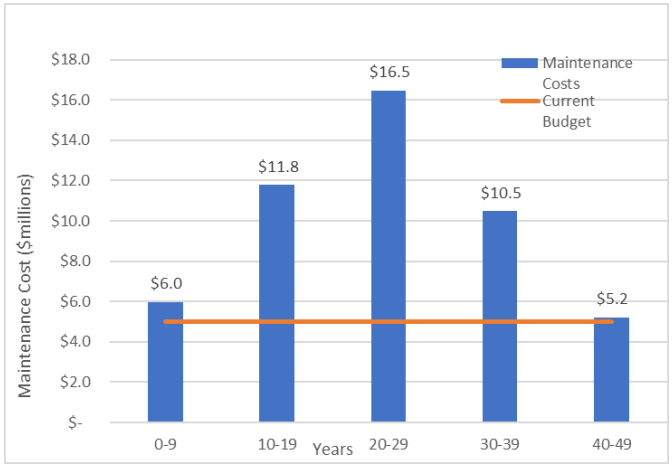


Fig. 88: Bridge Replacement Cost Forecast 2022/23

Ten year bridge replacement programme

Year Renewal Planned	Bridge Number	Road Name	Context	Lifelines - Land Transport Function Only	Estimated Replacement Cost
1	109	Harrison Road	Waihi School		$350,000.00
1	353	Maori Gully Road	Sole Access	Low	$250,000.00
1	810	Fox Street	Temuka Township		$125,000.00
1	133	Landsborough Road	9.6km detour	Medium	$2,500,000.00
2	285	Sowerby Road	7.4km Detour		$250,000.00
2	205	Palk Road	Sole Access		$120,000.00
2	79	Flaxburn Road	Sole Access		$175,000.00
2	507	Huirapa Street	Marae/Welfare Centre	Critical	$500,000.00
3	97	Guild Road	6.7km Detour	Medium	$120,000.00
3	165	Mill Road	Sole access	Low	$100,000.00
3	184	Mowat Road	Sole access	Low	$175,000.00
3	206	Palmer Road	7.6km Detour		$400,000.00
3	241	Rice Road	12km Detour		$100,000.00
3	266	Sercombe Road	Tertiary Detour Route	Medium	$100,000.00

Year Renewal Planned	Bridge Number	Road Name	Context	Lifelines - Land Transport Function Only	Estimated Replacement Cost
3	329	Wilks Road	7.8km Detour		$300,000.00
3	378	Boiling Down Road	Seondary Fonterra Detour	Medium	$100,000.00
4	278	Slip Panel Road	Sole Access	Low	$100,000.00
4	34	Brophy Road	Sole Access	Low	$100,000.00
4	84	Gale Cutting Road	9km Detour		$300,000.00
5	168	Moa Pass Road	7km detour		$168,000.00
5	351	Yates Riad	Sole Access	Low	$300,000.00
5	96	Guild Road	6.7km Detour	Medium	$300,000.00
6	171	Monument Road	6km Detour	Medium	$450,000.00
6	47	Clandeboye Settlement Road	5km detour		$325,000.00
7	64	Driscoll Road	6km Detour		$150,000.00
7	121	John Talbot Road	6km detour		$275,000.00
7	372	Ophua Street West	2.4km Detour		$125,000.00
7	124	Keane Road	4.4km Detour		$125,000.00
7	127	Kennedy Street	State Highway detour	High	$300,000.00

Year Renewal Planned	Bridge Number	Road Name	Context	Lifelines - Land Transport Function Only	Estimated Replacement Cost
8	228	Rangitata Gorge Road	Sole Access	High	$325,000.00
8	300	Taylor Road	7.1km Detour		$175,000.00
8	276	Slacks Valley Road	5km detour		$175,000.00
8	330	Winchester Hanging Rock Road	11km detour	High	$300,000.00
9	227	Rangitata Gorge Road	Sole Access	High	$3,000,000.00
10	148	Maori Gully Road	Sole Access	Low	$325,000.00
10	175	Moore Road	6.8km detour		$125,000.00
10	209	Parke Road	8.2km detour		$250,000.00
10	229	Rangitata Gorge Road	Sole Access	High	$200,000.00
10	240	Rangitira Valley Road	10.5km detour		$150,000.00

Large Culverts

As demonstrated in Figure 89, large culverts are in reasonably good shape. Only four culverts are due to be replaced in the next 10 years, however as with bridges there is a large wave of renewals approaching in the longer term (10-20 years).

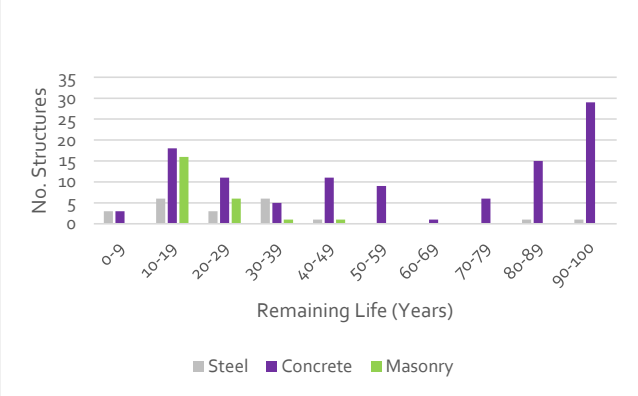


Fig 89: Large culverts remaining life

Retaining Walls

RAMM data on condition is only available for about one third of the retaining walls on the network. More comprehensive data is required in order to manage this asset better. While retaining walls do not typically cause issues, in the event of major weather events or earthquakes, they can affect the resilience of the network. As per our improvement plan, initially data capture will occur on critical assets/lifelines.

Fig 90: Coulter Place, Geraldine – a new retaining wall has been installed in 2023. This was an important resilience upgrade for State Highway 79, but funded by Council due to proximity to the footpath.

Fig 91: Forest Creek Bridge – high river flows have reduced the extent of Forest Creek Bridge, and caused significant damage to one of its piers during the 2021 flood event.

Railings

Our data for this asset type also needs to improve, with no condition information on the majority of the railing and the age only known for about half of the assets. Confidence in the age data is also low with some assets showing 143 years of age which conflicts with structural data. This will be reviewed over the life of this AMP.

Critical assets (Key routes, lifelines)

Bridge failures in natural hazard events can have a significant impact on the resilience of the district. The LTU Lifelines Project report identified 115 bridges on important routes.

The following bridges have been identified as being critical assets:

Bridge Name	Rationale
Route 72, SH8 linkage - Brassels Bridge	In the event of SH1 closure, Brassels Bridge is the alternate route for north/southbound traffic.
Farm, Factory & Canal Road Bridges	Identified lifeline linkages between Fonterra Clandeboye Dairy Factory and SH1.

Asset Capacity/Performance

The capacity of the district's bridge assets is satisfactory for existing traffic loads. However there are a number of challenges in this area. In particular:

Bridge replacement and repair needs

As identified above, there are a significant number of bridges due for replacement in the next decade. This is a New Zealand-wide issue with aging bridge networks, combined with the impacts of climate change, earthquake risk and regulatory changes which have increased volumes of heavy vehicles.

Ensuring depreciation rates keep pace with rising replacement costs

Bridge assets are valued regularly to identify rates for depreciation. However with rising construction rates, there is a risk that depreciation does not keep pace with actual replacement costs. In order to ensure that depreciation funding is at the required level, assets currently valued >$1m will need to have structure specific valuations completed, this would likely be completed at the time of 3 yearly inspections.

Strengths and weaknesses of existing assets

The table below outlines the strengths and weaknesses of bridge/structure assets as this relates to capacity and performance.

Asset	Strengths	Weaknesses
Bridges	Works and replacement bridges have been assessed and prioritised.	Aged bridge stock, risk to council (financial, reliability, resilience), backlog of maintenance works, number of timber bridges coming up for replacement in next ten years. No provision for capacity only renewals.
Large Culverts	Only a few old culverts in the portfolio	Nothing of significance at this point. No provision for capacity only renewals.
Retaining Walls	Where conditions are known, they are generally good	Data lacking, safety risks unknown, reactive replacement programme. Ownership of assets unclear – some Council, some Waka Kotahi, some privately owned.
Concrete Fords	Smaller, lower risk structures.	Condition data lacking, safety risks unknown, reactive replacement programme
Railings	Not a large portfolio to update	Age/condition lacking, safety risks unknown, no replacement programme

Maintenance plan

Bridge inspections are undertaken annually by the Road Maintenance Contractor, with a detailed general inspection carried out three yearly by our Bridge Consultants. Following the general inspection findings, programmes of work are developed by priority and budget. As raised above, given the high cost of bridge replacements, there is a balance required between available funding and the bridges needing replacement.

Renewal/replacement plan

Additional work is required to establish a forward bridge repair, maintenance and replacement strategy to ensure the ongoing integrity of the network. This will include evaluation and/or disinvestment of whole of lifecycle maintenance management options to support an affordable bridge replacement programme. For example, identifying where there are opportunities to invest $500,000 in a heavy maintenance programme to extend bridge life by a further 10-20 years. By providing a clear line of sight showing which bridges are to be replaced, it will also ensure that maintenance is not continued on bridges which are going to be replaced.

To support this, Structure Specific Asset Management Plans (SSAMs) will be prepared for significant or complex bridges. This will provide better understanding of the condition, site complexities, replacement costs, and anticipated maintenance interventions at the individual asset level.

Design standards

All new structures and upgrades to existing structures are required to be designed in accordance with the NZTA Bridge Manual to either HN_HO-72 and for HPMV vehicles were appropriate.

Customer satisfaction

Most customer dissatisfaction with bridges and structures is level of service driven. We commonly receive requests for upgrades of assets which we are not funded to provide, recent examples are shown below.

Fig. 92: Flooding at Langridge Road bridge – we have received resilience upgrade requests for this location. The existing structure is not near the end of life, if project was to be brought forward it would require full Council funding including a full assessment of flow paths.

Figs. 93 and 94 (above and below): There is strong community support for an upgrade of Kowhai Stream Ford, which provides sole road access for approximately 10 properties. Maintenance requests are also frequent, diverting staff and contractor resource from other activities. Options for upgrade/level of service increases were presented to Council's Infrastructure Committee for approval in November 2023. The Committee did not agree to a level of service increase, therefore we are likely to see customer dissatisfaction trends continue at this location.

Options analysis

Option	Description / Programme responses	Average annual cost (OPEX)	Average Annual cost (CAPEX)	Will this option enable delivery of strategic responses?	Corresponding impact on delivery of LOS	Preferred option
1	Maintain Current Level of service for class one and HMPV bridges	$700,986.67	$3,071,946.67	*Yes, with increases in innovation, efficiency or effectiveness in some areas*	*LOS met, exceeded in some areas*	*Yes*
2	Short term restriction of end of life structures	$1,200,610.71	$600,000.00	*No, with decreases in innovation, efficiency or effectiveness*	*LOS not met, likely to see significant asset degradation over time.*	
3	Removal of end of life structures	$1,680,855.00	$240,122.14	*No*	*LOS not met, likely to see significant asset degradation over time.*	
4	Option 1 + renewal of community requested 'under capacity bridges'	$700,986.67	$4,071,946.67	*Yes, with increases in innovation, efficiency or effectiveness in some areas*	*LOS exceeded*	

Customer Level of Service Statements and targets for bridges and structures

1. **Rural and urban transport networks are designed to user needs and maintained to nationally acceptable standards**

   - 60% of residents feel the transport network meets their needs
   - 70% customer service requests are responded to within 15 working days
   - The current (2023) level of bridges that can carry Class 1 traffic loadings is maintained
   - The current (2023) level of bridges capable of HPMV loading is maintained

2. **The transport system connects our communities, with limited disruption from unexpected outages/emergency events**

   - Resilience works programme developed including identification of critical routes.
   - 2027 onwards – resilience works programme implemented as per programme

3. **Transport infrastructure enables continued urban, commercial and industrial growth**

   - No specific targets, condition, project completion and customer satisfaction measures are used.

4. **Land Transport assets are managed on budget and for longevity, utilising innovation and circular models of product use.**

   - Bridge and structures renewals and maintenance delivered as per programme, to scope, quality and budget.

Financial Impact

The following table shows the financial impact of the preferred option:

Activity class	Preferred option – description of cost changes between Council 2023 budgets and current request	Preferred option – difference between Council 2023 budgets and current request
114– structures maintenance	Our bridge stock is getting old and needing increasing maintenance to ensure as much life is achieved as possible while maintaining safe access. There is a large bow wave of bridges coming at us over the next 1-30 years so the need to keep up with maintenance is required.	+$473,171.47
215 – structures components replacements	Our bridge stock is getting old and needing increasing maintenance to ensure as much life is achieved as possible while maintaining safe access. There is a large bow wave of bridges coming at us over the next 1-30 years so the need to keep up with maintenance is required.	+$480,400.00
216 bridges and structures renewals	Year 1 - Landborough Road Bridge, Harrison Road, Maori Gulley Road, Fox Street. Year 2 - Sowerby Road, Palk Road, Flaxburn Road, Huirapa Street Year 3 - Guild Road, Mill Road, Mowat Road, Plamer Road, Rice Road, Sercombe Road, Wilks Road, Boiling Down Road	+$1,291,546.67

Financial Expenditure Summary

The following table summarises the bridges and structures maintenance and renewal expenditure for the preferred option and associated funding request.

Activity class	OPEX budget (Year 1)	CAPEX budget (Year 1)	Total budget/funding request (Year 1)	Annual average funding request (based on years 1-3)
114– structures maintenance	$650,000		$650,000	$700,986.67
215 – structures components replacements		$750,000	$750,000	$780,400.00
216 bridges and structures renewals		$3,725,000	$3,725,000	$2,291,546.67
TOTAL bridges and structures	**OPEX Year 1** $650,000	**CAPEX Year 1** $4,475,000.00	**Total funding request Year 1** $5,125,000.00	**Total annual average funding request (based on years 1-3)** $3,772,933.33

Improvements

The following improvements have been identified to improve capability in this area:

Improvement	Benefit
Identify structures on key lifeline routes	Increase awareness of district resilience issues.
Develop Structure Specific Asset Management Plans (SSAMs) for Large / Complex structures	Mitigate significant increases in bridge replacements.
Further develop 10 year replacement and heavy maintenance programme	Mitigate impact of significant increase in bridge replacements.
Ensure structures are being depreciated correctly. Update replacement costs (Structure specific for assets >$1m)	Reduce risk of insufficient depreciation.
Full review and update of Retaining Wall inventory data. Add retaining walls and railing to structure inspection schedule. Develop a management plan	Asset information/data is collected so that TDC can have confidence in the decisions it makes about these asset groups.
QA of culvert and railing install dates and condition	Confidence in data and its use in decision making.
Develop Council policy on replacements/disinvestments	Affordability for current and future generations of ratepayers/ road users

9.5 Environment and Minor Events

Introduction

Environment and Minor Events activities are carried out on a range of assets and include:

- Routine care for the road corridor (including vegetation control)
- Reactive reinstatement of transport assets following adverse weather.

While the value of these works is not high compared to other activity classes, the volume of required works is steady and increasing with continuing heavy rainfall events. Restoration of damaged infrastructure is being needed more and adds considerable pressure to available resources. Increasing wet periods are also increasing roadside tree growth which is requiring more maintenance for visibility and safety purposes.

See over page for linkage of this activity to the strategic case.

Condition and Performance

Environmental maintenance programmes are currently achieving a good balance between network requirements, actual delivery and customer satisfaction.

Environmental management strategy

We deliver both programmed and reactive environmental responses.

Programmed responses (vegetation removal, spraying, street tree pruning and minimal mowing) are tailored to priority areas of the network using ONRC classifications, safety assessments and road use data. The environmental maintenance contractor undertakes activities at agreed locations on a cyclical basis, enabling good network coverage and performance against the following criteria:

Activity	Performance Criteria
Vegetation Removal	• Kerb and channel and footpaths are vegetation free • Vegetation does not obscure roadside furniture/signs • Vegetation is controlled on bridge approaches, intersections and railway crossings as specified • Overhanging roadside growth is kept clear to a minimum of 1.5m from the edge of the carriageway up to a height of 5m • The road corridor is kept clear of wilding trees and pest plants as specified
Spraying	• Strict adherence to the No-Spray Zone register • Compliance with relevant chemical control standards
Mowing	• The approved programme is complied with

Immediate response activities (including event response) occur as required, these are often prompted by monitoring activity or customer requests.

We also educate landowners on their responsibilities regarding vegetation growth on boundaries.

There are ~5000 street trees on our network, many of which are large and haven't had formative pruning in their younger years, meaning that we have a backlog of heavier/more expensive maintenance and/or tree replacement to undertake. Street trees planted in the last 10 years have had formative pruning, meaning their long-term maintenance burden is less than the older trees. We consider that street trees help to improve active transport amenity and uptake, providing shelter and beautification on journeys. Street trees also act as carbon sinks in our urban centres, helping to offset transport emissions.

Environmental renewals

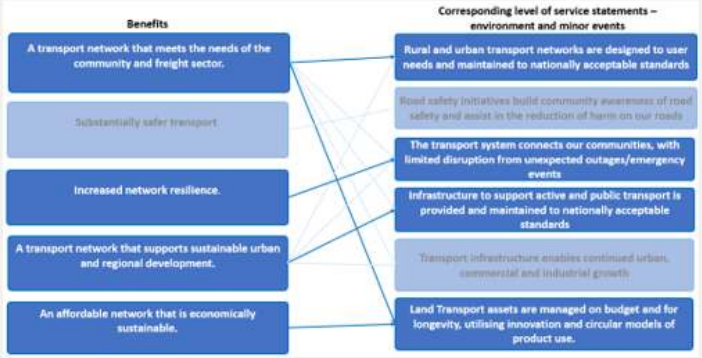
A small allocation has been requested to gradually implement stormwater quality treatment devices on kerb and channel renewal areas to meet consenting/legislative requirements.

Strategic links

Environment and minor events

Activity classes	Problem statements
121 Environmental maintenance 140 Minor events 221 environmental renewals	• Consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction. • The roading network lacks resilience against natural and anthropogenic hazards, decreasing accessibility and increasing costs. • A lack of appropriate infrastructure to support mobility alternatives is limiting transport options within our community, slowing transition to a lower carbon transport system and sustainable urban environments.

Benefits of proposed environmental and minor events activities and corresponding level of service statements



Environment/minor events activities contribute to these Council community outcomes

Resilient infrastructure, connected citizens, enhanced lifestyle, sustainable environment

Strategic responses - management of environment/minor events

- Ensure holistic approach to maintenance and operation of the transport system
- Ensure infrastructure meets current and future resilience needs and that hazard management practices are fit for purpose
- Ensure transport planning integrates people, place and movement
- Raise community awareness of priorities, the levels of service and value we deliver

Environment/minor events activities contribute to these GPS priorities

- Increasing resilience - The transport system is better able to cope with natural and anthropogenic hazards.
- Integrated freight system - Well-designed and operated transport corridors and hubs that provide efficient, reliable, resilient, multi-modal, and low-carbon connections to support productive economic activity.
- Maintaining and operating the system - the condition of the existing transport system is efficiently maintained at a level that meets the current and future needs of users

Options Analysis

Option	Description / Programme responses	Average annual cost (OPEX)	Average annual cost (CAPEX)	Will this option enable delivery of strategic responses?	Corresponding impact on delivery of LOS	Preferred option
1	No LOS Change +escalations	$922,069.03	$28,814.66	*No, though community awareness activity could be retained*	*LOS not met, likely to see significant asset deterioration over time*	
2	LOS mainly the same, increase to allow for improved street tree maintenance and replacement	$1,920,977.14	$28,814.66	*Partially, but will not maintain consistency across the network or meet resilience needs*	*LOS mostly not met, urban network will fare better than rural*	
3	LOS mainly the same, increase to allow for improved street tree maintenance and replacement, Increase emergency works funding proactive request to $500,000 per annum. Increase to allow for a small amount of stormwater pretreatment devices to meet Stormwater Management Plans	$2,123,232.00	$208,106.67	*Yes*	*LOS met*	*Yes*

Customer Level of Service Statements

1. **Rural and urban transport networks are designed to user needs and maintained to nationally acceptable standards**
   - 60% of residents feel the transport network meets their needs
   - 70% customer service requests are responded to within 15 working days
2. **The transport system connects our communities, with limited disruption from unexpected outages/emergency events**
   - Resilience works programme developed including identification of critical routes.
   - 2027 onwards – resilience works programme implemented as per programme
3. **Infrastructure to support active and public transport is provided and maintained to nationally acceptable standards.**
   - No specific targets, however implementation of street tree maintenance programme is an available measure.
4. **Land Transport assets are managed on budget and for longevity, utilising innovation and circular models of product use.**
   - Environment and minor events activities delivered as per programme, to scope, quality and budget.

Financial Impact

The following table shows the financial impact of the preferred option:

Activity class	Preferred option – description of cost changes between Council 2023 budgets and current budget	Preferred option – difference between Council 2023 budgets and current budget
121 environmental maintenance	Increasing growth due to increased rainfall means that we need to control sight distances as signs, intersections and edgemarker posts more frequently. Increased snow fall in high country areas mean regular snow clearance is required. Detritus and spills on roads remain constant so the need for clean up has had cost escalations only applied to the figures. Our current maintenance contract does not allow for amenity mowing, and there are currently no plans to change this. However, there are a number of urban street tree that add to amenity, help to encourage uptake of active modes and serve a purpose as carbon sinks that are aged and costing more to keep pruned. We have improved our early maintenance and form pruning on younger trees to reduce this burden long term however there is a cost of $330,000 each year for the next 5years to prune our older trees. To replace the street trees along with our footpath renewals would be in the order of $500,000 per annum.	+ $863,848.00
140 minor events	Due to the increased number and intensity of events, we need to budget for more mid-scale events. We generally experience one event per year that costs over $2M to remediate. The time taken to work through Waka Kotahi process can mean significant delays in obtaining funding for emergency works.	+ $460,000.00
221 environmental renewals	Increasing need to consider stormwater treatment when undertaking kerb and channel renewals and other road renewals is meaning we need to request further funding here to meet Stormwater Management Plans.	+$188,106.67

Financial Expenditure Summary

The following table summarises the maintenance and renewal expenditure for the preferred option and associated funding request.

Activity class	OPEX budget (Year 1)	CAPEX budget (Year 1)	Total budget/funding request (Year 1)	Annual average funding request (based on years 1-3)
121 environmental maintenance	$1,560,000.00		$1,560,000.00	$1,623,232.00
140 minor events	$500,000.00		$500,000	$500,000.00
221 environmental renewals		$200,000.00	$200,000.00	$208,106.67
TOTAL environment and minor events	**OPEX Year 1** $2,160,000.00	**CAPEX Year 1** $200,000.00	**Total funding request Year 1** $2,260,000.00	**Total annual average funding request (Based on years 1-3)** $2,331,338.67

9.6 Network and Traffic Services

Introduction

Network and traffic services covers a range of activities including maintenance of signs, traffic signals, road markings, sight rails, streetlights, variable message signs, surveillance cameras and delineation, and edge marker posts.

These assets are critical to road safety, particularly on our large rural network where they highlight the road alignment (line marking, RRPM's and marker posts), provide warning and identify hazards for drivers (signage, variable message signs and sight rails) and providing safe points to cross the road (belisha beacons, traffic lights).

Streetlights are also important for safety, assisting drivers, pedestrians and cyclists in finding their way in the dark by illuminating the roads, intersections, crossings and footpaths. Lighting also helps create a pleasant environment, allowing activities to occur at night and deterring crime e.g. in CBD areas, parks, carparks.

This asset group has a large quantity of assets that need to be maintained. Historically there has not been a focus on signs and markings across the network, it is possible this could be contributing to the increase in rural crashes. This was identified in the 2023 technical audit undertaken by Waka Kotahi. Staff are considering unbundling in the next road maintenance contract to establish a standalone contract for network services, Low Cost Low Risk and Road to Zero to improve the focus for contractors and outcomes for road users.

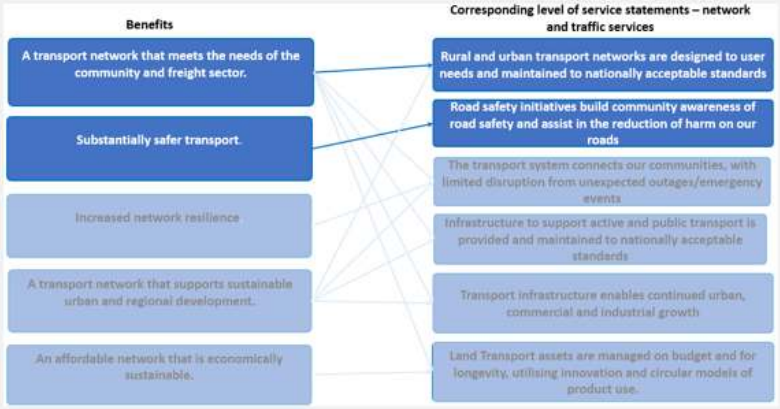
See over page for linkage of this activity to the strategic case.

Fig. 95: Traffic signals in Timaru CBD.

Strategic linkages

Network and traffic services	
Activity classes	**Problem statements**
122 Network service maintenance 222 Traffic services renewals 131 Rail level crossing warning devices maintenance 123 Network operations	• Road network deficiencies, inappropriate speed environments and poor driver attitudes result in deaths and serious injuries on our roads. • Consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction.

Benefits of proposed network and traffic services activities and corresponding level of service statements



Network and traffic services contribute to these Council community outcomes

- Connected citizens
- Enhanced lifestyle

Strategic responses - management of environment/minor events

- Ensure holistic approach to maintenance and operation of the transport system
- Implement safe systems

Network and traffic services contribute to these GPS priorities

- Maintaining and operating the system - the condition of the existing transport system is efficiently maintained at a level that meets the current and future needs of users
- Safety - The primary focus of this priority is to make transport substantially safer for all.

Asset summary

A summary of the various assets covered under this activity are listed below. Inventory data is taken from the TDC RAMM database.

Network Services Assets	Quantity	Units
Signs	7807	ea
Traffic signals	*6*	*sets*
Surveillance cameras	32	ea
Line marking	9327	records
MetroCount Traffic Counters	16	ea
Sight rails	1.33km	km
Streetlights	4567	ea
Streetlight poles	3036	ea

Current Condition and Performance

Signs

Currently we do not have condition assessments for over 65% of signs. With a known gap in this space, we intend to update condition rating within RAMM.

Traffic Signals

Traffic signals have been managed on a very low budget over the past 20 years, with no significant renewals until 2021. Many poles were too short for the current specifications and many assets were second and third hand when installed. Controller boxes did not meet current health and safety standards and cabling was at end of life. These assets were inspected and an upgrading programme commenced.

Since the establishment of a new maintenance and renewal contract in 2021, three intersections have been upgraded to current standards. This work has included renewing assets to a good standard, but not replacing the whole intersection (such as cables). These upgrades have cost about $200,000 per intersection with works taking two to three weeks, interrupting traffic on higher volume roads. Two of the remaining traffic signals do not meet current design specifications and often have performance issues, impacting pedestrians ability to cross busy intersections.

- Strathallan Corner in the center of the CBD continues to fail, as the controllers are dated. In the short term, it may need at minimum a new controller at the cost of $80,000 in the next financial year. When controllers fail a roundabout TMP is installed. This poses significant safety and access concerns for pedestrians.
- Wai-iti Rd / Selwyn St is built to a 1980s standard. This intersection was to be upgraded as part of a project of Road to Zero safety platform installation and the signals will need to be almost completely replaced. When scheduled this will cost in the order of $600,000.

The third signal set, on Church Street and Otipua Road Intersection, has not yet been upgraded and needs a new controller box and communications installed to connect it to the SCATS network, at a cost of $80,000. It is a reasonably new intersection so this can be programmed for upgrade in the 2024-27 NLTP.

More work is required on data collection for the signals assets, including condition and age of different assets, to make asset management more robust and visible. We have been working through a transition to improve knowledge of assets and asset management practices for traffic signals.

Fig. 96: Location of urban Timaru traffic signals

Surveillance cameras

Timaru District Council's assets include:

- 29 CCTV cameras within the Timaru CBD which are linked back to the Timaru Police Station for monitoring
- 3 cameras on the one lane bridge location on Milford Clandeboye Road
- Cameras on the corners of North and Stafford St, and George and Stafford St, to monitor traffic movements and any issues with lights working correctly.

These assets are in RAMM. However as mentioned previously with traffic signals, we need to do some work on data collection about the signals assets, and the condition and age of different assets to make asset management more robust and visible for these assets.

We have been working through a transition of improving knowledge of assets and asset management practices.

Linemarking

Road marking is important as it serves a number of purposes:

- Clearly defining where the vehicles should be on the road
- Promoting road safety and ensuring smooth flow of traffic
- Use of different patterns and colours specify particular functions
- Supplementing road signs and other devices.

Not all roads are suitable for line marking and we use a risk-based approach based on ONRC and the physical road attributes (e.g. road widths) to determine where marking is practical and compliant with the relevant line marking standards. TDC network is currently broken into twelve zones for remarking, currently on a rotation of four zones every year. This resulting in demand for ad hoc repairs in high wear areas between rotations. It is proposed a shift in approach, with all lines being remarked every two years, would reduce visits to zones outside of the rotation, and improve visibility and safety of the network. The estimated cost for a full network remark is $500-600K which excludes escalations and rail protection requirements. Our plan is to split the zones from twelve into two zones, Northern and Southern which means full remark the network every two years at an estimated cost of $300-350K. Eighteen Roads have been identified to install and or replace damaged RRPM's (Reflectorised Raised Pavement Markers) in the 2024/25 financial year, and a programme of work to be identified with cold applied plastic on high wear intersections and at Railway Crossings to reduce multiple establishment costs and long term maintenance costs.

Sight rails

There are minimal sight rails/guard rails on the Timaru network. We utilise 1.3km of sight rails as a form of delineation to highlight road curves, intersections and hazards along the corridor. They are predominantly located on the rural parts of our network constructed from timber and painted white for visibility. Pending future funding availability further network surveys could be undertaken to develop a programme.

Streetlights

Ninety percent of our streetlight have already been up graded to LEDs and has had a significant effect on our customer satisfaction surveys. 91% of our streetlights are 7 years old or newer. The estimated cost saving is 60%. The recent technical audit identified a need to consider more flag lighting at key rural intersections, a programme of works and prioritisation programme need to be considered, and if resource funding was made available in Network and Asset Management work category, then this work could be progressed (however we note that key State Highway intersections still lack flag lighting and would be a higher national priority than our local roads). There is a large piece of work to commence in

conjunction with the lines company to ascertain ownership and location/ condition of streetlight cables.

Traffic services strategy

The road maintenance contractors are responsible for carrying out maintenance on these assets. This includes:

- Cleaning/Painting
- Worn to the point where remarking is necessary
- Not reflective to the required standard
- In the incorrect, position Work Requirements
- Damaged missing/minor repairs

A lot of the renewal work is reactive (find and fix) in nature except for Linemarking which is cyclic. This work is typically identified through inspections, audits and customer complaints. The maintenance requirements for this work are clearly identified in the specifications for the road maintenance contract, as shown in the following tables.

2.11 Traffic Services

Traffic Services – *linked to applicable work requirements in section 3.27-3.30*						
	ONRC Category					
Response	**Regional**	**Arterial**	**Primary Collector**	**Secondary Collector**	**Access**	**Low Volume**
1. Immediate Response	Temporary Traffic Management to be established within 30 Minutes if permanent repair cannot be completed as a first response		Temporary Traffic Management to be established within 1 Hour if permanent repair cannot be completed as a first response		Temporary Traffic Management to be established within 2 Hours if permanent repair cannot be completed as a first response	
2. Programmed Response	All Faults to be programmed as Priority 1		Priority as agreed with Engineer			

	Programmed Response				
Work Type	**Priority 1**	**Priority 2**	**Priority 3**	**Priority 4**	**Priority Special (S)**
Critical Signs – Regulatory speed and intersection control/chevrons/warning signs	8 Hours				
Signs (All excluding critical as above), Marker Posts and Sight Rails	1 Week	2 Weeks	1 Month	3-6 Months	As agreed with Engineer
Roadmarking - Intersections	2 Days	1 Week	1 Month	3-6 Months	
Roadmarking – Non-intersection	2 Days	1 Weeks	1 Month	3-6 Months	
RRPMs	2 Days	1 Weeks	1 Month	3-6 Months	

2.9 Winter Events

Winter Events – *linked to applicable work requirements in section 3.25*						
	ONRC Category					
Response	Regional	Arterial	Primary Collector	Secondary Collector	Access	Low Volume
1. Immediate Response	• Work undertaken in time to limit icing as much as practicable • Compliance with the Emergency Event Priorities					
2. Programmed Response	As per Immediate Response					

	Programmed Response				
Work Type	Priority 1	Priority 2	Priority 3	Priority 4	Priority Special (S)
Ice Gritting	No later than 7am – actual deployment dependant on weather forecasting information and local knowledge				
Snow Clearing	As agreed with the Engineer				

Performance Criteria	
All Activities	• The Contractor's demonstrated ability to identify the need to ice grit, and clear snow, with accurate and timely recommendations to the Engineer • Gritting and snow clearance are carried out so that traffic hazards due to ice, frost and snow are kept to a minimum • There is no damage to the road and its furniture as a result of the Contractor's operations • The Engineer is kept aware of the event and progress being made towards rectifying it • That accurately completed records and reports are always submitted to the Engineer in a timely manner or as specified

Level of Service	
All Activities	• The safety of road users is always assured and that the agreed service level is restored as quickly as possible • Inconvenience to road users is minimised

2.10 Footpaths, Berms and Street Furniture

Footpaths, Berms and Street Furniture – *linked to applicable work requirements in section 3.26*						
	ONRC Category					
Response	Regional	Arterial	Primary Collector	Secondary Collector	Access	Low Volume
1. Immediate Response	Temporary Traffic Management to be established within 30 Minutes		Temporary Traffic Management established within 1 Hour		Temporary Traffic Management established within 2 Hours	
2. Programmed Response	Priority and repair as agreed with Engineer					

	Programmed Response				
Work Type	Priority 1	Priority 2	Priority 3	Priority 4	Priority Special (S)
Footpaths	1 Day	3 Days	1 Week	1 Month	As agreed with Engineer
Grass Berms	As Programmed and agreed with Engineer				
Street Furniture					

Activity	Performance Criteria
All Activities including below (additional activity specific criteria as below)	• Footpaths are routinely inspected ensuring maintenance requirements are met • Immediate and/or programmed response timeframes are met
Footpath and Vehicle Crossing Repairs, Renewals and Rip and Remake	• Footpath and vehicle crossing pavement compaction achieves the minimum Clegg Hammer Impact Values as per the specification • Footpath and vehicle crossing surfacing is complete within 7 days of the completion of the footpath pavement construction • The level of the finished surface of the repair matches the surrounding surface within a 2mm tolerance so there is no ponding of water • The finished surface is waterproofed, dense, stable and does not move under the action of traffic

Level of Service	
All activities	• Faults that immediately endanger road users or significantly reduce the life of the assets are addressed without delay

Asset Capacity/Performance - Demand – Issues and Challenges

Physical capacity and performance

TDC utilises the dashboard on the Te Ringa Maimoa website to tracks and benchmark our data quality annually, the current results are highlighted below. This is showing low scores for known railing and streetlight assets.

Asset Inventory: **Traffic Facilities & Streetlights**	RAIL4	Railing assets known	**Completeness**	Low			50.1	5 50 100
Asset Inventory: **Traffic Facilities & Streetlights**	RAIL2	Railing asset records maintained	**Timeliness**	Low			No results displayed until all data for this metric has been finalised for the financial year	
Asset Inventory: **Traffic Facilities & Streetlights**	RAIL3	Railing data valid	**Accuracy**	Low			97.6	90 95 100
Asset Inventory: **Traffic Facilities & Streetlights**	SIGNS4	Sign assets known	**Completeness**	Low			67.4	30 40 60 80 100
Asset Inventory: **Traffic Facilities & Streetlights**	SIGNS5	Sign data valid	**Accuracy**	Low			99.7	70 80 90 100
Asset Inventory: **Traffic Facilities & Streetlights**	SIGNS3	Sign replacement activity	**Timeliness**	Low			No results displayed until all data for this metric has been finalised for the financial year	
Asset Inventory: **Traffic Facilities & Streetlights**	LIGHTS4	Streetlights data valid	**Accuracy**	Low			99.5	95 96 98 100
Asset Inventory: **Traffic Facilities & Streetlights**	LIGHTS5	Streetlights assets known	**Completeness**	Low			36.1	0 50 95
Asset Inventory: **Traffic Facilities & Streetlights**	LIGHTS3	Streetlight replacement activity	**Timeliness**	Low			No results displayed until all data for this metric has been finalised for the financial year	

Fig. 97: Data Quality Dashboard - Te Ringa Maimoa

Customer Satisfaction

TDC customer survey results show satisfaction with activities:

Q	Long Term Plan Measures		2019		2020		2021		Performance vs. Target (percentage point difference)
	Level of Service	Target measure	Jun	Dec	Jun	Dec	Jun	Dec	
Q12	Adequate street lighting provided that enables people to move around safely and efficiently	95% of people believe access to the network is not inhibited by lack of street lighting in urban areas and intersections	87%	87%	89%	88%	86%	96%	+1

Road safety

A network that supports safe travel and Vision Zero is our goal. Loss of control on corners is the key cause of DSI on the network, which may indicate our lack of signage, linemarking and delineation is not as effective as it could be. Work has been done with Aoraki Roading Collaboration to develop a delineation strategy. Funding is required to assess the network and implement the strategy over the next 3 years.

Options Analysis

Option	Description / Programme responses	Average annual cost (OPEX)	Average annual cost (CAPEX)	Will this option enable delivery of strategic responses?	Corresponding impact on delivery of LOS	Preferred option
1	No Change to LOS +cost escalations	$1,472,890.01	$410,608.86	*No, with some decreases in the innovation, efficiency and effectiveness of safe systems*	*LOS not met*	
2	Increase roadmarking to every two years and replace signs and edgemarker posts at a higher frequency. Supports a holistic approach to road safety, reducing the likelihood of loss of control on bends crashes, which is our highest cause of DSI crashes and also improve visibility of intersections	$1,546,746.67	$733,333.33	*Partially, though implementation of safe systems unlikely to be consistent*	*LOS met*	*Yes*
3	Annual Road Marking and replace signs and edgemarker posts at a higher frequency	$2,161,099.28	$1,200,610.71	*Yes*	*LOS met, exceeded in some areas*	

Customer Level of Service Statements

1. **Rural and urban transport networks are designed to user needs and maintained to nationally acceptable standards.**
   - 60% residents feel that the transport network meets their needs
   - 70% of customer service requests are responded to within 15 working days*
2. **Road safety initiatives build community awareness of road safety and assist in the reduction of harm on our roads**
   - Number of fatalities and serious injury crashes on the local road network is less than the previous financial year on an annual basis*
   - Delineation Programme focus areas completed as per programme.

Financial Impact

The following table shows the financial impact of the preferred option:

Activity class	Preferred option – description of cost changes between Council 2023 budgets and current request	Preferred option – difference between Council 2023 budgets and current request
122 – network service maintenance	Our highest cause of DSI crashes is loss of control on bends, and intersection crashes are over-represented. As such increased road marking for both edgelines, centre lines and limit lines need marking more regularly, and high wear intersections also need cold applied plastic applied to ensure limit lines are visible for longer periods.	+$319,272.83
222 – traffic services renewals	Ensuring timely renewal of old signs that no long meet standards, or have good visibility will help TDC meet Road To Zero Targets Increase in year one for renewal of Selwyn/Wai-iti Intersection traffic signals -$500,000. Year 2 - upgrade of Strathallan and Stafford Street intersection signals. Both are running on old second hand replacement parts and do not meet current signal standards.	+$733,333.33
131 – rail level crossing warning devices maintenance	Increases for inflation.	+$19,374.40
123 - network operations	Increases for inflation.	+$130,133.33

Financial Expenditure Summary

The following table summarises the maintenance and renewal expenditure for the preferred option and associated funding request.

Activity class	OPEX budget (Year 1)	CAPEX budget (Year 1)	Total budget/funding request (Year 1)	Annual average funding request (based on years 1-3)
122 – network service maintenance	$1,150,000.00		$1,150,000.00	$1,196,613.33
222 – traffic services renewals		$1,000,000.00	$1,000,000.00	$733,333.33
131 – rail level crossing warning devices maintenance	$70,000.00		$70,000.00	$70,000.00
123 - network operations	$270,000.00		$270,000.00	$280,133.33
TOTAL network and traffic services	**OPEX Year 1** $1,490,000.00	**CAPEX Year 1** $1,000,000.00	**Total funding request Year 1** $2,490,000.00	**Total annual average funding request (based on years 1-3)** $2,280,080.00

9.7 Active transport

Introduction

The purpose of Timaru's footpath and cycle network is to provide a safe, efficient and connected system of routes that cater for the movement of pedestrians, scooters and bikes. It contributes by providing alternative transport options to vehicles and accommodates for both commuting and leisure functions.

Active Transport is an area which has experienced a significant increase in demand. Central Government has been a big driver, with a growing focus on climate change and investment in active transport initiatives to reduce emissions. For example, the first round of the Transport Choices programme has made funding available for active transport projects which must be completed by June 2024, which was extended to June 2025 and now has been put on hold. $863,487.00 has been spent to date (end October 2023) on hurrying concept and detailed design through Waka Kotahi funding approval gates.

There is considerable recent work and further work underway to identify how Timaru District Council will contribute to reducing the impact of climate change and it is expected this will impact on the development of active transport. This includes:

- Review of the 2018 Timaru District Council Active Transport Strategy – currently in progress
- Timaru CityTown Strategy 2022
- Timaru District Council Long Term Plan 2021-31 and 2024-34

While the data shows that Timaru's footpaths are generally in average or better condition, there is still a large volume of complaints from the community. This indicates a mismatch between the level of service provided and community expectation.

See over page for linkage of this activity to the strategic case.

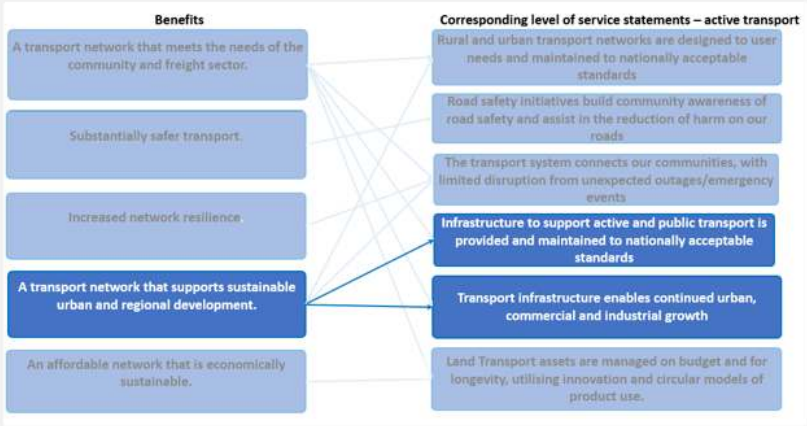
Fig. 98: Walking and biking infrastructure helps to foster sustainable urban environments

Strategic Links

Active transport

Activity classes	Problem statements
124 Cycle path maintenance 125 Footpath maintenance 224 Cycle path renewal 225 Footpath renewal	• A lack of appropriate infrastructure to support mobility alternatives is limiting transport options within our community, slowing transition to a lower carbon transport system and sustainable urban environments.

Benefits of proposed active transport activities and corresponding level of service statements



Active transport activities contribute to these Council community outcomes

- Connected citizens
- Enhanced lifestyle
- Sustainable environment

Strategic responses - management of environment/minor events

- Ensure holistic approach to maintenance and operation of the transport system
- Ensure transport planning integrates people, place and movement
- Raise community awareness of priorities, the levels of service and value we deliver

Active transport activities contribute to these GPS priorities

- Reducing emissions - Transitioning to a lower carbon transport system.
- Sustainable urban and regional development - People can readily and reliably access social, cultural, and economic opportunities through a variety of transport options. Sustainable urban and regional development is focused on developing resilient and productive towns and cities that have a range of low-emission transport options and low congestion.
- Maintaining and operating the system - the condition of the existing transport system is efficiently maintained at a level that meets the current and future needs of users.

Current Condition and Performance

Footpaths

As shown in the figure below, the condition of the portfolio has been well managed, with 92% of footpaths in average or better condition.

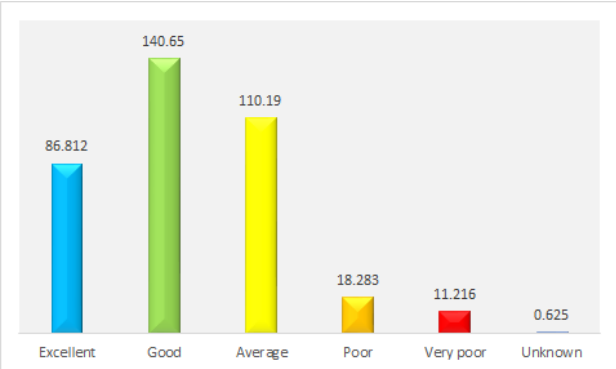


Fig. 99: Footpath condition

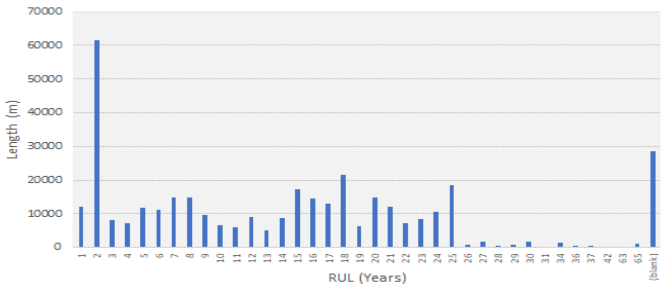


Fig. 100: Remaining useful life of footpaths

Demand growth

Historically, transport infrastructure has favoured light vehicle use and investment in multi-modal infrastructure has been limited. With changes in our communities occurring alongside the stimulus to transition to a lower carbon transport system, we are seeing more demand for new infrastructure that enables greater transport choice for our communities. There is enthusiastic support for walking and cycling paths across the District, with e-bikes have opened opportunities for older age groups, and families alike (refer Strategic Case).

City centre tiles

Like many other urban centres in New Zealand, the footpaths in Timaru, Geraldine and Temuka CBDs are largely surfaced in tiles that are problematic in wet weather, causing a slipping hazard. Our tiles are the bugbear of our community and frequently prompt complaints. In recent years, in response to public requests, we have upgraded the tiles in several areas with new ones that have much better slip resistance. Locations include:

1. Corner of Sophia Street and Church Street – North East Side
2. Corner of Sophia Street and Church Street – South East Side
3. Corner of Church Street and Stafford Street – North West Side
4. Corner of Strathallan Street and Stafford Street – North East Side
5. Corner of Strathallan Street and The Terrace – North West Side

During 2023 we have also been trialling a non-slip coating product in particular areas, which so far is proving effective. The product has a five year life and we intend to extend the trial to most of Timaru's main street and the central areas of our rural townships. This treatment offers an interim solution until future budgets for permanent upgrade or replacement of the tiles is available. Council's CityTown programme is exploring the regeneration of Timaru's city centre, including the layout and

function of future infrastructure. Options for permanent replacement of the tiles in Timaru will be explored at which time construction of CityTown upgrades is programmed, and extra funding has been included in this business case to extend non-slip coating application to the townships of Temuka and Geraldine.

Street tree damage

Our district has some ~5,000 street trees, many of which were not pruned in their formative years causing an unsuitable level of growth and/or are oversized varieties not suitable for today's standard of street tree planting. Large trees have large roots and we are seeing root damage occur regularly on our footpath network, affecting condition and causing safety/tripping hazards.

Ice

Damp and/or icy footpaths in winter create a slipping risk and are exacerbated by lack of maintenance of private retaining walls, stormwater outlets and gravel driveways. More education is needed with community in regards to private landowner responsibilities.

Fig 101: City centre tiles are the bugbear of our community

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Cycling network

Timaru's wide streets have made it possible to establish an on-carriage cycling network in parts of the city. However this network is disjointed and not protected from vehicular traffic which reduces its appeal. Improving the connectivity of the cycle network can help to make cycling a more attractive and safer mode of transportation. We have seen an increase in cycling where separated cycle trails are provided.

While there is increased demand from Central Government to reduce emissions by reducing vehicle kilometres travelled (vkt) by car, increased infrastructure is needed to make alternatives like cycling or walking an attractive alternative. Issues include:

- The existing cycle network is disjointed and has poor connections to the off-road facilities.
- The road network layout often makes local streets undesirable for cycling e.g. parents then being deterred from letting children bike to school during the school term, resulting in more traffic on the roads.
- Default urban speeds of 50 km/hr and opposition to change this unless outside of schools.
- Wide urban streets that encourage high speeds and on street parking/reversing movements from private property.
- Lack of connectivity between Timaru and the smaller towns throughout the district.
- As facilities are improved for cycling, it will be critical that safety is a priority, to ensure that increase in cycling does not result in an increase in accidents involving cyclists.

There are a number of proposed active transport projects to build momentum to reduce dependency on cars in Timaru District.

Timaru District Active Transport - Network Development – Better Off funding

The outcome this project is seeking is supporting Timaru District's transition to a lower emissions economy by providing a genuine alternative to travelling by car. This project is funding development of a district wide **Active Transport Strategy** to guide investment in an effective active transport network (replacing an outdated 2018 strategy).
The strategy will drive development of active transport infrastructure to support transport mode change, active recreation and cycling tourism. It will identify a programme for development of the trails and routes that will make up with the network and also include a $2.1M construction programme.

Customer Satisfaction

Footpaths: The expectation of customers is that a safe, connected footpath network is available for both leisure and commuting activities. Customer interaction comes through:

- The CRM and Snap-Send-Solve system for notifications of faults (trip lips and cracked/damaged footpath).
- Surveys
- New or replacement footpaths

Despite monitoring/data telling us that 92% of footpaths are in average or better condition (surveyed 5 yearly), only 63% of participants in most recent road user surveys agreed that footpaths are safe, well designed and maintained. The root cause of problems people report can sometimes be the result of external factors, and this is not always understood by community. Of complaints received during the six months spanning June-November 2023,

- 12% were related to poor reinstatement/workmanship of utilities works
- 18% were related to tree roots impacting condition of the footpath

- 20% were related to slippery footpaths/lichen
- 52% were related to broken footpaths/potholes

Key to lifting customer satisfaction results is being able to explain the level of service funded for footpaths in a clear way, so that community expectations can be better aligned with the service provided.

Cycleways: No current data is available. Monitoring and evaluation will be included in project plans.

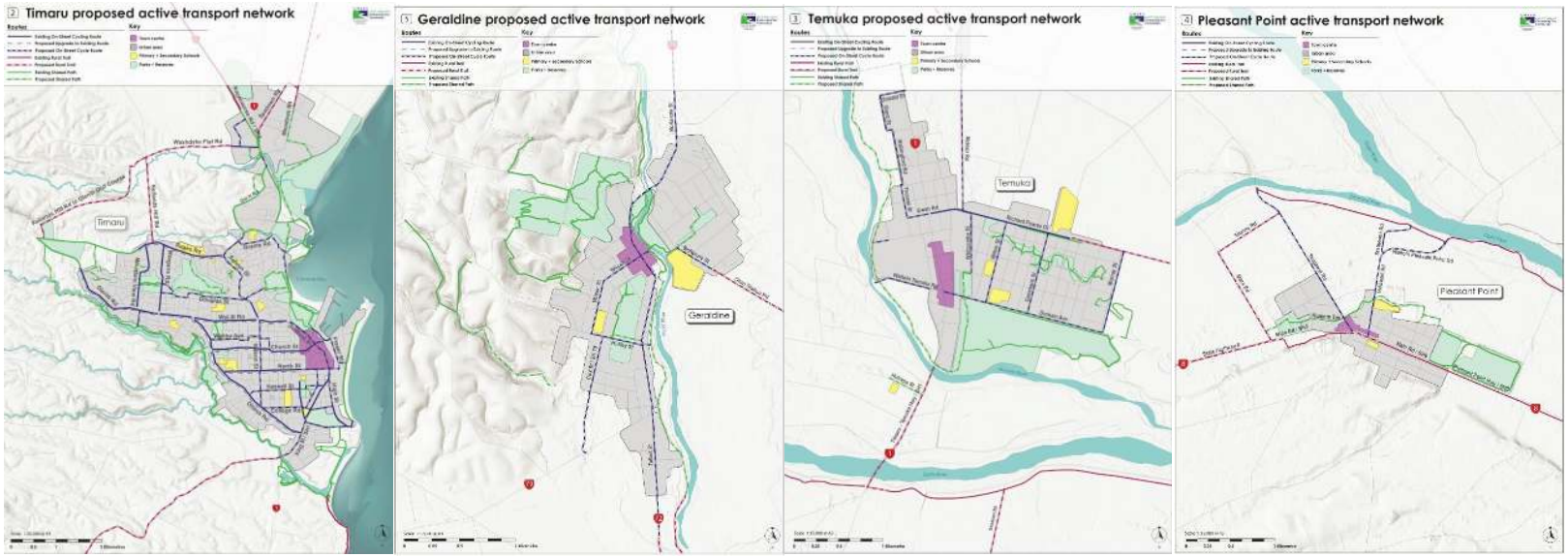


Fig 102: Draft proposed new routes for the Timaru District Active Transport Strategy Refresh – the refresh is proposing an integrated on and off road network connecting key destinations within townships, and between townships, an offering for both commuters and recreational cyclists.

Options Analysis

Option	Description / Programme responses	Average annual cost (OPEX)	Average annual cost (CAPEX)	Will this option enable delivery of strategic responses?	Corresponding impact on delivery of LOS	Preferred option
1	Current LOS plus escalations (includes $200k pa of non-slip tile treatment)	*$780,396.96*	*$2,461,251.96*	*Yes*	*LOS met*	
2	Current LOS plus Escalations *plus gradual implementation of regionally significant active transport strategy (see low cost low risk programme in financial summary section of Part A)*	*$674,320.00*	*$3,131,066.67*	*Yes, with some increase in innovation, efficiency or effectiveness*	*LOS exceeded*	*Yes*
3	Improved LOS and gradual implementation of regionally significant active transport strategy	*$1,020,519.11*	*$6,063,084.10*	*Yes, with significant increases in innovation, efficiency or effectiveness in some areas*	*LOS exceeded, significant asset upgrade over time*	

Customer Level of Service Statements

1. **Infrastructure to support active and public transport is provided and maintained to nationally acceptable standards.**
   - 60% residents feel that the active transport network meets their needs
   - Footpaths – 60% residents satisfied that maintenance is about right or too high
   - Biking – 60% residents satisfied that maintenance is about right or too high
   - 75% of footpaths to be average or better condition*
   - 4% of the footpath network is resurfaced annually
   - Urban walking projects implemented as per programme.
   - 50% of residents regularly walk, 30% of residents regularly cycle and 5% of residents use public transport
   - 1 school travel plan completed or reviewed annually
   - Active transport strategy projects delivered as per programme.
2. **Transport infrastructure enables continued urban, commercial and industrial growth**
   - No specific targets, condition, programme delivery and mode use measures are suitable.

Financial Impact

The following table shows the financial impact of the preferred option:

Activity class	Preferred option – description of cost changes between Council 2023 budgets and current request	Preferred option – difference between Council 2023 budgets and current request
124 – cycle path maintenance	Increasing requests for maintenance and sweeping of existing and new cycleways/shared paths mean the increased maintenance is required.	+$30,145.33
125 – footpath maintenance	With an increased focus on mode shift, ensuring effective and timely maintenance and renewal of our footpath network is imperative to assist reduction in VKT. Slippery tiles in Geraldine and Temuka need a spray treatment to make them safe for users.	+$206,168.00
224 – cycle path renewal	We have a low number of existing cycleways, so the renewal need is currently low.	-
225 – footpath renewal	With an increased focus on mode shift, ensuring effective and timely maintenance and renewal of our footpath network is imperative to assist reduction in VKT. Council currently fund $1,9M PA for footpath renewals.	-$89,996.67

Financial Expenditure Summary

The following table summarises the maintenance and renewal expenditure for the preferred option and associated funding request.

Activity class	OPEX budget (Year 1)	CAPEX budget (Year 1)	Total budget/funding request (Year 1)	Annual average funding request (years 1-10)
124 – cycle path maintenance	$50,000.00		$50,000.00	$50,000.00
125 – footpath maintenance	$600,000.00		$600,000.00	$624,320.00
224 – cycle path renewal		$50,000.00	$50,000.00	$50,000.00
225 – footpath renewal		$2,000,000.00	$2,000,000.00	$2,081,066.67
Regionally Significant Project – Implementation of Active Transport Strategy		$1,000,000	$1,000,000	$1,000000
TOTAL active transport	**OPEX Year 1** $650,000.00	**CAPEX Year 1** $3,050,000.00	**Total funding request Year 1** $3,700,000.00	**Total annual average funding request (Years 1-10)** $3,805,386.67

Improvements

Improvement	Benefit
Designing better footpaths that will include our disabled community	Creating a safer environment for more people to get out and use the footpaths.
Creating footpaths with the minimum width of 1.5m	Creating a wide enough footpath for everyone to use, such as pedestrians sharing footpaths with cyclists where appropriate.
Trees being removed that are not appropriate for footpaths	Footpaths will last longer when there are no tree roots lifting/breaking footpaths up. Tree roots create tripping hazards for pedestrians on footpaths. By removing the inappropriate trees, we will remove a significant amount of tripping hazards.
Development of asset management specific to active transport	Better able to respond to demand and manage development of the asset.

9.8 Network and asset management (including corridor management)

Introduction

Network and Asset Management covers the general management and condition of the road network, including professional services, inspections, asset management and the collection and management of network data.

See over page for linkage of this activity to the strategic case.

Assets and condition overview

Asset condition is collected using a risk-based approach with more regular data collection programmes established for the higher risk assets. Asset information is collected for:

- Pavement and surface condition on an annual basis for high volume roads and renewal candidate sites – Using High Speed Data
- Pavement and surface condition on a three yearly basis for other sealed roads. – Using High Speed Data
- Structures (bridges, retaining walls, major culverts) are inspected on a repeating schedule to ascertain condition.
- The footpath network, of which 92% of the length is in average or better condition. This is to encourage the use of alternative mode of transport such as active walking and cycling.

The current asset conditions for the major asset classes are summarised in the table below.

Asset class	C1	C2	C3	C4	C5	Unknown
Footpath	19%	49%	24%	4%	4%	0%
Culverts	20%	5%	51%	1%	1%	23%
Bridges	65%	0%	0%	0%	0%	34%
Retaining walls	0%	0%	8%	8%	0%	83%
Signage	31%	0%	0%	0%	0%	68%
Railings	1%	1%	0%	0%	0%	98%
K&C	12%	37%	34%	3%	1%	13%

Scale is from C1 for top condition - C5 for poorest condition.

This programme business case recommends developing the condition assessments for other asset groups. This would enable a better understanding of the assets and where the greatest need is.

Data confidence levels

Timaru's overall data confidence rating is Grade B. We have been investing in data collection and analysis to help to continue to grow our knowledge of our network. This assists in our strategy and management decisions to ensure the works undertaken are the the right work, in the right location and that they're undertaken in a cost-effective manner with a long-term view. This data is used to support business cases and funding applications.

Confidence Grade	Description
B – Reliable	Data based on sound records, procedures, investigation and analysis, documented properly but has minor short cummings, e.g some data is old, some data missing. Data set is complete and estimated to be accurate =/- 10%.

We are continuing to invest in FWD data to build comprehensive network model to understand and direct pavement renewals in the optimum

locations. The following table shows the data confidence levels for the various asset classes in RAMM.

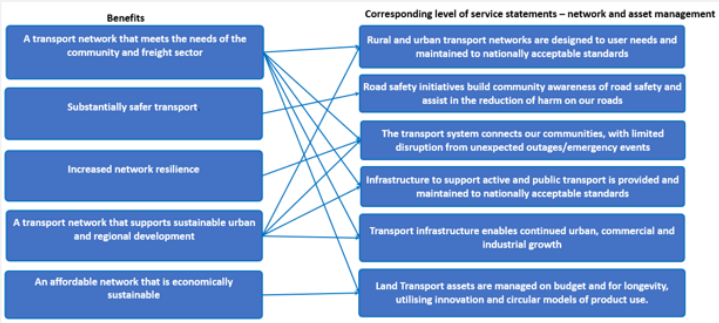
Asset class	Data Confidence	Criticality	Comments
Pavement	High	Very High	Based on current replacements rates the pavement life is expected to last 200 years. With the increase in traffic loading this is affecting the asset preservation and hence the request for an increase in funding in this area. Long term this works will reduce the amount of maintenance repairs requiring intervention.
Unsealed Pavements	High	High	Condition and performance are monitored through RoadRoid to ensure that the unsealed network is kept within agreed levels of service.
Surfacing	High	Very High	Surfacing funding drivers are a combination of good asset management, safety, condition/performance measures and customer levels of services.
Structures	Medium	Very High	Condition is driving the increase in funding requested for structures. Bridge inspections (undertaken 3 yearly) have accurate data, as yet this isn't fully evident in RAMM.
Footpath	High	High	Work on footpath (includes shared paths) are to meet customer and DIA satisfaction requirements around agreed levels of service. This work also contributes to having good alternative infrastructure to entice people away from cars.
Culverts	Medium	Medium	Drainage investment focuses on growing our network resilience to natural events and climate change. Good drainage also benefits the pavement, surfacing and safety.
Kerb & Channel	High	Medium	
Traffic Services	Medium	Low	Signs and road marking are a combination of safety (crash and Road2Zero) and customer satisfaction drivers for this asset group.
Streetlights	High	Low	Lighting investments is a combination of customer satisfaction and safety.

Strategic links

Network and asset management

Activity classes	Problem statements
151 network and asset management	• Consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction. • The roading network lacks resilience against natural and anthropogenic hazards, decreasing accessibility and increasing costs. • Road network deficiencies, inappropriate speed environments and poor driver attitudes result in deaths and serious injuries on our roads. • A lack of appropriate infrastructure to support mobility alternatives is limiting transport options within our community, slowing transition to a lower carbon transport system and sustainable urban environments.

Benefits of proposed network and asset management activities and corresponding level of service statements



Activities contribute to these Council community outcomes

Connected citizens, enhanced lifestyle, sustainable environment, diverse economy, resilient infrastructure

Strategic responses - management of network and asset management activities

- Ensure holistic approach to maintenance and operation of the transport system
- Ensure transport planning integrates people, place, and movement.
- Implement safe systems
- Ensure infrastructure meets current and future resilience needs and that hazard management practices are fit for purpose

Activities contribute to these GPS priorities

- Maintaining and operating the system - the condition of the existing transport system is efficiently maintained at a level that meets the current and future needs of users
- Increasing resilience - The transport system is better able to cope with natural and anthropogenic hazards.
- Reducing emissions - Transitioning to a lower carbon transport system.

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Critical assets

The condition of our critical assets is monitored closely. The criteria used to determine criticality includes:

- One Network Framework
- Lifelines
- Road Safety

In response to climate change TDC have identified that bridges, drainage assets and unsealed roads are critical assets for the district and form part of our contingency planning for response to emergency events.

Roads with a high crash/accident trends are also considered critical from a safety aspect. These sites are assessed for safety improvements that either eliminate or reduce the level of risk. This aligns with the Road to Zero Strategy.

Asset valuations

As at 2023, the replacement cost of the Council's roading assets stood at over $1b, this included a depreciated replacement cost of over $680m. Carriageways are by far the highest valued asset, followed by structures and drainage.

Asset	Replacement Cost	Deprecation Replacement Cost	Depreciation to Date	Annual Depreciation
Structures	$160,198,645	$75,345,000	$84,853,645	$1,649,443
Drainage	$145,196,461	$81,630,468	$63,565,992	$1,585,912
Footpath	$77,033,275	$36,241,618	$40,791,657	$2,105,826
Carriageways	$598,600,012	$464,627,375	$133,972,637	$6,531,027
Traffic Services	$15,240,020	$9,983,155	$5,256,866	$404,425
Lighting	$23,287,319	$11,878,921	$11,408,398	$734,230
Miscellaneous	$1,524,126	$829,787	$694,339	$31,508
Total	**$1,021,079,857**	**$680,536,323**	**$340,543,534**	**$13,042,370**

Current Performance

The Timaru network is predominantly in house business units, with great SMEs that work well together and with other Councils to analyse data/trends, use tools and investigate better ways to do things. This is supported by a small number of consultants who contribute specific technical expertise, such as WSP who provide bridge engineering support. The cost of network and asset management is low when compared with the peer group average, suggesting that there has been under investment in this area for a considerable period of time. Council have funded current staff levels to keep up with regulatory changes, and now needs Waka Kotahi to meet their share.

Customer request numbers are increasing, there has been significant effort in the AMP to more accurately respond to the level of funding available to the level of service that can buy. Customer expectations have increased significantly over the last 5 years and the level of service and individual requests outside their house, or on their route is generally unaffordable to the general rate payer and road user, when this LOS is expanded across the entire network. Differential Levels of service have been utilised for a long time in Timaru District, and have been further refined over the last 6 years. As a result Customer Service requests are not being responded to within reporting timeframes, automation improvements have been made to the RAMM and Customer Request system to reduce double handing of requests, however this could be further refined for customers to have an interactive portal or automated text message.

As there are significant third party new/renewed assets located across the network, a focus has been on educating utilities owners and contractors on their requirements under the Utilities Act. Production of Backfill and Reinstatement Guidelines and an increase in inspections, as well as invoicing for sites that have non-compliant reinstatement is seeing an improvement in this area.

Case Study: New Purchase: MetroCount Traffic Counters

The RoadPod® VM magnetometers are small, unobtrusive and off-grid vehicle counters that provide real-time data on traffic movements. Ten of these counters have to purchased to work in an array to accurately count vehicles, monitor speeds and classify vehicle type based on the length of each passing vehicle. Gap and headway information is also available and all data is precisely time-stamped.

100% off grid, each sensor is powered by a in-built solar panel and internal battery. The central gateway also runs off solar energy. Data is securely transmitted to the Cloud, with each sensor capturing time-stamped vehicle information independently and transmitting it to a central gateway, which then combines the information and securely sends the raw data to the Cloud.

This method allows installation to occur quickly, with little to no traffic management or cutting/ grinding of the road surface and ensures longevity of each RoadPod VM on the road. Each unit can easily be moved around the network as required.

Fig 103: MetroCount Traffic Counter

Asset and Management Strategy

TDC provides most engineering professional services and collection and maintenance of network data internally. The team includes, a two person survey team, design engineer and multiple council engineers to provide professional services to contract management and a corridor management team of two.

Information systems are essential for storing and analysing information to make good AM decisions. See table overleaf.

The following table explains the systems used and role in the management the transport activities:

Name	System Purpose	Functions
RAMM	Asset Information System	RAMM holds individual assets records, condition data, maintenance costs, forward works programmes, valuation
RAMM Contractor	Job Management tool for programming and claiming.	Module within RAMM that enable user to facilitate the programming of network maintenance and the estimation and claims process which is integral to programmed maintenance contracts
Pocket RAMM	Maintenance inspections, asset updates claiming, QA.	Pocket RAMM is the field version of RAMM Contractor run on a netbook, laptop, or tablet.
CAS	Crash Analysis System	CAS is a national database owned and managed by NZTA. The data is based on completed Traffic Crash Reports from the New Zealand Police.
ONRC Performance Measures Reporting Tool	Performance and Benchmarking	Standardisation of road performance throughout New Zealand. Address historical inconsistencies. Annual reporting function, “insights tool”.
High Speed Data	Data Collection	Roughness, rutting, and texture data collected. Used for performance and condition reporting in RAMM and ONRC.
RoadRoid	Unsealed road performance monitoring system	Visual assessments and roughness data capture on unsealed roads.
ArcGIS	GIS	GIS map-viewer provides access to interactive map-based information about the District. With the viewer you can: Find property and rates information View assets View aerial photography View property and road boundaries Contains other information e.g. hazards
Submittica	CAR (Corridor Access Request)	CAR Monitor is a new service. It combines the current process of lodging a B4UDig enquiry and having to apply separately for a CAR if the intended excavation site is in the road corridor.
dTIMS	Predictive modelling	Forecasting asset deterioration, optimisation of budgets and maintenance spending, scenario options evaluation.
FWD	Non-destructive	Non-destructive testing device used to evaluate the physical properties of pavements. Used to calculate the stiffness-related parameters of the pavement structure.
SCATS	Traffic signal coordination	The SCATS system allows coordination of the traffic signals at various intersections to improve traffic flow efficiency. SCATS also provides traffic information data with vehicle counts recorded by signal detector loops, faults, alarms, traffic signal layout, and phase plans.
KiwiRAP	Safety Issues	Identifies safety related issues on the network such as Out of Context Curves.

Juno Viewer	Data: Visualisation, Modelling, FWP Management	Juno has a number of functions including data analysis and reporting, deterioration modelling and forecasting, forward works plans as well as filed inspection tools and video analysis.
MegaMaps	Speed management	Has enabled mapping and coordination of speed management planning.
PowerBI	Various	Utilised for a range of supporting functions.

The main systems TDC use for accounting and customer services management are listed below:

Name	System Purpose	Functions
Authority/RAMM Contractor	Financial Tracking System	It will be used for financial tracking, processing, and managing service requests, and for the storage of information and electronic archived information.
Authority/RAMM Contractor	Customer Service Management Systems	Manages complaints and requests for service from the general public.
TIO (Transport Investment Online)	Funding system	TIO is the base source of data from which information is extracted to present the various reports for funding decision makers. Therefore, information entered into TIO for activities that are submitted for funding approval must be complete, current and accurate

The TDC RAMM database is the primary source of the truth. All maintenance, planning, data, assets and costs are managed and stored in RAMM and through its various modules. Access to the databases is permission controls based on individual user's competence levels and role requirements.

TDC RAMM data quality is reported annually through the ONRC PMRT. The report highlights annual results, changes from the previous year and also benchmark against the other RCAs. The various measure looks at completeness, accuracy and timeliness of data management.

TDC data have been proactive in keeping its data to a high standard and at the top end of most of the measures. This gives confidence in the data-driven decisions that TDC make about the network.
The Data Quality score for 2019/20 = 87/100 (as of 21/09/2020) with the national average score = 78/100.

TDC perform well when compared against National, Regional and Peer Groups. TDC will look to improve on the lower scoring items over the next period, as part of our improvement plan.

An overview of the full data quality report has been provided below.

REG THE ROAD EFFICIENCY GROUP

ASSET MANAGEMENT DATA QUALITY RESULTS 2019/20 | PERCENTAGE AT THE EXPECTED STANDARD

V0.3: 28-10-2020

	Quality Dimension			Importance			Data Category						Score
RCA Name	Accuracy	Completeness	Timeliness	High	Moderate	Low	Network	Asset Inventory	Condition	Maintenance Activity	Demand	Crash	Overall Score
Timaru District Council	75	95	50	84	78	58	77	70	75	71	100	100	87

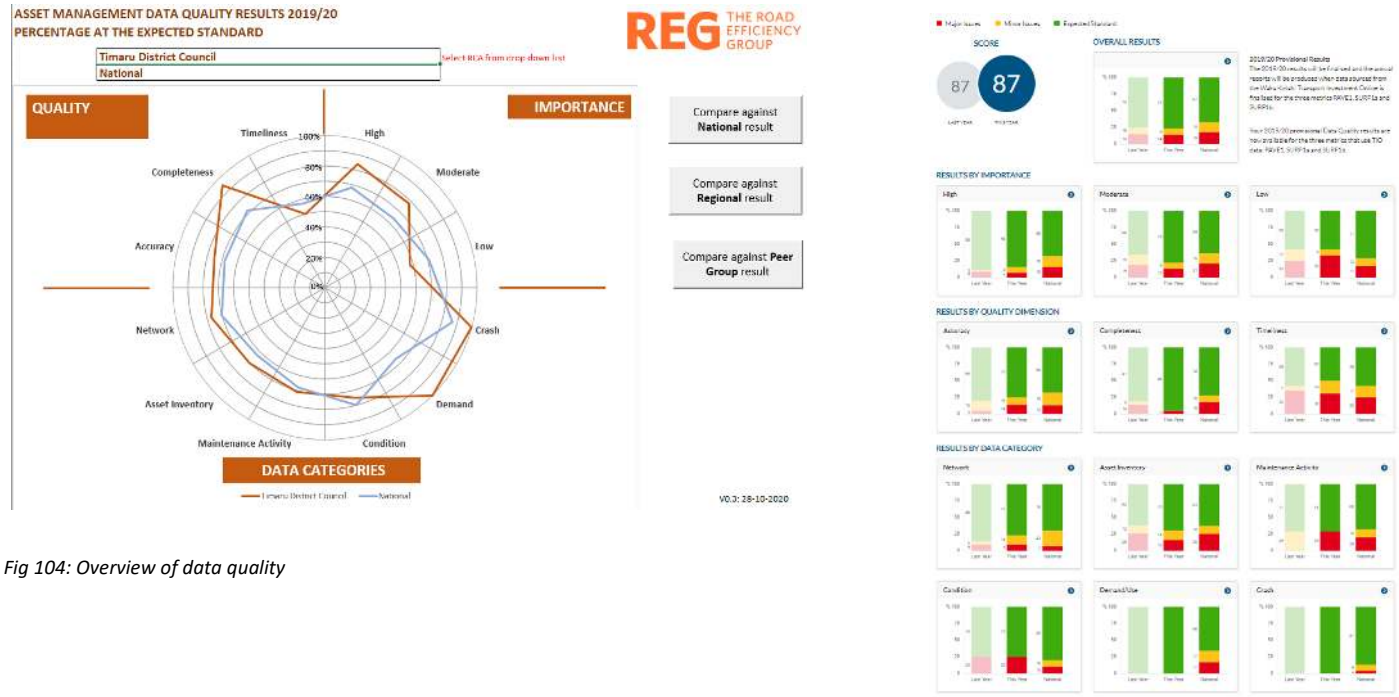


Fig 104: Overview of data quality

Options Analysis

Option	Description / Programme responses	Average annual cost (OPEX)	Will this option enable delivery of strategic responses?	Corresponding impact on delivery of LOS	Preferred option
1	Current Waka Kotahi Funding	$1,208,547.95	*No, with decreases in innovation, efficiency and effectiveness*	*LOS not met, likely to see significant asset deterioration over time*	
2	Current LOS (currently majority funded by Council)	$2,339,173.33	*Yes*	*LOS met*	*Yes*
3	Current LOS with improved closing the loop on all CRM calls	$2,881,465.71	*Yes, with significant increases in innovation, efficiency and effectiveness in some areas*	*LOS met*	

Customer Level of Service Statements

1. **Rural and urban transport networks are designed to user needs and maintained to nationally acceptable standards.**
2. **Road safety initiatives build community awareness of road safety and assist in the reduction of harm on our roads**
3. **The transport system connects our communities, with limited disruption from unexpected outages/emergency events**
4. **Transport infrastructure enables continued urban, commercial and industrial growth**
5. **Infrastructure to support active and public transport is provided and maintained to nationally acceptable standards.**
6. **Land Transport assets are managed on budget and for longevity, utilising innovation and circular models of product use.**

No specific measures for network asset management – high performing asset management is measured by the performance of all other activities.

Financial Impact

The following table shows the financial impact of the preferred option:

Activity class	Preferred option – description of cost changes between Council 2023 budgets and current request	Preferred option – difference between Council 2023 budgets and current request
151 – network and asset management	Increasing demands and implementation of initiatives from both Waka Kotahi and Te Ringa Miamoa require resourcing both internally and externally. The contestable funds that regularly appear also require projects to be close to shovel ready, and increase in these areas would ensure TDC remain ready to respond and ensure strong delivery, road network management, various condition assessments, deterioration monitoring, Road user education, to bridge the gap between demands and understanding affordability.	-$645,484.02 *This variation is reflective of not all internal cost being requested or able to be met by Waka Kotahi.*

Financial Expenditure Summary

The following table summarises the expenditure for the preferred option and associated funding request.

Activity class	OPEX budget (Year 1)	CAPEX budget (Year 1)	Total budget/funding request (Year 1)	Annual average funding request (years 1-10)
151 – network and asset management	$2,250,000.00	-	$2,250,000.00	$2,339,173.33

Improvements

Improvement	Benefit
Increased survey and design for future improvement projects	Ability to meet Waka Kotahi time frames for various crown funding initiatives, such as Transport Choices and Streets for People projects, ensuring projects are shovel ready for tight time frames and for our community to use and benefit from
Increased High Speed data collection from 30% of rural network to 100% of rural network annually (noting this is nationally funded from 2024 onwards)	Measure deterioration and condition of pavements to ensure a robust forward work programmes. This will more fairly spilt funding over the future generations that will benefit from the asset. This will be funded 100% from 2024.
Waka Kotahi to meet existing staffing LOS ($2,600,000 for staff, RAMM, small amount of consultancy)	Historically underfunded – request to meet local share.
Network survey and plan to implement Aoraki Roading Collaboration Delineation Strategy	Consistency across networks. Improved financial forecasting for Network Services Maintenance and improved safety outcomes – leading cause of crashes is loss of control on bends
Increased signage condition assessment surveys	Improved planning and road safety outcomes
Increased permanent traffic counts on high volume (general traffic and HCV)	Improved network modelling and understanding and maintenance intervention strategies/pavement renewal designs
Investigate, develop and implement a network operating framework	Historically a focus on rural roads has meant that there has been less focus on understanding the growth and use of our urban networks. A network operating plan would help align and priorities our urban network improvements and improve safety and amenity outcomes for people using other modes.
Full rural MSD data capture and analysis annually	To improve prediction of fault progression/timely intervention and ensure appropriate budgets are set aside to ensure prudent stewardship of the sealed pavement asset.
AI for sealed road fault reporting	To improve prediction of fault progression/timely intervention and ensure appropriate budgets are set aside to ensure prudent stewardship of the sealed pavement asset.

9.9 Local road improvements

Introduction

This work category provides funding for the construction/implementation of *low-cost*, *low-risk* improvements (including road safety improvement projects) to a maximum total approved cost of $2 million per project, speed management initiatives, and also larger local road improvements.

This work category enables delivery of a wide range of projects to improve and create a safer environment for the community. A key benefit is that it can be used to enhance a project from the renewals programme to make improvements that would not otherwise be funded e.g. where a renewals project is underway to rehabilitate a street surface, local road improvement funding might be used to narrow down the entrance to improve the crossing point for pedestrians.

Funding has been targeted at areas where new development is occurring, to help ensure that public infrastructure in particular locations meets the changing needs of residents. This enables the network to stay fresh with the pace of change, and enables it to evolve to support improved mobility and safety within urban areas of our District.

Our local road improvement programming also enables us to respond to a range of opportunities to improve walking and cycling facilities, encouraging shift to active modes. These projects will contribute to the reduction of carbon emissions in our urban areas, as well as promote wellbeing in the community.

Examples of qualifying activities include:

- Small, isolated geometric road and intersection improvements
- Traffic and speed calming measures
- Walking and cycling facilities
- New footpaths
- New drainage
- Lighting improvements for safety
- Bridge Improvements (e.g. guardrails/delineation)
- Projects that improve resilience within the network?
- Minor engineering works associated with community programmes
- Unsealed road seal backs
- Seal widening
- New signs (rural/urban)
- New pavement markings (rural/new)
- Stock Underpasses Contribution
- Speed Management

Assessment criteria

Local road improvement projects may arise from a variety of sources, as follows:

- Road Safety – Value and/or Need – safety deficiencies identified
- Amenity – Value and/or Need
- Public Concern – requests from the public / community liaison
- ONF/ONRC Road Function (classification & volume)
- Alignment with strategic priorities and outcomes (e.g. Government Policy Statement and Council)
- Link with life cycle status and renewals programme, including other utility works, or adjoining developments
- Alignment with speed management plan and safe assessment system

The programme is re-prioritised annually, based on the funding confirmed by Waka Kotahi.

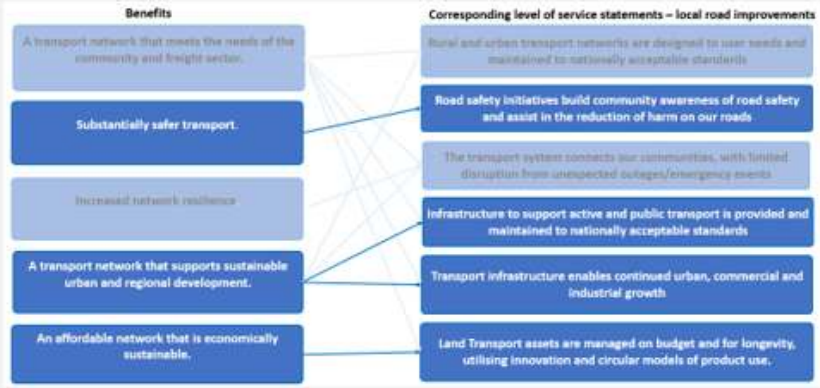
See over page for linkage of this activity to the strategic case.

Strategic case linkage

Local road improvements

Activity classes	Problem statements
341 low cost low risk improvements	• Road network deficiencies, inappropriate speed environments and poor driver attitudes result in deaths and serious injuries on our roads. • A lack of appropriate infrastructure to support mobility alternatives is limiting transport options within our community, slowing transition to a lower carbon transport system and sustainable urban environments. • Consistent local economic growth, combined with an ageing roading network, is driving deterioration of assets, restrictions on the movement of freight and community dissatisfaction.

Benefits of proposed local road improvement activities and corresponding level of service statements



Activities contribute to these Council community outcomes

Connected citizens, enhanced lifestyle, sustainable environment, diverse economy

Strategic responses - management of local road improvement activities

- Ensure transport planning integrates people, place and movement
- Implement safe systems

Activities contribute to these GPS priorities

- Reducing emissions - transitioning to a lower carbon transport system.
- Safety - the primary focus of this priority is to make transport substantially safer for all.
- Sustainable urban and regional development - People can readily and reliably access social, cultural, and economic opportunities through a variety of transport options. Sustainable urban and regional development is focused on developing resilient and productive towns and cities that have a range of low-emission transport options and low congestion.

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Current Condition and Performance

The current state of the Timaru District Council's local road improvement initiatives is challenging to assess due to their wide variability. However, completion rates have been positive. Analyzing statistics on fatal and serious crashes reveals a rising trend, emphasising the community's need for improved safety measures, especially on high-risk roads and sites. Safety-related initiatives, such as enhancing intersections, footpaths, and cycle routes, are crucial for addressing these concerns.

Historically, the council allocated $6 million annually, but rising construction costs indicate that $8 million per year may be more appropriate moving forward. The demand for these initiatives is driven by a changing community dynamic, evolving needs, climate change considerations, vehicle reduction efforts, new regulations, and Stormwater Management Plan requirements not factored into current funding bids.

Several factors contribute to the demand for infrastructure improvements. Changes in truck dimensions, particularly in rural sealed networks with widths of 5.4-5.6m (trucks can be 2.55m wide meaning no room for error!) pose safety challenges, requiring ongoing funding for seal widenings. Urban environments face issues with on-street parking hindering active transport strategy implementation. There's a growing desire for separated cycleways, footpaths, and speed control measures, with regular requests from the public, however despite this, there are often conflicts with adjacent residents when on street parking needs to be removed to cater for these multi modal facilities. Central government requirements and customer expectations, including approximately one request per week for speed control measures, also influence the council's direction.

Resilience initiatives, such as new footpaths, stock underpasses, and upgraded drainage, aim to enhance safety and adapt to climate change impacts. Addressing climate change is a priority through projects that promote active transport modes and reduce carbon emissions.

Key drivers for road improvements include local demands for safer roads, improved facilities for footpath users, and the need for speed calming and control measures. Pressures arise from increased traffic volumes, higher density of heavy vehicles, rising construction costs, consent and approval processes, and human resource requirements.

Two priorities are:

- Stormwater resilience, as the road corridor grapples with increased water volume from private properties
- Vehicle speed control, responding to regular demands from the public for speed control treatments.

These challenges highlight the need for strategic planning and resource allocation to address current road safety concerns and future infrastructure needs.

Local road improvement strategy

As discussed in the preceding section, projects on the local road improvement programme arise from a range of sources. Before projects are prioritised, they are also assessed against ONF/ONRC, alignment with Council strategic priorities and safety measures. The programme is further ranked based on:

- Dependencies e.g. pragmatic coordination with other activities on the road network such as planned roadworks, utility works, adjoining developments
- Other extenuating circumstances or community priorities.

Local road improvement programme summary

Small scale network improvements			
Activity type	**Year 1 2024/25**	**Year 2 2025/26**	**Year 3 2026/27**
Active transport	$ 1,210,000.00	$ 900,000.00	$ 1,525,000.00
Freight	$ 3,480,000.00	$ 2,594,000.00	$ 550,000.00
Resilience	$ 629,000.00	$ 965,000.00	$ 790,000.00
Safety	$ 1,639,000.00	$ 2,250,000.00	$ 2,965,000.00
Urban development	$ 2,033,000.00	$ 1,410,000.00	$ 2,176,000.00
TOTAL	**$ 8,991,000.00**	**$ 8,119,000.00**	**$ 8,006,000.00**
Regionally significant projects			
Washdyke – new link road	***$4,400,000***		
Heaton/Hayes Resilience - South Port Access	***$4,000,000***		

Options Analysis

Option	Description / Programme responses	Average annual cost (OPEX)	Average annual cost (CAPEX)	Will this option enable delivery of strategic responses?	Corresponding impact on delivery of LOS	Preferred option
1	Small Scale network Improvements	-	$10,005,089.27	*Partially, with decreases in in the integration of people, place and movement into planning/ programming*	*LOS partially met, transport infrastructure will not enable continued urban, commercial and industrial growth.*	
2	Small Scale network improvements + Washdyke New Link + Southern Port Access	-	$10,815,089.27	*Partially, though integration of people, place and movement into planning and programming will not be optimised*	*LOS mostly met, though transport infrastructure unlikely to enable continued urban, commercial and industrial growth.*	*Yes*
3	Small Scale network improvements + Washdyke New Link + Southern Port Access + Urban Development Improvements EG peri-urban roads to urban streets i.e. Pages Road/Elm Street - to the value of $1,000,000 per annum	-	$11,815,089.27	*Yes*	*LOS met, exceeded in some areas.*	

Customer Level of Service Statements

1. **Road safety initiatives build community awareness of road safety and assist in the reduction of harm on our roads**
   - Number of fatalities and serious injury crashes on the local road network is less than the previous financial year on an annual basis*
   - Speed limit changes implemented as per Speed Management Plan

2. **Infrastructure to support active and public transport is provided and maintained to nationally acceptable standards.**
   - Projects implemented as per urban walking programme
   - Active transport projects implemented as per programme

3. **Transport infrastructure enables continued urban, commercial and industrial growth**
   - Projects completed as per local road improvements programme.

4. **Land Transport assets are managed on budget and for longevity, utilising innovation and circular models of product use.**
   - Local road improvements delivered as per programme, to scope, quality and budget.

Financial Impact

The following table shows the financial impact of the preferred option:

Activity class	Preferred option – description of cost changes from 2021 AMP	Preferred option – difference between 2021 LTP and proposed Year 1 budget	Preferred option – difference between previous Waka Kotahi approved allocation (annual average) and 2021 LTP
341 – low cost low risk	Includes two regionally significant projects – new Washdyke link road and Heaton/Hayes Resilience South Port Access projects.	+$4,333,333.33	

Financial Expenditure Summary

The following table summarises the expenditure for the preferred option and associated funding request.

Activity class	OPEX budget (Year 1)	CAPEX budget (Year 1)	Total budget/funding request (Year 1)	Annual average funding request (years 1-10)
341 – low cost low risk		$9,333,333.33	$9,333,333.33	$10,815,089.27

9.10 Road safety promotion

Introduction

Our mission is to promote safe, efficient, and effective use of the land transport system by promoting behavioural-based activities. With the support of our partners including NZ Police, Waimate District Council, Mackenzie District Council, Waitaki District Council, Ashburton District Council, ACC (Accident Compensation Corporation), FENZ (Fire and Emergency New Zealand), and AA (Automobile Association), we aim to transform our community culture through road safety promotion.

Our efforts include school travel planning through Te Mana Ora and advocating for safe road use on our networks to the wider community. We encourage everyone to be a spokesperson for this cause.

See over page for linkage of this activity to the strategic case.

Fig 105: Road safety promotion – road safety coordinators maintain a high profile in our community to build awareness of issues and encourage safer driving behaviours.

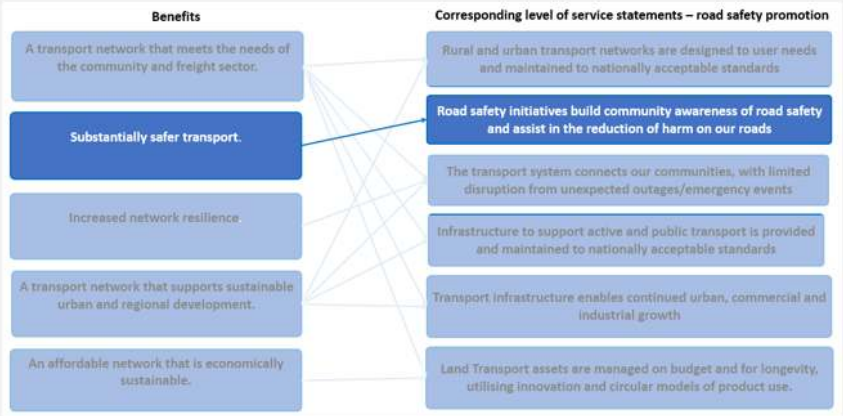
Fig 106: Timaru District Council staff and NZ Police representative crossing at the zebra – teaching school students how to navigate zebra crossings safely.

Strategic Links

Road safety promotion

Activity classes	Problem statements
432 Safety promotion, education and advertising	• Road network deficiencies, inappropriate speed environments and poor driver attitudes result in deaths and serious injuries on our roads.

Benefits of proposed road safety promotions activities and corresponding level of service statements



Road safety promotions activities contribute to these Council community outcomes

- Connected citizens
- Enhanced lifestyle

Strategic responses - management of road safety promotions activities

- Implement safe systems

Road safety promotions activities contribute to these GPS priorities

Safety - The primary focus of this priority is to make transport substantially safer for all.

Current Performance

The graphs/tables below summarise crash statistics in the Timaru District. While crash numbers were declining between 2018/19 and 2020/21, we have since observed an increasing trend. Loss of control on bends is a major crash contributor, and young people continue to be overrepresented in crash statistics.

Fig 107: Reported crash numbers – Timaru District

Fig 108: Crash rate/billion VKT

CRASH Count									
Top 5 Movement codes categories	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40-44**	**45-49**	**50-54**	**55-59**
Lost Cntl Bend	10	9	3	1	2	2	1	4	1
Head On Crash	2	5		2	3	1	1	1	
Lost Cntl/Str Rd	1	5	2	1	2	2			
One Turns Right	1			1	1		2		
Obstruction		1		1			1	2	
Grand Total	**14**	**20**	**5**	**6**	**8**	**5**	**5**	**7**	**1**

Fig 109: Crash types and demographics

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Road Safety and Promotion Strategy

Ensuring the safety of road users remains a priority as we align our efforts with the objectives outlined in the Draft Government Policy Statement on Land Transport 2024. The direction to reduce road accidents, injuries, and fatalities is the cornerstone of all our road safety promotion initiatives. Our programme is strategically designed to contribute to the overarching goal of creating safer, more accessible, and sustainable transportation networks across our region.

Road safety in South Canterbury is a collaboration between all three councils (Timaru, Mackenzie and Waimate), and multiple agencies involved to plan and collaborate on improving our road safety performance, including the Aoraki Roading Collaboration, Te Mana Ora – WAVE and several others.

Education and engagement activities include raising awareness, 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. A key aspect is helping drivers become good road users, depending on their stage. For example, learner drivers have unique needs from experienced drivers when recognising high-risk areas or altering their driving behaviours.

This business case seeks continuation of funding for public awareness campaigns, educational programs, and infrastructure enhancements that target high-risk areas and behaviours in our South Canterbury Cluster. By closely aligning with the objectives outlined in the Draft GPS, our road safety promotion programme seeks to contribute to the reduction of road fatalities and serious injuries, thus playing a pivotal role in creating a transport system that safeguards the lives and well-being of all road users.

Furthermore, our strategy resonates with the Draft GPS's emphasis on investing in projects that promote healthier, safer, and more sustainable transportation options. We aim to create a ripple effect that not only addresses immediate road safety concerns but also lays the foundation for a culture of responsible road use. This aligns with the Draft GPS's vision for a transport system that prioritizes safety, accessibility, and environmental resilience.

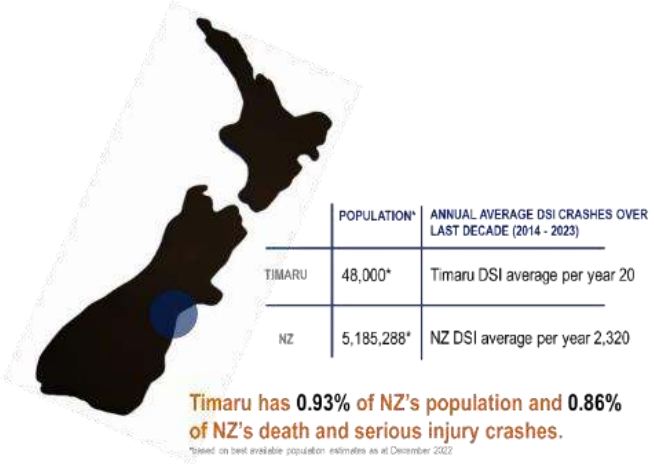

Fig 110: Key road safety statistics

Road safety promotion and education initiatives

Road to Zero Focus Areas	Activity/Programme Description	Target audience	Year 1 budget
Driver licencing/training	• Run 3 Rotary Young Driver Awareness (RYDA) sessions for ~500 high school students per year. Held at Levels Raceway, sessions cover core road safety issues with the aim of improving driver awareness and skills. • Run 2 track days at Levels Raceway per year for students 16-19 to attend with their parents/ caregivers, this builds on the RYDA sessions and provides practical learnings, also building intergenerational connections and understanding of road safety issues. • Continue to encourage community access to Venture Development's driving simulator, which uses VR technology to simulate driving scenarios, enabling driver skill and road safety awareness building without real life consequences. • Promote the Whichway mobile game and sponsor prizes to encourage community participation. • Promote the NZTA Drive programme as well as offer incentives to sign up for the e-drive online app. • Study and testing: Engage in testing and evaluation to ensure road safety messages are effective and resonate with target audiences.	Young drivers (16-24yrs)	$78,000
Driver licencing/training	• Continue to offer free Voluntary Senior Driver Assessment following the Age Concern Mature Drivers Class. • Refresh partnership with mobility scooter retailers and community service providers to promote safe mobility scooter use and explore opportunities to offer supporting training, education and promotions. • Study and testing: Engage in proper testing and evaluation to ensure the road safety message is effective and resonates with the audiences.	Older road users 65+	$45,500
Driver licencing/training	• Undertake multi-modal winter driving advertising and promotions campaign • Install updated billboards on main routes in the region targeting winter driving themes. Study and testing: Engage in testing and evaluation to ensure that road safety messages are effective and resonate with target audiences.	All road users	$32,500
Driver licencing/training	• Update public toilet road safety signage, and continue to lobby Waka Kotahi to bring back visiting drivers campaign, with a view to supporting this with local promotions.	Visiting drivers	$80,000

Road to Zero Focus Areas	Activity/Programme Description	Target audience	Year 1 budget
Alcohol	• Support local Students Against Drink Driving (SADD) groups to grow and undertake more activities. • Run one thought leadership event/hui per year for local high school students, featuring engaging key speakers/influencers. • Explore the opportunity to engage with local rugby clubs on alcohol harm and road safety. • Commission updated, emotive billboard signage throughout the region targeting family themes. • Explore opportunity to collaborate with FENZ, NZ Police and the Serious Crash Unit on campaign to discourage drink driving.	All road users	$52,000
Intersections	• Collaborate with other RCAs on intersection safety advertising and education campaign. • Complete regular audits of high risk intersections and make recommendations to relevant RCAs on improvements. • Study and testing: Engage in testing and evaluation to ensure road safety messages are effective and resonate with target audiences.	All road users	$18,800
Speed	• Promote safer speed choices through billboards, events, and other media. • Continue to support community access to Venture Development's driving simulator, which uses VR technology to simulate driving scenarios, including the outcomes of poor speed choices. • Install updated safe speeds billboards on main routes throughout the region • Attend and promote road safety awareness at major regional events (such as the A&P show, Caroline Bay Rock and Hop) • Study and testing: Engage in testing and evaluation to ensure road safety messages are effective and resonate with target audiences.	All road users	$71,500
Speed	• Trial safe workplace driving education and advertising with local employers, targeting 40-44 males who are overrepresented in road crash statistics.	High risk drivers	$3,250
Distraction	• Undertake multi-media advertising campaign on distracted driving, targeting young drivers. • Commission updated billboard signage throughout the region featuring distracted driving themes	All road users	$45,500

Road to Zero Focus Areas	Activity/Programme Description	Target audience	Year 1 budget
	• Continue to support community access to Venture Development's driving simulator, which uses VR technology to simulate driving scenarios, including the outcomes of driver distraction. • Attend and promote road safety awareness at major regional events (such as the A&P show, Caroline Bay Rock and Hop)		
Motorcycling	• Promote local Ride Forever courses • Run an event during Motorcycle Awareness month to promote motorcycle safety • Run monthly multi-media advertising campaign to promote safe riding • Explore the opportunity to collaborate with ACC and Fairlie Pies on a September motorcycle safety promotion	Motorcyclists	$32,500
Vehicles	• Support the SADD campaign promoting purchase of safe vehicles • Undertake local promotional activity on the importance of purchasing safe vehicles • Explore opportunity to collaborate with Waitaki DC and Ashburton to bring the Decepta car to the region.	All road users	$19,500
Vehicles	• Collaborate with RCAs and Waka Kotahi on multi-media advertising of safe pullover places/rest stops across the regional network, particularly in lead up to harvest/contracting season. • Explore opportunity to provide education to rural community on safe on-road farming practices.	All road users	$80,000
Vehicles	• Undertake multi-level advertising campaign to promote rail and road safety weeks, including collaboration with local agencies/groups e.g. SADD	All road users	$50,000
Fatigue	• Run 'driver reviver' promotion annually in collaboration with NZ Police, FENZ and Fulton Hogan. The promotion is a roadside event encouraging drivers to take a 15 minute break including offer of free food, drink and play activities for children with multi-media coverage. Potential locations in future years include Burkes Pass, Waimate, Rangitata and SH82. • Study and testing: Engage in testing and evaluation to ensure that road safety messages are effective and resonate with target audiences.	All road users	$32,500

Road to Zero Focus Areas	Activity/Programme Description	Target audience	Year 1 budget
Restraints	• Create a South Canterbury version of 'Make it Click' with local influence to promote correct restraint practice, in collaboration with South Canterbury Restraint group.	All road users	$19,500
Walking	• Undertake trial of regular workshops with schools and other agencies to identify community road safety issues and potential solutions. Use workshop findings to co-design refresh of South Canterbury Road Safety Action Plan, including future speed management and infrastructure improvement initiatives.	Young road users (0-15yrs)	$19,500
Walking	• Continue to work with schools and WAVE in Timaru District to develop or update school travel plans.	Young road users (0-15yrs)	$26,000
Cycling	• Explore opportunity to promote recreational cycling to families • Undertake multi-media advertising campaign around bike safety	All road users	$39,000
		TOTAL	**$778,050**

Options Analysis

Option	Description / Programme responses	Average annual cost (OPEX)	Average annual cost (CAPEX)	Will this option enable delivery of strategic responses?	Corresponding impact on delivery of LOS	Preferred option
1	No change to outreach +Escalations	$704,129.37	-	*No, with decreases in the implementation of safe systems.*	*LOS not met*	
2	Increase outreach to a wider range of users, including high risk commercial drivers, farming activities, school and high school students	$897,103.95	-	*Yes*	*LOS met*	*Yes*

Customer Level of Service Statements

1. **Road safety initiatives build community awareness of road safety and assist in the reduction of harm on our roads**
   - 85% residents believe the road network is safe
   - 60% of residents are aware of road safety programmes or advertisements
   - Number of fatalities and serious injury crashes on the local road network is less than the previous financial year on an annual basis*
   - South Canterbury Road Safety Action Plan projects completed as per programme.

Financial Impact

The following table shows the financial impact of the preferred option:

Activity class	Preferred option – description of cost changes from 2021 AMP	Preferred option – difference between 2021 LTP and proposed Year 1 budget	Preferred option – difference between previous Waka Kotahi approved allocation (annual average) and 2021 LTP
432 – road safety promotion	To balance the need to respond to the data and issues we are seeing across the networks and achieve inter-generational change, we are seeking an increase in funding to support more school travel planning and review per year (currently 1-2). Doing more school travel planning will give us better ongoing connection and coverage across all of our primary schools, and assist with the implementation of upcoming speed management and infrastructure changes, planned to provide greater mode choice and healthier outcomes for community. We are also looking to increase our engagement with SADD (and similar) to encourage our upcoming at-risk youth to be the voices of their age group and promote safer choices. We have included a significant programme around rural driving working with tractor firms/farmers/federated farmers to encourage safer sharing of roads and encourage more pulling over on main routes, so those that are delayed are less likely to make poor decisions, putting them and others at risk as a result of attempting to avoid delays to their travel plans. There is a huge farming sector in wider Canterbury, and use of large tractors on long routes fulfilling their contract demands to support primary produce and production.	+$156,178.30	-$293,141.70

Activity class	Preferred option – description of cost changes from 2021 AMP	Preferred option – difference between 2021 LTP and proposed Year 1 budget	Preferred option – difference between previous Waka Kotahi approved allocation (annual average) and 2021 LTP
	We have also added a high-risk driver trial in the trade and labourer sectors, this is to support engagement with 40-44 year old male demographic, who are overrepresented in crash statistics. Through CERF funding and general cost of living/e-bike uptake, we know there are more people cycling. We would like to be proactive and start a cycling educational program, taking learnings from Nelson City examples and implementing an education and etiquette programme.		

Financial Expenditure Summary

The following table summarises the expenditure for the preferred option and associated funding request.

Activity class	OPEX budget (Year 1)	CAPEX budget (Year 1)	Total budget/funding request (Year 1)	Annual average funding request (years 1-10)
432 – road safety promotion	$778,050.00		$778,050.00	$897,103.95

Improvements

We desire to meet road-to-zero targets, as any friend or family member lost due to road trauma is unacceptable; however, our challenge is an extensive network with a high rural component and limited enforcement. The community requests lower speeds outside their homes, but they challenge route speed limit reductions. Due to the small numbers of DSI and the random nature of crashes, it is hard to meet DSI reductions on specific Road to Zero projects, making promotion and education a high-value activity. The education team work closely with the engineering team for safety infrastructure to support lower speeds and better crossing points, enabling real model choice for the community.

Through schools, there is an opportunity to change the community's attitudes in the longer term to uptake active transport choices and improve attitudes to speed and road safety. As we advance, the road safety coordinator's roles will significantly impact speed management planning and

education, supporting the delivery of speed management plans. Ongoing relationship building with NZ Police is essential as we understand that enforcement numbers in our area are limited, and the police also have responsibilities for the community.

10. Improvement Plan

Regular review of the AMP ensures it remains relevant and adapts to new technologies and changes in industry practice. This improvement plan summarises key tasks included in the programme business case to improve asset management prior to the next AMP review.

Systems and policies

Improvement	Benefit	Affected activities
Further develop and maintain unsealed wearing course programme	Improve budget forecasts for the unsealed network.	Unsealed pavements
Review Seal Extension Policy	Update seal extension policy to account for more non-quantifiable benefits to undertaking seal extension, such as dust mitigation	Unsealed pavements
Review kerb and channel forward works programme	Better clarity and coordination of kerb and channel renewal works with other asset renewals, more planned works and less reactive works.	Drainage
Develop Structure Specific Asset Management Plans (SSAMs) for Large / Complex structures	Mitigate significant increases in bridge replacements.	Bridges and structures
Further develop 10 year replacement and heavy maintenance programme	Mitigate impact of significant increase in bridge replacements.	Bridges and structures
Ensure structures are being depreciated correctly. Update replacement costs (Structure specific for assets >$1m)	Reduce risk of insufficient depreciation.	Bridges and structures
Develop Council policy on replacements/disinvestments	Affordability for current and future generations of ratepayers/ road users	Bridges and structures

Development of asset management plans specific to active transport	Better able to respond to demand and manage development of assets.	Active transport
Increased survey and design for future improvement projects	Ability to meet Waka Kotahi time frames for various crown funding initiatives, such as Transport Choices and Streets for People projects, ensuring projects are shovel ready for tight time frames and for our community to use and benefit from	Network and asset management
Network survey and plan to implement Aoraki Roading Collaboration Delineation Strategy	Consistency across networks. Improved financial forecasting for Network Services Maintenance and improved safety outcomes – leading cause of crashes is loss of control on bends	Network and asset management
Investigate, develop and implement a network operating framework	Historically a focus on rural roads has meant that there has been less focus on understanding the growth and use of our urban networks. A network operating plan would help align and priorities our urban network improvements and improve safety and amenity outcomes for people using other modes.	Network and asset management

Evidence and decision making

Improvement	Benefit	Affected activities
Continue trialling of ARI artificial intelligence modelling	Build system capability and improve scale and accuracy of available condition data.	Sealed pavements
Expand to annual MSD inspection on peri-urban and all rural sealed roads	To improve prediction of fault progression/timely intervention and ensure appropriate budgets are set aside to ensure prudent stewardship of the sealed pavement asset.	Sealed pavements/network and asset management.

Improvement	Benefit	Affected activities
Continue data collection using portable dust monitor	Ability to collect baseline network condition data relating to dust generated. Able to use this data to communicate levels of service to customers and contribute to Policy reviews.	Unsealed pavements
Additional Roadroid Licence	Ability to use existing staff resource to expand the percentage of network covered for data collection.	Unsealed pavements
Culvert condition rating – CCTV interior of culverts on lifeline routes	Having visibility of the inside of culverts allows for a more robust condition rating to take place, giving us a better idea of culvert condition.	Drainage
Identify structures on key lifeline routes	Increase awareness of district resilience issues.	Bridges and structures
Full review and update of Retaining Wall inventory data. Add retaining walls and railing to structure inspection schedule. Develop a management plan	Asset information/data is collected so that TDC can have confidence in the decisions it makes about these asset groups.	Bridges and structures
QA of culvert and railing install dates and condition	Confidence in data and its use in decision making.	Bridges and structures
Increased High Speed data collection from 30% of rural network to 100% of rural network annually (noting this is nationally funded from 2024 onwards)	Measure deterioration and condition of pavements to ensure a robust forward work programmes. This will more fairly spilt funding over the future generations that will benefit from the asset. This will be funded 100% from 2024.	Network and asset management
Increased signage condition assessment surveys	Improved planning and road safety outcomes	Network and asset management

Improvement	Benefit	Affected activities
Increased permanent traffic counts on high volume (general traffic and HCV)	Improved network modelling and understanding and maintenance intervention strategies/pavement renewal designs	Network and asset management
AI for sealed road fault reporting	To improve prediction of fault progression/timely intervention and ensure appropriate budgets are set aside to ensure prudent stewardship of the sealed pavement asset.	Network and asset management

Collaboration and communication

Improvement	Benefit	Affected activities
Increase collaboration and coordination with stormwater main asset owner	Understanding of what limits on the existing reticulated stormwater network helps to establish better outcomes when considering maintenance and renewals works that are fit for what the stormwater system can handle.	Drainage

Service Delivery

Improvement	Benefit	Affected activities
Analysis of flooding areas and look for options to reduce impacts	Reduce repeat flooding areas, extend the pavement and surfacing, keep roads open.	Drainage
Designing better footpaths that will include our disabled community	Creating a safer environment for more people to get out and use the footpaths.	Active transport

Improvement	Benefit	Affected activities
Creating footpaths with the minimum width of 1.5m	**Creating a wide enough footpath for everyone to use, such as pedestrians sharing footpaths with cyclists where appropriate.**	**Active transport**
Trees being removed that are not appropriate for footpaths	**Footpaths will last longer when there are no tree roots lifting/breaking footpaths up.** **Tree roots create tripping hazards for pedestrians on footpaths. By removing the inappropriate trees, we will remove a significant amount of tripping hazards.**	**Active transport**

People/culture

Improvement	Benefit	Affected activities
Waka Kotahi to meet existing staffing LOS ($2,600,000 for staff, RAMM, small amount of consultancy)	Historically underfunded – request to meet local share.	Network and asset management