



TARARUA  
DISTRICT COUNCIL

# Transportation Activity Management Plan

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# 1. Executive Summary

## 1.1 Our role, responsibilities, and function

Transport investments have a long-lasting impact on the lives and livelihoods of all those within our district. Tararua District Council is here to provide a sustainable transport system that keeps people safe, is well connected and can be accessed by everyone. The commitments outlined in this Activity Management Plan reflects how we will achieve this and how we contribute to improving the wellbeing of all of those within our district.

This AMP has undergone significant change in the last few LTP periods, due to changes in the wider transportation sector and changes in the Tararua District Council's financial and community priorities. This AMP incorporates a business case approach to determine strategic issues, which then justify the investment in the programs of work. These justifications are measured against achievable benefits, in alignment with government transport objective.

Building a strong programme to rehabilitate a declining network is the overarching theme of this AMP; in association with targeted investment in improving the safety, access, and resilience of the network. The maintenance and renewal programme of works is data driven which shows the optimal timeframes for work to be completed. The works programme has been planned to address the problems highlighted by recent recommendations raised in a technical audit and recent Cyclone Gabrielle Audit. Carrying out these recommendations will reduce the risk of significant future costs to our community, which have been exacerbated by restrained investment in capital renewals.

Using sound strategic planning has built a long-term programme that is both fiscally responsible and addresses the key issues over the life of this AMP and a strong Cyclone Gabrielle recovery programme.

## 1.2 Purpose of the plan

The purpose of this Rooding Activity Management Plan ("the AM Plan") is to provide The Tararua District Council ("TDC") with a tool to assist with the management of its roading assets ("the assets"). This tool combines management, financial, engineering, and technical practices and is intended to:

- ensure that an agreed level of service is provided to defined standards at optimum cost.
- be sustainable in the long term.
- comply with regulatory requirements.
- help the council to achieve the outcomes the community has defined. An Activity Management Plan provides a strategy for managing the assets to deliver a service to an agreed level to the customer, at an optimum cost.

The key elements in this Asset Management Plan are:

- a description of the asset including its various components
- the level of service to be delivered to the customers.
- the management strategy to be followed in running the roading network.

- the financial impacts of managing the assets.
- an improvement plan to enable the asset to be run more efficiently.
- the International Infrastructure Management Manual (NAMSG, 2015) provides the structure and format for Asset Management Plans.

### 1.3 Government Policy Statement on Land Transport 2024

The Draft Government Policy Statement on Land and Transport 2024/25-2033/34 introduces four strategic priorities. These are:

#### Increased Maintenance and Resilience

This AMP has a focus on maintenance first, with drainage maintenance and renewals a key focus of network maintenance. Surface renewals are focused on achieving the 14-year lifespan average that is expected from the assets

As Extreme weather events caused by climate change are taking a greater toll on the condition of the network, increasing preventative maintenance is a key area of the AMP e.g., drainage.

Maintenance and renewal programmes recognise the impacts of climate change, with appropriate drainage upgrades and mitigation measures put in place to manage risks. This includes, for example, aspects such as the managed retreat in lower LoS while supplying and maintaining the service of accessibility for rural areas. and the retirement of 'at risk' assets, reducing known hazards, and taking measures to reduce future risk.

#### Value for Money

There is a key focus on focus on achieving value for money through all maintenance and renewals programmes.

#### Safety

A step change in footpaths renewals is driven by the need for more active travel to support physical and mental health while supplying inclusive access for the community. The implementation of safer speeds will also aid in safer roads within the district.

Increased maintenance and surface renewals will enhance the safety of the roads throughout the district with less surface defects and better skid resistance.

#### Economic Growth and Productivity

Within TDC a key assumption is that growth within urban areas remains in line with past trends. We consider current depreciation to be the best approximation of the portion of the asset that was "used up" during the



financial year and that the AMP addresses urban development renewals. The heightened risk of asset failure and resultant reduction in service levels from underinvestment in renewals is a key factor in this plan.

The rural maintenance and renewal programmes are considered under the ONF framework for levels of service. There is consideration of regional development or regression, in the rural areas and the possible reduction in Levels of service, while providing sustainability of service.

## **1.4 Strategic environment**

### **District overview**

The Tararua district is located within the Manawatu-Whanganui region, situated on the southeast coast of the North Island, bound to the west by the Ruahine and Tararua Ranges. Covering an area of 4,364.65km<sup>2</sup> near the south-east corner of New Zealand's North Island, comprised of a resident population of approximately 19,050. It has several urban settlements with the largest being Dannevirke, Eketahuna, Pahiatua and Woodville.

The Tararua District Council is the local territorial authority and road controlling authority for the district. One of the Council's roles is to manage the district roading network and associated transport activities.

The district's roading network is the ninth largest of any local authority in New Zealand, with one of the fewest number of ratepayers per kilometre of road.

### **Transportation activity**

Council has statutory obligations under the Land Transport Management Act 2003 to maintain a road network within the district and the transportation activity is delivered by Council by providing a safe and efficient road network that enables the movement of people and products, both within and through the district. An effective road network is also essential to ensuring the economic and social wellbeing of the community through the provision of access and mobility for people, goods and services.

The council owns and manages:

- A vehicular network comprised of 1,191km of sealed roads, 767km of unsealed roads and 405 bridges and 149 high-capacity culverts.
- A pedestrian network comprised of 120 km (317,500) m<sup>2</sup> of footpaths.
- Enabling infrastructure, including:
  - 1,842km of stormwater channels and drains (mainly shallow, unlined surface water channels and kerb and channel)
  - 9,265 culverts (108 km) and 1,647 other drainage assets including sumps and manholes.
  - 1,414 retaining walls.
- Safety infrastructure comprised of 1,667 streetlights, 9,560 road signs, and 12,176m of rails and barriers.

The depreciated replacement value of Council’s roads and associated assets is approximately \$790 million.

Management of the transportation activity, including the maintenance and renewal of associated assets is the highest of the Council’s major activities and due to the low ratepayer base the Council is heavily reliant upon subsidies received from the NZ Transport Agency (NZTA).

### 1.5 Transportation activity management plan

The purpose of the Transportation Activity Management Plan (AMP) is to describe the financial, engineering, and technical strategies and practices that Council uses to meet its statutory obligations and provide the level of service required by users of the road network in a way that is most cost-effective for households and businesses. It is a living document reflecting Council’s practice as well as central and local government requirements, policy, and guidance. It is used to inform Council’s Long-Term Plan and is justification for Council’s programme proposed as part of the National Land Transport Programme.

Council outcomes required to achieve the long term vision are:	Council goals to be achieved as part of the transportation activity are:
<ul style="list-style-type: none"><li>• <b>Efficient Infrastructure</b></li><li>• <b>Prosperous Economy</b></li><li>• <b>Collaborative Council</b></li><li>• <b>Great Lifestyle, and</b></li><li>• <b>Sustainable Environment</b></li></ul>	<ul style="list-style-type: none"><li>• Council ensures roads are safe for all users</li><li>• Requests from the public are responded to in a timely manner</li><li>• Council ensures quality of roads and safety of users, and</li><li>• Council ensures that all roads remain available to users.</li></ul>

### 1.6 Customer feedback

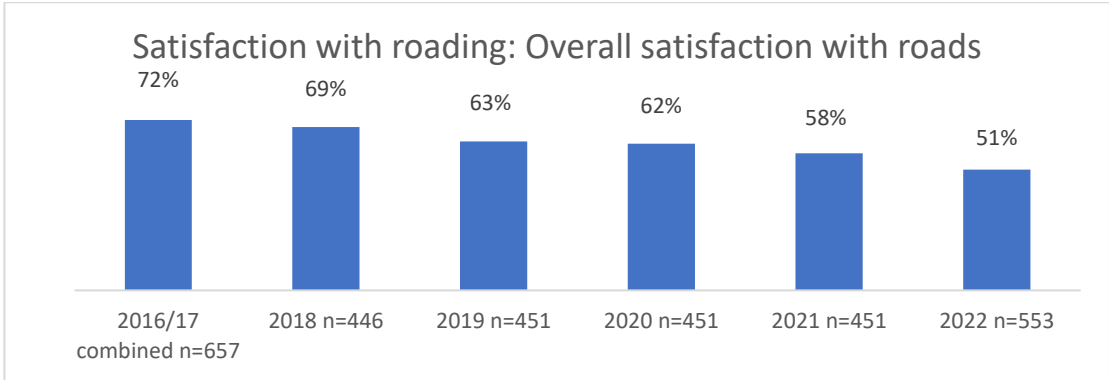
Our Road network exists to serve the community and as such the feedback and interaction we have with the public who use the network is a crucial input. To ensure we are reflecting their wants and needs we look at the following inputs. Public benefit is kept in mind throughout the document in the problems identified and the options to remedy.

#### Community satisfaction surveys

Council carries out annual community satisfaction surveys across all activities. These surveys are returned quarterly. The below figure shows satisfaction levels for the transportation activity. Of particular concern is the high and increasing percentage of customers dissatisfied with rural roads maintenance, indicating the level of service currently delivered by Council is too low.

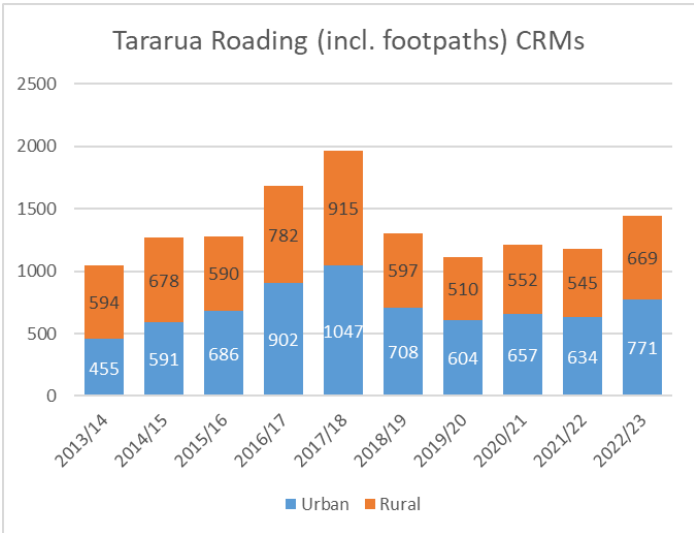
The survey and reporting methodologies have recently changed and comparison with past satisfaction levels cannot be carried out. The survey also highlights the opinions on *all* roads within

the Tararua District including those managed by NZTA which may negatively or positively skew the feedback results.



**Customer requests for maintenance**

Tararua District Council encourages members of the public (Customers) to lodge requests for service in a formal manner, via the Council’s Customer Services Team and through the Antenno app. By doing this Council can record and track Customer Requests for Maintenance. Reviewing CRMs collectively enables us to understand performance and highlight trends around Road Maintenance activities. The slight upward trend of the number of complaints in recent years is a reflection on how the public is perceiving the road network.









## 1.7 Problem and benefit statements

The AMP is a Business Case Proposal developed by the Council Roding Team (the Tararua Alliance) and is presented to Council and NZTA to gain funding for the delivery of the transportation activity. As part of the development of the AMP the current challenges recognised regarding achieving the desired Level of Service were workshopped. From these five key problems were identified as well as the potential benefits gained by addressing these problems (not necessarily one to one relationship). The following table details the problems and benefit statements developed for this AMP.

Problem Statements	Benefit Statements
<p><b>Climate &amp; Resilience</b></p> <p>Our road network is extremely vulnerable to changing climate and land use activities resulting in poor access, safety and resilience for users</p>	 <p><b>Resilience</b></p> <p>Reducing road closures and restrictions will improve transport reliability, increasing user confidence and the economic productivity of our district</p>
<p><b>Declining Level of Service</b></p> <p>Funding constraints associated with a very large road network, small ratepayer base and rising costs is resulting in reduced levels of service compared to our peers, low customer satisfaction and possible asset consumption</p>	 <p><b>Asset stewardship</b></p> <p>Whole of life cost to deliver fit-for-purpose levels of service will be reduced, enabling investment in other priorities</p>
<p><b>Safety</b></p> <p>An inconsistent transport system, and inadequate safety controls is resulting in accidents with a high risk of death or serious injury to people in the district.</p>	 <p><b>Safety</b></p> <p>A safer Tararua transport system in which the risk of fatal and serious injury crashes is reduced</p>
<p><b>Limited Transport Options</b></p> <p>Limited options for walking and cycling and low service levels, combined with a lack of public transport, is resulting in high vehicle use within Tararua's urban towns and villages, increasing the risk of accidents for vulnerable users and environmental impacts</p>	 <p><b>Environment</b></p> <p>Negative impacts to our environment as a result of the transport activity will be reduced</p>
<p><b>Asset Return</b></p> <p>Reassuming responsibility of relatively high profile and high-cost roads will significantly increase our investment requirements.</p>	 <p><b>Customer satisfaction</b></p> <p>Transport-related customer satisfaction in Tararua will be improved.</p>

## Problem to Benefit Statement links

The links between Problem statements and the Benefit Statements, which form the key priorities of the proposed investment for the next 3 years, are shown below. As can be seen in almost every case, each of the problems is addressed by all 5 of the benefit statements.

Benefit Statements	Link to Problem Statement
	<p>As the name suggests, this benefit very directly addresses the <b>Climate &amp; Resilience</b> problem.</p> <p>A focus on Resilience, reducing the impact of land use change and weather events and in turn, improving the overall condition of the network (<b>Declining Level of Service</b>)</p> <p>A network that is less prone to impact from severe weather events is a safer network (<b>Safety</b>)</p> <p>Although Resilience focuses predominantly on roads, this does include ensuring all modes of travel (incl. pedestrian traffic/vulnerable users) have a reliable network available (<b>Limited Transport Options</b>)</p> <p>It will be critical that the condition and future needs of any returning TDC assets be considered through a resilience lens (<b>Asset Return</b>).</p>
	<p>Responding to ever-increasing <b>Climate</b> issues and focusing on building greater <b>Resilience</b> in to the network will reduce whole of life costs, enabling investment in other priorities.</p> <p>Continued and enhanced Asset Stewardship will directly combat the <b>Declining Level of Service</b> across the network by responding at the right time, right place, and with the right treatment.</p> <p>Through improved prioritisation of maintenance and renewals the level of <b>Safety</b> on the network will increase.</p> <p>A targeted focus on maintenance and renewals on TDCs footpaths (specifically around vehicle crossings) will encourage greater use by pedestrians and other vulnerable users (<b>Limited Transport Options</b>)</p> <p>A robust process will be implemented to ensure any assets returned or vested to TDC are in good condition and not requiring early investment, enabling prioritisation where it is needed most on the network (<b>Asset Return</b>)</p>
	<p>A network that is less prone to impact from severe weather events is a safer network (<b>Climate &amp; Resilience</b>)</p> <p>Through improved prioritisation of maintenance and renewals the level of Safety on the network will increase (<b>Asset Stewardship</b>)</p> <p>As the name suggests, this benefit very directly addresses the <b>Safety</b> problem.</p> <p>Addressing safety concerns on TDCs footpaths (specifically around vehicle crossings) will encourage greater use by pedestrians and other vulnerable users (<b>Limited Transport Options</b>)</p> <p>A robust process will be implemented to ensure any assets returned or vested to TDC are in good condition and not pose a safety risk to users (<b>Asset Return</b>)</p>
	<p>By improving resilience and the network's vulnerability to the changing climate, travel delays and road closures will drop, which in turn lower road user emissions. The reduced impact of weather events will also result in a reduced response and recovery and the associated emissions. Further to this, improved resilience will provide significant benefits to the district's flora, fauna and waterways (<b>Climate &amp; Resilience</b>).</p> <p>In addressing the <b>Declining Level of Service</b> and it's associated growing bow wave of future works, we will reduce the need for more costly and carbon heavy future renewals and/or heavy maintenance.</p> <p>Safety improvements through virtual and AI technology (reducing human-traffic interaction) have the additional benefit of reduced vehicle emissions (<b>Environment</b>).</p> <p>A targeted focus on maintenance and renewals on TDCs footpaths (specifically around vehicle crossings) will encourage people to walk or cycle more reducing vehicle emissions (<b>Limited Transport Options</b>)</p>

## Benefit Statements



## Link to Problem Statement

By seeking what's best for the district, and the people of Tararua, each of the problem statements will inevitably be addressed.

- **Climate & Resilience**
- **Declining Level of Service**
- **Safety**
- **Limited Transport Options**
- **Asset Return**

## 1.8 Lifecycle management

The primary objective is to provide a safe and efficient road network that meets the short- and long-term needs of the district which is operated and enhanced in a sustainable manner at the least whole of life cost.

A strategic and systematic process of operating, maintaining, upgrading and expanding transportation assets is required to effectively manage the transportation assets throughout their life cycle.

Specific Lifecycle Management Plans have been developed for the following activities:

- Sealed Pavements
- Unsealed Pavements
- Structures
- Drainage
- Traffic Services
- Footpaths, Cycleways and Carparks
- Environmental
- Minor Improvements
- Network and Asset Management

### Management and delivery of transportation services

The Transportation Activity is managed and delivered by the Tararua Alliance, an unincorporated joint venture between the Council and Downer NZ Ltd. Responsibilities of the Tararua Alliance include management of all Transport assets, short- and long-term planning for the maintenance and renewals of assets, the delivery of physical works to maintain and renew assets and the management of compliance obligations for operators on the network.

## **Maintenance**

Maintenance refers to the activities required on a day-to-day basis to maintain the network to the agreed levels of service. Examples of these are isolated pavement repairs (potholes, patch repairs), grading of unsealed roads, sweeping of kerb and channel, cleaning of litter and detritus and control of vegetation (mowing, high-reach control).


















## **Renewal**

The process of renewal is the replacement and rehabilitation of assets to restore them to their original level of service (i.e., capacity or condition) as required to achieve the least whole-of-life cost. Renewal strategies are designed to provide for the progressive replacement of individual assets (or components) that have reached the end of their useful life.

## **Capital Works**

Capital works involve the creation of new assets or works which upgrade or improve an existing asset beyond its current capacity or performance in response to changes in usage or customer expectations. This may be due to growth or changes in the required levels of service.

## 1.9 Our proposal at a glance

	The Situation:	What are we doing?	Impacts*:
<b>Sealed Pavements</b> 	An aging network increased heavy vehicles (primarily logging), increasingly saturated pavements, and high cost increases has led to the inability to meet network needs for sealed pavements and a declining condition and level of service.	Increase reseals (50%) to better meet both short and long-term network needs, implement increased preventative maintenance, and change surfacing treatment type to become more environmentally friendly.	 82%
<b>Unsealed Pavements</b> 	Limited data for unsealed pavements makes it difficult to determine condition and trends, however customer requests and satisfaction surveys indicate a slight improvement in recent years.	Continue with current investment* to maintenance and renewals with improved data collection & programming, and increased focus on drainage (from other WCs)	 27%
<b>Structures</b> 	Tararua District's structures account for over a quarter of the total value of councils roading assets – many of these critical assets are now at or beyond their expected useful lives and require intervention.	Allowance for continued investment in bridges & large culverts (2-3 structures <sup>^</sup> ) as well as increased focus on retaining wall renewals and maintenance (2-4 structures <sup>^</sup> ). <small><sup>^</sup>renewed or restored to good condition annually</small>	 39%
<b>Drainage</b> 	Our drainage assets present us with the biggest risks to the resilience of our network. Despite increased investment in recent years, the significant backlog of blocked and structurally compromised assets further exacerbates the impact of severe weather events on the district.	An increase in funding across maintenance and renewals over the next three years will allow us to clear current backlogs, and bring the state of the drainage assets to a level which can better handle the significant weather events that face the district.	 120%
<b>Traffic Services</b> 	An increased asset base of linemarking and signs (which now also includes electronic signage), along with increased damage due to vandalism and strong wind events has left current budgets stretched.	By increasing funding in traffic services council will be able to better meet present network delineation needs as well as begin to invest in railings which have historically been underinvested in.	 40%
<b>Footpaths</b> 	Up until now, within the district all vehicle crossings, including where it intersects with the footpath, are the landowner's responsibility. Despite councils' best efforts, many of these crossings are now in poor condition resulting in negative perception on councils' footpaths as well as an increased safety risk to users.	Council to take on ownership/ responsibility of vehicle crossings (over footpaths) and renew current condition C4 & C5 assets within 6 years (2 NLTP periods). Increased maintenance budget to account for new walkways	 112%
<b>Carparks</b> 			
<b>Environment</b> 	Previous investment increases have allowed Council to improve the level of service in the environment work category.	Continue with current investment* with slight increase to allow for increased works (e.g. minor debris clearing) due to higher frequency of weather events	 28%
<b>Low Cost / Low Risk</b> 	Key focuses under LCLR for Tararua are Safety and Resilience. Although these are a focus within a large portion of the maintenance and renewals carried out within the district, there is still a major need for focussed works to address these significant issues.	Under Road to Zero we intend to complete the remaining speed limit changes around schools, and several intersection and corridor safety improvements. In addition to this various resilience and road improvement projects are proposed	 230%

\* Note that a blanket general increase of 25% to account for inflation has been allowed for in each work category

## 2. Introduction

The Tararua District Council has the following vision statement:

**“A growing and prosperous district providing a wide range of employment opportunities that is underpinned by highly efficient, capable, and affordable infrastructure.”**

### 2.1 Plan Scope and Purpose

The purpose of this Transport Activity Management Plan (AMP) is to provide The Tararua District Council with a tool to assist with the management of its roading assets (the assets). This tool combines management, financial, engineering, and technical practices and is intended to:

- ensure that an agreed level of service is provided to defined standards at optimum cost.
- be sustainable in the long term.
- comply with regulatory requirements.
- help the council to achieve the outcomes the community has defined. An Activity Management Plan provides a strategy for managing the assets to deliver a service to an agreed level to the customer, at an optimum cost.

The purpose of the Transportation Activity Management Plan (AMP) is to describe the financial, engineering, and technical strategies and practices that Council uses to meet its statutory obligations and provide the level of service required by users of the road network in a way that is most cost-effective for households and businesses. It is a living document reflecting Council’s practice as well as central and local government requirements, policy, and guidance. It is used to inform Council’s Long-Term Plan and is justification for Council’s programme proposed as part of the National Land Transport Programme.

### 2.2 Iwi, Key Partners, and Stakeholders

#### 2.2.1 Iwi

##### Rangitāne o Tamaki nui-ā-Rua

Tangata whenua whom we are in partnership with.

##### Kahungunu ki Tāmaki-nui-a-Rua

Tangata whenua whom we are in partnership with.

#### 2.2.2 Partners

##### Waka Kotahi

Waka Kotahi is a key funding partner for complying programmes. Council must provide clear investment decision making to Waka Kotahi to generate co-investment. This is usually in the form of a business case, including this Transport AMP.

Council and Waka Kotahi have a close relationship to manage the transport network within the district. Two state highways run through the district – State Highway 2 and State Highway 3 – with both highways passing through the districts four main urban centres. A consistent transport network needs to be provided to transport users irrespective of who controls the part of the network they are travelling on.

### **2.2.3 Stakeholders**

The groups listed below are stakeholders with an interest in, or who receive a benefit from the transport activity.

These groups are consulted with as and when required on issues and asset changes that will affect their current activities. This can range from minor information and advice to major consultation input by way of submission or direct discussion.

#### **Ministry of Transport**

Central Government department that sets national policy for transport

#### **New Zealand Police**

Provides education and enforcement to support the safe use of the transport network.

#### **Horizons Regional Council**

Coordinates the Regional Land Transport Programme, regional strategies, supports the provision of road safety activities and provides public transport services.

#### **Ratepayers**

People who own property within the Tararua District boundaries that contribute financially to and use the transport network for moving about.

#### **Community Groups**

Groups with a combined special interest in an aspect of the transport network. These include groups representing those with limited mobility and school community groups.

#### **Local Businesses and Farms**

Businesses and Farms within the District that use the transport network to deliver goods and services to the public or other businesses or farms. This also includes relationships with Fonterra and the Forestry Industry.

#### **Visitors**

Those who use the transport network but don't necessarily live here – this includes tourists and commuters from other districts.

#### **Road Transport Association and heavy haulage operators**

Advocates for the role heavy vehicles play in the movement of goods around the country.

#### **Automobile Association**

Advocates for road users throughout the country on transport matters. Has more than 1.7M members nationally

#### **Schools and education providers**

Students use the transport network to get to and from school. They may be walking, cycling, or taking school buses to school.

### **2.3 Relationship with other plans and documents**

Further to the statutory obligations under the Land Transport Management Act 2003, the transportation activity is also guided by the following:

**Draft Government Policy Statement (GPS)** on Land Transport Funding; which sets out the key requirements of the Government's transportation objectives by focusing on four priorities; Road Safety, Economic Growth and Productivity, Increased Maintenance and Resilience and Value for Money.

**NZ Transport Agency Long Term Strategic View:** which sets out the Transport Agency's perspective on the future demands and pressures that are likely to shape the issues and opportunities facing the land transport system.

**One Network Framework (ONF):** a collaborative initiative between Local Government New Zealand and the NZ Transport Agency) to improve customer levels of service consistency across Road Controlling Authorities through the implementation of a standardised road classification framework. It marries network-wide and local considerations. At its heart, the ONF organises transport links by their place and movement roles into road and street types.

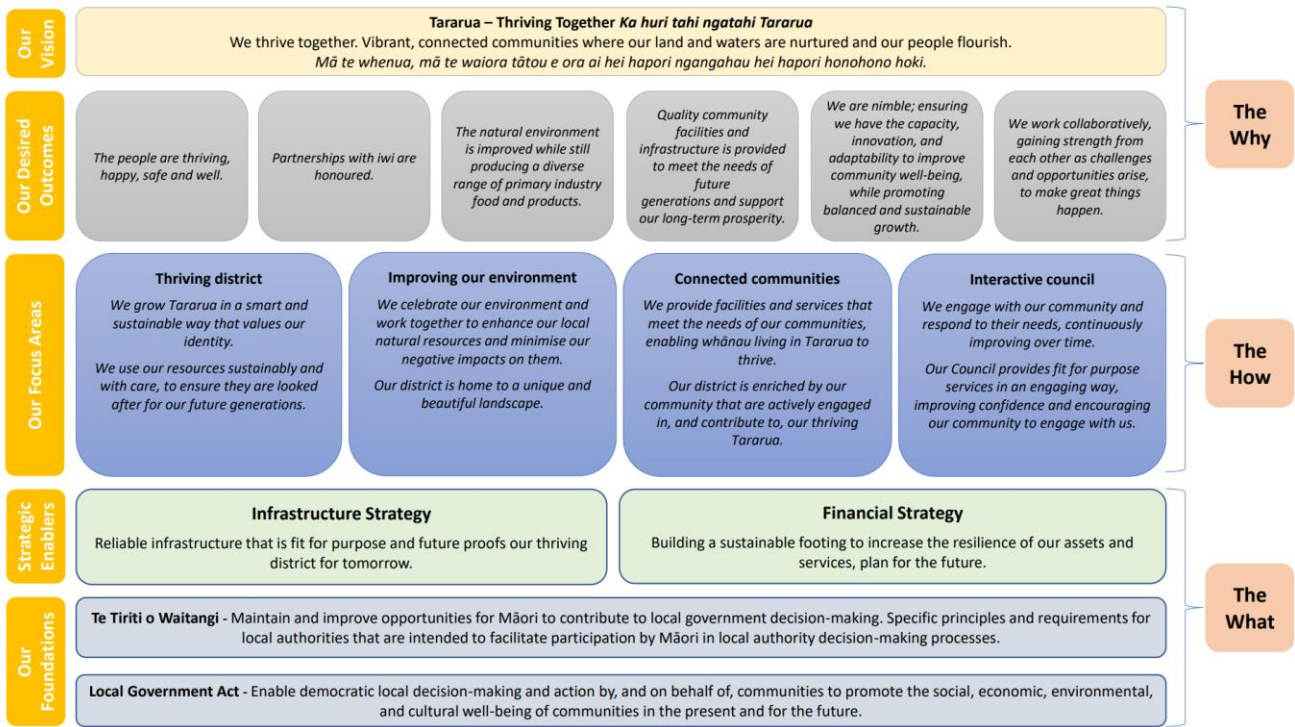
**Regional Land Transport Plan:** which identifies the strategic direction and key transport issues that face our regional land transport system over the next 30 years and sets out how the region proposes to invest to address the issues.

**Tararua District Council Long Term Plan and Infrastructure Strategy documents:** provide long-term population forecasting for the district and strategic guidance for the development of Council infrastructure. The Council's vision for the 2024-34 Long Term Plan is "A growing and prosperous District providing a wide range of employment opportunities that is underpinned by highly efficient, capable and affordable infrastructure", with a strategic focus on providing core network infrastructure, ensuring financial prudence, and improving economic development and promotion. The Infrastructure Strategy 2021-2051 assists Council to look at what is likely to be required over the next 30 years; balancing the ratepayer's ability to pay and future ratepayers having well maintained



and functioning infrastructure enabling its vision of “A growing and prosperous district providing a wide range of employment opportunities that is underpinned by highly efficient, capable, and affordable infrastructure. Vibrant, connected communities where our land and waters are nurtured, and our people flourish”.

Council outcomes required to achieve the long term vision are:	Council goals to be achieved as part of the transportation activity are:
<ul style="list-style-type: none"> <li>• <b>Efficient Infrastructure</b></li> <li>• <b>Prosperous Economy</b></li> <li>• <b>Collaborative Council</b></li> <li>• <b>Great Lifestyle, and</b></li> <li>• <b>Sustainable Environment</b></li> </ul>	<ul style="list-style-type: none"> <li>• Council ensures roads are safe for all users,</li> <li>• Requests from the public are responded to in a timely manner,</li> <li>• Council ensures quality of roads and safety of users, and</li> <li>• Council ensures that all roads remain available to users.</li> </ul>



## 2.4 AMP framework

This activity management plan has been developed using guidelines from the International Infrastructure Management Manual (IIMM) and is based on the sixteen Asset Management practices defined in that Manual.

The following table breaks down the structure of this document.

Section	Description
<b>Introduction</b>	What is the purpose of this Activity Management Plan?
<b>Strategic Context</b>	Why do we invest in the Activity?
<b>The Transport Activity</b>	What are the services we provide? Who do we provide services to? What future demands and drivers are there?
<b>Strategic Case</b>	Our Business Case
<b>How we manage the Transport Activity</b>	How do we deliver the Activity? Are we getting value for dollar?
<b>Transport Assets</b>	What are our assets
<b>Risk Management</b>	What are our risks?
<b>Levels of Service</b>	What level of service do we provide? What is the desired future state of the service?
<b>Life Cycle Management</b>	How do we invest in our assets? What programmes of work do we need to do?
<b>Financial Summary</b>	What will it cost? How will we pay for it?
<b>Plan Monitoring and Improvement</b>	How do we get better? How do we track progress?

## 3. Strategic Context

### 3.1 Our strategic direction

#### Our District

The Tararua District is situated on the southeast coast of the North Island, bound to the west by the Tararua and Ruahine Ranges. It covers an area of 4,364.65km<sup>2</sup> and has an estimated resident population of 19,050. The four main towns of Dannevirke, Woodville, Pahiatua, and Eketahuna are service centres for the agricultural sector. In addition, they service other categories of economic activity, such as industry and tourism (largely from passing domestic traffic).

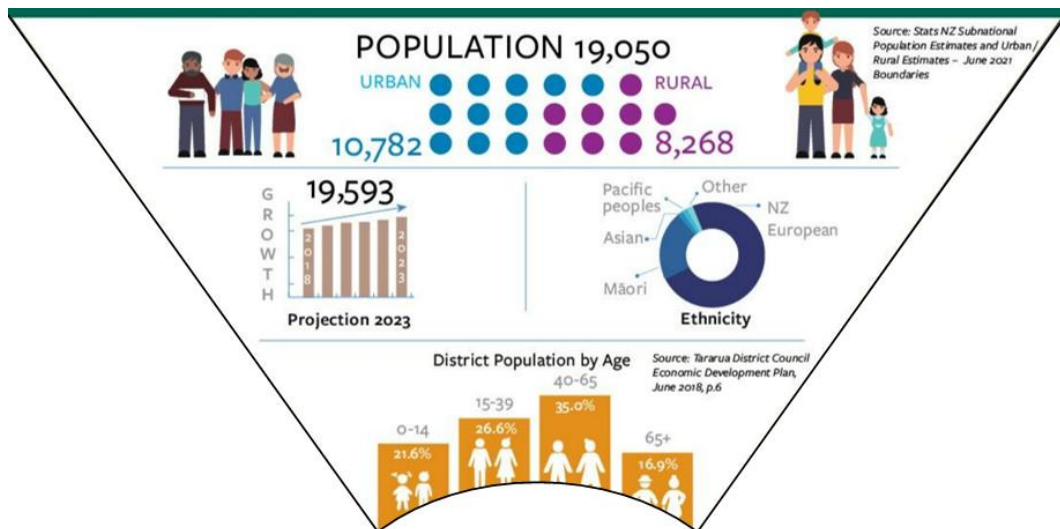
The primary industry in Tararua is agriculture with over a third of the District's workers employed in this sector. Tararua has a wealth of resources, the greatest being the farmland that grows top quality stock producing wool, meat, and dairy products of a particularly high standard.

A lesser number of larger industry groups include meat processing, dairy processing and steel fabrication with smaller scale industries including clothing manufacture, agricultural and retail trade, manufacturing, farm servicing, health and education services making up the remaining bulk of employment. Cottage industries and home occupations are common. Tourism currently makes a small contribution to the district's economy.

The Tararua District Council is the local territorial authority and road controlling authority for the District. The district was formed following the amalgamation of the Dannevirke Borough, Eketahuna County Council, Pahiatua Borough Council, Pahiatua County Council and Woodville District Council in the 1989 local government reform. The District's roading network is the fourth largest of any local authority in New Zealand, with one of the fewest number of ratepayers per kilometre of road.

## Our people

The latest data (based on the 2018 census data) estimates Tararua to have a total of 19,050 people living within the district, with an average age of 41 years old. A spread of this population is shown on the page.






Residence	Population	
Rural	7764	44.1%
Dannevirke	5650	29.7%
Pahiatua	2810	14.8%
Woodville	1650	8.7%
Eketahuna	540	2.8%

Population growth has been predicted for the district – particularly in the urban and peri-urban spaces. This will pose a future challenge for the District and Council infrastructure, and this is described further in Section 3.5

## Our Priorities

After consultation with Council members through workshops the following problem statements and benefit statements were decided based on the network and the future needs to improve the network. These priorities inform the decision-making process described further in this document

Problem Statements
<p><b>Climate &amp; Resilience</b></p> <p>Our road network is extremely vulnerable to changing climate and land use activities resulting in poor access, safety and resilience for users</p>
<p><b>Declining Level of Service</b></p> <p>Funding constraints associated with a very large road network, small ratepayer base and rising costs is resulting in reduced levels of service compared to our peers, low customer satisfaction and possible asset consumption</p>
<p><b>Safety</b></p> <p>An inconsistent transport system, and inadequate safety controls is resulting in accidents with a high risk of death or serious injury to people in the district.</p>
<p><b>Limited Transport Options</b></p> <p>Limited options for walking and cycling and low service levels, combined with a lack of public transport, is resulting in high vehicle use within Tararua’s urban towns and villages, increasing the risk of accidents for vulnerable users and environmental impacts</p>
<p><b>Asset Return</b></p> <p>Reassuming responsibility of relatively high profile and high-cost roads will significantly increase our investment requirements.</p>

Benefit Statements
 <p><b>Resilience</b></p> <p>Reducing road closures and restrictions will improve transport reliability, increasing user confidence and the economic productivity of our district</p>
 <p><b>Asset stewardship</b></p> <p>Whole of life cost to deliver fit-for-purpose levels of service will be reduced, enabling investment in other priorities</p>
 <p><b>Safety</b></p> <p>A safer Tararua transport system in which the risk of fatal and serious injury crashes is reduced</p>
 <p><b>Environment</b></p> <p>Negative impacts to our environment as a result of the transport activity will be reduced</p>
 <p><b>Customer satisfaction</b></p> <p>Transport-related customer satisfaction in Tararua will be improved.</p>

## Benefit Statements



## Link to Problem Statement

As the name suggests, this benefit very directly addresses the **Climate & Resilience** problem.

A focus on Resilience, reducing the impact of land use change and weather events and in turn, improving the overall condition of the network (**Declining Level of Service**)

A network that is less prone to impact from severe weather events is a safer network (**Safety**)

Although Resilience focuses predominantly on roads, this does include ensuring all modes of travel (incl. pedestrian traffic/vulnerable users) have a reliable network available (**Limited Transport Options**)

It will be critical that the condition and future needs of any returning TDC assets be considered through a resilience lens (**Asset Return**).

Responding to ever-increasing **Climate** issues and focusing on building greater **Resilience** in to the network will reduce whole of life costs, enabling investment in other priorities.

Continued and enhanced Asset Stewardship will directly combat the **Declining Level of Service** across the network by responding at the right time, right place, and with the right treatment.

Through improved prioritisation of maintenance and renewals the level of **Safety** on the network will increase.

A targeted focus on maintenance and renewals on TDCs footpaths (specifically around vehicle crossings) will encourage greater use by pedestrians and other vulnerable users (**Limited Transport Options**)

A robust process will be implemented to ensure any assets returned or vested to TDC are in good condition and not requiring early investment, enabling prioritisation where it is needed most on the network (**Asset Return**)

A network that is less prone to impact from severe weather events is a safer network (**Climate & Resilience**)

Through improved prioritisation of maintenance and renewals the level of Safety on the network will increase (**Asset Stewardship**)

As the name suggests, this benefit very directly addresses the **Safety** problem.

Addressing safety concerns on TDCs footpaths (specifically around vehicle crossings) will encourage greater use by pedestrians and other vulnerable users (**Limited Transport Options**)

A robust process will be implemented to ensure any assets returned or vested to TDC are in good condition and not pose a safety risk to users (**Asset Return**)

By improving resilience and the network's vulnerability to the changing climate, travel delays and road closures will drop, which in turn lower road user emissions. The reduced impact of weather events will also result in a reduced response and recovery and the associated emissions. Further to this, improved resilience will provide significant benefits to the district's flora, fauna and waterways (**Climate & Resilience**).

In addressing the **Declining Level of Service** and its associated growing bow wave of future works, we will reduce the need for more costly and carbon heavy future renewals and/or heavy maintenance.

Safety improvements through virtual and AI technology (reducing human-traffic interaction) have the additional benefit of reduced vehicle emissions (**Environment**).

A targeted focus on maintenance and renewals on TDCs footpaths (specifically around vehicle crossings) will encourage people to walk or cycle more reducing vehicle emissions (**Limited Transport Options**)

By seeking what's best for the district, and the people of Tararua, each of the problem statements will inevitably be addressed.

- **Climate & Resilience**
- **Declining Level of Service**
- **Safety**
- **Limited Transport Options**
- **Asset Return**

## 3.2 External strategic direction

The transport legislative framework plays an important role in shaping and developing how the New Zealand Transport Sector functions. Set by Central Government, several Acts, Rules, and Regulations dictate how Local Authorities manage their Roading Networks. These are primarily found in the following Acts;

- Resource Management Act 1991
- Land Transport Management Act 2003
- Local Government Act 2002
- Public Transport Management Act 2008



Funding for the management and maintenance of Local Authority roads is by way of the National Land Transport Fund and Local Share.

### **National Land Transport Fund (NLTF)**

Revenue is collected from taxes and levies and is credited to the National Land Transport Fund (NLTF). These funds are used to pay for investment in land transport activities under the NLTF. A portion of the NLTF is allocated to Local Authorities through funding assistance rates (FARs)

### **Local Share**

Local Authorities raise their local share from rates revenue, debt, developer contributions or other financial contributions and revenue. Funding assistance is provided for by way of the NLTF through the FARs.

### **Funding Assistance Rates (FARs)**

FARs is the percentage of funding each Local Authority receives to support its local transport network. FARs are determined by each Council's needs and ability to fund their transportation activities. The increase in the TDC FAR for the period of 2024-2027 to 73% has been factored into the affordability of the programme.

### **Central government influence on roading**

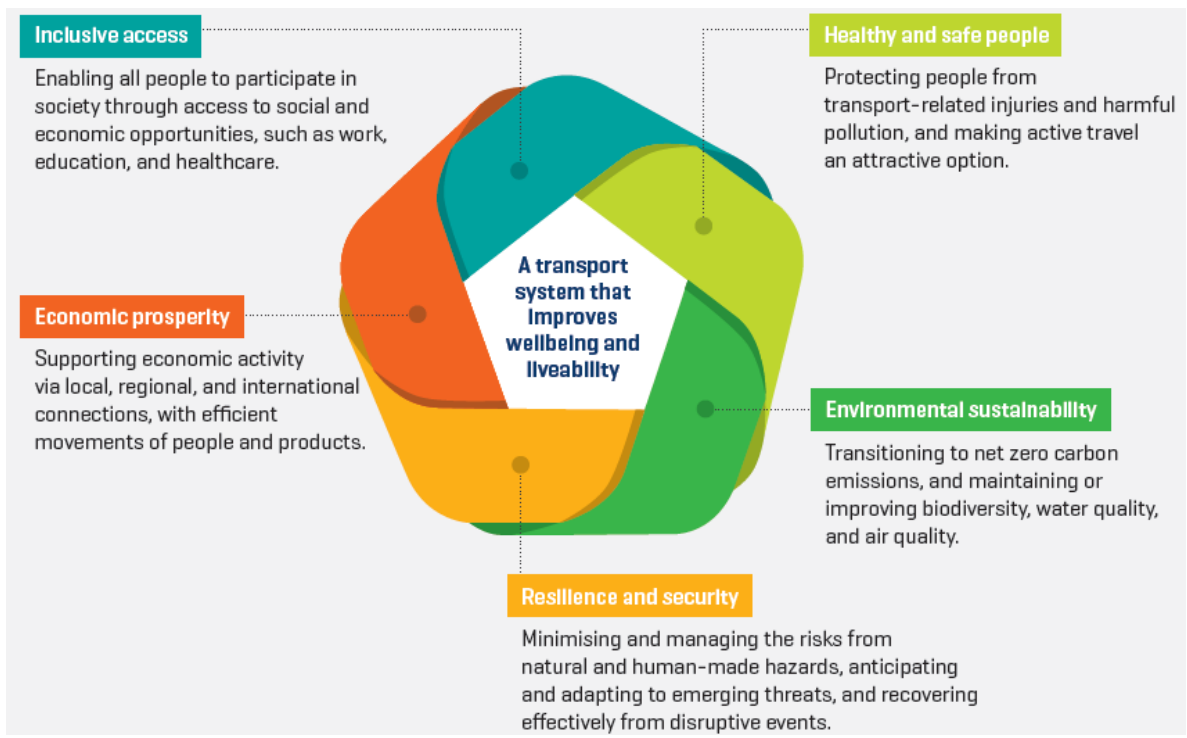
Central Government is responsible for overseeing all Transportation Activities across New Zealand. The Land Transport Management Act 2003 (LTMA), Transport Outcomes Framework and the

Government Policy Statement (GPS) on Land Transport Funding provide strategic direction. The LTMA states that Local Authorities across New Zealand have statutory obligations to maintain a roading network within their respective districts and in support of the GPS. The One Network Framework (ONF) provides a consistent approach to classifying and measuring the desired outcomes.

### Ministry of transport – transport outcomes framework

The Transport Outcomes Framework establishes the groundwork for a strategic approach to Transportation for New Zealand by identifying what the Government is aiming to achieve through the transport system. It defines mode neutrality as a guiding principle for transport planning, investing, and regulating.

The framework itself is designed to highlight the intention behind the transport system rather than specify how. In the roading context, NZTA use this framework along with the Government Policy Statement (GPS) on Land Transport which they use to guide the Road Controlling Authorities towards a consistent strategic approach.





## Government policy statement

The Draft Government Policy Statement on Land Transport 2024 builds on the direction set in GPS 2021 and continues the Government's commitment to safety within the transport system. This is highlighted in the Transport Outcomes Framework. It sets out the Government's strategic direction for the land transport system over the next 10 years and is updated every 3 years.

The draft GPS24 in May 2023 proposes emissions reduction to become an overarching focus for GPS 2024 supported by five proposed strategic priorities:

- sustainable urban development
- safety
- integrated freight system
- maintaining and operating the system
- resilience



NZTA uses the GPS to provide guidance on how the National Land Transport Fund (NLTF) is invested and how the Regional Land Transport Plans (RLTPs) and the National Land Transport Plan (NLTP) are assessed, and activities prioritised.

## One Network Framework

The One Network Road Classification (ONRC) provided a framework for the standardisation of the classification of roads in New Zealand

The One Network Framework (ONF) evolves the One Network Road Classification (ONRC) to a two-dimensional classification framework focused on movement and place. The ONF was approved by the Waka Kotahi Board in February 2021.

The ONRC was developed by the Road Efficiency Group (REG) following recommendations from the Road Maintenance Taskforce in 2012. A national road classification with levels of service enabled an operational and cultural change in road activity management and improved prioritisation of investment. This built on the 2011 State Highway Classification to help manage the future State Highway network more effectively.

The place function within the transport network acknowledges that roads and streets are destinations and places for people, as well as transport corridors for vehicle movements. It also ensures that the ONF is fit for purpose in more complex urban environments with a range of modes to accommodate and competing demands on limited road and street space. By introducing a stronger multi-modal focus, the ONF also brings more distinction to both urban and rural networks. It highlights the strategic importance of each mode to the overall objective of moving people and goods efficiently and effectively.

The ONF makes the following key shifts:

- A shift from the volume of vehicles on the network to the network’s functional importance for moving people and goods, by any mode.
- It considers adjacent land use, and the role the transport network plays as part of the wider public realm.
- When fully implemented, it will consider both the current and future movement and place function of the network. This will allow gaps to be identified and guide network changes and investment decisions seeking to close the identified gaps.
- It includes walking, cycling, freight, public transport, and general traffic networks, some of which include off-road routes.

This AMP details how the ONF customer levels of service outcomes will be delivered, ensuring the right infrastructure and services delivered to the right level at the best cost. Consistency with the ONF also contributes towards the Government’s core priority of a land transport system that is ‘value for money’ while delivering a consistent journey.

The new ONF allows for the consideration of future aspirations for corridors and networks within wider spatial and growth planning strategies. It helps establish the intended function of a corridor or road and plan for levels of investment and service. It does not dictate the final form or built design.

Further information in regard to the ONF tool is provided through the following link <https://www.nzta.govt.nz/planning-and-investment/planning/one-network-framework/current-network-classification/>

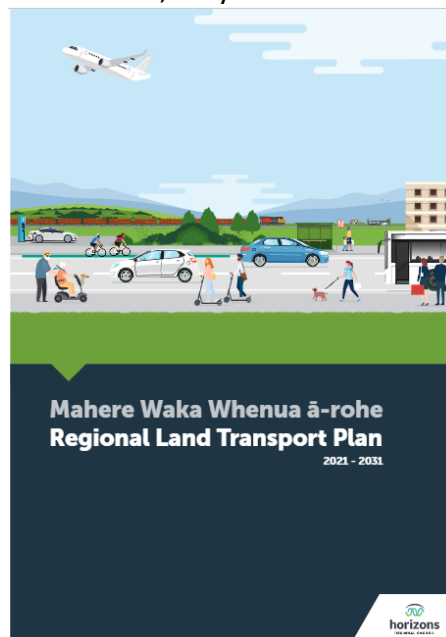
### Horizons Regional Council land transport programme

The Tararua District makes up part of the Manawatu/Whanganui Region and is managed by the Horizons Regional Council. In 2015 Horizons adopted the Regional Land Transport Plan (2015-2025) with an update provided in 2018. This RLTP is prepared by the Regional Transport Committee (RTC), which is comprised of representatives from Horizons Regional Council, Mayors from each of the local councils in the region, and the NZ Transport Agency.

The Regional Land Transport Programme (RLTP) is comprised of two key parts; Part One of the RLTP identifies the strategic direction and key transport issues that face our regional land transport system over next 30 years. It also sets out how the region proposes invest to achieve its objectives, strategic priorities and address or solve issues it identified.

Part Two of the RLTP consists of the regional programme, which sets out the specific plans for proposed land transport activities and projects in the Manawatu-Whanganui (Horizons) Region over a 10-year period.

Whilst the vision and strategic policy direction is set at a regional level, the project of works to physically deliver improving the regional land transport network is actioned by much of the programmed works contained within the local AMPs.



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to

The replacement for the Manawatu Gorge is likely to alter traffic patterns, with people migrating towards the new and improved route from Tararua to the Manawatu. This is likely to impact roads south of Woodville where historically people have used the Pahiatua Track to travel to Palmerston North.

Tararua District Council's Route 52 Upgrade project has been included within the Plan due to its importance of connecting a large portion of the Tararua's primary sector to the regional roading network.

These projects and their impact on this AMP are discussed further in the document.

### **3.3 Regulatory Context**

#### **Legislation & bylaws**

Legislation applicable to the management of the transport activity is listed below.

This legislation sets the minimum levels of service for environmental, design, and health and safety standards:

- Land Transport Management Act 2003
- Health & Safety in Employment Act 2015
- Civil Defence Emergency Management Act 2002
- Building Act 1991
- Public Works Act 1981
- Resource Management Act 1991
- Local Government Act 2002
- Public Transport Management Act 2008

The specific sections of the Tararua District Council Consolidated Bylaw 2000 relating to transport can be found in Appendix A. These bylaws are in place at the writing of this document – however changes to the District Plan may lead to changes to the bylaw within the period of the 2024-2027 NLTP

## 4. The Transport Activity

### 4.1 Purpose

Council has statutory obligations under the Land Transport Management Act 2003 to maintain a road network within the district and the transportation activity is delivered by Council to provide a safe and efficient road network that enables the movement of people and products, both within and through the district. An effective road network is also essential to ensuring the economic and social wellbeing of the community through the provision of access and mobility for people, goods and services.

The council owns and manages:

- A vehicular network comprised of 1,191km of sealed roads, 767km of unsealed roads, 405 bridges and 149 high-capacity culverts.
- A pedestrian network comprised of 120 km (317,500m<sup>2</sup>) of footpaths.
- Enabling infrastructure, including:
  - 1,842km of stormwater channels and drains (mainly shallow, unlined surface water channels and kerb and channel)
  - 9,265 culverts (108 km) and 1,647 other drainage assets including sumps and manholes.
  - 1,414 retaining walls.
- Safety infrastructure comprised of 1,667 streetlights, 9,560 road signs, and 12,176m of rails and barriers.

The depreciated replacement value of Council's roads and associated assets is approximately \$791 million as of 2022.

Management of the transportation activity, including the maintenance and renewal of associated assets is the highest of the Council's major activities and due to the low ratepayer base the Council is heavily reliant upon subsidies received from the NZ Transport Agency (NZTA).

The purpose of the transport activity within the district is to allow for the safe and efficient movement of people and goods between urban and rural areas.

People within the district want to be able to move efficiently and safely from their homes to school, work or play. Rural businesses rely on an open network to move stock and goods throughout the district and beyond.

With a mixture of urban and rural networks within the district, the contribution the network has on the accessibility, health, socioeconomic values, and quality of the environment is large.

## 4.2 Movement of people and goods

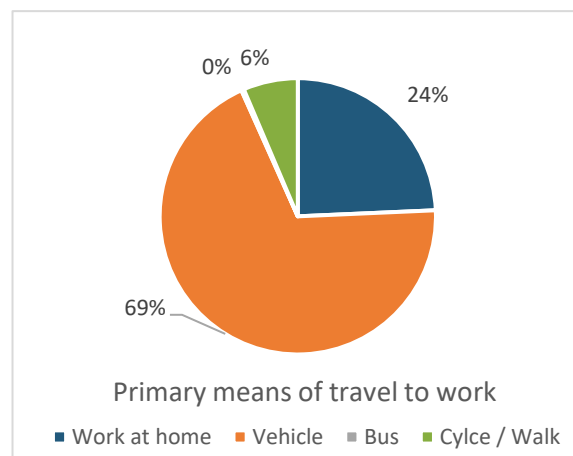
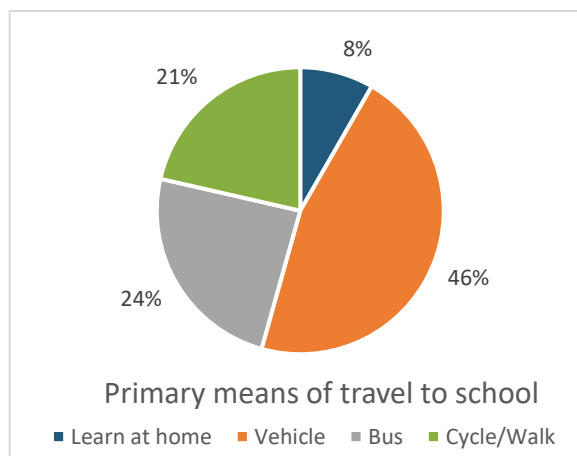
Council’s aim for Transportation is to provide a safe and efficient roading network that meets the short- and long-term needs of the district and is operated and enhanced in a sustainable manner at the lowest overall whole of life cost.

The following table details the various forms of transport available and how they feature within Tararua.

<b>Road</b>	Being a rural based economy covering a large geographic area, travel by road is the primary form of transport within Tararua.
<b>Pedestrian</b>	Pedestrian facilities are available throughout our larger townships. The flat topography where these townships are situated allows for easy walking.
<b>Cycling</b>	Our Urban centres have wide open streets and flat topography making this mode of transport relatively safe and easy to use. However, limited use of this mode of transport is observed. Its primary use is for recreation purposes.
<b>Rail</b>	The rail network runs through Tararua, with lines connecting all surrounding regions; Manawatu, Wairarapa, Hawkes Bay. However, very limited freight is sourced and delivered via rail within Tararua.
<b>Sea</b>	There are no seaport facilities within Tararua.

With limited transport options available within the Tararua, the primary form of transport is by vehicles on our roads. Within the Tararua 67% of the population travel by road to work, 6% lower than the national average. A large portion of the remainder work from home, which reflects the large percentage of the district population working within the agricultural sector.

The main means of travel to and from educational facilities is by road, with 68.4% of the population travelling by vehicle and bus. Comparative to the New Zealand average this is similar, but when comparing the two forms there is a clear differentiation between vehicle and school bus. Within the Tararua 24.5% of people travel by bus to school compared to 17% across New Zealand. This once again reflects the rural base of the population.



Our roading network was created following the 1989 local government reforms when the Dannevirke Borough, Eketahuna County Council, Pahiatua Borough Council, Pahiatua County Council and Woodville District Council were merged to form the Tararua District Council.

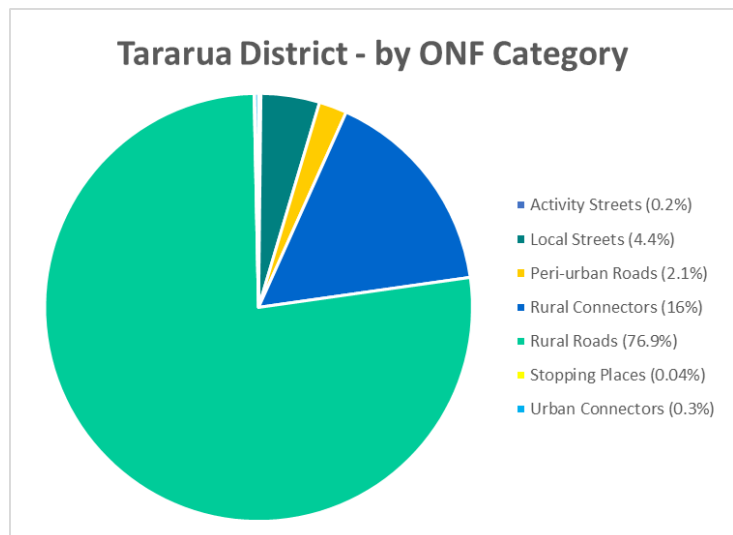
With different economic conditions, population sizes and geology where they were situated, these counties and boroughs had varying road management and construction philosophies. Evidence shows that in certain areas of the district many of the roads were constructed to lower quality standards, with little pavement depth, poor drainage and subsequently a lower ability to support heavy loads. These roads are showing signs of fatigue and draw a large portion of maintenance and renewals expenditure.

### 4.3 Place

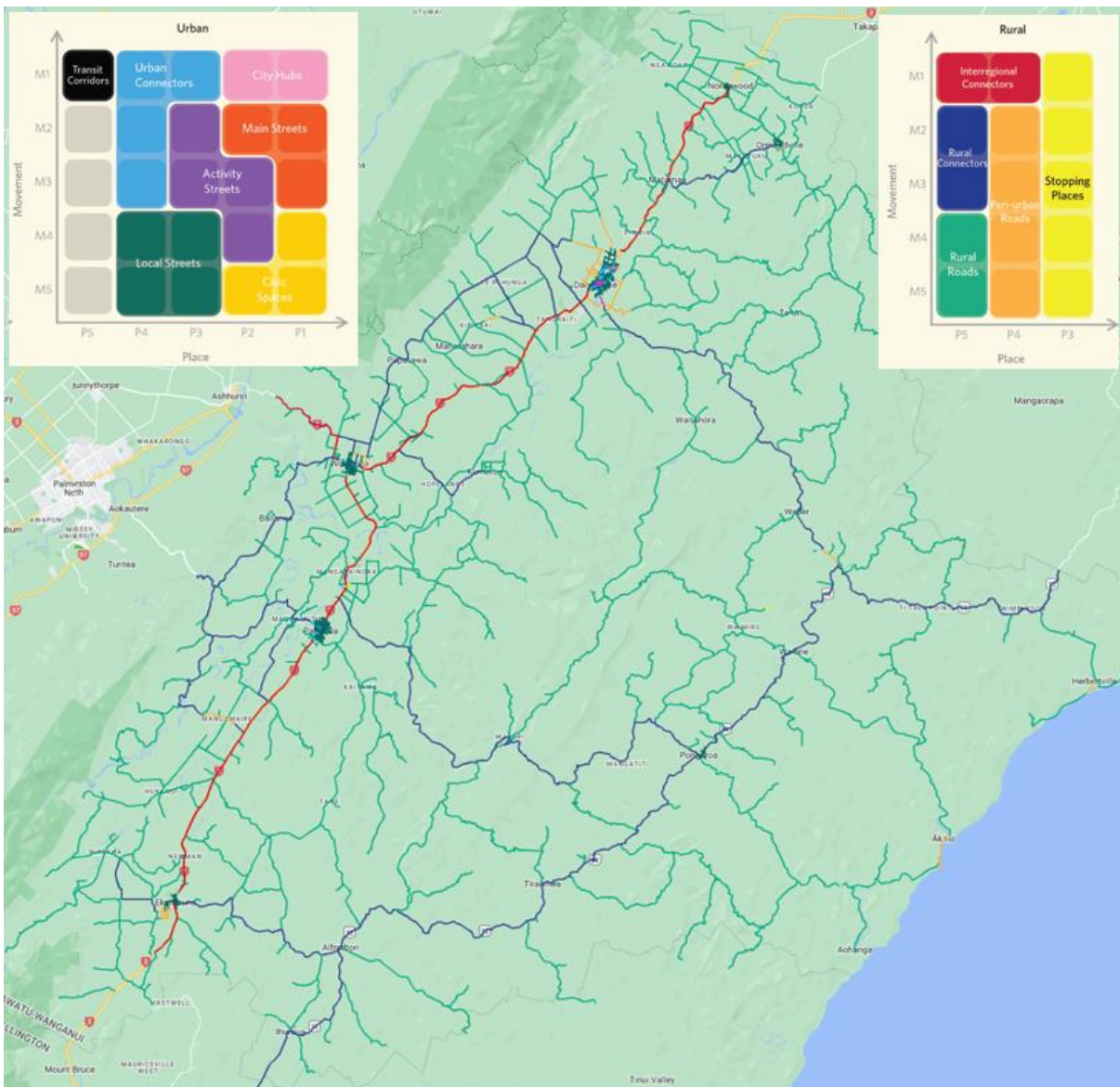
#### ONF within Tararua

The roading classification spread across the Tararua District is detailed below. The state highway roads are managed directly by NZTA with the rest being managed by the Tararua District Council.

Most of the network is classified under the One Network Framework (ONF) as “Rural Roads” with average traffic volumes less than 200 vehicles per day. Rural Roads are defined as “providing access to rural land, for those that live there, and in support of the land-use activity being undertaken”. These roads, along with “Local Streets” in the urban environment, is where journeys often start and end. The higher volume “Rural Collector” roads in the network play a pivotal role in connecting the region to its neighbours and ensuring traffic flows effectively through the region. These include the two bypass roads for the Manawatu Gorge: Saddle Road and Pahiatua Track – currently controlled by Waka Kotahi.



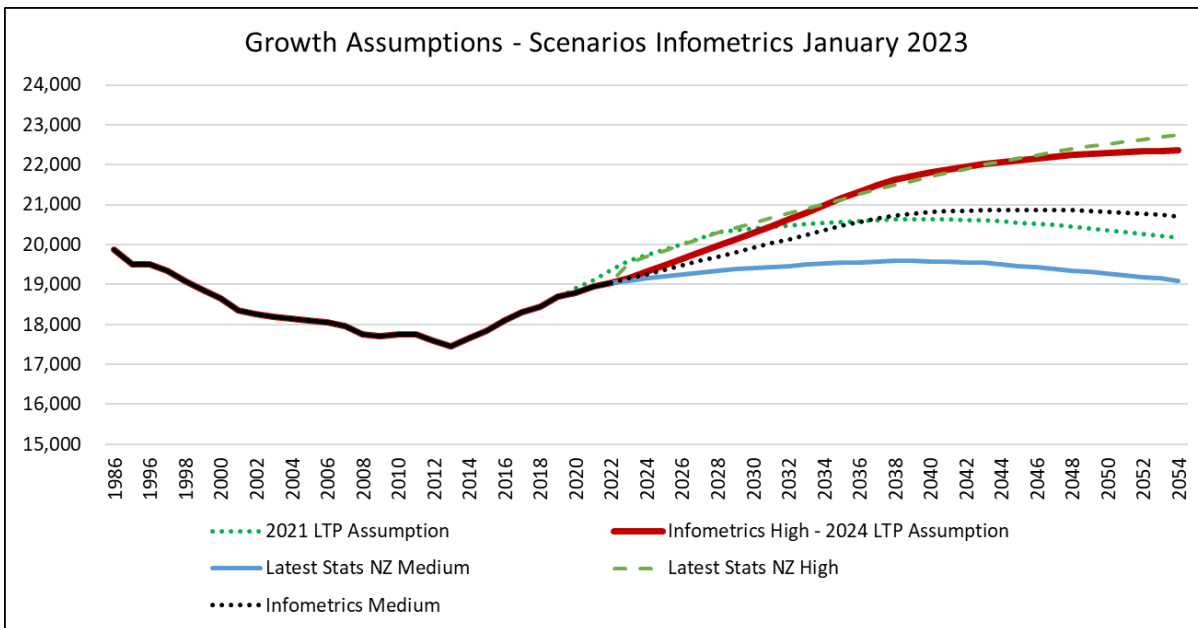
Some of the key benefits associated with ONF include “Improved investment planning and decision making ... [and] consistency in measuring current and future network performance and levels of service.” In line with this, a higher priority and level of investment per km is given to “Rural Connectors” and “Activity Streets”. However, with such a large proportion of roads in the “Rural Roads” category (77%), managing the network using these categories becomes difficult, so the Movement & Place ratings (see figure below) and multimodal framework will be utilised. Most of these roads lead to farming communities which serve as the largest contributor to Tararua’s economy. Therefore, they are of great importance to the district.



### 4.4 Future demands and drivers

The district population peaked at over 22,000 in the 1960’s but due to farm amalgamations and increasing mechanisation of agriculture decreased to 17,500 by 2013. Agriculture as an industry has shaped our District as well as the development of our roading network. In 2013, the trend in population decline reversed, with a growth of 2% between the years 2013-16 and 5% between 2016-2018. This growth exceeded historical forecasts and it is expected that this trend will continue until at least 2034.

The completion of Te Ahu a Turanga – Manawatū Tararua Highway (due for completion by late-2025) is expected to further increase population growth, with growing interest in real estate from people living outside the region.



With a roading network supporting a large agricultural sector and most of the local population travelling by these roads, maintaining our roads is critical to enable economic activity and growth regardless of low traffic volumes. This allows for the efficient transport of goods and services to the wider New Zealand economy. Underpinning this is the need to keep the service affordable and safe for the community.

The following demand factors heavily influence potential problems and responses:

- Continued traffic growth and increase in number of residents commuting for work is anticipated, especially once the Manawatu Gorge replacement road construction is complete.
- An increase in heavy commercial vehicles is expected and if possible, transport operators will take advantage of increased vehicle mass limits.
- There are several forestry blocks throughout the district with varying size and maturity dates. Logging is expected to be on an irregular basis and not a sustained yield basis. Forestry will continue to impact the road network, with year-on-year heavy vehicle growth for the next ten to fifteen years, although the number of trucks may vary over the years based on the log market.
- The roads within the district most affected by forestry include Route 52, River Road, Weber Road, Alfredton Road, and Coast Road.
- Dairy farm development is not expected to increase greatly in the district. Further development may occur north of Norsewood, creating more traffic on State Highway 2.

### **Te Ahu a Turanga**

At the time of writing the previous Long-Term Plan, the Manawatu Gorge route had been permanently closed but the alternative route had not been decided on. With the new route now confirmed, construction has started and is projected to be complete in mid-2025.



The new route will greatly improve connectivity with the Manawatu Region. The improved connectivity creates both Risk and Opportunity. Currently the Woodville area is experiencing an increase in house sales and property development, which is likely to continue, if not accelerate as the new route becomes a reality. While this is positive for the economy of Tararua, it will place pressure on existing infrastructure within the region and may increase expectations of Level of Service within the community as traffic and pedestrian numbers grow.

Two roads currently being managed by Waka Kotahi – Saddle Road and the “Pahiatua Track” (Pahiatua-Mangahao Rd, Makomako Rd and Pahiatua Track Rd) will be returning back to the Council network within the 2024-2027 NLTP period.

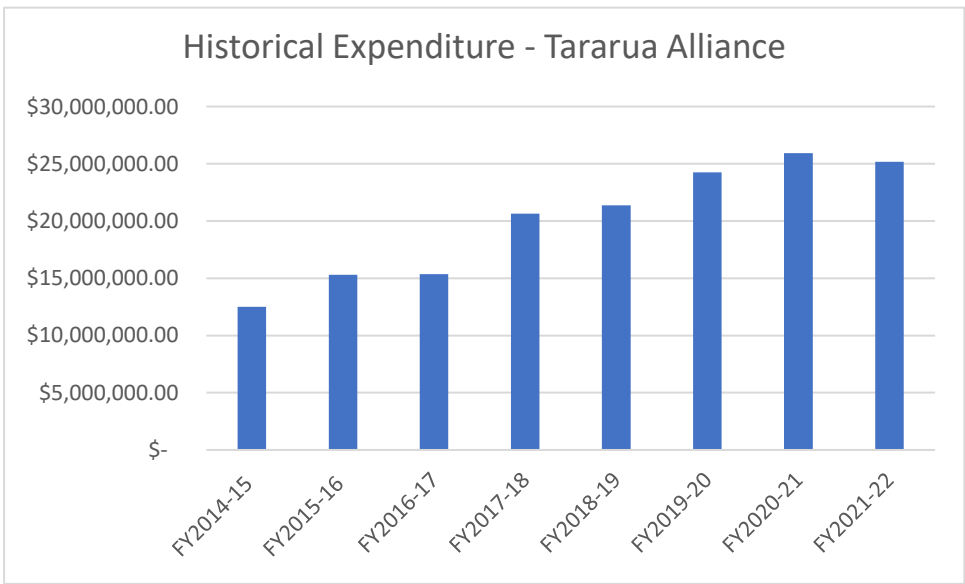
**Route 52 upgrade**

Route 52, formerly State Highway 52, was placed back under Council management in the 1980s. The route runs the entire length of Tararua District between Central Hawke’s Bay and Wairarapa. It is a vital link for our rural and coastal communities. Route 52 is also an important freight link, particularly for forestry travelling to Napier Port. The volume of heavy vehicles is predicted to increase significantly in the years ahead as pine plantations mature.

Route 52 lacks the pavement strength and width to safely handle the large heavy vehicles now using it. The long, winding and narrow road is quickly deteriorating as a result of increasing traffic. The formation and geology of the road also make it susceptible to damage, such as slips and dropouts, during bad weather. Hence, we are proposing to upgrade the 25km section of road between the Weber junction and Central Hawke’s Bay boundary.

Our primary reason for this project is to improve the safety and resilience of the road. The upgrades are also expected to improve the attractiveness and smoothness for tourist traffic using Route 52.

**4.5 What the Activity Currently Costs (high level)**



## 5. Strategic Case

### 5.1 Investment Strategy

The investment strategy outlined in this section is the result of multiple workshops held between the elected members of Tararua District Council, officers of Council and staff within the Tararua Alliance – a joint venture between Tararua District Council and Downer NZ Ltd.

As a result of these workshops the following problem statements were identified.

Using these problem statements a set of options were proposed to the elected members to meet the needs of the network based on Work Categories funded by Waka Kotahi.




While presenting these set options, the elected members decided to choose alternate options for each Work Category instead of one option across the board. A summary of this final selection will be included at the end of the section.

#### **Tararua District's desired AMP outcomes**

The Tararua Alliance is tasked with establishing a Transport Activity Management Plan to deliver the Council's Transport Objectives in line with the Vision and Strategy established in the Long-Term Plan. To achieve this, we followed the principles of the Strategic Business Case development and Investment Logic Mapping and have developed Problem Statements to address the challenges Tararua District's roading network face. These Problem Statements are shown below and highlight both the issues being faced by Tararua and the consequences associated with them:

## 5.1.1 Problem Statements

### Problem Statement One

 <p>Reducing road closures and restrictions will improve transport reliability, increasing user confidence and the economic productivity of our district</p>	<p><b>Key strategic linkage</b></p> 		
<p><b>Background</b></p> <p>The Tararua District is susceptible to the effects of heavy and/or prolonged rain events. The district can expect to receive storm events, of varying significance, during any particular year and time of year. Climate change is expected to increase the likelihood (frequency) and consequence (damage and cost to repair) of these events, resulting in a higher risk to the council roading network.</p>			
What are the specific benefits from investing in the <u>Resilience</u> ?		How will we measure success?	How will we do this?
An efficient and resilient network	Increased stakeholder confidence and satisfaction	Customer Satisfaction Surveys	<p>Increased proactive maintenance (i.e. drainage maintenance, tree removal, scour protection, preventive maintenance) at known vulnerable locations.</p> <p>Reactive response to unplanned events gives consideration to both the classification of the affected road, likely number of affected customers, and criticality of the asset.</p> <p>Development of Emergency Procedures and Preparedness Plan.</p> <p>Improved recording and monitoring of all road closures, and provision of road closure information to customers.</p>
	Reduction in the number and duration of road closures when unplanned events occur	Monitoring the number and duration of road closures.	
	Reduction in the impact to customers when unplanned events occur	Monitoring the number of journeys impacted by unplanned events.	
An affordable network which is sustainable	Reduction in in the damage and reactive response costs associated with unplanned events	Monitoring the quantity and cost of reactive emergency works	<p>Inspection regimes that provide early identification of defects and required intervention.</p> <p>Proactive drainage maintenance and renewals.</p> <p>Repair treatments are fit for purpose and target the root cause of failure.</p>
	Funding for planned, proactive work is maximised through reduced reactive costs, increasing value for money	Monitor cost and proportion of programmed works vs Reactive	<p>Smart procurement, through the Alliance, where the financial mechanism contributes to lower overall costs.</p> <p>Increased funding for environmental maintenance and minor events work categories reducing the need to transfer costs from other maintenance activities</p>
A safe and well connected network for all modes	A safe journey for all road users through all of our network to support economic activity, tourism and all other activities	Monitoring of crash statistics	By ensuring the network reliability and resilience is not a factor in any crashes.

**Problem Statement Two**

	<p><b>Problem Statement Two</b></p> <p>An inconsistent transport system, and inadequate safety controls is resulting in accidents with a high risk of death or serious injury to people in the district.</p>	<p><b>Benefit Statement</b></p> <p>Investing in improving the consistency of road form and environment will contribute to a safe and well connected network for all users and minimising the risk of serious crashes</p>		<p><b>Primary Outcome</b></p> <p>Healthy and Safe People</p>
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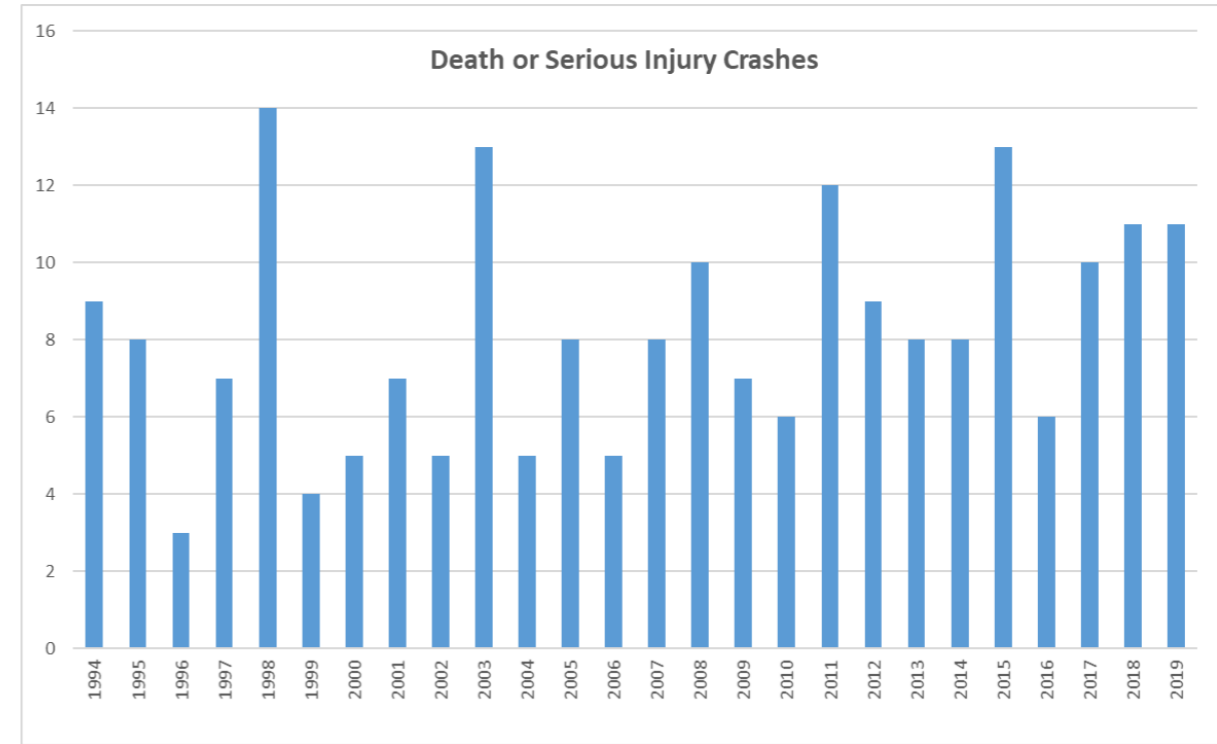
**Cause**

The Tararua District is a large complex network made up of multiple historic counties and boroughs that each had their own take on road management. A holistic, whole of network strategy has not been in place. As Tararua’s road network has developed over time, no level of consistency has been applied to encourage consistent levels of service with regards to road form within classifications. The provision of motorist traffic control and guidance devices, such as pavement marking, signage and rails, is currently inconsistent, with the provisions on some long roads changing significantly despite the road’s classification remaining the same. Investment in safety improvements have been reactive and make-shift, stemming from customer requests, leading to further inconsistencies on the road network.

**Effect**

The inconsistency of road safety provisions results in an unintuitive road network for motorists, which can become confusing and lead to crashes. Tararua District still lags behind nationally in road safety. Every year, we are having fatal and serious injury accidents on our roads. These numbers reflect lives lost and ruined in what are mostly preventable crashes. Having an effective road network is crucial for the economic, social and cultural well-being of our district. However this can come at a price in terms of road safety if not carefully considered and implemented. Improvements in road safety are needed, not only to save lives, but to also enhance the economic development and productivity of the district through both effective and safe road use.

What are the specific benefits from investing in the problem?	How will we measure success?	How will we do this?
A safe and well connected network for all modes	A safe journey for all road users through all of our network to support economic activity, tourism and all other activities.	Monitoring of crash statistics
		By ensuring the network reliability and resilience is not a factor in any crashes.



Which ONRC Customer Levels of Service Outcomes does this affect?



**Amenity**








**Efficiency**








**Safety**

**Problem Statement Three**

	<p><b>Problem Statement Three</b></p> <p>Funding constraints associate with a very large road network, small ratepayer base and rising costs is resulting in reduced levels of service compared to our peers, low customer satisfaction and possible asset consumption</p>	<p><b>Benefit Statement</b></p> <p>A specific strategy on how freight routes are managed will encourage and support economic activity within the region.</p>	<div style="display: flex; justify-content: space-around;">   </div> <p><b>Primary Outcome</b></p> <p style="background-color: #f4a460; padding: 2px; border-radius: 10px; display: inline-block;">Economic Prosperity</p>	
<p><b>Cause</b></p> <p>The past three decades saw a significant change in land use across parts of the district, with many large sheep and beef farms in the east of the district converting to Pine plantations. These forests are now mature and are being scheduled for harvesting, which is changing road usage patterns, with significantly increased truck movements placing additional pressure on the roading network. Government legislation is allowing heavier, longer, wider and higher vehicles to increase freight efficiencies within the constraints imposed by the local roading network.</p> <p><b>Effect</b></p> <p>The increased volume of trucks on the district's roads is causing increased deterioration and concerns for Council related to decreased levels of service or increased cost to maintain roads to their existing level of service. A lack of specific strategies to manage the impact of this traffic leads to reactive decision making which in turns leads to a decreased level of service and increased travel operating costs for motorists.</p>		<p>What are the specific benefits from investing in the problem?</p>	<p>How will we measure success?</p>	<p>How will we do this?</p>
<p>Which ONRC Customer Levels of Service Outcomes does this affect?</p>		<p>An efficient and resilient network</p>	<p>Decreased vehicle operating costs</p> <p>Increased stakeholder satisfaction and reduced customer complaints</p>	<p>Smooth Travel Exposure, Roughness</p> <p>Customer Complaints Satisfaction Surveys</p> <p>Increased proactive maintenance (i.e. drainage maintenance, tree removal, scour protection, preventive maintenance) at known vulnerable locations to minimise the negative impact on the network.</p> <p>Reactive response to unplanned events gives consideration to both the classification of the affected road, likely number of affected customers, and criticality of the asset.</p>
		<p>An affordable network which is sustainable</p>	<p>Reduce the amount of reactive maintenance costs</p>	<p>Monitor cost and proportion of programmed works vs Reactive</p> <p>Inspection regimes that provide early identification of defects and required intervention.</p> <p>Proactive drainage and pavement maintenance and renewals. Repair treatments are fit for purpose and target the root cause of failure. Smart procurement, through the Alliance, were the financial mechanism contributes to lower overall costs.</p>
		 <b>Amenity</b>  <b>Efficiency</b>		

**Problem Statement Four**

	<p><b>Problem Statement Four</b></p> <p>Limited options for walking and cycling and low service levels, combined with a lack of public transport is resulting in high vehicle use within Taranaki's urban towns and villages, increasing the risk of accidents for vulnerable users and impacts on the environment.</p>	<p><b>Benefit Statement</b></p> <p>Innovation, experimentation and adoption of new technologies and processes will help minimise the impact of climate change and make better use of our limited resources.</p>	<div style="display: flex; justify-content: space-around;">   </div> <p><b>Primary Outcome</b></p> <p>Environmental Sustainability</p> <p><b>Co-Benefits</b></p> <p>Better Travel Options</p>														
<p><b>Cause</b></p> <p>The current practice of maintenance and renewals has been focused on ensuring an expected level of service is achieved. While this sounds like an appropriate strategy it is in essence quite reactive and essentially leaves us chasing our tails with a limited and fixed budget and a large network to manage. Due to the limited resources it means we cannot trial pro-active activities or make any significant step changes to the condition of the network. It also leaves little capacity to invest in alternate travel modes or practices.</p> <p><b>Effect</b></p> <p>By continuing as we are the result we will achieve is likely to be the same – a continued battle to keep ahead of the a deteriorating network with significant investment required in some key sections that are under significant stress – such as Route 52. There are also missed opportunities to innovate, experiment and adopt new more efficient technologies and processes that could help offset the current issues that are not going away such as climate change.</p>		<table border="1"> <thead> <tr> <th data-bbox="1383 558 1961 632">What are the specific benefits from investing in the problem?</th> <th data-bbox="1961 558 2214 632">How will we measure success?</th> <th data-bbox="2214 558 2757 632">How will we do this?</th> </tr> </thead> <tbody> <tr> <td data-bbox="1383 632 1590 957" rowspan="2">An affordable network which is sustainable</td> <td data-bbox="1590 632 1961 779">Increased stakeholder satisfaction and reduced customer complaints</td> <td data-bbox="1961 632 2214 779">Customer Complaints Satisfaction Surveys</td> <td data-bbox="2214 632 2757 957" rowspan="2">Inspection regimes that provide early identification of defects and required intervention to then increase proactive maintenance treatments.  Investigation and implementation of innovative technologies such as Emulsion instead of Bitumen for sealing will minimize our carbon footprint.</td> </tr> <tr> <td data-bbox="1590 779 1961 957">Funding for planned, proactive work is maximized through reduced reactive costs, increasing value for money</td> <td data-bbox="1961 779 2214 957">Monitor cost and proportion of programmed works vs Reactive</td> </tr> <tr> <td data-bbox="1383 957 1590 1146">A safe and well connected network for all modes</td> <td data-bbox="1590 957 1961 1146">A safe journey for all road users through all of our network to support economic activity, tourism and all other activities.</td> <td data-bbox="1961 957 2214 1146">Monitoring of crash statistics</td> <td data-bbox="2214 957 2757 1146">A holistic approach to travel within our road corridor will be adopted especially within the design process to ensure all users are considered – from freight to foot and everything in between.</td> </tr> </tbody> </table>			What are the specific benefits from investing in the problem?	How will we measure success?	How will we do this?	An affordable network which is sustainable	Increased stakeholder satisfaction and reduced customer complaints	Customer Complaints Satisfaction Surveys	Inspection regimes that provide early identification of defects and required intervention to then increase proactive maintenance treatments.  Investigation and implementation of innovative technologies such as Emulsion instead of Bitumen for sealing will minimize our carbon footprint.	Funding for planned, proactive work is maximized through reduced reactive costs, increasing value for money	Monitor cost and proportion of programmed works vs Reactive	A safe and well connected network for all modes	A safe journey for all road users through all of our network to support economic activity, tourism and all other activities.	Monitoring of crash statistics	A holistic approach to travel within our road corridor will be adopted especially within the design process to ensure all users are considered – from freight to foot and everything in between.
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**Problem Statement Five**

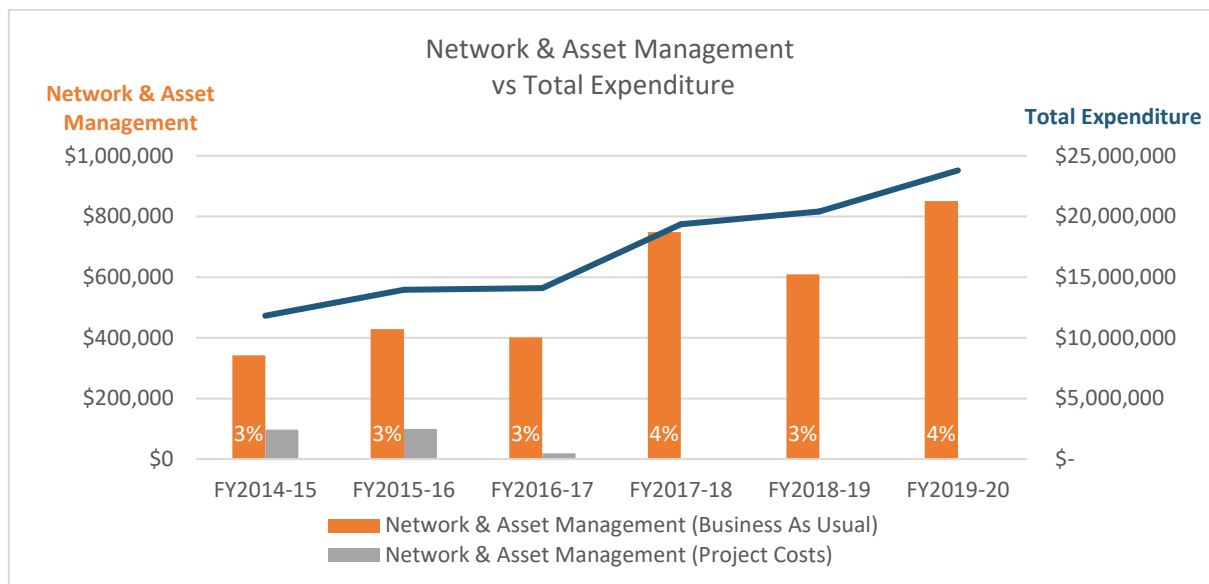
	<p><b>Problem Statement Five</b></p> <p>Reassessing responsibility of relatively high profile and high-cost roads will significantly increase our investment requirements.</p>	<p><b>Benefit Statement</b></p> <p>Innovation, experimentation and adoption of new technologies and processes will help minimize the impact of climate change and make better use of our limited resources.</p>			<p><b>Primary Outcome</b></p> <p>Environmental Sustainability</p> <p><b>Co-Benefits</b></p> <p>Better Travel Options</p>											
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## 5.2 Strategic Responses

### 5.2.1 Network and Asset Management

#### Historical investment

Since 2014 Network and Asset Management has remained around 3 to 4% of the total expenditure per year on our network. The main cost in this activity sits with covering the staff such as inspectors, asset managers and asset engineers that work to provide robust processes, information and justified plans for the design, engineering, and delivery teams. With a focus on data driven decision making being a key strategy for the planning team this investment is quite important to enable this to continue. There has been innovation and changes made in the way the activity occurs such as the implementation of the Downer NZ TKH (Transport Knowledge Hub) which uses a set of processes widely accepted as best practice network management, implementation of dTIMS for pavement deterioration modelling as part of the forward works programme process and JunoViewer for condition trend analysis and on-site data based decision making.



#### What do we want to do

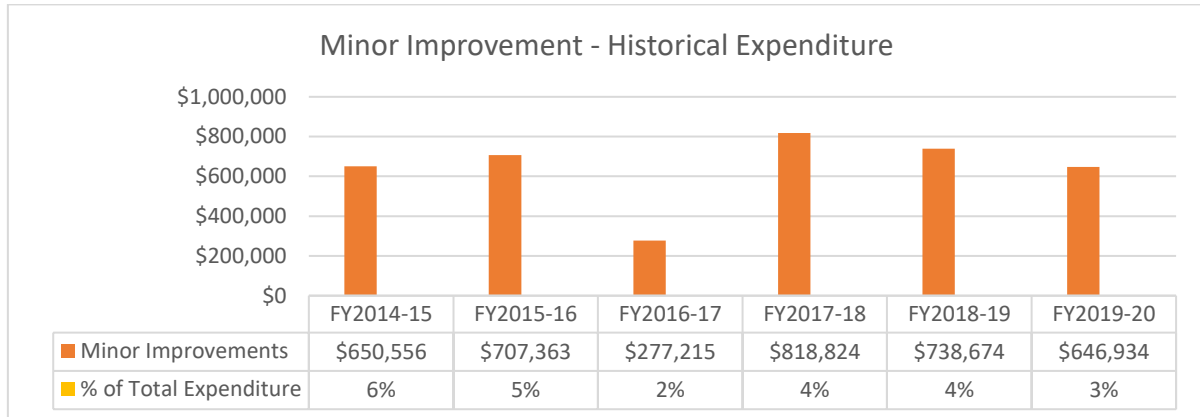
Over the next three year funding cycle we need to ensure we have a complete understanding of the components that make up our network and how the public interacts with them. There will be projects to focus on further data capture to better understand traffic flows including walking and cycling movements and routes to feed in to the upcoming One Network Framework classification as well as a project to componentise the bridge assets. The “business as usual” costs are expected to remain relative to the Total Expenditure of the Transportation Activity, however there will be new costs related to the proposed Data Capture and Network Modelling project.

An increase of 2% of this activity will allow for the additional data capture and compliance costs.



## 5.2.2 Minor Improvements (Low Cost, Low Risk roading Improvements)

Over the past few years Minor Improvements have made up on average 4% of the overall budget spend each year. This will increase somewhat during the 2024-27 funding block to target the safety component of the new Draft GPS .



### What do we want to do

Over the next funding cycle we will be beginning focused projects related to safety. The first is to standardise the signage and delineation on our network. With the conglomeration of multiple boroughs and counties into what is now the Tararua District there is a lingering difference in the way each area approached safety. The project will confirm a standard and perform a gap analysis to highlight projects to improve and standardise signage, sight and guardrails and delineation across the network.

At the same time we will be utilising the KiwiRAP tool to continue to investigate our out of context curves. From high to low classification we will be investigating each of the highlighted corners for safety concerns deriving potential improvements to mitigate the risk – with treatments such as improved signage to sight benching and realignment.

The two projects working in conjunction with each other will provide a programme of physical works that will over time create a consistent and safe journey for our road users.

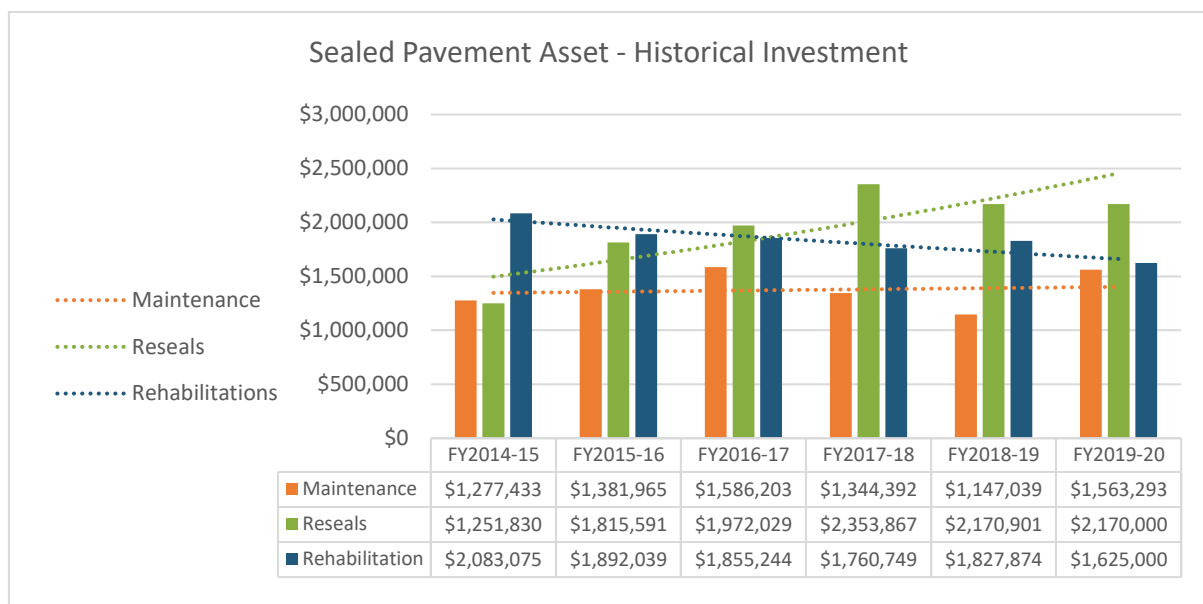
Lastly, we will look at a project to make the zones around schools safer by modifying the speed limit for those areas in line with NZTAs proposed changes to speed limit review currently underway which will likely strongly encourage setting lower speed limits around schools and will provide a more streamlined processes to have that happen.

### 5.2.3 Sealed roads

Maintaining our Sealed Pavement network within a limited funding base can prove challenging across our large district. The decisions we make now can have consequences on the life expectancies of pavements and can either improve the state of our network or provide challenges for future generations.

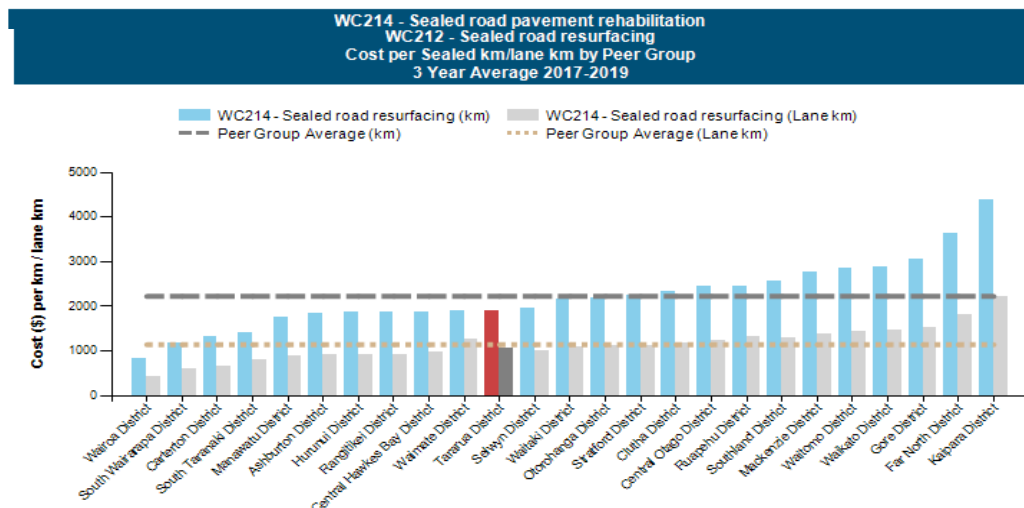
#### Historical investment

Over the past 5 years, the Tararua District Council have been altering its maintenance and renewal funding in response to the improving sealed pavement conditions. The chart below demonstrates this, with the amount invested in Rehabilitations reducing and Reseals increasing.



#### Historical investment comparisons

The following tables provide details of Tararua District Council’s activities as well as others within our Rural District Peer Group. This data allows us to gauge our level of investment in comparison to other Council’s. The information shows that across Maintenance and Reseals



we are investing less than average within our peer group. As for Rehabilitations we are investing close to the average.

### **Current level of service summary**

Our current drive for Sealed Pavement Maintenance and Renewals is to improve the resilience of the overall asset and working towards providing uniformity across the network. The number of high-severity faults and the need for rehabilitations is reducing indicating that structurally our pavements are relatively in good condition, however, when comparing ourselves to other districts nationwide using the ONRC reporting tool, the roading network within Tararua falls behind in a number of measures.

Our Low Volume roads are rougher than the National, Rural and Manawatu/Whanganui districts and with a large percentage of our roads falling into this category, there is still much work to do to bring us up to meet the average. We are currently working towards earlier intervention with faults. This will assist in improving our ONRC measures, as well as reducing the frequency of costly higher severity fault repairs.

In regards to safety, the Tararua District is also over-represented in the crash statistics per 100km of road. Secondary Collector, Access and Low Volume roads all sit above the average when comparing against other rural, national and Manawatu/Whanganui regional districts. Sealed pavements can contribute to crashes through poor alignment, uneven surfaces, surface condition and variable road width, all of which we have issues with. Alongside Minor Improvements, we are working towards targeting these issues.

### **Link to problem statements – how is it affecting our problems**

Many of our problems across the network stem from how our roads have been developed. With the Tararua District being a merger of various Council's and Boroughs, our sealed roads have been built to varying standards with some being wide and well formed, other are narrow winding from house to house and barely have a pavement structure below the multiple seal layers.

The development has led to the **inconsistent road form and safety measures** we find across the network today. Providing consistency across the network has not been a focus as funds have been directed towards other priorities.

Many of our roads to the east are situated in gully's following streams or on the side of hills. These roads have poor subgrade strength, with formation and structural failures occurring regularly. The **resilience** of our sealed roads is tested often and significant disruption is experienced which impacts the **economic prosperity** of our rural economy. Forecasting demand on our network to keep up with pressures is key in order to encourage or at least not hinder economic activity when managing the Sealed Pavement asset.

With aged infrastructure, safety and resilience issues and limited funding, we tend not to explore **environmental sustainable** options to reduce carbon footprint of the roading network. We must look at alternate preventative treatments to help mitigate climate change effects while utilising limited resources.



Road slumped into gully – Route 52

### **Option analysis**

Our approach for Sealed Pavements is to consider the total expenditure across the asset and balance Maintenance and Renewal activities to allow us to maintain or improve the Level of Service across the Asset.

As this asset is the asset that most road users interact with and the assets contribution to the problems we face, a reduction in funding has not been considered.

We have derived 3 scenarios with varying levels of expenditure across maintenance and renewals activities. These scenarios help us determine the optimum level of investment required to achieve the outcomes desired and Level of Service we intend to provide.

The scenarios are presented in the following tables on the following pages and are outlined below;

- Maintain the current levels of funding and strategy for the asset group.
- Maintain funding and alter the strategy for the asset group
- Increase the funding for the asset group and widen the extent of works while incorporating the current strategy.

### **Minor improvements associated with sealed pavement**

Minor Improvements are often associated with modifications to the Sealed Pavement asset. Undertaking works in conjunction alongside activities such as Pavement Rehabilitations allows funding to be spread further as a number of costs can be reduced (design, establishment, management).

For budgeting purposes, a nominal amount is allocated to Sealed Pavement each year and fluctuates depending on what other projects are planned across the network.

### **Maintenance and renewals option tables**

### Option 1 - Maintain Funding and Strategy

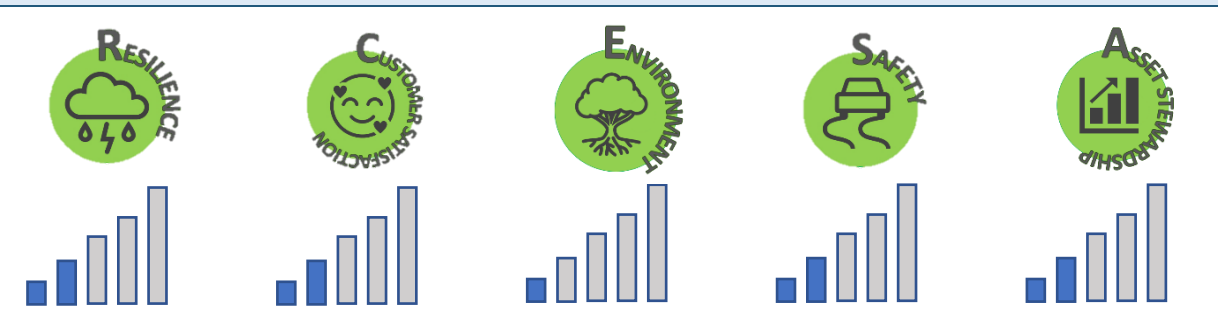
Maintain the Status-quo and continue to undertake repairs once they reach a critical priority level. This approach sees high priority faults (P4 & P5) targeted first, then Priority 3s targeted if they fall within or close proximity to other works (i.e. patch repairs within reseal or close to reseal sites). Priority 2 faults are not deemed critical and left to deteriorate. A large portion of the sealed pavement maintenance budget is current focussed on pre-reseal repairs.

The current strategy targets 5% of the sealed network resurfaced annually which assumes an average seal life of 20 years. Analysis of existing and previous seals within the district show an average expected life of 14 years, for which roughly 7% of the sealed network should be annually resurfaced.

#### Benefits & Consequences:

- ✓ Minimise funding increases (inflation only)
- ✓ Priority 4-5 Faults continue to be addressed.
- ⊗ Overall condition of sealed pavement will continue to slowly deteriorate – asset consumption
- ⊗ Below network-need resurfacing resulting in higher maintenance needs in over the long term
- ⊗ High-cost treatments (Digouts, Stabilisation) will continue with lower cost, preventative treatment options reducing as Priorities reach 3->4->5.
- ⊗ Decreased safety and higher risk of DSIs
- ⊗ Limited focus on environmentally friendly alternative treatment options.
- ⊗ Reduction in customer satisfaction
- ⊗ Risk of recent cost escalation trend continuing (up to 7% annually) resulting in higher delivery costs

#### Alignment with Benefit Statements



Funding (3yr)	Current Maintenance	\$5,652,224	Proposed Maintenance	\$7,065,280	Variance 25%
	Current Reseals	\$7,111,695	Proposed Reseals	\$8,889,619	Variance 25%
	Current Rehabilitation	\$5,456,234	Proposed Rehabilitation	\$6,820,293	Variance 25%
		<b>\$18,220,153</b>		<b>\$22,775,191</b>	Variance 25%

## Option 2 – Long term Implementation of Asset Preservation Strategy

Outside of pre-reseal repairs the focus will remain on high priority pavement faults, but an increased maintenance budget will allow for an increase in proactive maintenance and the ability to address some lower priority faults, at a lower \$/m<sup>2</sup> rates.

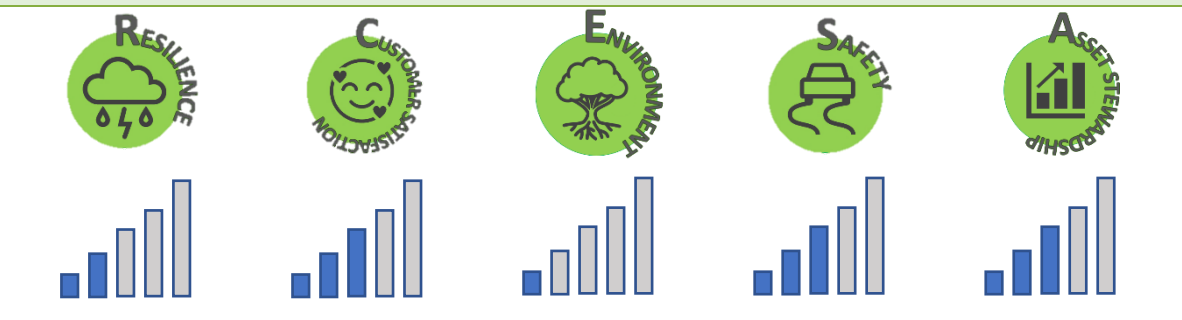
The current strategy targets 5% of the sealed network resurfaced annually which assumes an average seal life of 20 years. Analysis of existing and previous seals within the district show an average expected life of 14 years, for which roughly 7% of the sealed network should be annually resurfaced.

A long-term implementation of the Asset Preservation Strategy will see an incremental move towards the above 7% target, initially aiming to reach 6% over the next two 3Y funding cycles.

### Benefits & Consequences:

- ✓ Overall condition improvement in the long term
- ✓ Asset consumption slowed
- ✓ Reduction in maintenance costs over the long term
- ✓ Lower cost Priority 2 options increase
- ✓ Reduction in high severity faults
  
- ⊗ Limited focus on environmentally friendly alternative treatment options.
- ⊗ Initially only slowing of downward trend of network deterioration before reversal
- ⊗ Risk of recent cost escalation trend continuing (up to 7% annually) resulting in higher delivery costs

### Alignment with Benefit Statements



Funding (3yr)	Current Maintenance	\$5,652,224	Proposed Maintenance	\$7,630,502	Variance 35%
	Current Reseals	\$7,111,695	Proposed Reseals	\$10,667,543	Variance 50%
	Current Rehabilitation	\$5,456,234	Proposed Rehabilitation	\$6,820,293	Variance 25%
		<b>\$18,220,153</b>		<b>\$25,118,337</b>	Variance 42%

### Option 3 – Asset Preservation Strategy

With a significant increase to reseals (see below), additional allowance will be given to pre-reseal repairs. An increased maintenance budget will allow for a significant increase in proactive maintenance (2<sup>nd</sup> coat patches & crack seals) and the ability to address lower priority faults, at a lower \$/m<sup>2</sup> rates.

The current strategy targets 5% of the sealed network resurfaced annually which assumes an average seal life of 20 years. Analysis of existing and previous seals within the district show an average expected life of 14 years, for which roughly 7% of the sealed network should be annually resurfaced.

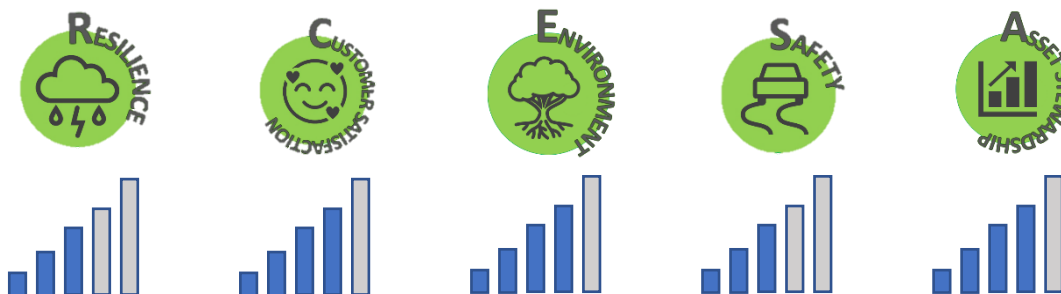
The Asset Preservation Strategy will see an accelerated move towards the above 7% target, initially aiming to reach 6% by 2026/27 and then 7% in the following NLTP.

This option also makes allowance for the implementation of the change from hot cutback bitumen-based resurfacing to emulsion to keep up with industry change driven by environmental, climate change, and safety factors.

#### Benefits & Consequences:

- ✓ Overall condition improvement
  - ✓ Asset consumption reduced
  - ✓ Reduction in maintenance costs over the long term
  - ✓ Improvement in customer satisfaction / reduction in CRMS
  - ✓ Lower cost Priority 2 options increase
  - ✓ Reduction in high severity faults
  - ✓ **improved safety and reduced risk of DSIs**
  - ✓ **significant improvement in safety in the bitumen manufacturing and sealing process**
  - ✓ **reduced impact on the environment (49% less CO2 emissions from reseals)**
  - ✓ increased weather window for application and seals less prone to surface failures
- ⊗ Achieving and meeting calculated network need delayed till following NLTP
  - ⊗ Risk of recent cost escalation trend continuing (up to 7% annually) resulting in higher delivery costs

#### Alignment with Benefit Statements



Funding (3yr)	Current Maintenance	\$5,652,224	Proposed Maintenance	\$9,208,563	Variance 63%
	Current Reseals	\$7,111,695	Proposed Reseals	\$15,148,596	Variance 113%
	Current Rehabilitation	\$5,456,234	Proposed Rehabilitation	\$8,806,885	Variance 61%
		<b>\$18,220,153</b>		<b>\$33,164,044</b>	Variance 82%

### Option 4 – Low Risk Modelled Requirement (allowing for total average inflation of 35%)

With a significant increase to reseals (see below), additional allowance will be given to pre-reseal repairs. An increased maintenance budget will allow for a significant increase in proactive maintenance (2<sup>nd</sup> coat patches & crack seals) and the ability to address lower priority faults, at a lower \$/m<sup>2</sup> rates.

The current strategy targets 5% of the sealed network resurfaced annually which assumes an average seal life of 20 years. Analysis of existing and previous seals within the district show an average expected life of 14 years, for which roughly 7% of the sealed network should be annually resurfaced. This strategy will target this 7% within the NLTP.

This strategy will also see an increase (50%) in pavement rehabilitation, targeting treatment lengths displaying high defects and deterioration, minimising the risk of reseals not achieving their expected lives.

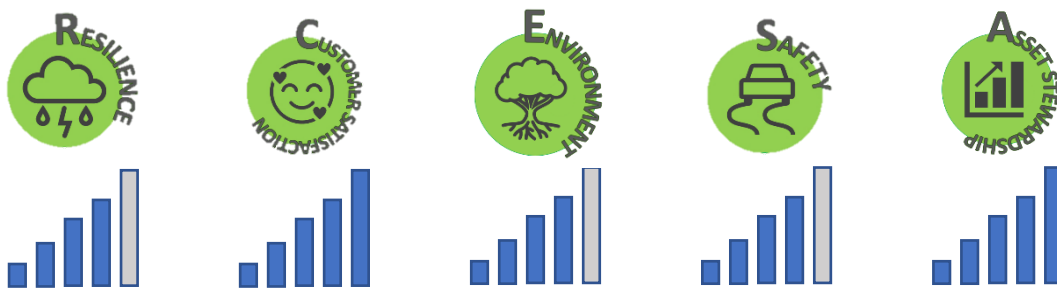
This option also makes allowance for the implementation of the change from hot cutback bitumen based resurfacing to emulsion to keep up with industry change driven by environmental, climate change, and safety factors.

Due to the unknowns of future financial fluctuations a reduced risk approach will be taken, with an increased allowance for inflation.

#### Benefits & Consequences:

- ✓ Overall condition improvement
- ✓ Network needs met.
- ✓ Reduction in maintenance costs over the long term
- ✓ Improvement in customer satisfaction / reduction in CRMS
- ✓ Lower cost Priority 2 options increase
- ✓ Reduction in high severity faults
- ✓ **improved safety and reduced risk of DSIs**
- ✓ **significant improvement in safety in the bitumen manufacturing and sealing process**
- ✓ **reduced impact on the environment (49% less CO2 emissions from reseals)**
- ✓ increased weather window for application and seals less prone to surface failures
- ✓ reduced financial risk

#### Alignment with Benefit Statements



Funding (3yr)	Current Maintenance	\$5,652,224	Proposed Maintenance	\$9,891,392	Variance 75%
	Current Reseals	\$7,111,695	Proposed Reseals	\$16,001,314	Variance 125%
	Current Rehabilitation	\$5,456,234	Proposed Rehabilitation	\$10,257,720	Variance 88%
		<b>\$18,220,153</b>		<b>\$36,150,426</b>	Variance 98%



## **Proposed option**

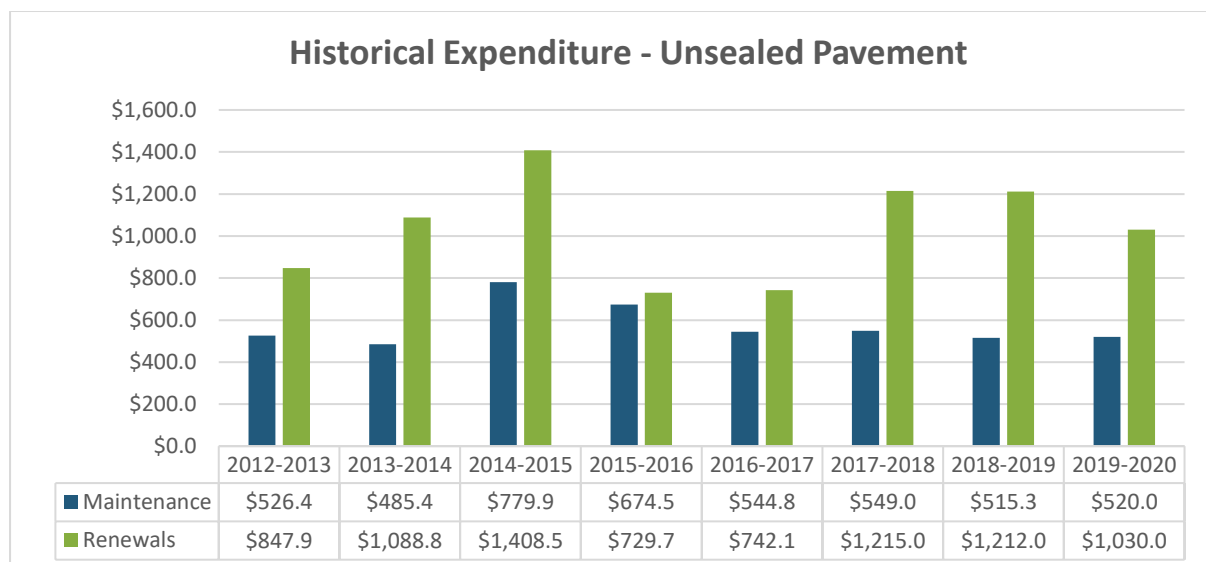
Our preferred option is Option 3 – Asset Preservation Strategy. This option will see an end to the “sweating the asset” approach that’s been common across the country and will significantly reduce asset consumption. It will also give us the opportunity to adopt the newer technology of Emulsion that is safer for people and the environment. In choosing this option we can continue to focus on proactive repairs. In being able to work proactively we can lift the overall standard across the network and address some of the key drivers behind the declining LOS and customer perception of the network.

## 5.2.4 Unsealed Roads

With Unsealed roads making up a large percentage of our road network, the level of maintenance and renewals and the subsequent Level of Service (LoS) we provide is important to many people in the district.

### Historical investment

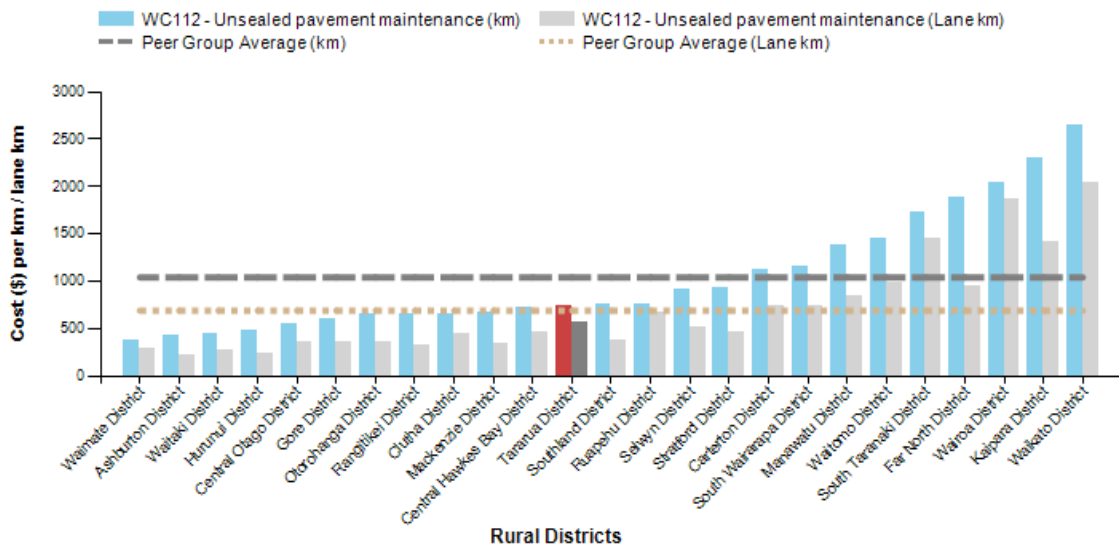
Increasing demands on our Unsealed Pavements has led to a push to upgrade the pavement structures. Between 2015-2017 there was a significant reduction in renewal activities with Heavy Metal Overlays paused. This time allowed us to gather greater evidence as to where treatments were needed and revise our strategic approach to the Unsealed Road network. Vulnerable areas were identified to allow a more targeted approach rather than the Reactive, Customer Request driven approach of previous years. Heavy Metal Overlays have now resumed with many of the structural issues addressed. The focus is shifting towards upgrading the running course, to improve safety and ride quality.



### Historical investment comparisons

The following tables provide details of Tararua District Council's activities as well as others within our Rural District Peer Group. This data allows us to gauge our level of investment in comparison to other Council's.

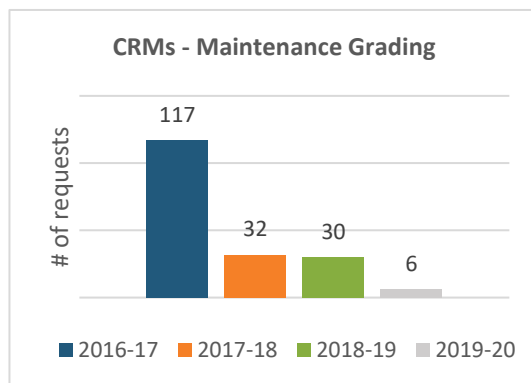
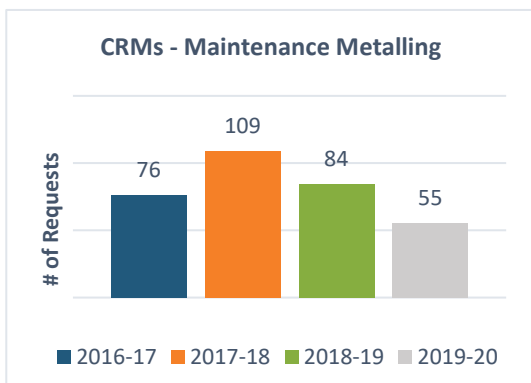
**WC112 - Unsealed pavement maintenance  
Cost per Unsealed km/lane km by Peer Group  
3 Year Average 2017-2019**



**Current level of service summary**

Our unsealed roads have undergone a transformation over the past five years. Through a combination of grading and re-metalling we have managed to bring them to a standard that has allowed us to be more targeted with our maintenance and renewal works.

The current practice is to inspect the road on a cyclic basis and then only if required, grade or apply an application of metal running course. This has meant better utilisation of resources as rather than grading for the sake of grading (i.e., a cyclic schedule), we can spread investment further and focus on roads in poorer conditions. This approach here led to a noticeable reduction in Customer Requests for Maintenance relating to the unsealed roads, as well as several compliments as well.



With high confidence in our Maintenance and Renewals strategies, we are starting to focus on other aspects that impact Safety and Quality as well as working to identify future demands.

**Link to problem statements – how is it affecting our problems.**

As unsealed roads generally have low traffic volumes, targeting safety improvement funds towards this asset does not provide the same level benefits to road users as targeting funds towards higher classification roads would have. However, with a high percentage of our roads unsealed, safety must stay a focus.

Safety concerns generally arise through public feedback when there is a change in use (i.e., Forestry harvesting commences) and drivers with little local knowledge start to use them. These people generally drive at greater speeds and are not aware of the high-risk sections of the road, such as blind corners.

Where Unsealed pavements meet sealed pavement/bridge approaches have been identified as areas of with a high safety risk to the road user. With continuous impact from vehicles these areas often pothole and corrugated and this can lead to loss of control.

High-risk sites are being identified and a targeted programme is being implemented to address some of these safety risks through the Minor Safety improvement programme.

Recently, using a combination of Renewal and Minor Improvements we have been making safety improvements by undertaking shape correction followed by a seal coat to increase traction for the road user. The next steps with this is to identify all of these risky transition sites and prioritise them for improvement works to ensure a consistent and safe journey.

### **Unsealed roads resilience**

Our unsealed roads can be hit hard during storm events. High-intensity rainfall leads to the aggregate being washed off the road and into side-drains. This increases the likelihood of culverts becoming blocked, which in turn can lead to heavy scouring or the loss of sections of road.



Damage to Unsealed Road through Logging Activity

Over the period since the Tararua Roding network has been managed under the Alliance model, trials have been undertaken on differing aggregates to improve the Unsealed Road network pavement condition. However, with high demands across the range of assets Tararua manages and limitations on funds, innovative measures are limited to those that will provide the greater benefits for the investment made.

### **Option analysis**

Historically, under a measure and value contract model, roads were programmed on a cyclic basis and influenced by the underlying commercial drivers of the contract model. This could result in roads being graded or metalled even when it was not required. Following the establishment of the Tararua Alliance, the Level of Service (LoS) has been tested and roads are now graded or metaled when required rather than to achieve specific quantity targets (ie. length of road graded, or aggregate volume applied).

The frequency of grading and metalling of roads were altered, then monitored by field-staff in combination with the number of Customer Requests for Maintenance (CRMs) to determine the suitability of this approach. With little changes to the condition of the pavement and the reduction in complaints (as shown in the previous tables), the current LoS and intervention strategy is believed to be suitable.

Taking into consideration the above, only two options have been analysed for the Unsealed Road Asset. One maintains the current approach for Maintenance, Renewals and Safety improvements while the other increases funding for Safety Improvements.

### Maintenance and renewals option tables

Option 1 – Maintain Funding* and Strategy (allowing for total average inflation of 25%)					
<p>Continue with our current approach with a high level of running course application and grading to ensure a good quality network while focusing on increasing cross-fall to increase resilience of the asset.</p> <p>Through improved data collection (e.g. unsealed roughness) and programming we hope to continue to improve the level of service on the district’s unsealed network. It’s also expected that the proposed increased investment in drainage will have a flow-on effect in improving the condition of our unsealed roads.</p> <p><i>*Slight increase (2%) to match quantities and needs from recent years</i></p>					
<p>Benefits &amp; Consequences:</p> <ul style="list-style-type: none"> <li>✓ Overall condition improvement</li> <li>✓ Asset consumption reduced</li> <li>✓ Improvement in customer satisfaction / reduction in CRMS</li> <li>✓ improved safety and reduced risk of DSIs</li> <li>✓ <b>Improved the Resilience of the network</b></li> </ul> <p>⊗ Risk of recent cost escalation trend continuing (up to 7% annually) resulting in higher delivery costs</p>					
Alignment with Benefit Statements					
Funding (3yr)	Current Maintenance	\$1,637,276	Proposed Maintenance	\$2,306,920	Variance 41%
	Current Renewals	\$3,110,512	Proposed Renewals	\$3,718,599	Variance 20%
		<b>\$4,747,788</b>		<b>\$6,025,519</b>	Variance 27%

**Option 2 – Maintain Funding\* and Strategy - Low Risk (allowing for total average inflation of 35%)**

Continue with our current approach with a high level of running course application and grading to ensure a good quality network while focusing on increasing cross-fall to increase resilience of the asset.

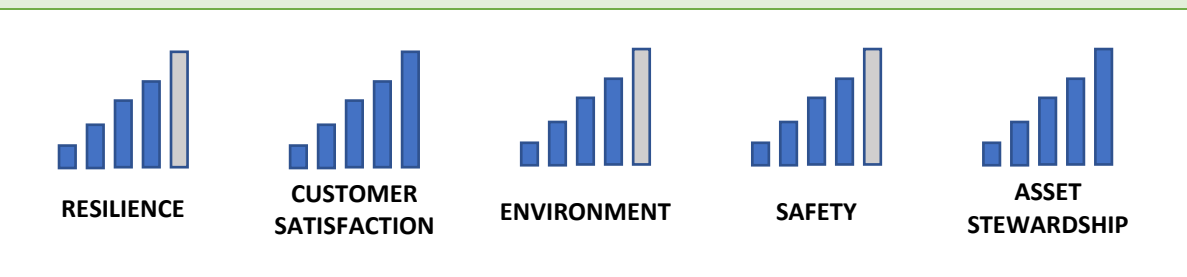
Through improved data collection (e.g., unsealed roughness) and programming we hope to continue to improve the level of service on the district’s unsealed network. It’s also expected that the proposed increased investment in drainage will have a flow-on effect in improving the condition of our unsealed roads.

*\*Slight increase (2%) to match quantities and needs from recent years*

**Benefits & Consequences:**

- ✓ Overall condition improvement
- ✓ Asset consumption reduced
- ✓ Improvement in customer satisfaction / reduction in CRMS
- ✓ improved safety and reduced risk of DSIs
- ✓ Improved the Resilience of the network
- ✓ Reduced financial risk

**Alignment with Benefit Statements**



<b>Funding (3yr)</b>	Current Maintenance	\$1,637,276	Proposed Maintenance	\$2,472,287	Variance 51%
	Current Renewals	\$3,110,512	Proposed Renewals	\$4,043,666	Variance 30%
		<b>\$4,747,788</b>		<b>\$6,515,952</b>	Variance 37%

**Proposed option**

Our preferred option is Option 3 – Asset Preservation Strategy. This option will see an end to the “sweating the asset” approach that’s been common across the country and will significantly reduce asset consumption. It will also give us the opportunity to adopt the newer technology of Emulsion that is safer for people and the environment. In choosing this option we can continue to focus on proactive repairs. In being able to work proactively we can lift the overall standard across the network and address some of the key drivers behind the declining LOS and customer perception of the network.

## Maintenance and Renewals Option tables

Option 1 - Maintain Funding with targeted Safety Improvements					
<ul style="list-style-type: none"> <li>Continue with our current approach with a high level of running course application and grading to ensure a good quality network while focusing on increasing cross-fall to increase resilience of the asset.</li> <li>Fund a small number of safety improvement sites which focus of the highest risk sections.</li> </ul>					
<b>Benefits</b> <ul style="list-style-type: none"> <li>There is no deterioration further in the condition of the Unsealed Road asset.</li> <li>Selected sites undergo safety improvements.</li> <li>No change in funding required.</li> </ul>			<b>Consequences</b> <ul style="list-style-type: none"> <li>Safety improvements across the Unsealed network will develop slowly.</li> </ul>		
Positive Impact on Problems			Negative Impact on Problems		
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: #007bff; color: white; border-radius: 15px; padding: 5px 15px; margin: 5px;">Inclusive Access</div> <div style="background-color: #6c757d; color: white; border-radius: 15px; padding: 5px 15px; margin: 5px;">Healthy and Safe People</div> </div> <div style="text-align: center; margin-top: 10px;"> <div style="background-color: #ffc107; color: white; border-radius: 15px; padding: 5px 15px; display: inline-block;">Resilience and Security</div> </div>			<div style="display: flex; justify-content: center; align-items: center;"> <div style="background-color: #6c757d; color: white; border-radius: 15px; padding: 5px 15px; margin: 5px;">Healthy and Safe People</div> </div>		
<b>Funding (3Yr)</b>	Current Maintenance	\$1,516,214	Proposed Maintenance	\$1,516,214	Variance 0%
	Current Renewals	\$3,221,635	Proposed Renewals	\$3,221,635	Variance 0%
	Minor Improvements		Minor Improvements	\$300,000	

### Option 2 - Increase funding allocation for Safety Improvements

- Continue with our current Maintenance and Renewal approach with a high level of running course application and grading to ensure a good quality network while focusing on increasing cross-fall to increase resilience of the asset.
- Increase funding by 10% to undertake additional improvements (Sight-benches, corner widening) and improve the Safety of the Unsealed Roding Asset.

#### Benefits

- Allows us to continue with our current Strategy or renewing culverts in-conjunction with Rehabilitations and limit the future cost of remedial works on these sections of pavement.
- Allows us to focus investment on assets with a lower condition rating or impacts on the associated assets.
- Improves the Resilience of the network as the overall drainage systems functions better.

#### Consequences

- Increased funding allocation required.

#### Positive Impact on Problems



#### Negative Impact on Problems

<b>Funding (3 yr)</b>	Current Maintenance	\$1,516,214	Proposed Maintenance	\$1,516,214	Variance 0%
	Current Renewals	\$3,221,635	Proposed Renewals	\$3,221,635	Variance 0%
			Proposed Improvements Minor	\$300,000	
	Comments				

### Proposed option

Following testing of Level of Service and alteration of our Unsealed Pavement strategy, we believe our current approach to Unsealed Pavement Maintenance and Renewals is correct now.

We will however seek to make further safety improvements at critical risk points across the unsealed network, therefore, we propose to allocate more funding from the Minor Improvement Work Category.

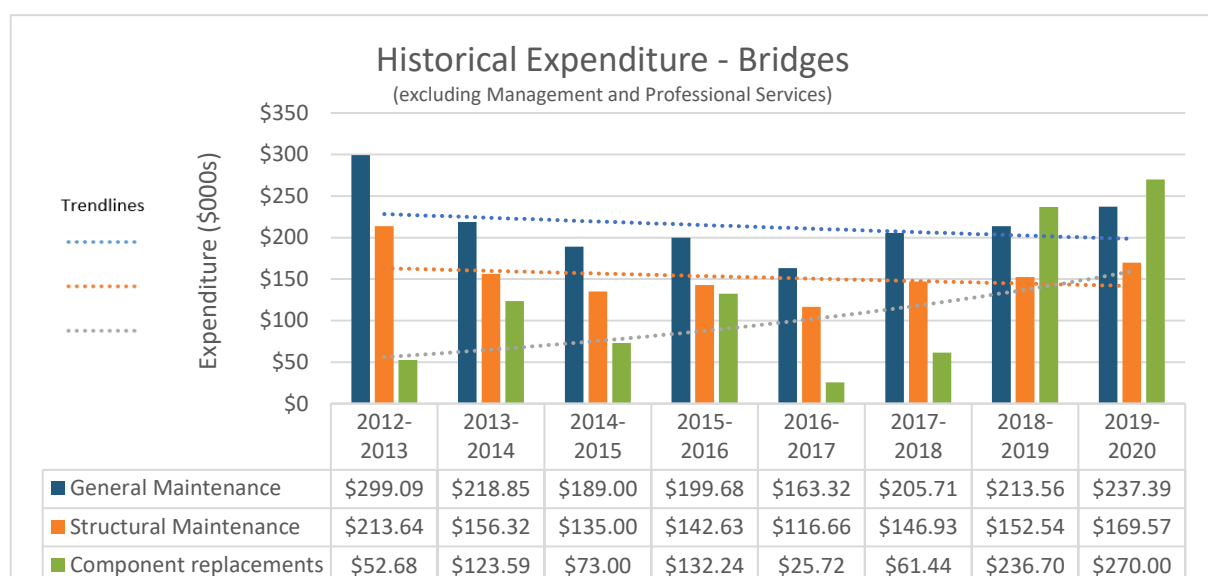


## 5.2.5 Structures

### Historical investment – bridges

Expenditure on the General and Structural Maintenance of our Bridges has remained relatively static over the period between 2012-2019, however with increased inspections on the aging assets, component replacement has increased.

With increasing focus and subsequent understanding of these assets, we are increasingly aware of the risks and steps we need take to address issues we face with our Bridges. The resilience and Level of Service our bridges provide is to be one of the focuses of the coming years.



### Bridge – current level of service (what are we currently achieving)

Having recently completed a study into the state of our bridge stock and with the data transfer into RAMM nearing completion, we now have easier access to bridge asset information and improved ability to manipulate and analysis the data.

Over the upcoming AMP period, the information now in RAMM will be used track and build on our understanding of the bridge asset and their maintenance and renewal needs to achieve the desired Level of Service (LoS).

Of the updated information reviewed to date and supported by the increase in Historical Spending, the funding required to maintain our bridges is trending upwards. This indicates we are identifying and repairing a greater number of issues with our structures. Increases in traffic volumes along certain routes are also putting pressure on our single-lane bridges.

With the increasing demand and stress on our bridge assets deterioration rates are likely to accelerate. If this continues, there will be a reduction in the LoS.

### **Bridges - link to problem statements**

Large environmental events, whether it be storms or earthquakes can lead to significant damage to our Bridges.

Many of our district's rivers form the headwaters of larger catchments (ie. Manawatu) therefore during high intensity rainfall events our larger bridges tend to fare well as they are not having to manage the large volumes of water that those in the lower catchments face. However, our smaller bridges are often impacted due to the rapid rise and fall of flow volumes leading to scouring of headwalls and abutments. Increasing intensity of rainfall and frequency of these events has increased the vulnerability of our bridge stock and is contributing to the resilience issues we have.

Growing traffic volumes due to the mobilisation of the rural workforce is increasing demand on our one-lane bridges. With a number of these near corners or in dips, there is increased likelihood of an accident occurring at these bridges.

Bridges across the district are generally narrow in width and have been built to support vehicles rather than mixed-modal transport (vehicles/bikes/pedestrians). Combine this with poor approach visibility, people can be discouraged to use alternative modes of transport such as Bikes as there is an increased safety risk in doing so. Designating then developing Cycle friendly routes is being considered to improve the network.

With an aging stock, the increased pressures our bridges are leading to accelerated deterioration rates, as well as restricting our ability to grow the district.

### **Bridge option analysis**

Based on the fault-data available and recent increases in bridge repairs and component replacement, it has deemed necessary to increase the investment in the bridge stock to ensure that the asset continues to meet the required Level of Service.

## Option 1 - Increase Funding for Bridges

### Proposal 1

An increase in Bridge Renewals budget is required to address the issues with our known Non-compliant bridges.

Year 1 – additional \$50k required for bridge testing (concrete sampling) & repair design.

Year 2 & Year 3 – additional renewal funding of \$100k to perform those repairs.

### Proposal 2

Proposal 1 above plus additional funding targeted towards the upgrade of bridges which do not meet the new loading capacity limits on known freight routes.

### Proposal 3

Proposal 1 and 2 above plus 1 bridge replacement per funding cycle for single lane bridges that are no longer fit for purpose for the route where they are situated.

*Eg: Oxford Rd bridge (used as a Woodville bypass by State-Highway traffic) This is speed limited due poor approach visibility in combination with high traffic flows in a 80km/h speed zone.*

Benefits	Consequences
<ul style="list-style-type: none"> <li>Addresses the known issues with Non-compliant bridges.</li> <li>Improves resilience of our Asset.</li> <li>Improves access to our network for Heavy vehicles.</li> <li>Improves the Safety of our Network</li> </ul>	<ul style="list-style-type: none"> <li>Increased funding required.</li> </ul>

Positive Impact on Problems	Negative Impact on Problems

Funding (3 yr)	Current Maintenance	\$1,443,436	Proposed Maintenance	\$1,443,436	\$1,443,436
	Current Replacement	\$1,148,535	Option 1	+ \$50k (Y1) + \$100k (Y2 and Y3)	\$2,098,535
			Plus Option 2	+ \$300k (total)	
			Plus Option 3	+ \$400k (Yr2)	
Comments – Maintenance spend includes some structures maintenance – not currently split out.					

### Proposed option

Having identified issues with our bridge stock and the assets being a critical feature of our network, only one option has been presented and all 3 proposals within have been chosen.

### Retaining Walls

**Retaining wall condition – what condition are they in**

Following identification and initial condition assessment of retaining walls, it has been identified that these are an Achilles heel for the Tararua Roding Network. During recent high-intensity rainfall events, several walls have sustained damage for which extensive repairs have been required. Additional to these repairs, many have been found to be in a condition where they are likely to fail in the short to medium-term. The creation of the inventory is allowing us to create an inspection and maintenance programme that will improve the resilience of the asset.

### Link to problem statements – how is it affecting our problems

Links between our problems across the network and retaining walls are very similar to bridges, as in-part they both perform a similar function, as they allow traffic to traverse our network. By not having a good grasp on the condition of many of our retaining walls, our network is placed in vulnerable state. Failure of retaining walls can lead to the closure of roads and costly remedial action, both financially and environmentally.

### Option analysis

The retaining wall database in its infancy and with limited data available to analyse, we cannot provide options to compare funding approaches. However, from the inspections completed and failures experienced, we do know that funding is required. Funding will allow us to repair the already stressed asset and reduce the likelihood of failures of this asset type.

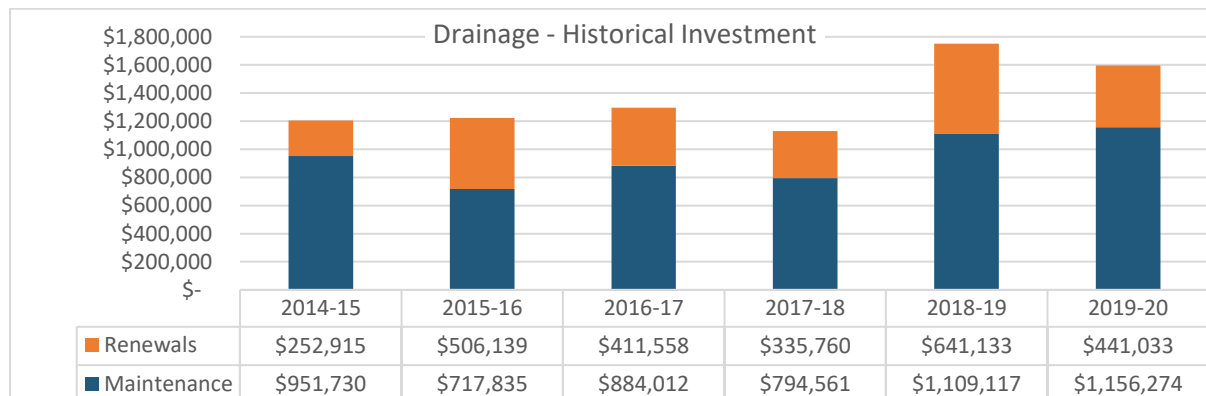
### Proposed option

Increase funding for retaining walls				
Increase funding to allow us to repair the known issues with retaining walls.				
Funding (3 yr)	Current Maintenance	\$0	Proposed Maintenance	\$216,513
	Current Renewals	\$0	Proposed Renewals	\$150,000
<b>How does our Proposed Option assist us in resolving our problems?</b>				
Understanding the condition of and performing maintenance on retaining walls will reduce the likelihood of failure of these assets. Improving the resilience of the asset will reduce the overall cost to the community compared to if one was to fail.				

## 5.2.6 Drainage

### Historical investment

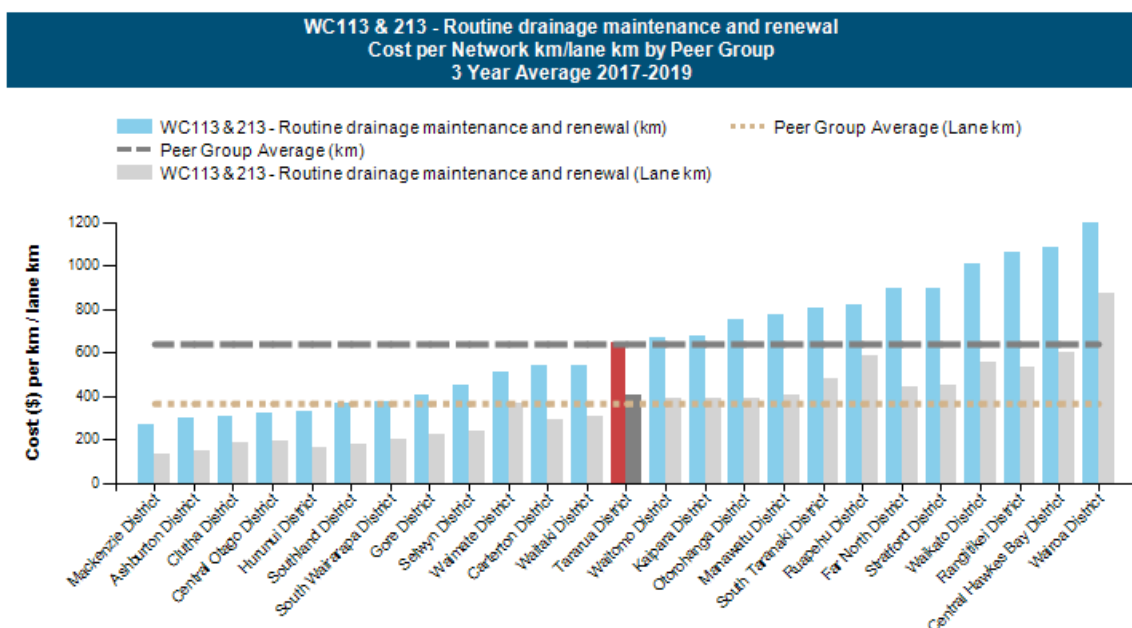
With increasing focus on improvements to our drainage assets, there has been increased investment in maintenance of this asset over the past few years. Our Drainage Renewals are targeted towards completing culvert upgrades in conjunction with Pavement Rehabilitations. This allows us to future proof the new pavements while maximising the opportunity to complete the works at low cost as establishment costs and surface reinstatement is covered by the rehabilitation works scope.



While investing in culvert replacements while undertaking other works is a cost effective strategy, it absorbs the majority of our Drainage Renewals budget. A renewals reserve of funding is maintained throughout the year to undertake reactive response to drainage issues, but limited funding is available to undertake a wider renewals programme.

### Historical investment comparisons

The following tables provide details of Tararua District Council's activities as well as others within our Rural District Peer Group. This data allows us to gauge our level of investment in



comparison to other Council's. The chart shows we are investing close to the average of our Peer Group.

### **Current level of service summary**

With increasing frequency of High-intensity rainfall events, the resilience of our drainage assets is being tested.

In recent years we have identified drainage as an asset that requires an increase in Level of Service. This is a current priority and forms a key part of our overall Maintenance Intervention Strategy.

A minimum size of 375mm dia. for culverts has been set to manage increased water-flows and protect the pavement assets. With over 58% of culverts sizes less than this diameter, there is much work to required to improve the resilience of the assets. There has been a focus on ensuring surface water channels are maintained and a 7 year cycle of renewal is underway to ensure each road has clear flowing water channels. [Link to Problem Statements – How is it affecting our problems](#)

Our roading network is built on varying terrain and soil types of which some (sloping and clay type soils) are prone to slips and dropouts. With changing climate conditions and more frequent high-intensity rainfall events, the vulnerabilities within our drainage systems are exposed, with capacity limits being tested.

Following our Drainage Asset Inventory update, it has been identified that our drainage assets are below optimum condition and have been designed to varying standards and investment is needed to improve the condition of the asset.

Investing in this asset will reduce maintenance costs across other asset types such as Pavement Maintenance and reduce the financial and community impact from storm events.

### **Option analysis**


The recent Drainage inventory refresh identified 79 assets in very poor condition & 874 that are below our desired Level of Service and require intervention. This has been taken into consideration when developing our Life-cycle Cost Options for our drainage assets.

With the asset considered to be in a “stressed” state, a reduction in funding has not been considered.

Three options have been considered when reviewing our approach to Drainage Maintenance and Renewals and are presented in the following tables. These options are;

- Maintain the current funding and strategy for this asset group
- Maintain funding within the asset group but alter strategy to target specific issues across the network.
- Increase funding to allow us to address the known issues with this asset group.

## Drainage asset option tables

Option 1 - Maintain Funding and Strategy					
Continue to fund Drainage Maintenance and Renewal activities at present levels and undertake works in line with the existing strategy of upgrading all culverts in conjunction with Rehabilitations and targeting remaining funds towards the other assets with the highest risk.					
<b>Benefits</b> <ul style="list-style-type: none"> <li>Undertaking culvert renewals alongside Pavement Rehabilitations allows us to reduce the unit rate cost of each install as single establishment and surface reinstatement costs are eliminated.</li> <li>No need for additional funding.</li> </ul>			<b>Consequences</b> <ul style="list-style-type: none"> <li>High risk drainage assets outside of the Rehabilitation programme continue to deteriorate.</li> <li>High-cost repairs following high-intensity rainfall events increase</li> </ul>		
Positive Impact on Problems			Negative Impact on Problems		
					
Funding (3yr)	Current Maintenance	\$3,231,481	Proposed Maintenance	\$3,231,481	Variance 0%
	Current Renewals	\$1,632,477	Proposed Renewals	\$1,632,477	Variance 0%

## Option 2 – Maintain Funding and alter Strategy

Alter strategy and redirect drainage renewals funding currently used on Pavement Rehabilitation sites to very poor condition culverts only across the network.

### Benefits

- Allows us to focus some or all investment on assets with a lower condition rating or risk to associated assets.
- This allows us to address many of the current issues we have with our drainage assets.
- Improves the Resilience of the network as the overall drainage systems functions better.
- No need for additional funding.

### Consequences

- Increased cost for each repair (50-100%) as additional costs are added by not completing works in conjunction with wider works (i.e. increased establishment and surface reinstatement costs)
- Renewals are only deferred and when required will result in disturbance of rehabilitated pavement. This typically leads to an increase in future faults as the pavement layers are compromised.

### Positive Impact on Problems



### Negative Impact on Problems



Funding (3yr)	Current Maintenance	\$3,231,481	Maintenance	\$3,231,481	Variance 0%
	Current Renewals	\$1,632,477	Renewals	\$1,632,477	Variance 0%



### Option 3 – Increase Funding

Our drainage assets present us with significant risks to the resilience of our network. An increase in funding will allow us to start addressing the issues we are faced with.

#### Maintenance

Increasing the maintenance budgets by \$100k per year would allow us to increase activities (Unlined Surface Water-channel clear / Culvert Jet Cleaning) and improve the function of the Asset.

#### Renewals

Increasing the renewals budget by \$55k per year will allow us to remedy a prioritised selection of the 79 assets.

- The prioritised list would include risk factors of full culvert collapse - depth of pipe, alternate access, risk to the road itself etc. etc.
- This will minimise the risk of us losing a road due to a collapsed culvert and help create resilience for the network.

Along with the additional funding for Renewals, the number of Pavement Rehabilitations likely to reduce over the next 3 years. This will free up existing funds and allow us to focus investment on culverts across the wider network. This alteration of strategy will see a number of the issues we have identified rectified.

#### Benefits

- Allows us to focus investment on assets with a lower condition rating or impacts on the associated assets.
- Allows us to address many of the current issues we have with our Drainage Assets.
- Improves the Resilience of the network as the overall drainage systems functions better.

#### Consequences

- Increased funding required.

#### Positive Impact on Problems



#### Negative Impact on Problems

<b>Funding (3 yr)</b>	Current Maintenance	\$3,231,481	Proposed Maintenance	\$3,531,481
	Current Renewals	\$1,632,477	Proposed Renewals	\$1,687,477
	Comments			

### Preferred option

Option 3 is the preferred choice as it allows us to address drainage related resilience issues we face across the network.

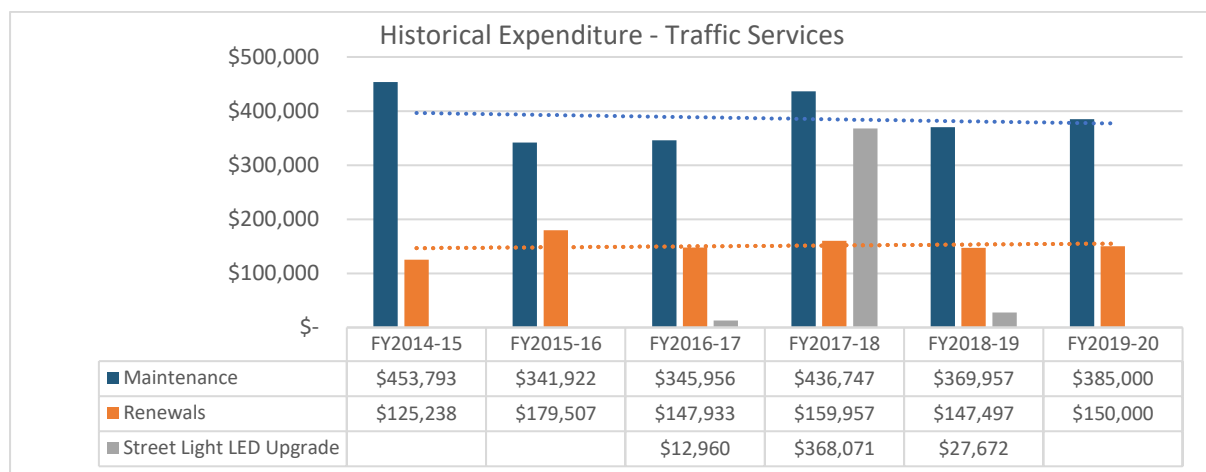
## 5.2.7 Traffic Services

When considering the options for the Traffic Service assets we have considered what Tararua has now and compare it to the national context of what is being promoted through the Government Policy Statement and other guiding documents.

### Historical investment

Investment in the Maintenance and Renewals of Traffic Services has remained relatively static over the previous 6 years.

In 2016, Tararua District Council undertook an upgrade of its Street Light assets and change the Bulbs to LEDs. To do this we utilised the enhanced subsidy for the conversion to LED lights which will save power and reduce maintenance costs. This addressed the current lighting stock but did not look into areas that require additional lighting installed.



### Current level of service summary

<b>Signage</b>	The current LoS provided by the signage assets is mixed. Regulatory and basic General Information signage is in good condition, but Permanent Warning signs such as Chevrons featuring sporadically about the district and many being the old Black and White type.
<b>Line-marking</b>	Line-marking consistency is considered to be an asset which requires improvement.
<b>EMPs</b>	With many of the “sets” of markers around the district are not installed to MOTSAM standards or align with the desired LoS established in guiding documents (ONRC).

<b>Street Lighting</b>	There is no specific standard for which Tararua District Council aims to achieve when it comes to lighting across the district as guidelines are designed for larger metropolitan areas. The LUX survey recently complete identified many of the urban streets should have additional lighting, but this would require significant investment to do so. The survey results will be used to target the areas of the network where the no lighting presents the greatest risk to pedestrians or road users.
<b>Rails &amp; Barriers</b>	Rails & Barriers are in a stressed state with little to no maintenance and renewal works performed on the existing assets for many years. As part of the <i>Traffic Services Standardisation &amp; Improvement Project</i> a new LoS is to be adopted for this asset-type.

### **Link to problem statements – how is it affecting our problems**

The district wide inconsistency towards Traffic Services directly links to our Problem Statement of *“Inconsistent road form and ad hoc safety measures area resulting in a high risk of serious crash to motorists”*. Devices designed to improve safety, such as Chevrons, Edge Marker Posts and Sight-Rails feature sporadically around the district and many are not installed to MOTSAM standards.

Line-marking is generally only found on the routes with high traffic volumes.

With a large percentage of our roads falling into the lower ONRC categories, following the tools guidelines for LoS will not result in a great deal of change. To address this we will be conducting our own assessment and developing additional guidelines for where Traffic Service assets are to be installed.

### **Option analysis**

With Traffic Services having strong links to our problems of inconsistency, a reduction of LoS is not being considered for Traffic Services.

Three options have been assessed for the assets for the upcoming AMP period and are;

- Maintain the same level of funding and strategy.
- Upgrade the asset base by including Traffic Services in a wider Minor Improvement project.
- Increase funding for the Traffic Services category.

### Option 1 - Maintain Funding and Strategy

Continue to manage the Traffic Services asset at current funding levels and with the same strategic approach.

- Undertake maintenance and renewal of Street Lights as required to maintain current LoS.
- Install new EMPs, Linemarking on Rehabilitations.
- Undertake yearly Line-mark of network
- Repair Sight-rails and Guardrails when damaged.

#### Benefits

- No need for additional funding.

#### Consequences

- Increasing inconsistency of EMPs across district.
- Deterioration of the Traffic Services Asset.

#### Positive Impact on Problems

#### Negative Impact on Problems

Healthy and Safe People

<b>Funding (3 yr)</b>	Current Maintenance	\$1,089,686	Proposed Maintenance	\$1,089,686	Variance 0%
	Current Renewals	\$419,919	Proposed Renewals	\$419,919	Variance 0%
	Comments				

## Option 2 – Include Traffic Services in Minor Improvement Project

### Minor Improvement (Out of Context Curves Project)

Adopting work already started by KiwiRAP to identify out of context curves across New Zealand, we will focus Minor Improvement Funding to determine then undertake suitable mitigations such as additional signs, sight rails and delineation on Out of Context Curves within Taranua.

#### Benefits

- Allows us to address specific safety concerns across the network in a low cost manner.
- Improves the consistency of the asset across the district.

#### Consequences

- Safety Improvement money cannot be utilised in other areas such as corner widening.

#### Positive Impact on Problems

Healthy and Safe People

#### Negative Impact on Problems

Improving Freight Connections

Resilience and Security

Funding (3 yr)	Current Maintenance	\$1,089,686	Proposed Maintenance	\$1,089,686	Variance 0%
	Current Renewals	\$419,919	Proposed Renewals	\$419,919	Variance 0%
			Proposed Safety Improvements	\$150,000	
	Comments				
Funding for the Out for Context Curves project is to come from the existing Safety Improvement budget.					

### Option 3 - Increase Funding

#### Proposal 1 – Traffic Services Standardisation Project

We will define and/or clarify Level of Service for signs, delineation and roadmarking to ensure we have a consistent standard, then complete a GAP analysis on our network to determine where we have safety issues and remedy them.

(+\$10k Maintenance - \$150k Minor Improvements)

We will identify and replace non-conforming Terminal ends on Guardrails. (+\$40k Renewals)

#### Proposal 2 - Street Lighting Improvements

We have recently had a LUX Survey performed on our network which has identified a number of areas that require streets lights installed to ensure a safe and consistently well lit urban area.

#### Proposal 3 – School Speed Limit Zones

As part of the NZTAs Tackling of Unsafe Speeds programme an investigation, consultation and delivery is required of changes to speed limits nearby schools within the district. About 10 rural and 10 urban school speed limit zones are required to be investigated.

#### Benefits

- Allows for a dramatic overhaul of the existing asset, eliminating our problems of inconsistency and provides prompt network wide safety improvements for the road user.

#### Consequences

- Increased funding.

#### Positive Impact on Problems

Healthy and Safe People

Inclusive Access

#### Negative Impact on Problems

<b>Funding</b>	Current Maintenance	\$1,089,686	<b>Proposal 1 - Traffic Services Standardisation Project</b>		
			Maintenance	\$1,099,686	
	Current Renewals	\$419,919	Renewals	\$459,919	
			Minor Improvements	\$150,000	
				<b>Proposal 2 - Street Lighting Improvements</b>	
	Minor Improvements	\$150k (but invested in other areas)	Minor Improvements	+\$100k	
			<b>Proposal 3 - School Speed Limit Zones</b>		
		Minor Improvements	+\$70k		
Comments					

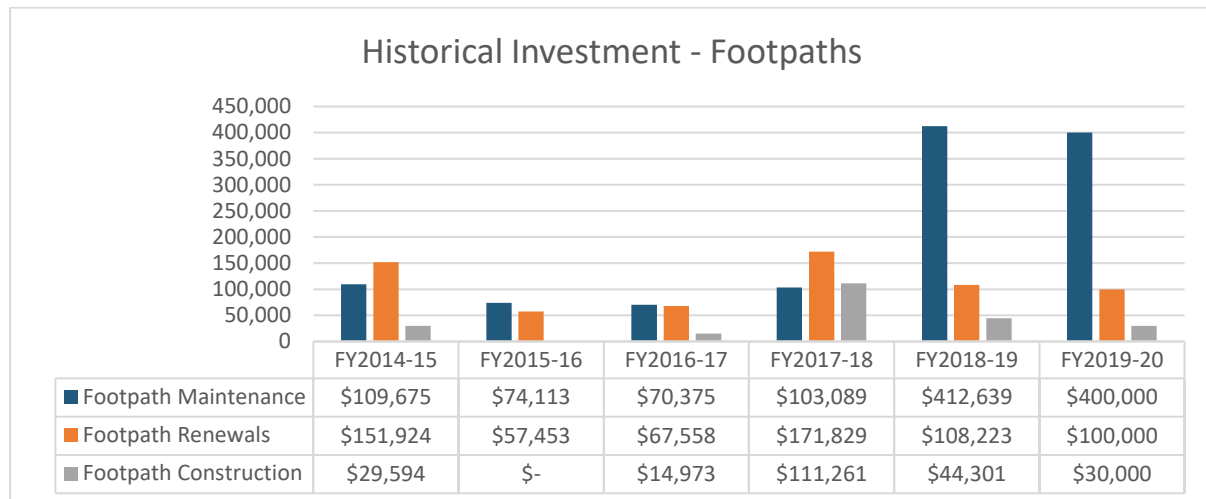
## **Proposed option**

Selecting both Options 2 and 3 gives us the best impact on the safety of our road users over the next three years. It will ensure we have assessed our out of context curves and performed upgrades to minimise or mitigate the issues. It will also ensure we can afford to install a few solar street lights at high risk rural intersections and begin us on the journey to enhance the way our network is interpreted by standardisation of signage and delineation as well as make the zones near schools safer by reducing the speed.

## 5.2.8 Footpaths, Cycleways and Carparks

### Historical investment

Investment in Footpaths has historically been low as it was an activity which was funded entirely by rates. In 2018, with an increasing focus on alternative modes of transport this changed and NZTA now provide financial assistance for the maintenance and renewals of these assets. In the corresponding years, investment in the maintenance of the footpath assets has increased significantly.



### Footpaths

Tararua District Council recognises that there is a lack of footpaths across the districts townships and is working to address this issue. The current strategy is to extend our footpath network and have a footpath along one side of the Urban carriageways. Within the 4 major townships there is 11.4km of carriageway which currently has no footpath.

When undertaking renewals we aim to replace like for like and have been building new footpaths to a minimum of 1.4m width. Going forward, we likely to adopt the NZTA's Pedestrian Planning Guide as a standard for which are footpaths are constructed to.

### ***Property entranceway issues***

Tararua District Council does not own vehicle crossings (from edge of carriageway to boundary) and it is the property owners responsibility to maintain them. The maintenance of these is often an area of dispute, as the residents often expect Council to repair the entranceway while undertaking footpath repairs. Council has a policy to repair the section of entranceway where the footpath crosses only. If the whole entranceway was repaired Council would inherit a significant burden, as many of the entranceways are very old and poorly constructed (AC or chipseal with minimal pavement depth)

### ***UFB rollout***



Footpath renewal works have been limited for the past 2 years due to the scheduled rollout of UFB across the Tararua Districts townships. If renewal work was to occur prior to this, little value would be gained, as the footpaths are likely to be dug up again and once again create a patchwork quilt of AC.

The rollout has commenced in Dannevirke and once complete, we can once again work towards improving the Level of Service for footpaths in that town. The other townships are scheduled to follow Dannevirke and completion of the rollout expected in 2022.

### **Walkways and cycleways**

With only 1.1km of dedicated cycleway in the district and increasing demand for this mode of transport, expansion on this network is being explored. Tararua District Council has recently released a “Visitor and Walk-cycle Strategy and Action plan” for the development of walkways and cycleways across the district.



This plan explores opportunities to create cycleways as a way to encourage tourism. One of the ideas is to create a cycleway between Woodville and Ferry Reserve, which is located at the eastern end of the (now closed) Manawatu Gorge. If this route is created it will address an issue of narrowness along the State-Highway and provide important safety benefits for cyclists. Another idea is to create a cycleway between Pahiatua and the tourism point of Mangatainoka. This also address a safety concern along the State-Highway, where the narrowness of the road and high traffic volumes increase the risk for cyclists.

The full plan can be found by following this link

<https://www.tararua.govt.nz/files/assets/public/pdf/publications/plans-amp-reports/other-plans-and-reports/plans/provincial-growth-fund-tourism-and-action-plan-31-july-2019.pdf>

### **Carparks**

In recent years, Tararua District Council has been investing in the creation of new carparks around the district, with new parking areas being formed at points where the public congregate (schools and maraes). The primary reason for the creation of these carparks is to improve the safety of both the pedestrian and road user. This programme will continue, with other areas identified where safety improvements can be made.

Additional to the creating of new carpark assets, a project to improve lighting in public carparking areas is in the early stages of development, with its intention to improve safety and security at night. During the next funding block we will be installing additional lighting in areas that require it as a way to encourage the personal safety of the public.

### **Link to problem statements – how is it affecting our problems**

Footpaths and Cycleways link to our problems statement of “The current level of service does not actively support economic activity due to the lack of a specific strategy to address this and the historic management of the network” which links to the GPS strategy of developing Better Travel Options. Alternative modes of transport have not been a focus of our transport strategy in the past.

With a limited ratepayer base, a lack of footpath network in urban spaces and a cycleway network so small it barely registers, development of these assets must also contribute to the economic prosperity of the district. The development of the “*Walk-Cycle Strategy and Action Plan*” are a way to contribute to Government Policy Statement objectives of promoting alternative modes of transport and councils economic development goals.



The creation of new car parks in areas where people congregate improves the safety of people.

### **Option analysis**

With 11.4km of urban carriageway having no footpath and a strategy already formed to develop Footpaths, Cycleways and Car parks within the district, only two options are being considered. These options are to;

- Maintain the current levels of fund and strategy for the Asset group.
- Increase Funding for the Asset Group.

## Option tables

Option 1 - Maintain Funding and Strategy					
Continue to develop the asset types in line with current strategy.					
<ul style="list-style-type: none"> <li>Repair category 4-5 faults only due to UFB rollout.</li> <li>Renew Footpaths where they will not be interfered with by the UFB rollout.</li> <li>Minimal expansion of the Urban footpath network.</li> <li>Target Safety projects such as lighting to develop Carparks in areas where public congregate with existing Carpark funding.</li> </ul>					
<b>Benefits</b> <ul style="list-style-type: none"> <li>No need for additional funding.</li> <li>Investment in footpath renewals will not be wasted due to disturbance caused by UFB rollout.</li> <li>Safer spaces for People</li> </ul>			<b>Consequences</b> <ul style="list-style-type: none"> <li>Footpath asset will continue to deteriorate in the short term due to UFB rollout.</li> </ul>		
Positive Impact on Problems			Negative Impact on Problems		
					
Funding (3yr)	Footpaths & Cycleways	Current Maintenance	\$1,126,714	Proposed Maintenance	\$1,126,714
		Current Renewals	\$668,871	Proposed Renewals	\$668,871
		Current Construction	\$90,533	Proposed Construction	\$90,533
		Carpark Renewal	\$1,050,000	Proposed Renewal Carpark	\$1,050,000
Comments					

## Option 2 - Increase Funding

Increase the construction budget to allow for new footpaths in areas where there is no footpath on one or both sides +\$900k to Construction Budget.

Increase budget for the renewal of footpaths where UFB has been completed and increase LoS and widen footpaths that do not conform with new NZTA Pedestrian Planning Guide dimensions. (+\$150k to Renewals Budget)

### Benefits

- Both proposals will provide safety improvements to the users of the Footpaths.
- Adopting proposal 2 will allow us to improve the overall condition of footpaths and meet new design standards which are intended to increase space for wheelchairs and mobility scooters.

### Consequences

- Increased funding.

### Positive Impact on Problems

Healthy and Safe People

Inclusive Access

### Negative Impact on Problems

Funding (3yr)	Footpaths & Cycleways	Current		Proposed	
		Maintenance	Capital	Maintenance	Capital
		Current Maintenance	\$1,126,714	Proposed Maintenance	\$1,126,714
		Current Renewals	\$668,871	Proposed Renewals	\$818,870
		Current Investment	\$90,533	Proposed Investment	\$990,533
		Carpark Renewal	\$1,050,000	Carpark Renewal	\$1,050,000
Comments					

## Proposed option

With increased emphasis on this asset class, both proposals from Option 2 of increasing funding is selected along with the strategies outlined in Option 1. Over the next three years as the UFB rollout is completed in the different neighbourhoods renewals will follow behind where needed to ensure this asset class continues to offer a reliable level of service.

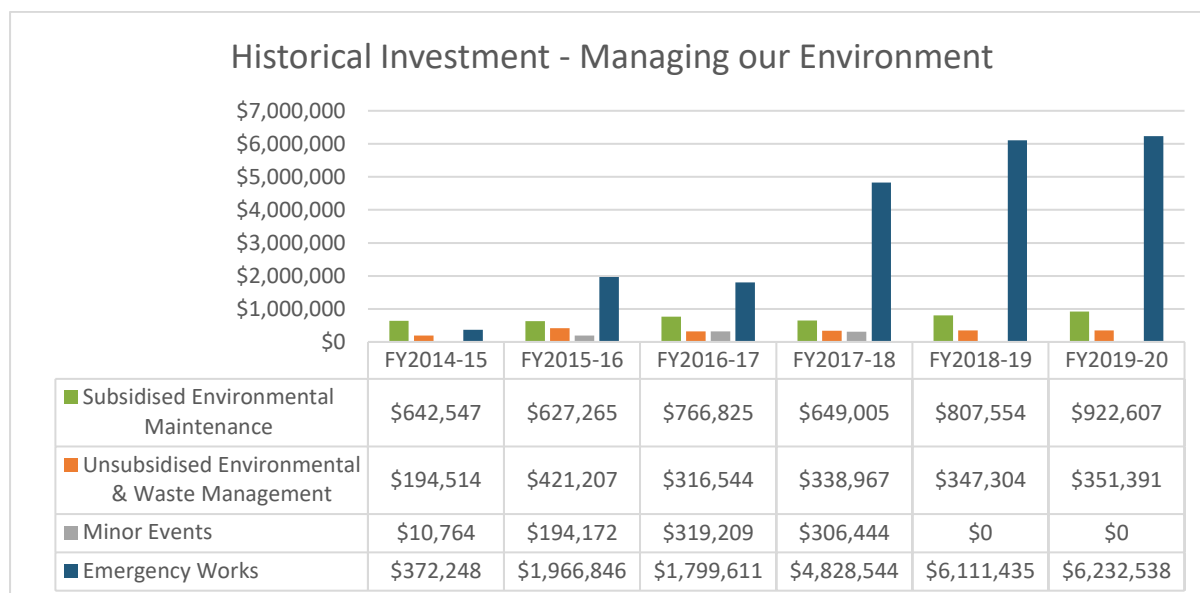
## 5.2.9 Environmental Maintenance

With an extensive roading network spread over a wide variety of terrain types, managing the environment provides one of our greatest challenges within Tararua.

The routine activities we undertake as part of this group are more noticeable than many of our other road maintenance activities, as they add to the amenity value of the district. However, the most important are the safety benefit it provides, therefore our strategic approach and funding is highly important.

### Routine operations

The budget for the Routine Operations of Environmental Maintenance has been increased in recent years to improve the Level of Service. The increased investment is targeted towards certain activities that will protect the condition and improve function of other assets.



### Reactive operations

As shown by the chart below, since the 2015-2016 financial year, there has been significant increases in Emergency work, with 2017-2020 being exceptional. The initial sharp rise in 2017-18 is associated with a cyclone that impacted the Lower North Island. The proceeding years saw our district impacted by other large environmental events which has seen the large expenditure continue.

### Current level of service summary

#### Routine operations

Mowing and High-reach Vegetation control - With increasing health and safety obligations and increased Traffic Management requirements, the cost of Mobile operations (such as mowing) has steadily increased. Tararua District Council have been attempting to operate

within existing budgets for a number of years by altering Level of Service (LoS) for vegetation control, but with an increasing number of Customer Requests for Maintenance (CRMs) for mowing and high-reach vegetation control, we are no longer meeting the customers' LoS expectations.

Roadside Spraying – Over the past 2 years we have revised the approach of this activity. The revision is expected to reduce cost of maintenance for other assets, but is not immediately noticeable as growth takes a number of spraying cycles to get on top of. We believe the current approach will address the issues faced and is suitable at this current point in time.

Debris and Litter Control – With more frequent minor events, low cyclic mowing frequencies and increasing costs, the budget for Detritus and Litter control has been exceeded for a number of years now. To fund the shortfall, funds for vegetation control has been transferred. If the current LoS is to be maintained, increased funding must be allocated to this activity.

Unsubsidised CBD Footpath Cleaning – Currently, Dannevirke and Woodville are scheduled for cyclic footpath cleaning to maintain aesthetic values of the urban CBD with five cleans occurring throughout the year.

With the Pahiatua CBD Upgrade Project scheduled for completion in July 2021, the new footpaths will be included in the cleaning programme.

### **Reactive operations**

Minor and Major events can have huge impacts on our network. While we cannot control the frequency or scale of these events, we can improve the resilience of our assets and lessen financial impact and impacts of the community.

### **Link to problem statements – how is it affecting our problems**

#### **Routine operations**

The routine activities undertaken as part of Environmental maintenance assist in keeping or network clean, tidy and safe. With a large rural network, narrow winding roads and a large number of single-lane bridges, overgrown vegetation compromises the **Safety of People**, by reducing sight distances and traffic being forced towards to the centre of the road.

Environmental Maintenance activities promote **Economic Prosperity** as a clean and tidy district improves people's perceptions of the Tararua and encourages people to want to live or visit here. They also allow other asset types, such as side-drains and culverts, to function to at capacity, thus improving **Resilience and Security** of our network.

#### **Reactive operations – minor events and emergency works**

In recent years, Emergency Events have been the greatest contributor to our problems within Tararua. With increased intensity and frequency of these storms, the **Resilience and Security** of our network is being tested. Following high-intensity rainfall events, many of our roads sustain heavy damage with closures or access restriction in place for significant lengths of time. The closure of roads puts the **Safety of People** at risk as they may not be able to access medical services, or medical services may not be able to reach them.

Severed **Freight Connections** and the cost to recover from the events impact the **Economic Prosperity** of the district. Following storm events, the environment is also impacted. Closures lead to an increase in emissions, as road users are having to use longer routes to reach their destinations. Additional to this, the disturbance required to repair damaged section of roads impacts flora and fauna.

While these events are naturally occurring, large storm events impact the environment, our economy and our people in a significant way. With no physical assets associated with Environmental Maintenance, focus on improving the resilience of other asset groups such as Drainage and Structures, can limit the impacts on our district.

### **Option analysis**

Although many of our problems are linked to storm damage and the associated costs are managed as part of this group, we can only influence the costs associated with Routine Maintenance.

The options we have considered largely influence the safety and amenity of our network and are;

- Maintain the current funding and Level of Service.
- Increase funding to improve the Level of Service.

## Environmental maintenance option tables

Option 1 - Maintain Funding				
<p>In maintaining the current strategy for the routine operations of Environmental Maintenance we will continue to exceed the current allocated budget and not achieve the expectations of LoS for the community.</p> <p>To support the under-allocation, funding is drawn from other budgets and the overall network will suffer as a result. Safety of road users will continue to be compromised due to the low level of vegetation control, the district will be increasingly untidy and the high levels of Customer Requests for Maintenance will continue.</p>				
<b>Benefits</b> <ul style="list-style-type: none"> <li>No need for additional funding.</li> </ul>		<b>Consequences</b> <ul style="list-style-type: none"> <li>Increasing deterioration of the general condition of the network.</li> <li>Continuing risk to Safety caused by vegetation growth.</li> </ul>		
<b>Positive Impact on Problems</b>		<b>Negative Impact on Problems</b>		
		<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="background-color: #76c73a; color: white; border-radius: 15px; padding: 5px 15px;">Healthy and Safe People</div> <div style="background-color: #ffc107; color: white; border-radius: 15px; padding: 5px 15px;">Resilience and Security</div> </div>		
<b>Funding (3 yr)</b>	Current Maintenance	\$2,519,761	Proposed Maintenance	\$2,519,761
	Current Allowance (Minor Events)      Reactive	\$1,350,000	Proposed Allowance      Reactive	\$1,350,000



## Option 2 - Increase Funding

### Proposal 1

Increase the budget and put more focus into clearing of litter and detritus. (+\$50k/year)

Additional funding in this category will allow us to spend more time on what is a very visible activity. We can make a big difference to how the network is perceived. The safety to the public and the network also improves by removing material that falls onto the road and water channels.

### Proposal 2

(And/or above) Increase budget to allow for an increase in vegetation LoS. (+\$75k/year)  
 For Access and Low Volume road - increase the number of grass mows per year from 1 to 2 cuts (+\$40k/year) and increase High-reach control to a minimum of once every 2 years. (\$35k/year)

By increasing the number of cuts performed in a season, we can account for the high growth years which seem to be becoming more regular.

### Proposal 3

(And/or above) Increase the budget to allow for the street cleaning of Pahiatua CBD. (\$35k/yr)

With the upgrade completion date being July 2021, the need to increase Street Cleaning and Waterblasting of footpaths is required. Currently we only have Dannevirke & Woodville on a cleaning/waterblasting schedule.

### Benefits

#### Proposal 1 and 3

- Improve amenity value of the Tararua district.
- Improve function of Side-drain and Culvert assets.

#### Proposal 2

- Improve safety of on Access and Low Volume roads by reducing vegetation, thus improving visibility.

### Consequences

- Increased funding.

### Positive Impact on Problems

Healthy and Safe People

Inclusive Access

Economic Prosperity

### Negative Impact on Problems

Funding (3 Yr)	Current Maintenance		Proposed Maintenance	
		\$2,519,761		\$2,999,761
			Increased Detritus and Litter Control	+\$50k/year
			Increased Vegetation Control	+\$75/year
			Pahiatua CBD Cleaning	+\$35/year
	Current Reactive Allowance (Minor Events)		Current Reactive Allowance (Minor Events)	
	\$1,350,000			No change

## Proposed Option

An increase in funding with all 3 proposals has selected.

**Proposal 1** allow us to address issues with litter and detritus. Being such a visible aspect of the road network it is important that this be focused on to stop the growth of a negative public perception of our district.

**Proposal 2** allows us to improve the safety of the network and respond to regular complaints about vegetation during summer both relating to long grass and to trees impinging on the road corridor.

**Proposal 3** allows us to include Pahiatua in the street cleaning schedule is solely about bring the LoS in line with the other larger townships

### 5.2.10 Summary of all options

Activity / Asset Class	2021/24 NLTP	2024/27 NLTP	Variance
Sealed Pavements	\$ 18,220,153.00	\$ 33,164,044.00	82%
Drainage	\$ 5,115,000.00	\$ 11,248,881.00	120%
Footpaths	\$ 1,893,446.00	\$ 4,016,275.00	112%
Structures	\$ 3,573,291.00	\$ 4,973,066.00	39%
Environment	\$ 3,159,625.00	\$ 4,039,807.00	28%
Unsealed Pavement	\$ 4,747,788.00	\$ 6,025,519.00	27%
Network and asset management	\$ 2,147,545.00	\$ 3,838,281.00	79%
Minor Events	\$ 1,306,948.00	\$ 1,896,989.00	45%
Traffic Services	\$ 1,766,715.00	\$ 2,468,599.00	40%
Safety / Low Cost Low Risk (LCLR)	\$ 1,589,449.00	\$ 5,375,000.00	238%

**\$43,519,960.00                      \$77,046,461.00                      77%**

**Total proposed NZTA increase =**                      \$23,803,815.71  
**Total proposed TDC increase (at 69% FAR) =**                      \$9,722,685.29 (or \$3.241M annually)

**Total proposed Rates increase for roading =**                      9.70%

# 6. How we manage the Transport Activity

## 6.1 Managing our Assets

With a combined value of \$791M, the roading network and its associated assets has the highest net worth of all the infrastructure types Tararua District Council has responsibility over. It also influences the greatest amount of people of any infrastructure group, with most residents and visitors using it daily.

Currently approximately \$25M is invested annually to maintain the assets and manage the transport activity.

To gain maximal efficiencies and long-term value for money, the roading network is managed with a holistic asset management focus. This means all assets are linked operationally and strategically, so how we manage/maintain one asset type and its lifecycle can influence how other assets perform.

Balancing the maintenance cost over the course of individual assets lifecycle against wider strategic asset objectives is the challenge this section intends to address.

### 6.1.1 Network lifecycle management

Infrastructure asset management is the combination of financial and economic management across the entire lifecycle of an asset, the application of engineering principals to maximise an assets lifespan, and other practices with the objective of providing the best value Level of Service (LoS) for the costs involved. The lifecycle of infrastructure can be described by the following phases;

- **Creation** (design, construction and commissioning)
- **Operation** (managing, maintaining, renewing)
- **Disposal** (removal, decommissioning, divesting)

The Strategic Environment outlined in the previous section of this document guides our decision making when it comes to the creation and operation of our transportation infrastructure. To restrict the growth of costs our intent is to limit the creation of assets, as well as proactively maintain existing assets in a manner that will not place undue burden on future generations of Tararua ratepayers.

The Tararua Alliance is responsible for the management of all roading assets, from Creation through to Disposal as well as the physical delivery of Maintenance and Renewal activities.

## 6.2 How the Activity is delivered

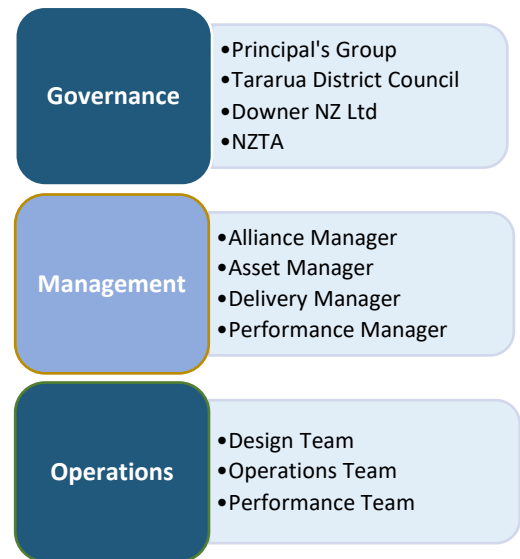
### Management & delivery of road maintenance activities

Road maintenance and capital works form the largest component of the Tararua District Councils procurement of transportation services. For maximum effectiveness and efficiency,

TDC's whole road corridor maintenance contract is carried out by a single entity - the Tararua Alliance. This entity model is a "pure alliance" / shared risk (advanced) Public/Private Partnership delivery model, where the supplier selection method is quality based.

Established in 2014, the Tararua Alliance is an unincorporated joint venture between Tararua District Council and Downer NZ Ltd and is responsible for managing all aspects of the transport network, from the high-level management (development of long-term strategies and plans) to the physical day-to-day delivery of road maintenance activities.

Governance of the Tararua Alliance is overseen by the Principal's Group which comprises of Senior Council Staff, Downer Senior Management, as well as NZTA representatives. The Alliance itself is overseen by an Alliance Manager who reports to the Principal's Group. The Alliance Manager is supported by an Asset Management Team, Delivery Team, and Performance Team. These teams then oversee the operational component of the Alliance (the day-to-day running). Details of each parties' roles are provided in the following table.



Roles and responsibilities within the Alliance are spread across both Council and Downer staff, working as one team in a shared office based at the Oringi Business Park located between Woodville and Dannevirke.

The development of our existing transportation infrastructure has been shaped by various factors over time. Being a large rural district with a low population base, the network and its supporting assets is comparatively underdeveloped when comparing our network to the others around New Zealand. Our roads have been developed for length, rather than for high traffic volumes and many are winding and narrow. Another influencing factor of our current roading network is the local government reforms of the 1980's. These reforms saw the amalgamation of several local Boroughs and Councils, which form the district of today. The different entities developed roads to differing standards and although this occurred 40 years ago, there is still a variety of standards across the network due to the sheer size of the district.

In general terms, operating and maintaining the transportation network in Tararua is about making the best use of the available funds that our low ratepayer base can provide.

Operating the transport network can be described through the following activities;

- Network Management and Planning
- Route Maintenance
- Renewals

### Network management and planning

Management of the transportation network and short and long-term planning for physical works is the responsibility of the Tararua Alliance planning team. Their role is to maintain our asset inventory, monitor the network condition and trends then develop physical works programmes to meet the desired Level of Service (LoS) established through this document and its overarching documents.

A clear understanding of both the capacity demands, which drive LoS, as well as an assets capability to deliver on those demands is critical to allow for the effective management of the transport network.

Over the course of the previous AMP, a project has been undertaken to merge several asset inventories into RAMM and create one source of the truth for all network inventory information. RAMM is an internationally recognised Asset Management software tool used by Road Controlling Authorities, including NZTA across New Zealand. It is a live database and is used to store and analyse asset data, record, and monitor faults and programme/track physical works.

To plan for physical works, an understanding of network condition and the condition of its physical assets is required. This knowledge is gained through several channels. Information can be sourced externally through the Customer Request for Maintenance (CRMs) process; or developed internally through Network Condition Assessments, Traffic/Pedestrian Surveys, and Network Inspections. The primary source of information is gained through Network Inspections with condition and fault data stored in the RAMM All-Faults Database.

### **6.3 Data and Information Systems for the Activity**

#### **RAMM**

Roading Assessment and Maintenance Management (RAMM) is used to hold asset data on most of the physical assets that support the transport activity. This includes data on age, maintenance history, technical specifications, inspection records, survey data and visual inspection records. The pavement treatment selection algorithm is used to support the development of short-term renewal profiles and indicative short-term maintenance programmes for pavements and surfacing using this asset data. Timely entry of faults on the network and as-built information from programmed works are entered into RAMM by contractors. Programmes developed in RAMM are optimised by using a predictive modelling tool. Council have used dTIMS in the past and is now utilising JunoViewer.

#### **ONRC Performance Measure reporting tool**

ONRC Performance Measure Reporting Tool (PMRT) is a national tool that uses information uploaded from RAMM and manually entered auditing information to monitor individual Councils against specified customer and technical levels of service. It can also report on Council's performance compared to similar transport networks around the country. The PMRT is under continual improvement, with dashboard reporting being developed from high level customer outcomes performance to detailed data confidence performance.

## CAS

Waka Kotahi's Crash Analysis System (CAS) is used to record crash data which in turn is used to compare and monitor crash trends over time. This data is used to predict and prioritise safety improvements for roading maintenance and project works. Cash data is uploaded into RAMM and subsequently into the ONRC PMRT tool. Network Modelling – Juno, Hawkeye etc

## 6.4 Quality of Data Supporting the Plan

### REG Scores

Technical assessment of asset management data quality is conducted through the Te Ringa Maimoa Transport Insights with the results reported on the ONRC Data Quality Dashboard. The objectives of the Transport Insights are to:

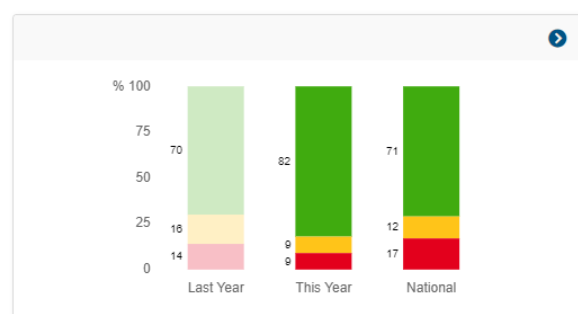
- Establish a framework to measure, monitor and report data quality across Road Controlling Authorities (RCAs) over time
- Establish a data quality baseline for each RCA, establishing a national perspective of data quality across RCAs, different quality dimensions and data types
- Gain an evidence-based understanding of the root causes of data quality issues
- Develop work programmes to address the issues and help RCAs improve data quality over time.

The data quality within RAMM is measured based on its accuracy, completeness, and timeliness. The data is also measured on its adequacy for reporting against the ONRC performance measures and asset management. The figure below shows the 2022-2023 Financial Year scoring.

● Major Issues ● Minor Issues ● Expected Standard



### OVERALL RESULTS



This score shows that the data held within RAMM is robust and is providing good information to inform investment and planning.

### Condition rating data

### Data Quality Plan/Improvement Plan

### Network inspections and the all-faults database

Condition surveys and asset assessments are undertaken based on an inspection regime with data entered into RAMM. This has been further explained in Section 9



## 7. Transport assets

The council owns and manages:

- A vehicular network comprised of 1,191km of sealed roads, 767km of unsealed roads and 405 bridges and 149 high-capacity culverts.
- A pedestrian network comprised of 120 km (317,500) m<sup>2</sup> of footpaths.
- Enabling infrastructure, including:
  - 1,842km of stormwater channels and drains (mainly shallow, unlined surface water channels and kerb and channel)
  - 9,265 culverts (108 km) and 1,647 other drainage assets including sumps and manholes.
  - 1,414 retaining walls.
- Safety infrastructure comprised of 1,667 streetlights, 9,560 road signs, and 12,176m of rails and barriers.






The depreciated replacement value of Council's roads and associated assets is approximately \$790 million.

Management of the transportation activity, including the maintenance and renewal of associated assets is the highest of the Council's major activities and due to the low ratepayer base the Council is heavily reliant upon subsidies received from the NZ Transport Agency (NZTA).

## 8. Levels of Service

Council have adopted the ONRC customer Levels of Service (LOS) outcomes, developed by industry through the Te Ringa Maimoa – previously the Road Efficiency Group. These have been established for each road classification and Council have set targets for travel time reliability, resilience, safety, amenity, and accessibility outcomes.

Comparison against initial targets set by Te Ringa Maimoa and against peer group councils suggest the District is currently delivering mid-range service levels overall. Improvements are required in safety and resilience.

LOS outcomes	Current performance	Risks of not investing	Implications of not investing
Safety 	<ul style="list-style-type: none"> <li>• Collective Risk across TDC controlled roads is comparable or lower to Peer Group councils <small>Error! Bookmark not defined.</small></li> <li>• Personal Risk poorer than Peer Group average <small>Error! Bookmark not defined.</small></li> </ul>	<ul style="list-style-type: none"> <li>• Increased likelihood and consequence of incidents</li> </ul>	<ul style="list-style-type: none"> <li>• Increasing number of death and serious injury crashes, and crashes overall</li> </ul>
Resilience 	<ul style="list-style-type: none"> <li>• Very high network vulnerability to weather events, resulting in road closures and increased costs</li> </ul>	<ul style="list-style-type: none"> <li>• Increased likelihood and consequence of weather events</li> </ul>	<ul style="list-style-type: none"> <li>• More frequent network outages, reducing accessibility and economic productivity, and increasing reactive costs</li> </ul>
Amenity 	<ul style="list-style-type: none"> <li>• Smooth Travel Exposure trending towards reduced LoS.</li> <li>• Peak Roughness trending towards improved LoS.</li> <li>• Average Roughness poorer than Peer Group and Regional average</li> </ul>	<ul style="list-style-type: none"> <li>• Deterioration of network</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced customer satisfaction</li> <li>• Reduced tourism opportunities</li> </ul>
Accessibility 	<ul style="list-style-type: none"> <li>• Structures capacity information currently limited and being addressed, likely to result in an increase of roads inaccessible to HPMV and 50MAX vehicles.</li> <li>• Available data shows 4.5% of network is not accessible to 50MAX vehicles.</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of access on road network.</li> <li>• Lower potential for economic growth.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced economic productivity for the district, region and NZ Inc.</li> </ul>
Cost efficiency 	<ul style="list-style-type: none"> <li>• Percentage of sealed network resurfaced and rehabilitated per year lower than National, Regional and Peer Group average</li> <li>• Overall historic spend per kilometre higher than National, Regional and Peer Group average</li> </ul>	<ul style="list-style-type: none"> <li>• Network becomes unaffordable to maintain and renew due to a higher proportion of the network being outside Customer Level of Service</li> <li>• Asset consumption</li> </ul>	<ul style="list-style-type: none"> <li>• Increased rates, reduced levels of service, differed costs impacting future years/generations</li> </ul>

<sup>1</sup> With the closure of the Manawatu Gorge the Saddle Rd and Pahiatua Track are now categorized as Arterial Roads due to high vehicle numbers. Crashes on these roads contribute to our Collective and Personal risk as they are owned by Tararua DC, but currently controlled by NZTA.

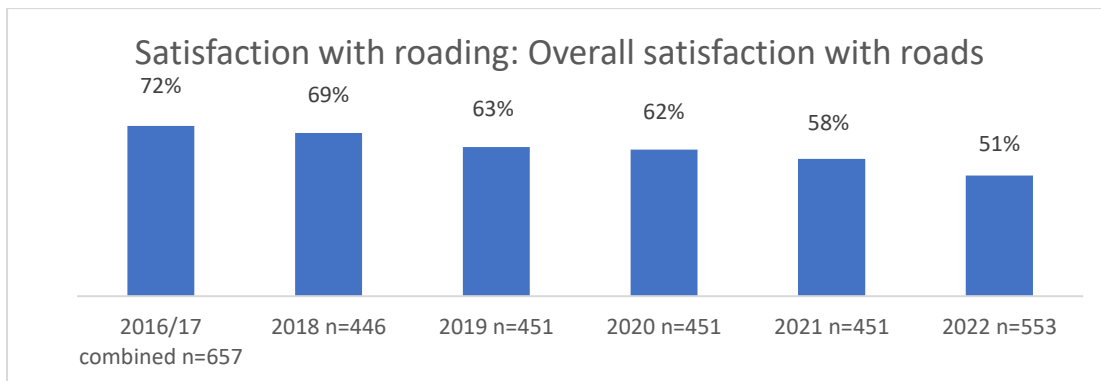
## 8.1 Customer Expectations and Feedback

Our Road network exists to serve the community and as such the feedback and interaction we have with the public who use the network is a crucial input. To ensure we are reflecting their wants and needs we look at the following inputs. Public benefit is kept in mind throughout the document in the problems identified and the options to remedy.

### Community satisfaction surveys

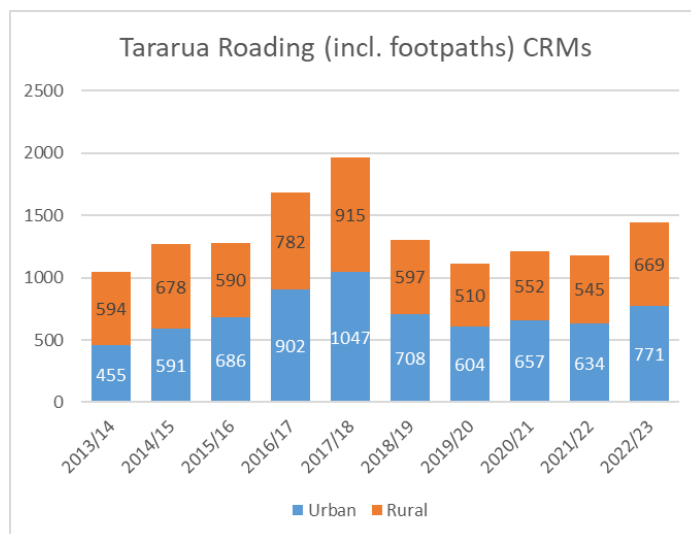
Council carries out annual community satisfaction surveys across all activities. These surveys are returned quarterly through proportional random phone surveys. The below figure shows satisfaction levels for the transportation activity. Of particular concern is the high and increasing percentage of customers dissatisfied with rural roads maintenance, indicating the level of service currently delivered by Council is too low.

The survey and reporting methodologies have recently changed and comparison with past satisfaction levels cannot be carried out. The survey also highlights the opinions on *all* roads within the Tararua District including those managed by NZTA which may negatively or positively skew the feedback results.



## Customer requests for maintenance

Tararua District Council encourages members of the public (Customers) to lodge requests for service in a formal manner, via the Council's Customer Services Team and through the Antenna app. By doing this Council can record and track Customer Requests for Maintenance. Reviewing CRMs collectively enables us to understand performance and highlight trends around Road Maintenance activities. The slight upward trend of the number of complaints in recent years is a reflection on how the public is perceiving the road network.



This system also allows for prompt service and monitoring of the Level of Service (LoS) we provide to our ratepayers. The CRMs are filtered and if transport infrastructure related, are passed onto the Tararua Alliance to investigate and respond as required.

If the request is safety related and considered a high-priority, Patrol staff will respond appropriately and if possible, rectify the issues while onsite. If they cannot rectify the issue immediately, the site will be made safe and programmed for repair. If the issue is not safety related and deemed to align with the Maintenance Intervention Strategy and/or does not meet the desired Level of Service, an appropriate action is created to the rectify issue. Feedback will be provided to the customer about what responses, if any, will occur.

# 9. Life cycle management

## 9.1 Lifecycle Overview

The primary objective is to provide a safe and efficient road network that meets the short- and long-term needs of the district which is operated and enhanced in a sustainable manner at the least whole of life cost.

A strategic and systematic process of operating, maintaining, upgrading and expanding transportation assets is required to effectively manage the transportation assets throughout their life cycle.

Specific Lifecycle Management Plans have been developed for the following activities:

- Sealed Pavements
- Unsealed Pavements
- Structures
- Drainage
- Traffic Services
- Footpaths, Cycleways and Carparks
- Environmental
- Minor Improvements
- Network and Asset Management

### Management and delivery of transportation services

The Transportation Activity is managed and delivered by the Tararua Alliance, an unincorporated joint venture between the Council and Downer NZ Ltd. Responsibilities of the Tararua Alliance include management of all Transport assets, short- and long-term planning for the maintenance and renewals of assets, the delivery of physical works to maintain and renew assets and the management of compliance obligations for operators on the network.

#### Maintenance

Maintenance refers to the activities required on a day-to-day basis to maintain the network to the agreed levels of service. Examples of these are isolated pavement repairs (potholes, patch repairs), grading of unsealed roads, sweeping of kerb and channel, cleaning of litter and detritus and control of vegetation (mowing, high-reach control).

#### Renewal

The process of renewal is the replacement and rehabilitation of assets to restore them to their original level of service (i.e., capacity or condition) as required to achieve the least whole-of-life cost. Renewal strategies are designed to provide for the progressive replacement of individual assets (or components) that have reached the end of their useful life.

## **Capital Works**

Capital works involve the creation of new assets or works which upgrade or improve an existing asset beyond its current capacity or performance in response to changes in usage or customer expectations. This may be due to growth or changes in the required levels of service.

Infrastructure asset management is the combination of financial and economic management across the entire lifecycle of an asset, the application of engineering principals to maximise an assets lifespan, and other practices with the objective of providing the best value Level of Service (LoS) for the costs involved. The lifecycle of infrastructure can be described by the following phases;

- **Creation** (design, construction and commissioning)
- **Operation** (managing, maintaining, renewing)
- **Disposal** (removal, decommissioning, divesting)

The Strategic Environment outlined in the previous section of this document guides our decision making when it comes to the creation and operation of our transportation infrastructure. To restrict the growth of costs our intent is to limit the creation of assets, as well as proactively maintain existing assets in a manner that will not place undue burden on future generations of Tararua ratepayers.

The Tararua Alliance is responsible for the management of all transport assets, from Creation through to Disposal as well as the physical delivery of Maintenance and Renewal activities.

To allow for the effective management of the Tararua Transportation Network, its assets or activities across the network are separated into various groupings. These groups are defined by the type of asset they are, function they serve, or the type of activities undertaken to maintain the network in general.

Groups are split into various Work Categories (WC), which are separated into the specific activities undertaken in the group (eg. Maintenance / Renewals), those activities which draw NZTA Subsidies and those which Tararua District Council must fund themselves. This separation is required for financial purposes, due to the different funding avenues i.e. Subsidised/Unsubsidised – Maintenance/Renewals. Additional to financial tracking, the work categories allow NZTA/TDC to monitor outputs and compare performance across Roading Authorities in New Zealand.

Group		Description and NZTA Work Category
Asset Based	Sealed Pavement	A surfaced carriageway, including pavement structure and chip-seal or Asphalt surface. WC 111: Sealed pavement maintenance, WC 212: Sealed road resurfacing, WC 214: Sealed road pavement rehabilitation, WC 325: Seal extension
	Unsealed Pavement	A carriageway with a gravel surface. WC 112: Unsealed pavement maintenance, WC 211: Unsealed road metalling
	Structures	Large man-made structures which allows the transport network to cross natural features (Bridges) or supports the carriageway (Retaining Walls) WC 114: Structures maintenance, WC 215: Structures component replacements, WC 322: Replacement of bridges and structures
	Drainage	Roadside drains or small structures (culverts) which allow water to flow away from or under road formations. WC 113: Routine drainage maintenance, WC 213: Drainage renewals
	Traffic Services	Features of a transport network which enhance safety and provide guidance to road users (sign, line-marking, safety railing) WC 122: Traffic services maintenance, WC 222: Traffic services renewals
	Footpaths, Cycleways and Carparks	Formed paths for pedestrians and cyclists and Carparks. WC 125: Footpath maintenance, WC 124: Cycle path maintenance, CPR: Unsubsidised Carpark Maintenance
Activity Based	Environment	Activities undertaken to control the natural environment the transport network or restore the network to an acceptable Level of Service following an event which impacts the road formation. WC 121: Environmental maintenance, WC 140: Minor events, WC 141: Emergency works, ENV: Unsubsidised Environmental & Waste Management
	Network and Asset Management	Provides for the general management and control of the road network and management of road assets including public footpaths and cycleways and associated facilities. WC 151: Network and asset management
	Minor Improvements	Provides for the construction/implementation of low cost, low risk improvements to the transport system to a maximum total cost for approval per project of \$1,000,000. WC 341: Low cost, low risk roading improvements

## Network inspections and the all-faults database

The Asset team within the Tararua Alliance are responsible for the development of work programmes in-line with approved budgets. Network Inspectors within the team travel the network on a cyclic basis to identify faults and defects across all assets. Faults identified through these inspections are entered into the RAMM database (referred to as the “All-faults Database”).

Each fault should have the following information stored against it;

- Asset type the fault relates to
- The primary cause of the fault
- The severity of the fault
- The dimensions of the fault
- The proposed treatment to repair the fault
- Photographs or other media to clearly show the fault.

The condition assessment prioritisation (Severity) guidelines from the National Asset Management Steering Committee (2011) have been adopted. These are outlined below;

- Very good condition - no fault is recorded.
- Minor fault - Identified fault is above the LoS but is recorded to allow deterioration monitoring. The threshold for data capture is that the fault would need treatment before a reseal can occur.
- Moderate fault - Fault is safe and is below the desired LoS. The fault would not be repaired in isolation, however if a similar activity was programmed nearby these faults would be considered for repair.
- Requires intervention – Fault is now a defect and is below the requirements of the LoS. Intervention is required within the appropriate response time for the asset type.
- Unsafe – Defect is significantly below the LoS threshold for safety and requires an immediate intervention either through temporary repair or site management.

The asset type, its location and the type of fault/repair method will determine if it will be repaired in isolation, rectified as part of a wider work programme, or left to deteriorate. The determining factors will influence whether it will be treated as part of Route Maintenance or as a Renewal.

### Asset creation

Assets are typically created as a response to growth pressure or changes in the desired level of service. The creation of new transportation infrastructure is either by capital works undertaken by Council, or assets created by developers then vested to Council.

In general, the following can be used as a guide to when Council will create a new asset;

- Where there is a high risk of accidents and a new asset will reduce the risk;



- When network resilience is compromised by not having an asset in place; or
- isolated storm damage significantly impacts the Level of Service; or
- when the long-term maintenance costs are expected to be lowered through the creation of the asset; or
- when regulatory changes require us to create a new asset.

### **Vested assets**

Over time, with population movement and changing economic demands, development occurs around the district. This development can lead to private entities creating new roading assets for which Council will take responsibility for in accordance with planning rules and regulations.

Within this NLTP period it is expected that the number of assets vested to Council is to increase as new subdivisions are formed.

## 9.2 Network and Asset Management

The Work Category Network and Asset Management covers all costs associated with the management and planning for the maintenance and renewals of Tararua District's Transport Assets. Activities can include;

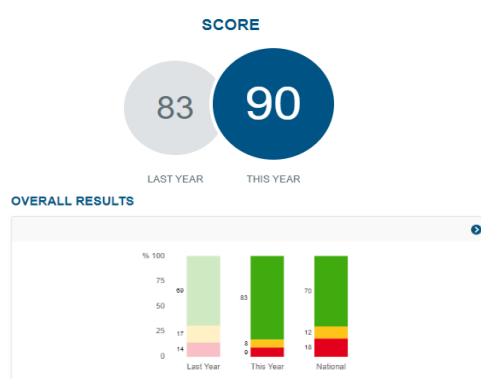
- management of the road network
- promotion and information activities (network user information – see below) that maximise the efficiency of the road network in support of the activity management plan.
- implementation and operation of road asset management systems
- regular, routine updates to the activity management plan
- roughness and condition rating surveys
- traffic count surveys, including pedestrian and cycle counts
- road network inspections and field validation of proposed programmes
- routine refreshing of the asset deterioration model
- maintenance and routine updating of transport models
- special road maintenance, renewal or improvement related studies that do not fit the transport planning work categories' description, eg KiwiRap studies
- professional services for road maintenance activity classes other than for operational traffic management and emergency works.

### Current outputs

Network and Asset Management activities are enablers to the delivery of the roading level of service. From the beginning of the Alliance to now, the asset management maturity and data quality has increased greatly which has allowed more confident decision making to be performed. Through this activity traffic counting, Roughness and High Speed Data (texture and rutting) surveys are performed that are inputs into decision making processes and compliance activities. The requirement for these come from our Data Collection strategy that outlines

when and what we need to capture to ensure our dataset remains current and highlights things such as our 3 yearly high speed data survey and routine all faults inspections.

Current practice has shifted from a reactive to proactive approach to managing the road network and the ability to make that happen comes from solid planning that can be delivered well ahead of time. By ensuring plans are delivered early the operational delivery side of the Alliance derives great benefit from being able to plan their movements ahead of time and gives confidence and early warning of their ability to deliver the programme of works.



Our efforts in focusing on data quality have also shown consistent improvement with the latest results showing us ahead of the national average. This coupled with the ongoing effort to increase accuracy in the capture all our assets see us getting a clearer and clearer picture of our network. This accuracy also contributes to more accurate modelling and future planning for the network.

Asset Management Maturity Assessments undertaken annually have shown that Asset Management practices in the transport space are sitting in the “Proficient” Category and at 73% are high enough to be considered for ISO 55001 accreditation.

### 9.3 Minor Improvements

Improvement projects are minor works completed across the network to improve safety for the road user. This programme is determined annually and based on NZTA funding criteria. Activities that we undertake in this category include sight distance improvements, intersection modifications, enhanced signage, minor road realignments and road width improvements carried out in conjunction with pavement renewal projects.

#### What have we been doing

Within Tararua we have utilised the Minor Improvement category to perform activities that improve safety within the network that fall outside of the renewals budgets. The programme for this activity has been put together to supplement other projects and to improve safety for pedestrians, cyclists and motorists. This activity sits broadly across other activities and is asset agnostic in that it could be a safety improvement to any asset class within our wider road network scope. There have been investments in corner realignments, sight benching, surface improvements on unsealed roads especially around intersections and bridge approaches, widening on narrow but heavily trafficked roads as well as sign and barrier additions including an electronic speed sign to actively encourage safe speeds.

#### What do we want to do

Over the next funding cycle we will be beginning focused projects related to safety. The first is to standardise the signage and delineation on our network. With the conglomeration of multiple boroughs and counties into what is now the Tararua District there is a lingering difference in the way each area approached safety. The project will confirm a standard and perform a gap analysis to highlight projects to improve and standardise signage, sight and guardrails and delineation across the network.

At the same time we will be utilising the KiwiRAP tool to continue to investigate our out of context curves. From high to low classification we will be investigating each of the highlighted corners for safety concerns deriving potential improvements to mitigate the risk – with treatments such as improved signage to sight benching and realignment.

The two projects working in conjunction with each other will provide a programme of physical works that will over time create a consistent and safe journey for our road users.

Lastly, we will look at a project to make the zones around schools safer by modifying the speed limit for those areas in line with NZTAs proposed changes to speed limit review currently underway which will likely strongly encourage setting lower speed limits around schools and will provide a more streamlined processes to have that happen.

## 9.4 Road pavement and surface

### 9.4.1 Our sealed roads

The purpose of the sealed road network is to provide effective movement of goods, produce and people across a safe and suitable all-weather surface.

Our aim is to provide sealed roads that are appropriate to their location and position in the network hierarchy; functional in terms of skid resistance, noise level and smoothness of ride; and have a structure suitable for the current and future loading demands.

Maintaining our sealed pavement network is the primary activity for which the majority of our transport budget is committed too. With a limited base of funding and a large network to maintain, careful prioritisation of sealed road activities is required to satisfy the expectations of our road users for a consistent, accessible and safe sealed road network.



Our Primary Industries of Agriculture and Forestry rely on our sealed roads to get product to market, therefore a lowering of Level of Service for our sealed pavements can greatly impact our districts economic viability.

Failure to maintain our Sealed Pavement assets appropriately will have lasting impacts on future generations.

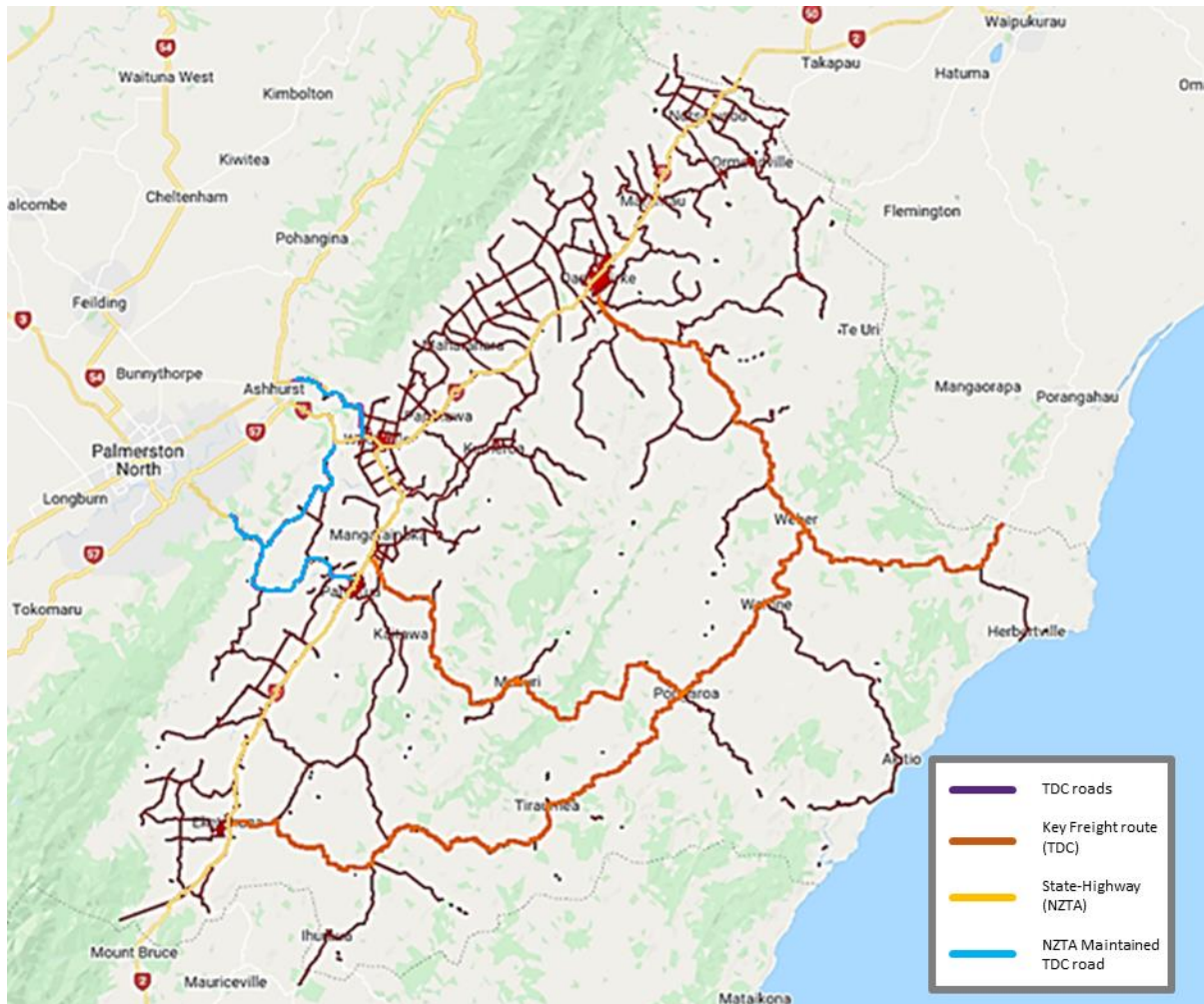
#### Asset inventory

The Tararua District Council owns and operates 1187 kilometres of sealed roads throughout the district and run over a wide variety of terrain types.

In the east where the State-Highway 2 network spine runs, the roads run through rolling hills to the north and over river plains in the south. These have the greatest traffic volumes, as this is where much of our population live.

The roads towards the west run through rugged gorges, mountainous terrain, and end along the coast. The roads in the east, although few, provide the critical connections to our important Primary Sector Industries of Agriculture and Forestry.

The wide variety of terrain types spread throughout the district provided with us multiple challenges to maintain Level of Service (LoS) on the sealed road network.



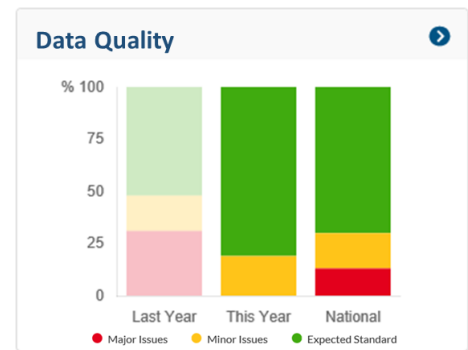
Most of our sealed pavements have chip-sealed surfaces with the average age of surface being 18 years old. Only 0.1% or 3.7km are surfaced with Asphaltic Concrete (AC). These AC surfaces have an average age of 24 years and are likely to be chip-sealed once surface renewal is required. This is due to the cost of replacement.

### Asset data quality

With this asset group being of such high importance and our biggest asset based on value, our sealed pavement asset data is managed closely.

The One Network Road Classification (ONRC) tool allows us to compare data quality across other New Zealand transport networks. The reporting tool shows that our data quality is better than average when comparing ourselves to other rural districts.

As shown in the table opposite there has been a large improvement in recent years. This reflects the amount of work that has been put into improving our data quality over the period of the last AMP cycle.



### Asset condition – what state are our sealed roads currently in?

As with many rural transport networks across New Zealand, parts of our network have been built to a high standard and perform well. Other parts of our network have underlying issues and present on-going maintenance challenges.

Our sealed road asset resilience is closely linked to the geological features of the district. With easy access to quality Greywacke aggregates along the river flats in the west, these roads, if built well, broadly perform better than the ones to the east. The roads in the east are built on ground that is prone to movement due to the geologically young and rugged clay based nature of the soils they are situated on. These roads are also more commonly built with locally sourced softer material, which do not perform as well as the river aggregates in the west.

With increasing vehicle weight limits and an increase in forestry activities, the east of our sealed network is being impacted now more than ever and the vulnerabilities of this asset are exposed.

### Pavement condition assessment

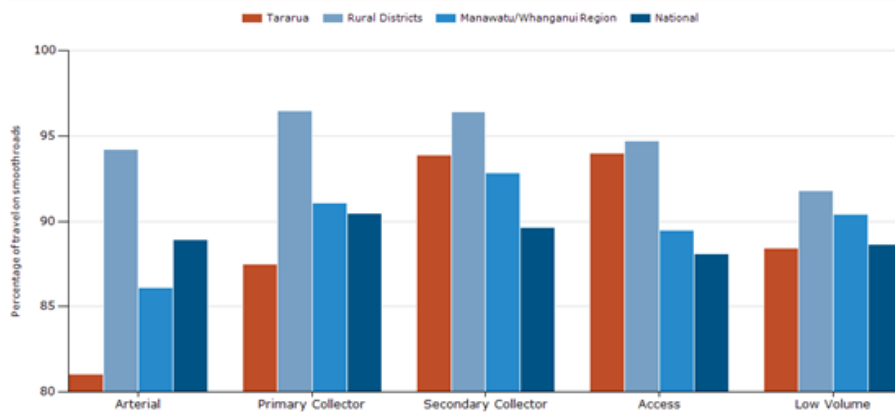
There are a number of tools available to assess the condition of transport networks. The ONRC tool performance criteria focus on Safety; Resilience; Amenity; Accessibility; and Cost Efficiency. Reports are available through the tool to allow us to compare the Tararua’s network to others.

Smooth travel exposure, roughness comparisons and cost efficiency comparisons are used to assess the condition of our sealed pavements.

The chart compares the Tararua District’s Smooth Travel Exposure (how comfortable roads are when travelling) to others across the region and country.



The trend of percentage of travel on roads smoother than the threshold



Most roads owned and maintained by Tararua District Council are Secondary Collectors, Access and Low Volume roads. On average these roads are smoother than those in the Manawatu/Whanganui region (our region), but not as smooth as the overall average of Rural Districts across New Zealand. The tool indicates greater focus is required on Low Volume roads.

Our Arterial and Primary Collector roads form a very small percentage of our network and the chart shows these are significantly lower than the other comparisons. However, these sections of roads are short in length (Arterials - 900m in length) and are in similar condition to the adjoining sections of the same road. Treating these sections in isolation would place these roads out of context for where they are situated, therefore improving the Smooth Travel Exposure of these roads is not a priority.

**Pavement all-faults**

The ONRC allows us to compare our network to others, it does not focus on the specific issues and faults across each network. Faults must be assessed locally due to the regional varieties of terrain and geology.

The sealed road network is inspected on a cyclic basis using the ONRC classification to determine the frequency of inspections. On inspection our All-Faults database is updated to allow us to make informed decisions around Pavement Maintenance and Renewals.

A summary of the Pavement All-faults currently recorded in RAMM is shown in the table below. These faults can be either pothole, pavement structural failures, surface failures, rutting etc. The type of fault, quantity, severity, and clustering is used to develop our forward works Maintenance and Renewal programmes.

All-Fault Data – Sealed Roads					
ONRC Hierarchy					
Fault Priority Level	Primary Collector	Secondary Collector	Low Volume	Access	Total
2 - Identified Low		43	85	111	239
3 - Identified Medium	126	706	365	1357	2554



4 - Intervention Required	24	105	39	122	290
<b>Totals</b>	<b>150</b>	<b>854</b>	<b>489</b>	<b>1590</b>	<b>3083</b>

Following the establishment of the Alliance model of contract and implementation of the ONRC framework, Sealed Pavement Maintenance and Renewals have become more targeted. The overall condition of the network has been improving (excluding a section of Route 52. This exclusion is explored separately in this document) and our fault severity has been dropping.

The reduction in high severity pavement faults is allowing us to rethink our approach to maintenance and renewals. As a result, the number of sites identified for Pavement Rehabilitation harder to come by. In response, we are altering our strategic approach and focusing on preventive actions rather than reactive responses. Preventative actions can reduce our repair costs as our options for repair are greater.

### Route 52

The Tararua District is separated by 3 main geological features; 2 of these are the mountainous Ruahine/Tararua ranges on the western boundary and the Pacific Ocean along the eastern coast, the other being the Puketoi Ranges which separate east from west. Proximity to and ease of access from surrounding regions has driven development in the west of the district. With the Puketoi's as a physically barrier, the east has remained largely undeveloped with only a small number of settlements scattered around the area.



State Highway 2 in the west forms the primary route when travelling the district. Route 52, formerly State Highway 52, is the primary route running along the eastern side of the Puketoi's. There are few roads connecting Route 52 with the east due to the topography.

Route 52 and its connections to the east are vital for agriculture, forestry and tourism within the district and are crucial lifelines for the rural communities located there. This is particularly the case in the event of emergencies.

### Sealed road asset resilience

While Route 52 is our primary focus in terms of resilience, we are faced with the same issues along many other routes. Of the 748 roads within the Tararua District, 305 are No-Exit roads. With many of these located within the eastern part of the district, where access is difficult due to the terrain, a closure presents a significant Health & Safety risk to the people living there.

Following cyclones in 2017 and subsequent smaller high-intensity rainfall events, a significant amount of damage has occurred throughout the network. Much of the network built up over time, starting with tracks being pushed through gullies and along the sides of hills, then gradually upgraded to a sealed surface within the budget limitations of the time. These upgrades have led to much to the network having a narrow road form with steep banks either side of the road and limited drainage to shed the water from the carriageway. A storm event will result in large slips, underslips and road washouts across the network. When these network wide events occur, whole roads can be impacted with multiple slips (as shown in the photo) blocking the carriageway. The scale of damage can result in homes and communities being isolated for a significant period of time. While most of these communities are aware of these risks and to an extent are prepared for them, the increasingly mobility of the agricultural workforce and increasing freight volumes leaving these areas is limiting the economic performance of the district.



### Sealed roads lifecycle optioneering

Maintaining our Sealed Pavement network within a limited funding base can prove challenging across our large district. The decisions we make now can have consequences on the life expectancies of pavements and can either improve the state of our network or provide challenges for future generations.

### Sealed pavement methodology

The Maintenance and Renewals of Sealed Pavements form the largest part of transport expenditure and the strategies developed as part of this AMP will have long lasting consequences for pavement conditions. With high investment and long-lasting impacts, the creation of pavement strategies are closely scrutinised.

The methodology we use to manage our Sealed Pavement follow those that our Alliance partner, Downer NZ, use for their NZTA Network Outcome Contracts, but with consideration for the Alliance model of contract. Using this methodology under an Alliance model allows us to use a proven process when forming our Pavement Maintenance Strategies and make “Best for Network” decisions.

### Asset information management

Information is a key component when it comes to the management and development of forward works programmes. A dedicated Asset team is responsible for our assets. From creation to disposal, the largest percentage of their time is invested in managing the Sealed Pavement asset and its information.

The team work within various software programmes such as RAMM, Juno-Viewer and dTIIMS to analyse fault data, track expenditure and monitor pavement condition, all of which assist in the development of forward works programmes. These tools are also used for reporting to

organisations such as NZTA and forecasting expenditure for the Council in the short and long-term.

### **Asset information creation**

The creation of new Sealed Pavement assets can result from;

- New works. I.e. new roads (green fields construction) and;
- Pavements and other assets that are vested with Council as a result of subdivision development.

Projects are justified and prioritised on the basis of a benefit / cost analysis which accounts for;

- The benefit to the road user for reducing delays in the time to travel along a given route;
- Vehicle operating cost savings;
- Safety benefits;
- Intangible benefits, including community dislocation, environmental issues (pollution, dust, water quality, noise and vibrations) and other possible local, regional and national issues.

### **Seal widening**

Seal widening is typically considered if there is a long-term increase in traffic on a section of carriageway and the road no longer meets an acceptable LoS with regards to safety.

In recent years, changes to traffic volumes on roads surrounding the Manawatu Gorge (following its closure in 2017) have led to some pavements being widened in the Woodville/Ballance area. With the replacement gorge route being finalised, additional roads within the area are being considered for widening due to expected changes to traffic flows.

Tararua District Council follows AUSRoads standards for construction of seal widenings, however seal widths are determined by the terrain for where they are situated. The minimum width we try to achieve is 5.5m for Access Roads and 6m+ for those in higher ONRC categories.

### **Seal extension**

Seal extensions are considered in response to a safety issue created through a change in use of the road (ie. increased traffic volumes), or when a section of unsealed pavement has higher maintenance requirements due to its location in the network. In recent years, Seal Extensions have occurred at bridge approaches on unsealed roads as it reduces potholes and/or damage to the bridge structure caused by Maintenance Grading. Seal extensions have also occurred where Minor Improvements have been made at the end of sealed sections of pavement to improve safety.

Currently seal extensions to improve LoS is not considered as this does not draw external funding.

## Road realignments

A road realignment may occur in conjunction with a Minor Improvement to improve the safety of a section of road. These improvements will typically involve the straightening of a hazardous corner and result in a slight reduction in the length of carriageway.

Road realignments may also occur in response to a storm event where damage has occurred to a section of pavement and shifting the road results in improved resilience of the carriageway.

The alignment of new pavements follow the principals of AUSROADs with consideration for the varying terrain and challenges of the Tararua District.

## Sealed pavement programme development

As part of the AMP development process we have updated the 30 year forward works programme for the Sealed Pavement Asset. Computer modelling (dTIMS) using the records held within RAMM (All-Faults, condition rating, pavement/surface ages) provides a list of candidate sites for further exploration. The short-term programme (1-3 years) will be validated in the field over the period. If the visual inspections backs up the computer modelling and other demands around the network do not elevate other sites then the site is confirmed and treatment determined. The pavement modelling process is further explained in the Renewals portion of this section.

Works programmes between 3-10 years are based on a combination of modelling, intended strategies of the time and age of treatment length. The work programme between 10-30 years is based on a nominal life expectancy of existing pavements.

These programmes are reviewed on a yearly basis and changes are made in accordance with what work has been completed, what the current demands are on the network and what the expected demands are to be.

The Reseal and Rehabilitation programmes lead our maintenance programmes, with a large portion of Pavement Maintenance expenditure spent on Pre-Seal repairs. Our target is to complete pavement pre-seal repairs at least 1 year prior to resurfacing.

## Routine maintenance

Variable factors across a carriageway such as Sub-grade strength, moisture, aggregate gradings, traffic point loadings and surface strength lead to differing rates of deterioration. These deterioration rates can lead to isolated failures on sections of pavement. Routine Pavement Maintenance refers to any maintenance tasks that are undertaken on an ongoing basis to repair isolated faults and return that section of pavement to an acceptable Level of Service.

Routine Sealed Pavement Maintenance tasks we undertake are;

- The repair of potholes
- Sealing of cracks in the surface

- Insitu-stabilisation repairs
- Pavement digouts
- Edge break and low shoulder repairs to restore pavement width.
- Shape correction (surface levelling, Rip&remake)

The focus for our carriageway maintenance strategy is to extend asset life and limit the need for expensive rehabilitation. We do this by undertaking pre-reseal repairs, preventative maintenance around the network and the use of Heavy Maintenance treatments rather than Rehabilitation.

Our comprehensive and up to date All Faults data is the primary source of information for short-term maintenance.

### **Sealed pavement maintenance programme development**

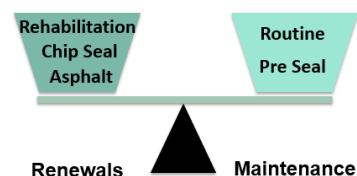
While some Sealed Pavement Maintenance repairs occur throughout the year (potholes, edge break, low shoulders) other works are restricted by the climate and location of the works. The ability to undertake Digouts, Stabilisation and Surfacing repairs is restricted in the wetter and cooler months of the year. With this being the case, the bulk of sealed pavement maintenance expenditure occurs between the months of October and April. During the other months, only safety related faults, faults with high-risk to the integrity of the asset or faults not requiring surfacing are targeted for repair.

To achieve maximum cost efficiencies when undertaking Sealed Pavement Maintenance, it is best to undertake repairs in clusters as establishment forms a significant part of the cost when completing repairs in isolation. To develop these clusters, we focus the repairs we undertake around the reseal programmes.

### **Advanced pre-reseal repair treatments**

Delivery of pre reseal repairs the year prior to resurfacing is considered best practice in pavement operations and enables resurfacing to be done at the most optimal time of the year. In the 2019-20 financial year, all known pavement defects within the 2020-21 FY reseal sites were repaired. Work is now focussed on the following years' (21-22) reseal programme, with these repairs likely to start in October. It is our intention to maintain this strategy of completing Pre-reseal repairs one year prior.

There is a link between the level of maintenance and renewal expenditure as depicted by the balance of Periodic and Routine maintenance shown in the figure opposite. With increases in the lengths of reseals, a subsequent increase in maintenance expenditure is required. When considering reseal programmes, thoughts of maintenance and renewals across other assets groups are considered. I.e. If a culvert is in poor condition replacement is considered prior to the resurfacing.



### **Preventative maintenance**

The ultimate goal of Sealed Pavement Maintenance is to undertake repairs prior to them reaching the point of failure. This typically means treating Priority 2 Faults before they reach Priority 3-4-5. Intervening in at lower priority often means faults can be repaired at a lower cost as a greater number of options are available in regards to treatment. In the case of Sealed Pavement Maintenance an example of this would be to complete crack sealing to water proof the pavement. Water ingress into the pavement is the predominate cause of failure deterioration.

A significant number of faults are categorised as Priority 2 and completing all faults at this level would require a significant increase in funding and resources. Over time this would reduce the overall maintenance/renewal costs across the network as the more costly repairs and rehabilitations would reduce in number. However, with funding limitations, only incremental steps can be made.

### Sealed pavement renewals

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

During a pavements early life, deterioration is generally limited to the surface layer. With open drainage systems, quality aggregates and adequate pavement depth, the sub-grade is protected, therefore maintains its shape and strength. Through traffic use, surfaces are stressed and wear, this can lead to reduced traction for vehicles, which contribute to accidents. To restore surface texture, pavements are programmed for resurfacing. Another reason for resurfacing is to water-proof the pavement structure, wear and tear of the surface can lead to water ingress into the pavement and accelerate deterioration.

If a pavement is not resurfaced at the optimum time its life can be greatly reduced.

As the pavement ages, deterioration rates accelerate. Continual loading can start to deform the Sub-grade and/or damage the structural integrity of a road. At a point in time, this deterioration will reach a point where resurfacing becomes untenable. When this occurs, pavement Rehabilitation is considered. A Pavement rehabilitation can be through a number of different treatments; Granular overlay, renovation, smoothing or full reconstructions. These treatments will be explored further in this section.

### Renewal decision making process

Creating a renewals programme is a complex undertaking, requiring the successful completion of many processes. This ensures robust forward works programme for renewals are created. The process include;

- Data collection and preparation
- Data analysis and scenario modelling



- Field validation and model alignment
- Economic justification
- Outcome verification
- Final programme formulation.

A set of strategy envelopes (demonstrated in diagram) are used to help inform our treatment selection process. The envelopes help create a first cut of possible treatment options based on the current and predicted condition of the carriageway section.



Potential candidates for renewal treatments are identified using the computer modelling tools detailed in the table below. These models give us different perspectives on the future need for the carriageway asset in terms of renewals. A virtual drive over of treatment sites eliminates sites where there are obvious benefits to delaying treatment, such as aligning with capital works or development programmes. Field validation and model alignment occurs once we have refined the model outputs in the office.

Model	Summary	Detail
<b>Financial Model</b>	Age and condition based replacement schedule	A renewal forecast using remaining useful life has been considered based on the asset valuation information. The valuation process using condition data to adjust asset age and remaining useful life which we have used to forecast the timing for renewal of the carriageway asset components.

<b>New Zealand Roads (IDS) dTIMS Model</b>	A long term condition optimisation model	The IDS empirical mechanistic model is highly sensitive to condition data and achieves best results with year on year data sets from a high speed data collection survey.
<b>Downer dTIMS Model</b>	A long term total cost optimisation model	The Downer dTIMS model uses historic maintenance cost information and current defect data, as well as high speed data to inform a probabilistic deterioration model.

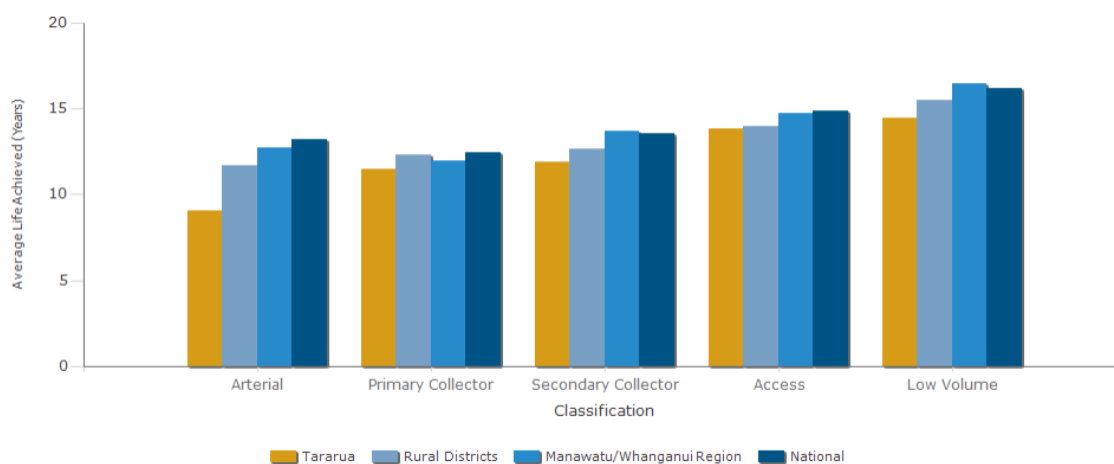
JunoViewer and Juno FIT are used for field validation tool to manage the forward works programme, taking FWP information into the field on handheld devices and capturing field notes and photographs to aid in the decision making process.

Rehabilitation sites are analysed in detail to determine if they can be justified according to the criteria in the Transport Agency’s Economic Evaluation Manual. Sites are justified when the whole of life cost is lower for the renewal option than the do nothing or do minimum options.

### Resurfacing strategy

Reports from the ONRC tool state that Tararua District Council has a high cost per lane km and a shorter life-span for reseals.

Chipseal resurfacing average life achieved, four year average to 2018/19



Note: Arterial roads are within Tararua are mostly NZTA managed roads

Our shorter lifespans are likely due to the historic volume of reseals completed around the network (see table below). In the years preceding the Alliance, Tararua District Council use to reseal between 7-10% of the network per year. Since implementation of the ONRC tool, which allows us to easily compare our network to others, the renewal quantities have been tensioned.

Historical Resurfacing	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Length (km)	103	95	116	109	109	97	78	56	74	68	63	62



% of network by length	9%	8%	10%	9%	9%	8%	7%	5%	6%	6%	5%	5%
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Tararua District Council has now adopted the target of resealing 5% of the network each year. Excluding first coats and 2nd coat seals of new or rehabilitated pavements, this will increase the life-span of reseals and align us closer with our Council peer group.

### Surfacing treatment selection

The type of surfacing used is determined using the NZTA 'Bituminous Sealing Manual' and is dependent on site specific factors such as the existing surface texture, surface defects, traffic stresses, traffic volumes and noise levels.

The types of surfacing commonly used in Tararua include two-coat, racked-in and wet-lock (in high-stress areas). Rehabilitated sites have 2<sup>nd</sup> coats applied 1-2 years after construction and it is typically a Texturizing seal due to the large chip size of the first coat (being a two coat 3/5). Moving forward we are considering using 4/6 on low-risk sites to allow the 2<sup>nd</sup> coat to be permanent seal.

Level of service considerations driven by the ONRC has resulted in the use of high-cost treatments being given greater scrutiny. Chip seal is significantly cheaper and more flexible than AC surfacing and so in Tararua the treatment is only considered in the following situations;

- Areas of high turning stresses (e.g. busy intersection or cul de sac head);
- Roads in industrial / commercial areas where there is a high concentration of heavy commercial vehicle traffic;
- Compliance with Resource Consent requirements;
- Whole of life cost can be proven to be less than alternative chip options.

It is anticipated that there will be a move toward the use of bitumen emulsions in preference to hot cutback bitumen. Emulsions are sprayed at much lower temperatures and use water instead of kerosene to reduce the viscosity. These two factors have both environmental and safety benefits but come at a higher cost.

### Sealed pavement rehabilitation strategy

Road pavement rehabilitation renewals are required where the pavement layers are reaching the end of their design life and are showing signs of deterioration. Renewal works, rather than resurfacing, then becomes the best option when considering the whole life costs of the pavement.

Potential candidates for rehabilitation are identified from summarisation of All Faults data, dTIMS (maintenance & renewal forecasting tool) and staff judgement via a network drive over. These sites are investigated in detail as part of developing a programme of works.

The annual programme is developed with an emphasis on road hierarchy in the first instance. Priority is given to roads with high traffic volumes, especially heavy commercial vehicles. Consideration will also be given to the likely rate of pavement deterioration should

no action be taken, i.e. roads with the highest maintenance costs per unit length will be given priority for road rehabilitation.

The treatment type is determined following an investigation of the existing pavement, an assessment of the future traffic loading and an economic assessment of the available options. The availability of suitable local aggregates is a prime consideration in determining the most cost-effective method of rehabilitating the existing pavement.

## **Pavement rehabilitation treatments**

### Granular Overlay

The life of a pavement is extended by overlay through the addition of a layer of basecourse and new sealed surface over an existing pavement. This basecourse layer essentially bridges the weakened sub-grade layers and improves the overall structure of the pavement. The treatment is generally referred to as an "Area Wide Pavement Treatment" or AWPT and used predominately on rural roads.

This technique can be unsuitable where there is existing kerb and channel, such as in urban areas, as it builds up the crown of the road or street so that the resulting crossfall becomes too steep. The consequence can be that road users' vehicles "bottom out" while accessing their properties due to the break over angles. In these circumstances, it is usually more efficient to carry out a full reconstruction as described below and replace the pavement, and often the kerb and channel, to the appropriate levels.

### Renovation

This increases the strength of existing basecourse/sub-base materials by adding a chemical stabiliser (hydrated lime, cement, or emulsion) and re-compacting. This involves the pavement being ripped in-situ and re-laid in place by heavy plant. This technique can incorporate blending in of new materials and stabilisation measures. This is used when the existing pavement formations can be reused in a reconstituted manner.

### Smoothing

Irregularities in the road surface, where the structural condition of the carriageway is sound, are smoothed by placing additional (thick) surfacing on an existing sealed surface to smooth out irregularities. The materials used depend on traffic volumes/road geometry and road condition. The most used material is asphaltic concrete.

### Full Reconstruction

Full reconstruction involves removing the existing basecourse and/or sub-base and replacing it with new metal courses and a new wearing course. This is the most likely technique used on urban streets due to the height restriction created by these streets having Kerb and Channel.

## **Sealed pavement asset disposal**

There are no plans to dispose of or cease to maintain any of the existing Transport network even though there are several existing roads which serve only one or two property owner(s) and essentially provide solely private access.

There are however many paper or unformed roads throughout the district which are not required for Transport purposes. When requested, these paper roads can be stopped and the land sold to the adjoining property owner(s). In these instances, the full cost of stopping the road and purchasing the land is met by the adjoining landowners.

Several paper roads are used for access by adjoining landowners. These roads are not considered to be part of the transport network and are not maintained by Council.

#### 9.4.2 Our unsealed roads

Unsealed roads in Tararua make up 39% of the total roading network and provide vital access to rural communities.

With relatively low traffic volumes, these roads typically fall under the One Network Road Classifications of Access or Low Volume, but as they provide connections for our farming, forestry and recreational activities, the types of vehicles can range from mountain bikes to tractors, quad bikes to tour busses, or private cars to forestry and stock trucks.



With growth in the dairy sector and increased forestry harvesting we see more Heavy Vehicles travelling our unsealed road now than in previous years. These vehicles significantly increase deterioration rates and the need for maintenance has been increasing.

Defects such as corrugations, potholes, rutting, heaves and shoves, loose aggregate and large stone have an impact on the ride quality and safety and with the primary user being light vehicles (cars, utes), the effects of heavy traffic can lead to these roads becoming difficult to travel if not impossible.

Under-investment in this asset type can lead to increased wear and tear on vehicles resulting in additional costs for the homes and businesses that the roads serve.

The key objectives in managing the unsealed network are to:

- provide affordable access to property;

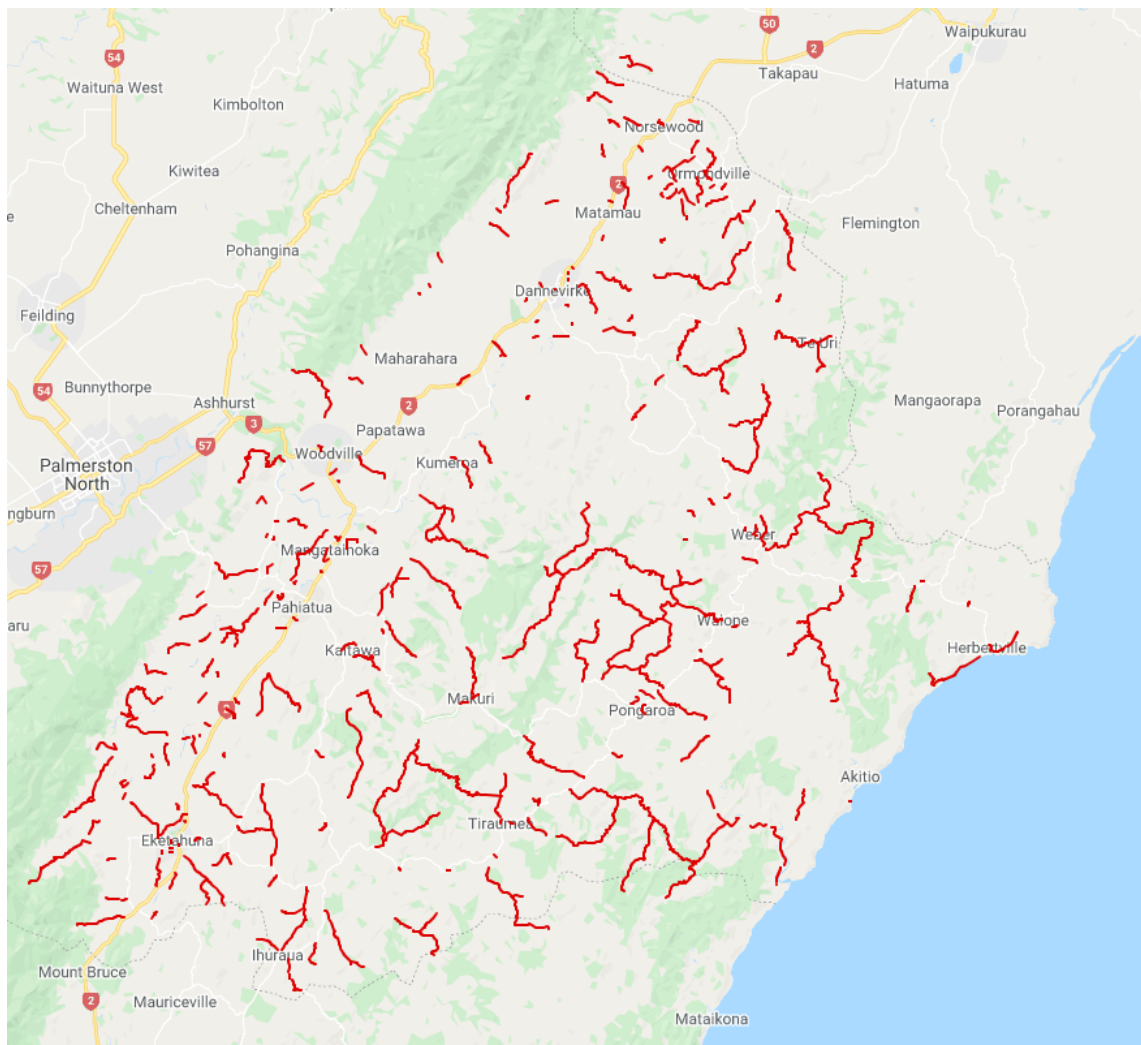
- provide a fit-for-purpose pavement and running course for all vehicle types using the route;
- provide a high level of maintenance for designated roads; and
- identify lengths for seal extension and progress these as funding becomes available.

Unsealed roads need to be accessible and safe in all conditions and for all vehicles. This is especially important for freight operators, tourists and visitors who may not be used to these types of roads.

### Asset inventory

Tararua District has 772 km of unsealed roads with less than 1 km in urban areas and the remainder being rural roads. The majority of the roads are no exit, farm or forestry access roads and provide access to areas of the district with low population densities.

The roads are scattered throughout the district and run over varying topographies. These variances provide some interesting challenges for maintenance and renewals.



### Asset condition – what state are they currently in?

The primary users of these roads are those who live or work on the farms in the area and vehicle movements can be as low as 1-5 light vehicles per day. This can change quickly (i.e., when forestry harvesting commences) and the vehicle count and loading increase dramatically. When this occurs, the asset can quickly deteriorate and large investment is required to bring the road back to an acceptable Level of Service (LoS).

Responses to these activities are often reactive, due to the variability in harvesting driven by log prices. We try to work with logging companies to plan for their activities, but with many operators, this is difficult to do.

Changes to Central Government strategies/regulations can also influence the condition of our Unsealed roads. With increased vehicle weights greater stress placed on our Unsealed Road assets now more than ever.

### **Unsealed roads lifecycle optioneering**

With Unsealed roads making up a large percentage of our road network, the level of maintenance and renewals and the subsequent Level of Service (LoS) we provide is important to many people in the district.

### **Unsealed roads methodology**

Our objective for Unsealed Road Maintenance and Renewals is to keep the asset functional and fit for purpose through regular inspection, filling of potholes, grading activities and remetalling.

### **Asset information management**

Managing the Unsealed Road Asset information involves tracking aggregate quantities applied to the roads and the frequency of maintenance activities. This information is valuable when it comes to decision making as it allows us to focus maintenance activities towards the parts of the network that may be vulnerable in times of increased demand.

Recording the location of maintenance metalling activities and the frequency of grading assists us in shaping our Heavy Metalling Forward Works Programme.

As a minimum, the following information is needed to manage the planned and reactive maintenance regime of the unsealed road:

- Faults and defects (potholes, corrugations, rutting, soft spots, drainage, etc.)
- Maintenance cost (per km, per ADT for HCV, per season, per aggregate type)

### **Routine maintenance**

Maintenance of our Unsealed Roading Network starts with inspections to determine the physical works required.

Regular inspections of the unsealed network allow us to manage the grading and metalling programmes and make wise choices in order to maximise the benefit of the funding available. The following inspection regime is used and drives our Forward Works Programme;

- Routine inspections - 3 monthly frequency
- Detailed inspections - 6 monthly frequency
- Pre-grading inspection prior to grading commencement.

The **Routine** inspection focuses on pavement assets but also accounts for other assets which can impact the unsealed pavements condition, such as environmental issues and drainage issues. The inspection staff will look at the following during the unsealed inspection:

- Physical condition defects - potholes, corrugations, loose aggregates.
- Are surface water channels, culvert inlets/outs and cut-off drains clear of detritus.
- Does the road have sufficient running course aggregate.

The **Detailed** inspection drives the renewal works (Metalling and Heavy Metal Overlays) and assists in fine tuning the maintenance grading programme. It is completed at lower speed and includes non-pavement, high value assets):

- Post grading inspection
- Drainage assets (water table, culverts, cutouts, soakpits, etc.) and their effectiveness.
- Visual check of known dropouts and slips.
- Areas in need of vegetation control.

A **Pre-grading** inspection determines the scope and type of grading, and is usually carried out by the grader operator in utility vehicle.

General Maintenance (pothole filling, minor vegetation control) is carried out by Patrol-person, who will also provide feedback on the condition of the Asset.

## **Managing Dust**

Unsealed roads have a tendency to generate a lot of dust when vehicles travel over them, generally this is not an issue as these roads tend to be isolated and away from populations centres and have few vehicle movements.

Dust generated by unsealed roads becomes an issue when there is an increase in traffic (ie. during forestry harvesting) or in dry summer months when there is little moisture in the aggregate to bind the fine particles together. In the dry summer months there is an increase in CRMs, with callers seeking resolution to the dust issues.

There are a number of low cost opportunities the Tararua Alliance employ to reduce or eliminate dust. Certain aggregates have properties which hold the fine particles together thus reducing dust and are used around the district. Compaction of the aggregate layer to form a hard surface crust (e.g. using the PTR) can also assist in the reduction of dust on unsealed roads.

Other high cost initiatives may be employed to manage on-going issues.

The table below provides details of viable for dust suppression treatments.

Dust Treatment Options	Treatment Details
<b>Water Application</b>	The application of water to temporarily add moisture and bind fine material together. This is only used when short-term intervention is required (1-2 hours).
<b>Alternative Aggregate</b>	<p>Tararua Alliance has been exploring alternative aggregates which naturally do not generate as much dust as other aggregates (ie. river metals). Lime, which occurs naturally around many parts of Tararua is a viable alternative.</p> <p>Lime has a low crushing resistance and deteriorates at a greater rate than the river metals typically used; therefore, it is only considered a solution to isolated problems, such as outside houses and buildings.</p>
<b>Insitu Material Modification</b>	<p>Cement or Lime Stabilisation to reduce dust by binding the fine particles to the larger particles in aggregate.</p> <p>This is a long-term solution to dust as it binds the entire aggregate layer together. However, it increases the difficulty of future maintenance as the surface cannot be reshaped without extensive ripping. Additionally, aggregate applied through maintenance metalling will not bind resulting in safety issues as the stones roll on the surface.</p> <p>If a road is to be stabilised, it is best to Chipseal the road, due to the high-cost to perform and impacts on future maintenance.</p>
<b>Dust suppressant</b>	<p>Application of Additive (Surfactants, Hygroscopic salts, Fines agglomeration etc) to seal the surface layer.</p> <p>This layer is disturbed over time through traffic use and maintenance grading and is considered a high-cost, medium term solution.</p>
<b>Otta seals or blinding agents</b>	<p>An Otta seals is designed to be a temporary sealed surface.</p> <p>The expected life of Otta seals is about 5 years if enough thickness is laid. An Otta seal can have a very similar texture and look as a sealed road, and this may create a false expectation of a higher level of service and increased vehicle speeds.</p>
<b>Chip seal surface</b>	The last option to managing dust is to seal the unsealed road with a 2 coat seal. This requires a design, and shape-correction as the pavement of an unsealed road is very different to that of a sealed road. In some cases, the basecourse may require stabilisation and/or make up metal before the chipsealing.

## Maintenance grading

Maintenance graders traverse the network on a cyclic basis and base on the pre-grading inspection will grade the roads in need. The primary Maintenance Graders have scarifying teeth and a tow behind Pneumatic Tyre Roller (PTR). The teeth rip the surface and mixes the existing aggregate. The purpose of this is to avoid the segregation of aggregate and reduces the need for metalling. The roller then compacts the aggregate and reduces the migration of aggregate to the side of the road caused by traffic.

To maintain the Tararua's extensive length of Unsealed network two graders are required. One focuses its activities to the north of the district, the other to the south. A times of low demand, one of these graders can be deployed to undertake other activities.



### Unsealed road renewal

Unsealed roads usually require pavement renewal for two reasons:

- 1 Failure of the pavement structure; typically caused by heavy vehicles in combination with saturated pavements
- 2 Loss of aggregate wearing course, resulting in traffic running on the pavement structural layers, eroding and damaging them.

Aggregate replacement is a regular activity undertaken throughout the year across the Unsealed roading network. Over the last three years Council has been applying approximately 10,000<sup>3</sup> of aggregate to the network per annum. This is exclusive of Heavy Metal Overlays which are an activity like spreading maintenance aggregates but with an increased depth along with reshaping and compacting the road surface.

Sites for Pavement Metalling and Heavy Metal Overlays are identified through inspection, network knowledge and lengths of pavement that have on-going maintenance issues. Environmental factors can also influence programmes as with no sealed surface to protect the pavement, aggregate loss is a common occurrence, especially during High-intensity rainfall events.

Aggregate is supplied through various quarries across the district and can vary in quality. The source is determined by how cost effective it is to purchase quality aggregates vs how much it costs to cart the aggregate to the metalling location.

Quality aggregate sources are primarily found in the west of our network where certain rivers, such as the Manawatu River, hold vast quantities of Grey-wacke aggregate. This aggregate is one of the better roading materials within New Zealand, but with many of our unsealed roads being in the east, it is costly to import.

Over recent years, the Tararua Alliance has been testing alternative supplies of aggregate to reduce the overall cost of maintenance and this will continue to improve our longevity of pavements while making Level of Service improvements within existing budgets.

### Disposal of assets



There are no plans to dispose of or cease to maintain any of the existing unsealed roads within our network even though there are several existing roads which serve only one or two property owner(s) and essentially provide sole private access. Several paper roads are used for access by adjoining landowners. These roads are not considered to be part of the transport network and are not maintained by Council. When requested, these paper roads can be stopped and the land sold to the adjoining property owner(s). In these instances the full cost of stopping the road and purchasing the land is met by the adjoining landowners.

## 9.5 Bridges and Structures

### 9.5.1 Our bridges

Our bridges facilitate the movement of people and goods throughout the district. Without these assets, traversing the natural waterways of the land would be extremely difficult, if not impossible, therefore these Structures form a crucial part of the Tararua’s roading network.



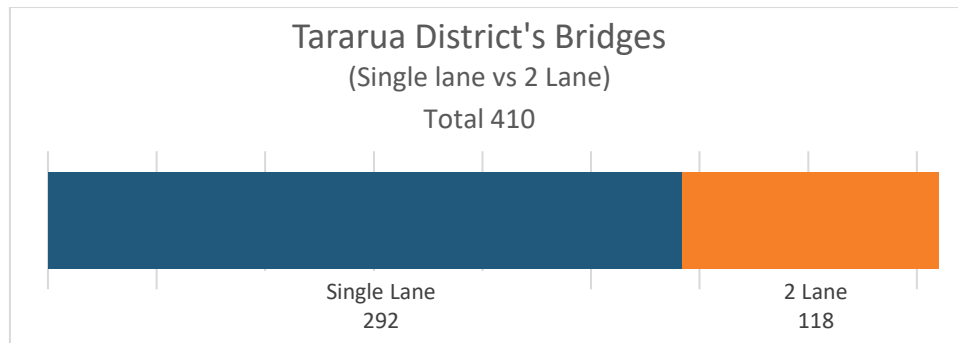
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Name/Location	Pahiatua Town Bridge – Mangahao Rd, Pahiatua.
Constructed	Between 1931-32.
Type	Reinforced Concrete Bowstring Arch bridge
Cat 1 NZ Historic Place	Built in the midst of the Great Depression it utilised central and local government measures put in place to try and mitigate the worsening of the economic crisis. It is considered “remarkable” due to its aesthetic and a costly design, built at a time of financial hardship

### Bridge asset inventory

Tararua District Council maintains a total of 410 bridges and 115 high-capacity culverts across the district. (*High-capacity culverts are those for which are >2m dia. and/or carry natural water courses*)

Many of the bridges are single lane and were constructed at a time when people were less mobile and lived in the community they served. With increased mobilisation of people, the demand for improvements to the Level of Service (LoS) our bridges provide is increasing.



The bridges assets have a replacement cost of \$153 million and an average replacement cost of \$563,732 for two-lane bridges and \$302,732 for single-lane bridges.

### Bridge capacity

In response to government regulatory changes, which increased the maximum weight limits and allowable length of Heavy Motor Vehicles (HMs), Tararua District Council initiated a study of the bridge stock across its network. The purpose of this study was to improve data information by updating capacity data, both structural and seismic, against the limits set in the NZ Transport Agency’s recently updated Vehicle Dimension and Mass (VDAM) Rule which came into effect February 2017.

The Tararua District has 21 Class-1 capacity restricted bridges, which do not have design capability for carrying over-weight vehicles (50 tonne). These restrictions reduce the economic opportunity created through the Central Government changes to regulations.



An example of loading capacity restriction limiting economic development are two bridges on the Route 52/Weber/Dannevirke route. The Provincial Growth Fund is considering investing in a new Log Rail Hub near Dannevirke and being one of the collector roads, this route would support this. The restrictions prevent 50 tonne HMs from operating at full capacity and to achieve the full economic benefit of the development, these bridges would need upgrading.

Although the study is nearing completion there are still a number of bridges across the district that still may require restrictions due to the condition or design of the asset.

Current capacity limits on bridge structures are advertised annually and comprise gross weight and axle weight limits as well as speed limits for HMs. The posted restrictions reflect the fact that when these structures were built they were designed and built as part of a Class 2 transportation network which was limited to vehicles with lesser gross and axle weights than the current universal Class 1 limits.

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### Bridge condition – what state are they currently in

As with many districts across New Zealand, our bridges are aging. Based on available records, the majority of bridges were constructed between 1930 and 1969 and were built when the carrying weights of heavy vehicles were significantly less than they are today.

Due to a number of bridges are nearing the end of their lives, or have limited structural capacity for the vehicles that traverse them, the focus on this Asset Type is increasingly important.

### **Bridge data quality**

As part of the study into bridges over the period of the last AMP Bridge Asset information has been transferred from various sources (TRIM - Council's records management system, and spreadsheets into RAMM. Broadly the asset database for bridges within RAMM is now complete and only improvements to detail is required. This detailing can be a time consuming process as it requires transforming historical documentation into digital to allow us to analyse the data.

The next step to enable better use of the bridge asset data is to componentise them and allow the various parts (deck, sub-structure, abutments, etc) to be managed as groupings, as the different parts have different lifecycles, structural importance and maintenance activities. Our aim is to do this over the next three years within RAMM.

The date of construction is not known for 64 bridge structures, and for these an estimate has been made considering the factors of road construction date, construction type and similarity to other bridges.

### **9.5.2 Our retaining walls**

Retaining walls allow vehicles to traverse parts of our network where land features prevent a standard carriageway cross-section from being formed. Retaining Walls hold just as much importance as our bridges, as if they did not exist or failed, access to some of our communities would be restricted and in some cases impossible.



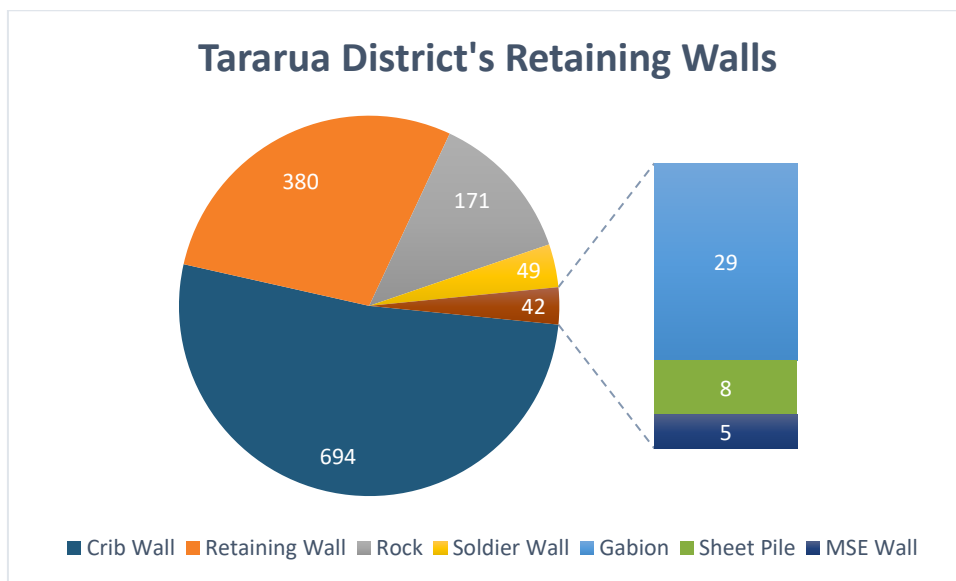
#### **Retaining wall asset inventory**

The construction of Retaining Walls is generally in response to damage caused by Environmental events and sections of pavement have been lost.

Historically, keeping records for retaining walls has been of low importance, or the method for which the information is stored is not suitable for easy analysis. Since the establishment of the Tararua Alliance, significant effort has been placed on identifying and recording these assets around the network as they present a large network resilience risk to us.

Building the Asset Database has taken time as it is difficult to locate these assets. This is due to the fact that they sit below the road out of sight and are usually are covered in vegetation.

We broadly believe the majority of the walls have now been located have now and loaded into RAMM. We have 1336 identified across the district, with the majority being Timber Crib Walls.



There is still a significant amount of to do to improve our understanding of our Retaining Walls and the risks they present and this is a focus areas for the coming years.

### Retaining wall condition – what condition are they in

Following identification and initial condition assessment of retaining walls, it has been identified that these are an achilles heel for the Tararua Roding Network. During recent High-intensity rainfall events, a number of walls have sustained damage for which extensive repairs have been required. Additional to these repairs, many have been found to be in a condition where they are likely to fail in the short to medium-term. The creation of the inventory is allowing us to create an inspection and maintenance programme that will improve the resilience of the asset.

### Structures methodology

Structural Maintenance & Renewals (Bridges and Retaining Walls) are carried out as part of the Road Network Maintenance and Management Alliance Contract.

Since commencement of the contract, significant resource has been applied towards updating the information surrounding these asset types and more work is needed to fully understand the condition of and requirements for these assets.

### Asset information management

With the merging of bridge data into the RAMM database and creation of retaining wall assets, we can now manage the these assets in a clear and traceable manner.

Focus is now shifting towards maintenance of this information. On-going maintenance of data (both office based and by field-inspectors) is required to develop our condition data. As we

progress through our All-Faults work programmes, basic updates will be performed onsite, followed later with a review by the Asset Information Manager/Engineer to check the data added onsite conforms with the standardised method of entry. This ensures consistency across the database.

### Condition Assessment and Programme Development

Condition inspections are now undertaken in a systematic regime which is critical to successful Structural Asset management. Frequent assessment of condition is an effective means of tracking the performance of a structural component over time.

A programme of inspection has been in place for bridges in previous years and it is likely retaining walls will be inspected with similar frequency.

Our Bridge Stock has 3 levels of Inspection. Every year a basic routine inspection is completed on the structures. This inspection identifies any obvious defects, such as scouring leading into the bridges, and general defects noticeable by observation from the bridge deck.

Asset Type	Inspection Frequency (Years)		
	Routine	General	Detailed
<b>Bridges</b>	1	2	6
<b>Large Culverts</b>	1	2	6
<b>Retaining Walls</b>	1	2	6

Every 2 years a more detailed general check is undertaken which looks at things like the integrity of the railing structures and drainage points to identify defects which occur gradually. Faults identified during these inspections are loaded into our All-Faults database and responded to accordingly.

Over the course of 6 years, each bridge undergoes a detailed inspection to identify any structural issues with the bridge, looking both at the Super-structure and Sub-structure. Following these inspections, a yearly Maintenance and Renewal programme is developed. Currently these inspections are completed by WPS-Opus.

Retaining walls are to be inspected with a frequency similar to the bridge inspections, but will be completed by the Tararua Alliance staff.

Repairs identified are prioritised to match the available annual budget using the following process.

Step	Action
1	Identify repairs from the routine repair schedule that have a high (H) priority.
2	Check repair schedules against the road forward works programme (Year one & two). Any repairs that will impact on treatments in the first two years of the programme should automatically be escalated to a high priority.
3	Are there any repairs on the same bridge or structure with a Medium (M) or Low (L) priority that can be done using the same resources? If yes changes these to a high priority.
4	Review and update estimates for all high priority repairs.
5	Rank all high priority repairs by ONRC. Repairs on higher classification roads should be targeted first.

6	If all the budget has not been expended, then identify any remaining medium priority repairs and rank by ONRC.
7	Review and update estimates for medium priority repairs identified in step 6.
8	If budget not expended target Low priority repairs by ONRC.

### Routine maintenance

General bridge and structures maintenance fall under the responsibility of the Tararua Alliance. A close working relationship between planning staff and delivery staff ensures priority works are identified and completed with due haste and budgets are monitored closely.

The Alliance cyclic patrol staff complete the basic and general inspections and maintenance activities across the district. Bridge work includes;

- Waterway scouring or bed aggregation.
- Debris in the waterway and around piles and piers.
- Damage or the deterioration of guard railings.
- Wearing or loose timber deck planks.
- Loose detritus on the deck.
- Blocked deck drains.
- Damaged signs and delineators.

More detailed inspections are carried out during and/or after events that might threaten the safety or performance of bridges, such as floods, earthquakes or overloading.

A programmed maintenance/renewals programme is the most cost effective way to manage the bridge stock. In addition to the work identified through the routine inspections and completed by general patrol-staff discussed above other types of maintenance work can include:

- Repairing structural defects, e.g. concrete spalling, corroded fastenings, rotten timber, undermining of foundations.
- Repairing or replacing damaged components, e.g. wheel guards and handrails.
- Restoring protective coatings, e.g. painting.
- Restoring or cleaning deck expansion joints.
- Watercourse training.
- Repairing road approach and abutment settlements.
- Cleaning around bearings.

These repairs are made to protect the investment in assets by extending the life of the structure and to minimise future repair costs.

## Renewals

Renewal is undertaken when a structure or significant component has reached the end of its useful economic life, i.e. it is more economical to replace or rehabilitate the structure or component than to continue maintaining it.

Renewal can include:

- Replacement of an entire structure.
- Replacement of individual structural components e.g. bridge deck, bearings, handrails
- Rehabilitation to restore the structural integrity of components, e.g. reinforcing repairs.

The reasons for renewal can include:

- Deterioration of the structure or component.
- Damage to the structure or component via flood, earthquake or vehicle impact.
- The waterway's characteristics have altered to the extent that the bridge can no longer pass the design flood flows.

Renewal needs are identified through detailed inspections, confirmed through a detailed structural investigation, then validated by economic justification of net present value option consideration.

To reinstate the condition of all structures at a network level requires a significant financial investment. Therefore we must make decisions on what maintenance work is to be undertaken within the limits of budget constraints that will enable the expected life of the asset to be maintained or extended. Hence the objective prioritisation is to select the maintenance strategy that will provide the best condition within a given budget.

## Structural asset disposal

Asset disposal processes will comply with Council's legal obligations under the Local Government Act 2002, which covers:

- Public notification procedures required prior to sale.
- Restrictions on the minimum value recovered, and
- Use of revenue received from asset disposal.

Bridges on roads which service single properties may be reviewed for disposal. Council may decide that bridges identified in any review process for disposal will no longer be maintained by Council, but will be subject to a legally binding agreement with the adjacent property owner. Council could decide to either:

- Undertake routine inspections on these bridges, paid for by the adjacent property owner who will be responsible for all maintenance requirements identified, or:
- Decommissioned to reduce potential Council liability.



All relevant costs of disposal will be considered when considering disposal options. These costs may include:

- Evaluation of options
- Consultation and advertising
- Obtaining resource consents
- Professional services, including engineering, planning, legal, survey
- Demolition, site clearing or the cost of making safe.

The use of revenue arising from the sale of assets, or the source of funds required to dispose of assets, would be considered by Council at the time of its consideration of any asset disposal.

### **Uneconomic bridges**

A bridge may be disposed of if it is uneconomic, unsafe or becoming so, and it is not in the public interest to maintain it in an appropriate safe condition. Disposal of bridges can be carried out in the following ways:

- Sale
- Gifted, or
- Demolition without replacement.

NZTA has a general policy regarding bridges that it considers uneconomic. A bridge may be deemed uneconomic by NZTA where the ratio of the total cost of the work to be undertaken per AADT is greater than or equal to \$8,000 per vehicle.

Under this policy financial assistance will be provided for the most cost effective maintenance option. Economic assessment of bridges requires the corresponding portion of road serving the bridge to be considered.

Consideration of divestment or retention of these types of bridge and culvert assets needs to be formalised to provide future direction for asset management and forecast expenditure.

Bridge replacements are assessed on a case by case basis. Council is aware that ratepayers deem a bridge not being replaced as a reduction in level of service.

Bridges in remote rural areas are used for moving stock and farm machinery along public roads, therefore seen as vital for the users.

There are no bridge or retaining wall assets to be disposed of at this time.

## 9.6 Drainage

### 9.6.1 Our drainage systems

Drainage infrastructure on the transportation network exists to manage water flows within the road reserve. This water can be natural water flow-paths following the terrain of the land, rainwater running off the carriageway or natural ground water rising from below the ground.

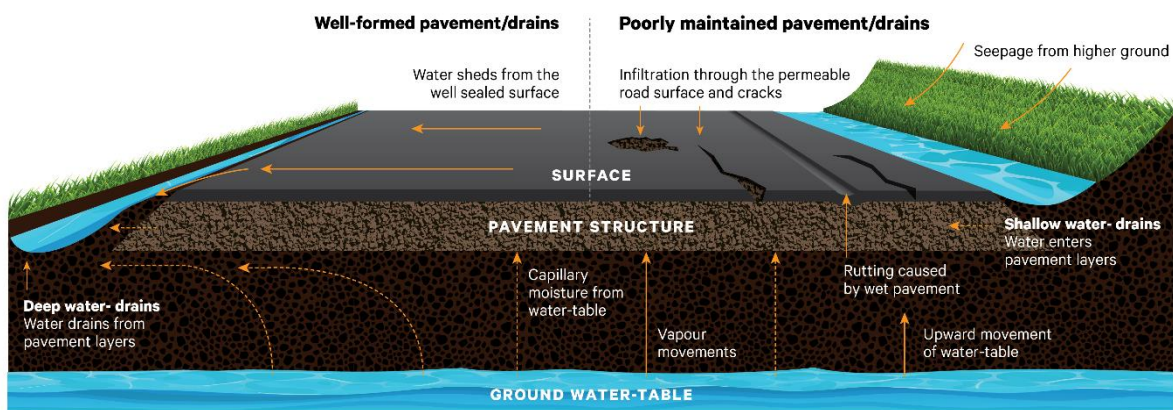
- In urban areas, the Tararua Alliance manages the drainage assets that collect the water in the road reserve and deliver it to the main reticulation network.
- In rural areas, the Tararua Alliance manages the side drains, swales, open drains and road culverts, along with their inlet and outlet structures.

With the soil types found in Tararua, our drainage systems are an important feature of our roading network as they protect our pavements structures. The decision not to invest in this asset can negatively impact the safety, quality and the overall cost of maintenance.

Quality drainage infrastructure will;

- Allow surface water to drain away from the pavement, thus reducing the likelihood of vehicle loss of control in wet weather and damage to the pavement structure caused by water ingress.
- Efficiently drain water away from the pavement structure, thus improving subgrade conditions.
- Protect vulnerable areas of the road formation by establishing flow-paths and not allowing water to discharge over embankments.

The drainage system represents a significant risk to the transportation network. The cost of repairing the consequences of a failure generally far exceed the value of the asset causing the failure, therefore is one of our key investment areas. The image below demonstrates a well formed road formation in comparison to a formation in poor condition.



### Asset inventory

With the Tararua Districts roading network being predominately rural, the majority of drainage assets are open side drains running along the carriageway. These drains have intermittent culvert road crossings transferring water from one side of the road before discharging into natural water courses, whether it be overland or directly into streams and rivers. The table below provides details of the drainage assets across our roading network.

Asset Type	Asset Description	# of Assets	Measure	Value (Replacement Cost)
Surface Water Channels	Lined (Kerb and Channel, Dish)		192km	\$21,507,446
	Unlined Deep >200mm below seal edge		271km	\$4,159,298
	Unlined Shallow <200mm below seal edge		1379km	\$21,125,932
Fluming	Outlet structures controlling culvert outflow water down batter slopes	46	221.5m	\$9,566
Sumps, Manholes and Drop chamber	Inlet Sumps or drop chambers connecting to culvert pipes	1162	NA	\$2,959,349
Culverts (carriageway crossings)	Culvert crossings under carriageway	9545	10.9km	\$39,492,015
Culverts (Side drains)	Culvert crossings running parallel to carriageway	1220	12.2km	\$359,425
Culverts (High Risk)	Large culverts carrying natural watercourses within road formation	120	1,327m	\$3,334,591
Subsoil drains	Subsoil drains under Channel (Concrete or Stone) <i>NOTE: Historical Asset data not recorded.</i>	14	1,015m	\$43,500
<b>Total Value</b>				<b>\$71,483,676</b>

### Asset condition – what state is it currently in

#### Data quality

Over the past 2 years a full Asset Drainage Asset survey has been undertaken to improve the quality of our data. This action was required as our RAMM database previously had very limited information.

With the concerted effort to improve the data over the previous AMP cycle we are now confident with the information we have on this asset and are shifting to maintaining this information.

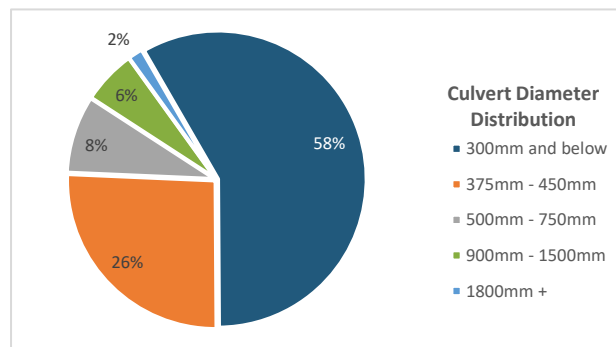
#### Culvert condition

With water from the surrounding surfaces collecting at the inlet points of culverts, they play a critical role in drainage systems. If this water is not able to pass through the culvert it backs

up and will find alternative flow-paths. This can either be along the water channels, which can lead to scouring due to the increase in volume and speed of flow, or over the road, which can lead to damage to the road structure. In some cases, blocked culverts can lead to the complete loss of a carriageway formation. There is an inherent risk to our roads from having culverts in poor condition.

The largest focus of the data improvement action completed over the last 2 years was to refresh the culvert information. All culverts were located and numbered, with the database updated where required, and their condition assessed with follow up actions identified.

Analysing the data collected during the survey, combined with knowledge of how our drainage assets handle heavy rain events, we have identified issues with our culverts across the network.



58% of the culverts across the network are 300mm or less in diameter. With increasing volumes of rainfall and further increases likely due to the changing climate, these sized assets present a risk to the resilience of our network.

When travelling the network (and confirmed by the recent drainage inventory refresh) it is noticeable that culvert inlet and outlets are in a poor state. Prior to the refresh, culverts were not marked with identification pegs. With poor records of culverts, locating them for inspection and maintenance was a challenge and few having inlet/outlet structures (headwalls etc) they could easily become blocked by long grass/vegetation.

Many of our larger culverts are aged and in poor structural condition. These are in need of renewal. Our biggest risk are the large culverts that are installed at great depth. If these were to fail, it can lead to significant repair costs and long periods of road closure.

By targeting our high risk culvert assets we can begin to minimise the risk profile and improve the resilience of our roading network.

#### Case Study – 2017 culvert collapse

In April 2017, a Cyclone impacted the Tararua and caused significant damage across the district. One of our key access routes (Route 52) suffered the loss of a section of road, caused by the failure of a 900mm diameter culvert. The carriageway formation crossed a 15m deep gully and on failure, water started to back up behind the fill embankment. Once water reached the top it crossed the carriageway and ran down the opposite side causing scouring which eventually led to the loss of the entire road. A stream had formed through the scoured gully at a depth of ~8m below the road surface. A pond had formed due to the remaining 7m depth to invert and had saturated the area making it difficult for machinery to access and excavate to culvert depth. With the onset of winter and costs mounting a temporary road for 4wd vehicles was created and the site was left until conditions improved. The closure resulted in an additional 30km added for freight trips to the south.



The cost to install a temporary road, drain the pond to allow the surrounding ground to dry, excavate down to and remove the failed culvert, install a replacement culvert, rebuild road formation and construct carriageway was \$800,000.

### **Unlined surface water channel (side drains) condition**

An Unlined Surface Water Channel is the drain running in parallel with the carriageway. Its function is to channel water away from the road formation to the natural water courses of the surrounding land. With Tararua having a predominately rural road network, the majority of our carriageways have these channels running alongside them. Maintenance of these is important, as saturation of a pavement can quickly lead to its failure. The cleaning of drains is a relatively low cost but high impact activity.

Historically, many side drains were not formed at great depth and were not maintained well. As work occurs around the network these issues are gradually being rectified, but with a large network, there is much work to do in this space.

Over the period of the previous AMP we have made a concerted effort to get on top of high shoulder and water channel clearing. With increased focus on this maintenance activity, overall pavement maintenance costs can be reduced.

### **Lined surface water channels condition**

Lined Surface Water Channels are concrete Kerb and Channel or concrete Dish-drains that predominately feature within the urban area. With high demands across our rural network, limited investment in funding is spent on this asset beyond cyclic maintenance and isolated minor repairs.

There are a number of issues with drainage within the urban stormwater networks for which the root causes fall outside the Roding scope. Tararua DC is in the final stages of developing an overall strategy to manage the combined Roding and 3 Waters Urban Stormwater networks. Once this strategy is in place and the root causes are addressed, greater focus will be placed on the Lined Surfaced Water Channels.

### **Sump condition**

The sumps, which largely are located within the urban boundaries have been installed over 40 years ago. While these are not the modern Pre-cast units found today, their condition is not of concern. As with Lined Surface Channels, the wider urban stormwater network requires greater focus.

### **Drainage methodology**

Following a significant amount of work to update the drainage data within RAMM, we now have adequate data to allow us to make informed decisions when it comes to Drainage Maintenance and Renewals. Analysis of the data shows a need to alter the strategy for this asset and direct attention towards drainage assets, which present resilience issues for us.

The methodology for how we undertake Drainage Maintenance and Renewals has not changed, but what assets are renewed will.

## Asset information management

Following the Drainage Inventory Refresh, our data quality is in a good state and maintaining this data is now the focus.

The maintenance of asset data involves tracking work in the field to ensure the data stored within RAMM is accurate and reflects the actual inventory in the field. The Asset Managers roll is to monitor work programmes and update this data as it occurs.

To maintain fault data, drainage assets have basic visual checks as part of general road inspections. These inspections identify issues noticeable from the carriageway.

We have a 3 year programme to undertake detailed inspections of all culverts across the network. During these inspections the culvert will have its structural condition assessed to determine if it is in a suitable condition and still functions as designed.

## Creation of drainage assets

The creation of new or the need to create drainage assets are driven by factors such as;

- changes to the natural environment (catchment changes, increase in rainfall, land form, springs),
- changes to the road formation which change the point where water collects (road realignment, grade changes),
- or new road being added to the network (development).

When a new asset is created, relevant data is loaded into the RAMM database.

## Routine maintenance of drainage assets

Routine maintenance of Drainage Assets reduce the risk of blockages leading to ponding which can cause scouring, damage the carriageway pavement, and/or create a safety hazard.

Routine Maintenance of our drainage assets primarily take the form the following activities;

- Periodic cleaning/clearing of culverts by hand or machine.
- Vegetation control in side drains and at culvert inlet and outlets to ensure a free flow path of water along the drain and reduce the likelihood of blockages and sediment build-up.
- Cyclic cleaning of kerbed water channels, sumps and catch pits in urban areas.
- Water-jetting of culverts to clear blockages.

Drainage assets on roads that have high traffic, cyclist or pedestrian volumes are prioritised to ensure they are maintained at a higher standard than those assets on parts of the network that have a lower ONRC classification.

The issues that affect the maintenance and operations of drainage assets include:

- Surface water channel damage by tree roots, vehicle impact or ground movement.

- Low to no maintenance of drainage systems within private property and flat topography often lead to surface flooding within our urban networks.
- Blockages to side drains in our rural network caused by slips and debris build-up.

### Renewal of drainage assets

Renewals to drainage assets are required when the asset is no longer fit for purpose, is damaged beyond the point of basic repairs, or requires modification due to changes in the wider environment.

Drainage renewals encompass three main types;

- Surface drainage – verges, shoulders, lined and unlined surface water channels.
- Formation drainage – side slopes, side drains, sub-soil drains.
- Storm water drainage – culverts, inlet and outlet structures, sumps, treatment devices.

Our approach to the programming of drainage renewal works is in the course of being altered. Previously work programmes were built predominately around the wider work programmes of Pavement Rehabilitations and Renewals. While portions of the drainage renewals work programme will still occur in conjunction with Reseals and Rehab (reforming of road side drains, critical culvert replacements), the alteration of strategy will see more high-risk drainage issues targeted.

High-risk areas are identified using local knowledge, RAMM information and spatial analysis. A list of all candidate sites is developed, ranked by risk, visualised in a map and the list formatted to prioritise treatments needs. Consideration for the following is then made before the renewals are confirmed;

- Alignment with other forward works programmes (ie. Reseals, AWPTs).
- Annual rainfall variation across the network.
- Failure mode analysis outcomes.

The prioritised renewal candidate sites are then compared to the annual budget to determine which sites can be added to the programme, then actioned accordingly.

Our Urban Stormwater Channel renewal programme is developed on an annual basis for kerb and channel where the frequency or extent of faults is such that spot maintenance is no longer the appropriate solution. These include sites where:

- Badly cracked channel allows water to enter the pavement layers
- Depressions or bumps in the profile cause water to pond, especially if the ponding extends onto the seal area.
- Badly cracked concrete which is becoming detached and causing a hazard to road users.

The decision to renew the kerb and channel is then confirmed by field inspection and maintenance cost analysis.

## **Disposal**

Disposal of Drainage Assets will occur only as a result of changes or improvements to the road network itself. For example, a road realignment may change the water flow paths, thus making a culvert crossing redundant. If an asset was to be removed it typically would be replaced by another drainage in a new location or another type of asset (ie. side drain changed to kerb and channel).

## **9.7 Street Lighting**

With the LED Lighting upgrade completed in 2018 Street Lighting is being maintained and renewed where necessary.

There are no current plans to increase lighting in the District.



## 9.8 Traffic Services

### Introduction

Traffic Services are the assets within the road reserve that help control the safe and orderly movement of vehicular and pedestrian traffic.

These services can be separated into the following groups;

- Traffic Signs.
- Road Markings.
- Carriageway Lighting.
- Rails and Barriers.

A good standard of Traffic Services can contribute significantly to a safer road network.

**Traffic Signs** fulfil several functions and can be separated into 4 categories;

- Compulsory/Regulatory signs. These signs tell you what you must do and are either Red or Blue.



- Permanent warning signs. These signs inform the road user of either a permanent hazard and are yellow and black.



- Temporary warning signs. These signs inform the road users of a Temporary hazard and are orange and black. Note: These signs do not form part of our signage inventory.



- General Information signs. These signs provide locality information.



**Road markings** are a key safety feature of a road, as they create a visual delineation the road and its boundaries.

- Road centrelines, lane lines and edge lines indicate the alignment and edge of carriageway.
- Edge Marker Posts (EMPs) and Raised Reflective Pavement Markers (RRPMs) supplement road and lane lines to indicate alignment and the edge of carriageway at night.
- Intersection markings provide instructions for how road users are to operate at intersections.
- Marked parking areas provide for the orderly use of carparks.
- Marked crossing points provide safety provisions for pedestrians.
- Service markings provide information for important services (ie. Fire Hydrant, Water Valves)

**Carriageway lighting** is provided to improve the safety of the road users and are generally located within Townships along footpaths. Occasionally they are located in the rural area to increase visibility at intersections.

**Sight-rails** delineate the roadway by providing continual guidance through tight bends with limited visual background. They can also provide a target background at the head of T-intersections. Sight rails constructed with wood, are painted white and are not intended to provide a physical barrier to stop vehicles leaving the carriageway.

**Guardrails** are similar to sight-rails (as they delineate the roadway) but are designed to provide a physical barrier between a hazard (ie. steep cliff) and the road user. They are constructed of Galvanised steel components and designed to an international standard. *Note: We consider barriers such as Guardrails to be Structures as are design to a specific standard which is critical to their performance. The asset is managed within RAMM as part of our Minor Structures category; however, as they are similar to Sight-rails in terms of maintenance and renewals, they have been combined into this portion of the document.*

### Our traffic service assets

Being a rural district with low vehicle numbers travelling our roads, the number of Traffic Service assets within Tararua are low in comparison to other districts. Certain types have been installed on an ad-hoc basis and do not conform with ONRC or installation guidelines.

With the Government Policy Statement driving improvements to the safety of New Zealand's roads, greater emphasis now placed on this asset as it has a relatively low capital cost to install, yet provides high-impact benefits to Safety.

The need to implement a district wide strategy to improve Traffic Services has been identified and is a key component of a number of proposals presented in the AMP.

### Signage inventory

Standard regulatory signage is found throughout Tararua, with the majority of streets/roads having name blades and advisory signage at each point where speed zones change.

Permanent Warning Signage intended to warn road users of hazards, such as Chevrons is under-developed across the network and feature sporadically.

The following table provides details of our signage inventory in comparison to our roads ONRC hierarchy. As is shows, the majority of our signage is located on the Access and Low Volume roads and this reflects the nature of our network.

		Arterial	Primary Collector	Secondary Collector	Access	Low Volume	Total
<b>Regulatory</b> (Speed, Giveaway, Stop, Railway Crossing etc)	No.	39	148	403	1006	835	2431
<b>Permanent Warning</b> (Curve Advisory, Giveaway Ahead etc)	No.	258	316	1191	2462	1567	2970
<b>Permanent Warning</b> (Chevrons)	No.	54	27	84	110	43	318
<b>General Information</b> (Road name blades, Cyclists, Passing Lane)	No.	31	148	423	659	512	1773
<b>District Information</b> (Tourist information, Historic Places, etc)	No.	47	48	232	401	269	997

### Line-marking and delineation devices

When driving the network it quickly becomes apparent, that there are few roads with line-marking or delineation. The combination of narrow roads and with increased heavy vehicles presents a high risk to the light vehicles, as often heavy vehicles will straddle the centre of the road to avoid uneven edges of the pavement. At night, with little reflective delineation, alignment is difficult to determine and increases the risk of vehicles leaving the road. Asset data quality is very poor which restricts the ability to make informed decisions about the Asset.

A Traffic Services Standardisation & Improvement Project has been initiated and over the period of this AMP significant improvement is to be made to this asset.

Data is available for Line-marking is available via the annual line-marking claim and it is intended to use this data source as the basis evaluating the existing markings.

## Carriageway lighting

There are currently 1,363 street lights on the local roads which are owned and operated by Council. Council also maintains an additional 264 lights located on the State-Highway network, although these lights are owned by the NZ Transport Agency. The majority of lighting is found in Eketahuna, Pahiatua, Woodville and Dannevirke.

Street lighting operates from dusk to dawn and are controlled by the three lines companies which operate across various parts of the district.

Council owns all dedicated lighting poles on the Local road network, but not the State-highway, where the poles are owned by NZTA. If a street light is supported by a utility company's pole (electricity or telephone), the light and its bracket are owned by the Council and included in the Lighting Asset Register, but not the pole.

Bulb Type	Local Authority	State Highway	Total
LED	1319	44	1363
Other type	4	220	224
		<b>Total</b>	<b>1587</b>

Over the period of the previous AMP, Tararua District Council has modernised the Street Light assets with all Council controlled lights upgraded with LED bulbs. Council has also just recently completed a LUX survey (June 2020) which has identified issues with our lighting and will form the basis for our upcoming maintenance, renewals and capital investment programme.

## Railing and barriers

Sight Rails and Guard Rails are not a common feature on the Tararua roading network. They occur sporadically around the network and have been poorly maintained.

When comparing Tararua against two other districts of similar road length and geography, we have 55 sections of Guardrail compared to 170 and 260. This indicates an under-investment in this asset type. The same can be said for Timber Sight Rail, with very few around the district.

Type	Total No.	Total (m)
Bridge Approach Rails	495	8342
Bridge Rails (Steel Tube and Armco)	36	577
Guardrail	52	1658
Timber Rails	8	255
Other type (Pedestrian)	11	59

## Asset condition – what state is it currently in

<b>Signage</b>	<p>Physical Condition</p> <p>The “All Faults” system is utilised to record identified defects in the sign stock. Using this defect data we can assign a derived condition using;</p> <ul style="list-style-type: none"> <li>• Assets with defects requiring renewal = Poor condition;</li> <li>• Assets with defects requiring maintenance = Average condition;</li> <li>• Assets with no defects = Good condition.</li> </ul>
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<p><b>Rails &amp; Barriers</b></p>	<p>The Railing and Guardrails across Tararua are considered to be in a “stressed state”, due to low levels of maintenance in the past and the sporadic nature of where and when these were installed.</p> <p>The majority of the Guardrails have Bull-noses or Fish-tail end treatment which are now considered “unsafe”.</p> <p>Formal condition assessments are not completed on these assets with faults being identified as part of routine network and asset inspections. Utilising this data, we can derive an approximate condition rating by assuming;</p> <p>Assets with defects requiring renewal = Poor condition;</p> <p>Assets with defects requiring maintenance = Average condition;</p> <p>Assets with no defects = Good condition.</p> <div data-bbox="917 280 1393 515"> <table border="1"> <caption>Rails &amp; Barriers Condition by Classification (No.)</caption> <thead> <tr> <th>Classification</th> <th>Good</th> <th>Average</th> <th>Poor</th> </tr> </thead> <tbody> <tr> <td>Arterial</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Primary Collector</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Secondary Collector</td> <td>50</td> <td>0</td> <td>50</td> </tr> <tr> <td>Access</td> <td>50</td> <td>0</td> <td>100</td> </tr> <tr> <td>Low Volume</td> <td>0</td> <td>0</td> <td>150</td> </tr> <tr> <td>No Classification</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table> </div>	Classification	Good	Average	Poor	Arterial	0	0	0	Primary Collector	0	0	0	Secondary Collector	50	0	50	Access	50	0	100	Low Volume	0	0	150	No Classification	0	0	0
Classification	Good	Average	Poor																										
Arterial	0	0	0																										
Primary Collector	0	0	0																										
Secondary Collector	50	0	50																										
Access	50	0	100																										
Low Volume	0	0	150																										
No Classification	0	0	0																										

With increased focus on safety features on a roading network, these items are being targeted for improvement.

### Traffic services lifecycle cost optioneering

When considering the options for the Traffic Service assets we have considered what Tararua has now and compare it to the national context of what is being promoted through the Government Policy Statement and other guiding documents.

### Traffic services methodology

With certain assets that form part of the Traffic Services group considered to be in a poor condition.

During the first year of this AMP cycle, funding has been set aside to develop an “Out of Context Curve Project” that will identify areas for improvement across the network and determine where the best return on investment can be made in terms of overall safety improvements.

This project is likely to transform our Traffic Services inventory, as the installation of these assets typically have a high benefit to cost ratio. Additional to the safety improvements made, the project will provide consistency across the network which can then guide Maintenance and Renewal programmes into the future.

### Asset information management

Signs, Street Lights and Sight and Guard rails are managed as stand-alone assets within RAMM and if work is undertaken on these, the database base is updated accordingly.

Network Inspectors carry out visual assessments to identify and record faults based on the network Maintenance Intervention Strategy Visual Assessment Guide, which includes failure categories such as cleanliness, visibility and damage. If an asset meets any of the failure criterias, it is entered into the “All Faults” database, analysed and programmed for either repair or replacement. The response and reinstatement times are managed to minimise the risk to public safety.

The all faults process is an on-going operation with asset inspectors continuously monitoring the deterioration of previously recorded faults and identifying new defects, and reviewing or adjusting the priority of recorded defects.

Traffic Service assets such as Linemarking, Edge Marker Posts and Raised Reflective Pavement Markers are not recorded as individual assets within RAMM. Due to the nature of these assets, the best method of recording this is by road length. With such inconsistency across these assets, the RAMM information held currently is poor, therefore it is not currently managed. As the “Out of Context Curve Project” is develops, this information will grow and be entered into RAMM by road length.

### Sign maintenance, renewals and capital improvements

**Maintenance** - Signs are generally maintained as part of routine network patrols. The patrol frequency is based on the road’s ONRC classification. The activities undertaken as part of these patrols include; washing of signs to remove grime/graffiti to improve visibility, removal of vegetation blocking signs from road users vision, and minor maintenance such as painting and straightening of posts, and tightening of fastenings.

**Renewals** - Signs are renewed when they fail to meet current standards or are damaged to the point where they become ineffective. We have sufficient mitigation strategies and focused response times to prevent delays in renewals and limit the risk to public safety.

**Capital improvements** - New works for additional signs are predominantly driven by safety audits and programmes to improve road safety, including accessibility around schools. There are new signs associated with programmes such as minor safety improvements and capital works.

### Road marking maintenance, renewal and capital improvements

**Maintenance** - Road Marking maintenance will occur alongside other physical works if deemed required at the time of works.

**Renewals** - Road markings are renewed on an annual basis, to ensure suitable reflectivity is maintained.

Raised Reflective Pavement Markers (RRPM) are renewed as required as part of the annual road marking programme, this includes RRPM installed for Fire Hydrants.

A review of the our networks delineation is underway which will allow us to determine the appropriate delineation standard based on a roads classification. The new standard will be

developed which will place greater emphasis on high classification roads and high risk sections of our network.

**Capital Improvements** - New road marking is typically associated with programmes such as minor safety improvements and capital works. Road marking is also installed at points of the network where there is increased risk of accident caused by poor road alignment, narrowness, or poor sight-lines.

### Street light operations, maintenance, renewals and capital improvements

**Operation** Street lighting operates from dusk to dawn and are controlled by the three lines companies which operate across various parts of the district.

Street light energy use is not metered but is calculated from the database of installed lights and wattages, and the switch on/off times. This method, while widely used within the industry, is open to several sources of error. For example it takes no account of lamps that are inoperative, and is slow to respond to additions or changes to the network.

**Maintenance** - Currently Street light maintenance is carried out on a reactive basis, with faults typically lodged through customer requests. Most requests are due to street light outages caused by power supply issues, so are lodged with Contact Energy, who is the Council's energy provider.

With the completion of the lamp upgrade project, maintenance related faults due to the lamp failures are expected to reduce. As the street light poles age, increased inspections, maintenance and renewal will be required.

**Renewals** - Until 2014/15, the streetlight renewal programme was confined to the reactive replacement of individual damaged or unserviceable lanterns and columns. Following the upgrade of all TDC owned lamps in 2017-18 focus is now on developing a planned long-term programme for renewals.

LEDs are now the standard lamp fitting for TDC owned street lights. LEDs produce a better and brighter light, reduce energy by a third and last significantly longer (two and a half times) than a sodium light, reducing the need for maintenance.

Brackets and poles can suffer from corrosion problems and external factors such as wind which causes fittings to become loose. Concrete poles are susceptible to concrete spalling as a result of corrosion and expansion of the steel reinforcing components. All poles can be subject to vehicle collision and replaced if required.

**Capital improvements** - Streetlights are typically acquired or upgraded in the following circumstances:

- When new lights are provided by the Council where no lights previously existed.
- When the Council street lights are installed and vested in the Council as part of a new urban subdivision.
- Through work to meet the level of service arising from:



- Improvements in association with a urban upgrade project.
- Safety improvements, and
- Improvements in association with undergrounding of overhead utility reticulation.

Following a recent LUX survey a Capital Improvement programme is being developed to determine whether additional lights are required to ensure the lights provide for safe and convenient night-time driving, while facilitating pedestrian movement alongside and between roadways and public spaces.

### **Sight rails and guard rails**

As part of the proposed **“Traffic Services Standardisation & Improvement Project”** an Improvement Action will be developed to improve the condition of Sight-rails and Guardrail. These Assets are in poor condition across the network and many Guardrail Terminal Ends no longer conform with the current Safety standards.

As part of the upgrade, a new maintenance and renewals regime will be developed to maintain the assets to an acceptable LoS. This is likely to mirror the Maintenance and Renewal regime of the signs asset

## 9.9 Footpaths, cycleways and carparks



### Introduction

The purpose of footpaths and cycleways is to provide safe spaces for “non-vehicular” modes of transport to operate. They are a link between journey origin and destination for their respective users and are an essential component of an effective, efficient and sustainable transport system and enable customers to make smart transport choices.

A footpath network in good condition is essential to provide a safe all weather surface for pedestrians and other vulnerable users such as mobility scooters and wheel chairs.

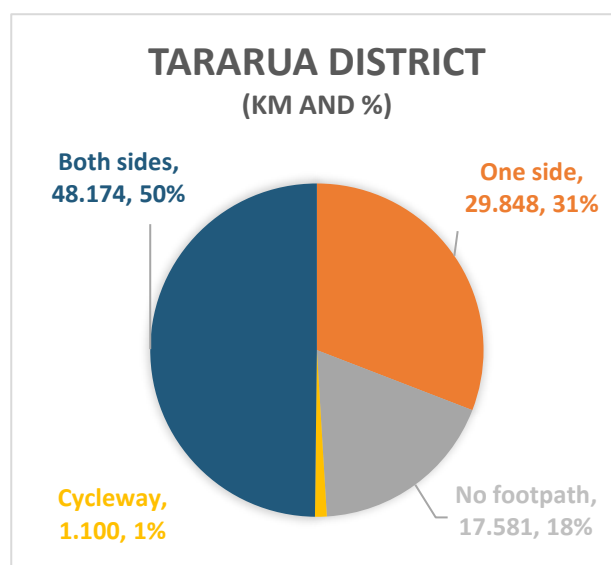
Carparks play an important role in the transportation network and in the community itself as they enable easy access to commercial and social areas within the district. Maintaining these to a good standard encourages their use and as such, supports the community itself.

### Our footpaths, cycleways and carparks

#### Footpaths

The majority of footpath assets are located within the four main urban areas in Tararua with a small amount in the minor townships of Norsewood, Pongaroa and Ormondville.

As is the case with many small rural townships throughout New Zealand, our footpath network is in varying stages of development. Generally, on urban streets where traffic volumes are high, footpaths run along both sides of the carriageway



and as traffic volumes reduce, footpaths feature on one side only or in many cases, no footpaths exist.

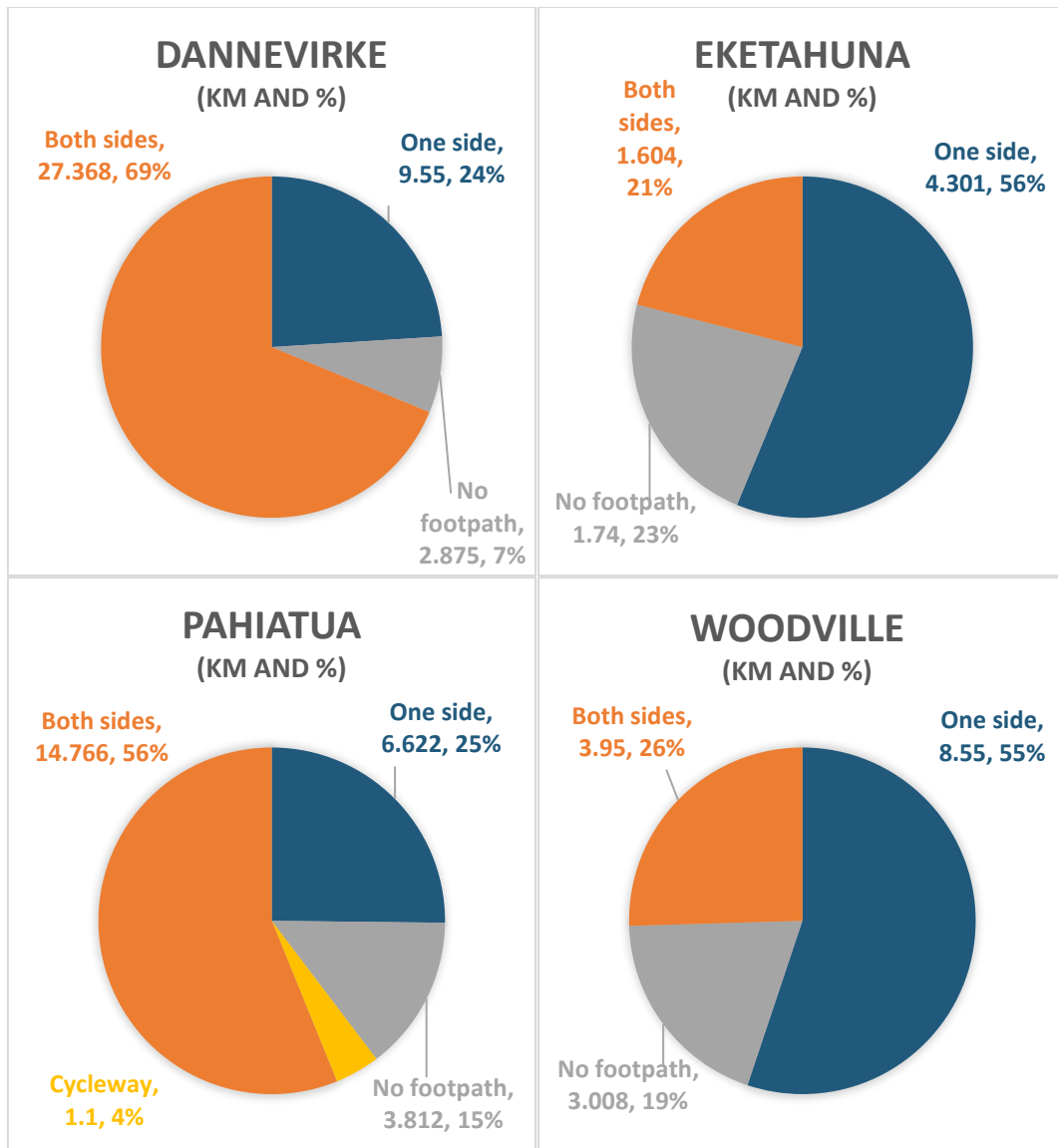
The majority of footpaths are surfaced with asphaltic concrete (asphalt) or concrete and have adequate width for the populations they service.

### **Cycleways**

Similar to many other low population based rural districts, formed cycle-ways are not a common feature within our district. We have 1 formed cycleway running between Pahiatua and the Fonterra Dairy Processing Plant located 1.1km from the town boundary.

Although we have few cycle-ways, the flat topography of our urban areas allow for easy cycling. Additionally to this, we have wide street formations which provide ample room for vehicles and cyclists to mix, making cycling a relatively safe activity. This however, cannot be said for all parts of the network. Our rural network has narrow road formations, is winding and in areas the shoulders drop quickly away. Parts of the State-Highway near the urban centres also have narrow road formations and high traffic volumes. Both these factors restrict the growth of cycling as a form of transport, as cycling in these areas can be dangerous.

The charts on the following page provides details of our asset inventory across the various townships.



## Carparks

Council manage a total of 23 off-carriageway carparks within the Tararua, this supplements marked on-street parking and private carparks owned and managed by businesses. Over the period of the last AMP, Council has been investing in the creation of off-street parking at points where people gather, such as schools and marae's.

Carpark Location	# of Council managed carparks	Total Area (m2)
Dannevirke	13	20,974
Eketahuna	2	4,200
Pahiatua	3	4,159
Woodville	5	2,015
<b>TOTAL</b>	<b>23</b>	<b>31,348</b>

## Asset condition

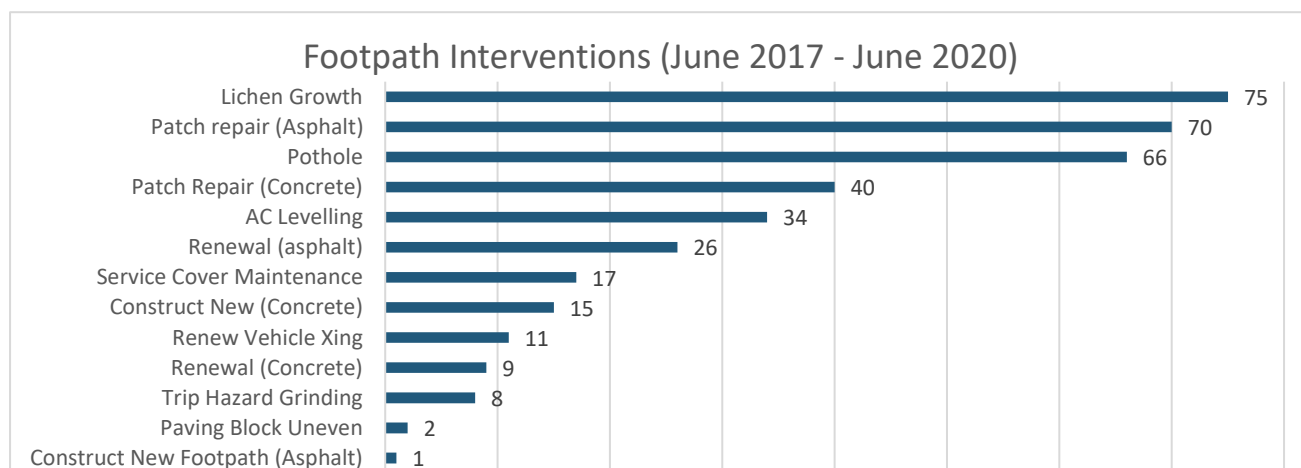
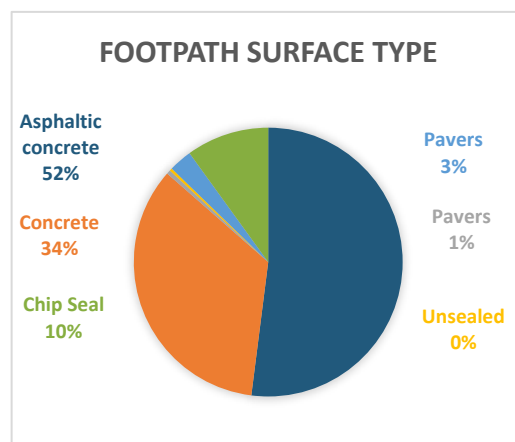
### Data quality

With few footpaths to manage we very have high confidence in the quality of our Footpath, Cycleway and Carpark data.

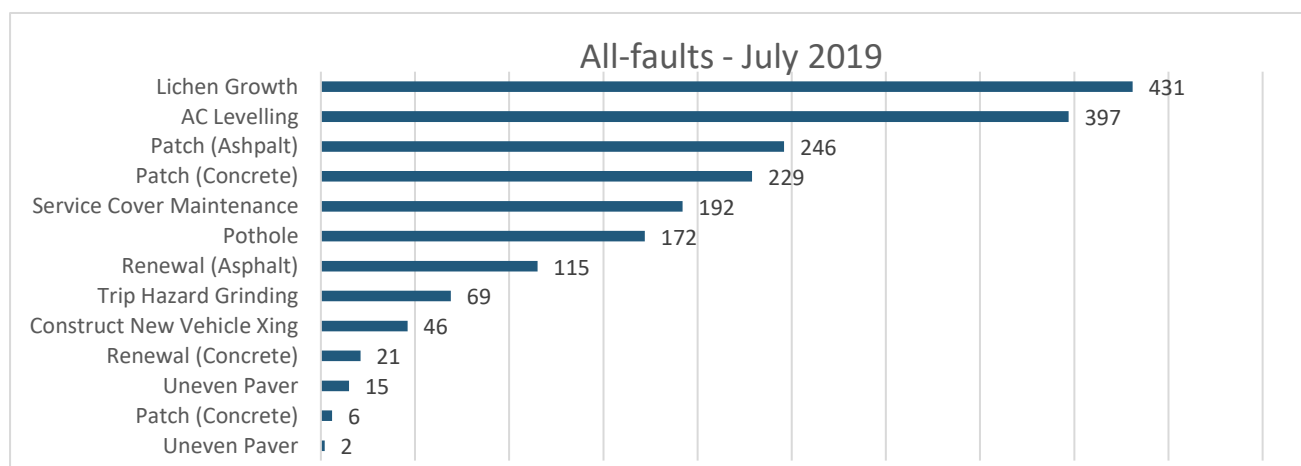
### Footpath condition

Most of the footpaths throughout the Tararua District are built from Asphalt of which the surface is approximately 20 years old. In general, the footpaths are in good structural condition.

Fault assessments are completed as part of our urban patrols or in response to Customer Requests for Maintenance (CRMs) . The table below provides detail of the works complete over a 3 year period between June 2017 and June 2020 with Lichen Growth being the most common reason for intervention.



When reviewing the “All-Fault data”, the recorded faults are similar to the historical interventions, with Lichen being the most common Fault type followed by Asphalt levelling. Lichen Growth indicated the footpath surface is aged rather than failing.



## Cycleway condition

The one cycleway on the outskirts of Pahiatua and is in good condition, having been built in 2006. It has a chipseal surface and has lichen growing on the edges where bicycles tend not to run.

## Carpark condition

The Council owned and managed carparks within the district are generally in good condition. A number are scheduled for resurfacing in the coming years.

The recent street light LUX survey carried out over the network has identified a number of carparks where lighting should be installed to improve the safety and security at night.



Makomako Rd Cycleway  
(Pahiatua to Fonterra)

## Footpaths, cycleways and carparks methodology

Footpaths, Cycleways and Carparks are managed to ensure that the desired Levels of Service (LoS) are delivered for the lowest long term cost. This is done through a combination of general maintenance and renewal to manage the sections that have a high number of faults.

Following the release of the NZTA Pedestrian Planning Guide Tararua District Council are reviewing its approach towards the Maintenance, Renewals and Construction of Footpaths.

## Fault inspection and programme development

Footpaths, Cycleways and Carparks have similar structures and surfaces to that of the Sealed Pavement assets and the faults that occur are similar albeit on a reduced scale due to the reduced stresses placed on them.

RAMM is used to manage the asset, record faults and develop work programmes. Yearly inspections are undertaken on all 3 asset types within the group and depending on the severity and spread of faults, repairs will either be programmed for maintenance or renewal. Additional to the inspections, responses to Customer Requests for Maintenance may lead to the asset in the wider area being assessed.

Footpath condition is impacted by the widespread use of the berm and footpath for the installation of underground services and to ensure these activities do not lead to a lowering of LoS careful monitor of contractors and their work methods is required to ensure public safety during the works and satisfactory reinstatement and warranty of all disturbed surfaces. This is managed by the Corridor Access Request (CAR) process.

## Maintenance

One direct benefit of using the “All-Faults” system to manage the Footpaths, Cycleways and Carparks asset is that the data is readily available can be fed directly to the operational teams who use it to plan out their maintenance and renewal programmes.

The severity of a fault will determine when intervention occurs, with safety related faults targeted to be repaired in a timely manner. Lower severity faults are repaired as part of wider work programmes. All repairs are expected to be surfaced with like-for-like treatments to avoid uniformity issues.

There is also an element of reactive works generated through interaction with the public CRM system, although there is an effort to minimise this by attending high priority defects in a timely manner.

The maintenance of these assets is generally co-ordinated with the renewal programme and other works programmes to maximise cost efficiencies.

## Renewal

Renewal works are considered where a significant section of the asset is in poor condition and in need of repair. Performing renewals over large areas is significantly more economical than repairing several small patches close together. Renewing larger area also has the benefits of creating a consistent and even surface that will provide a better customer experience for users at a lower whole of life cost.

The renewal sites are highlighted by the yearly “All Faults” inspections and validated by the appropriate operational team members. To ensure efficient and effective delivery of renewal works, minimum lengths of renewal are required.

Tararua District Council is reviewing the recently released NZTA’s Pedestrian Planning Guide within the context of our districts existing assets . If its guidelines allow us to maintain the consistency of our network then it will be adopted as the standard for all renewal and construct activities.

## Footpath surface treatment section

The table below describes the various surfacing materials available for footpath construction and provides an indication of the expected life and resistance to common deterioration modes.

Asphaltic concrete (asphalt) is the most common footpath surface treatment on the network as it provides a suitable surface, is quite resistant to deterioration and is much cheaper than concrete.

Footpath surface material	Average Economic Life (yrs)	Cost to construct	Cost to Maintain	Difficulty of Mtce.	Resistance (Wearing)	Resistance (Weeds & Tree Roots)	Resistance (Vehicle Overrun)	Comfort of Use
Concrete	75	H	L	L	H	H	H	H
Pavers	75	H	H	M	H	M	M	M
Asphaltic Concrete	25	H	M	H	M	M	M	H
Chip seal	15	M	M	H	M	M	H	L
Unsealed	5	L	M	L	L	L	H	L

L= Low; M = Moderate; H = High

### Capital improvements

The most common drivers for the creation of new assets are:

- New paths being constructed by TDC where no path previously existed
- New footpaths being vested to TDC from new urban subdivisions by private developers
- Upgrading existing assets to improve the Level of Service, particularly in relation to special or superior treatment from that which previously existed prior to upgrade.

Following the Walk-Cycle Strategy and Action Plan and review of the current footpath locations Tararua District Council have planned to invest more in the Construction of new Assets.



## 9.10 Environmental maintenance

The Environmental Maintenance activity encompasses the routine care and attention of the naturally occurring features (grass, trees) within the road corridor to maintain safety, aesthetic, and environmental standards, and provides for the reactive reinstatement of the transportation assets following adverse weather or emergency events.



If this type of maintenance did not occur, the network would eventually be taken over by nature and become unusable.

The specific tasks carried out for this activity are outlined in the table below.

Routine Operations	Purpose
<b>Mechanical Vegetation control and Roadside mowing</b>	To control vegetation growth within the corridor to maintain corridor width and sight visibility.
<b>Roadside Spraying</b>	To maintain water flowpaths along drains and to control unwanted vegetation with the road corridor.
<b>Detritus and Litter control</b>	To clear lined channels of detritus and keep the road corridor tidy.
<b>Unsubsidised Environmental and Waste Management</b>	Providing services (ie. Rubbish Bins, footpath cleaning) within townships to keep Tararua tidy.
<b>Woodville Stock Effluent Facility</b>	A purpose built facility to allow Stock trucks to dispose of effluent. This Facility is located on State-Highway 3 at the entrance to the now closed Manawatu Gorge.
Reactive Operations	
<b>Minor events including vehicle accidents, slips and debris removal</b>	To clear foreign objects from carriageways, prevent chemical run-off into waterways and clear carriageways and drains of blockages.
<b>Emergency works</b>	To repair damage to the network caused by large scale environmental events.

### Routine operations

The primary focus of Environmental Maintenance routine operations is to maintain the environment that impact other physical assets (Sealed/Unsealed Roads, Drainage systems, Structures)

Over recent years, there has been a shift in strategy and an increase in environmental activities such as vegetation control and spraying. By controlling vegetation better, we can improve the function of other assets. By removing visual barriers along carriageways, the safety on our roads improve. Through controlling vegetation in drains and at culvert inlets/outlets these assets function better as impediments to water flow are removed.

Over time it is expected that by increasing the focus on vegetation control across the network, maintenance costs in other areas, such as drain clearing will reduce.

Tararua District Council maintains one physical asset as part of its Environmental Maintenance activity. Maintenance involves the emptying of tanks and any structural repairs required to keep the asset safe and functional. The tanks have sensors which provide an alert to Council when they are nearing capacity and engages a certified waste management company to empty and dispose of the effluent at an approved facility.

This facility is located on State-Highway 3 near the entrance to the Manawatu Gorge.



### Mowing and vegetation control

Uncontrolled grass and vegetation growth severely limits visibility and forces vehicles towards the centre of the road, thus increasing the chances of accidents.

To maintain this growth, the Sealed and Unsealed roads are scheduled for mowing and High-cut vegetation control on a cyclic basis. Frequency is dependant on a roads ONRC category.

Based on the current approach and number of Customer Requests for Maintenance (CRMs) we receive for vegetation control, we are not meeting the desired Level of Service (LoS) for this activity.

The below table shows the current frequency of activities.

Routine Vegetation Control and Spraying Schedule (2019-2020 FY)					
Road Type	ONRC	Length (km)	Current Mow Frequency	High Cut Frequency (years)	Spray Frequency
<b>Sealed</b>	Arterial	29.25	3x year	1	2x per year
	Primary Collector	22.9	3x year	1	2x per year
	Secondary Collector	282.34	2 x year	2	2x per year
	Access	537.85	1 x year	3	2x per year
	Low Volume	227.76	1 x year	3	2x per year
<b>Unsealed</b>	Secondary Collector	10.44	1 x year	2	2x per year
	Access	81.19	1 x year	3	2x per year
	Low Volume	680.02	1 x year	3	2x per year

### Roadside spraying

This activity allows us to control vegetation growth across the roading network, whether it be vegetation growing in side-drains which impede waterflow; spraying around signs and Edge Marker Posts (EMPs) to maintain their visibility for the road user; or spraying of noxious vegetation, this activity plays a critical part in keeping our network functional and safe.

The road-side drains across the district are gradually being upgraded through clearing of existing and the formation of new drains as part of the drainage activity. This improvement is being supported by an increase in road-side spraying, to protect the reformed or new water channel.

### **Detritus and litter control**

This activity is primarily about keeping our network clean and tidy. Maintaining the ascetics of the Tararua promotes peoples well-being. For travellers, litter along the carriageway is unsightly and impacts their perception of our district.

Detritus and Litter along our roads can also impact other assets. For example a plastic bag may block the inlet of a culvert, thus reduce its efficiency. Small slips within the water-channel will impede water-flows.

### **Unsubsidised environmental and waste management**

Council fund and undertake a number of activities which are not subsidised through the National Land Transport Fund. These are activities are largely those which promote amenity of the district and are not directly related to the Transportation Asset and are;

Rubbish Bin Clearing - Rubbish Bins are provided around the Urban centres to allow people to dispose litter to reduce the amount dropped onto the group. This helps keep our townships clean and tidy.

CBD Footpath Cleaning - Footpaths within the CBD are cleaned through High-pressure Hot-water Blasting to maintain ascetic values. In conjunction with this, weeds within the CBDs are controlled.

### **Reactive operations - minor events and emergency works**

Reactive Operations are responses to events that impact the network and are caused by environmental factors (human or nature).

Weather events can have a major impact on the Tararua District's roading network. The combination of undulating topography and weak soil types can result in damage across our network following high-intensity rainfall. Add to this the isolation of some of our communities and limited access routes, a significant storm event can close access to parts of our network for days to weeks and create damage, which may take months to years to recover from.

While the occurrence of these events is beyond our control, we do anticipate a certain amount each year, therefore funding is set aside to respond to these events.

### **Minor events**

NZTA qualifies these activities as any activities that would otherwise qualify as emergency works except that the total cost of the works is less than \$100,000 per event, including:

- removal of rocks and slip material from roads, public footpaths and cycleways that have resulted from minor events

- repairs to road, public footpaths and cycleway surfaces in response to minor events
- reinstatement of network facilities damaged as a result of a minor event.

Minor Events are subsidised through the standard NZTA Financial Assistance Rate (FAR).

### **Emergency works**

Central Government recognises that recovery from large storm events can place undue pressure on Council funds therefore, Council's across New Zealand can apply to NZTA to gain additional FAR subsidy from the National Land Transport Fund. The NLTF subsidy allows Councils to respond immediately to events, which can impact public safety and restore vital access.

Referred to as "Emergency Works" these events are defined as major, short-duration natural events (a qualifying event) that has reduced or will reduce customer levels of transport service significantly below those that existed prior to the event and results in unforeseen, significant expenditure.

Events that qualify for NLTF funding as emergency works will:

- be of unusually large magnitude or severity for the particular area in which they occur (as a guide, they would be expected to have an annual return period greater than 1 in 10 years)
- originate from natural, short duration triggering events, including very high intensity rainfall, severe wind, severe drought in government declared drought areas or seismic events
- have reduced, or will reduce within a 12 month period, levels of transport service significantly below those that existed prior to the event
- involve a total cost of \$100,000 or more per event per approved organisation or Waka Kotahi NZ Transport Agency (state highways) region
- be clearly defined, named and described, with a separate funding application required for each event.

### **Managing our environment lifecycle cost optioneering**

With an extensive roading network spread over a wide variety of terrain types, managing the environment provides one of our greatest challenges within Tararua.

The routine activities we undertake as part of this group are more noticeable than many of our other road maintenance activities, as they add to the amenity value of the district. However, the most important are the safety benefit it provides, therefore our strategic approach and funding is highly important.

### **Methodology**

The activities undertaken as part of Environmental Maintenance is largely driven by mother nature for which we have limited to no influence over. During long dry summer periods,

growth is limited therefore the cost to maintain the network is reduced, alternatively, if summers are warm and wet then growth accelerates and we struggle to keep on top of vegetation growth. Managing our roading network under an Alliance model allows us to respond to these changes by increasing activities or decreasing activities as required.

The Routine Activities we undertake to manage the environment is a balancing act between over-delivering, therefore costing more money than necessary and not doing enough, leading to increased risk to safety and a deterioration of people's perception of the district.

### **Routine operations**

Routine patrols are carried out on a cyclic basis to pick up and remedy minor defects that help improve the amenity and safety of the network.

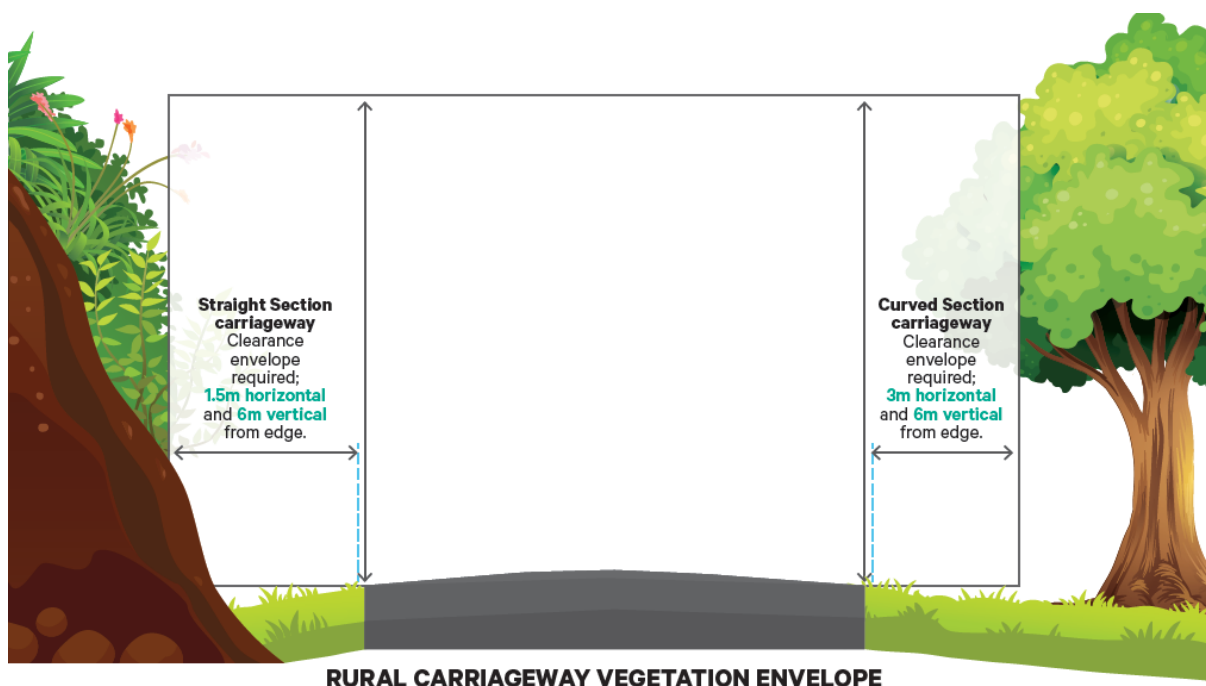
Customer requests are investigated as they are received. Issues which impact safety are responded to as soon as possible, with the patrol staff rectifying minor issues within their capability at the time (ie. clearing fallen trees, or unblocking a drain). If the request is for larger more general, then the issue may be managed through a wider programme of works (ie. High-reach vegetation control)

### **Roadside mowing and vegetation control**

Mowing and vegetation control is carried out on rural sealed and unsealed roads for the purpose of maintaining lines of sight for road users and to control fire risk.

Roadside mowing is undertaken on a scheduled cyclic basis rather than having a specified length for which grass has to be maintained to.

The requirements for the control of overhanging vegetation are that no foliage shall encroach inside the specified vegetation envelope such that the passage of traffic is impeded, or causes visibility problems or otherwise interferes with the safe use of a road.



Vegetation control is managed through the Tararua Alliance, with physical works sub-contracted out.

<b>(Proposed) Routine Vegetation Control and Spraying Schedule</b>					
<b>Road Type</b>	<b>ONRC</b>	<b>Length (km)</b>	<b>Current Mow Frequency</b>	<b>High Cut Frequency (years)</b>	<b>Spray Frequency</b>
<b>Sealed</b>	Arterial	29.25	3x year	1	2x per year
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### **Roadside spraying**

Roadside vegetation control is undertaken on sealed and unsealed roads and specifically at bridges, culvert headwalls, sight rails, edge marker posts, kerb and channel and traffic signs.

Roadside spraying is managed under the Road Network Alliance contract with physical works sub-contracted out.

The contract specifies the following for control;

Sealed Rural Roads: Our clear expectation is to keep Watertables free of vegetation to allow water to flow. Control area shall include to the control of vegetation around edge marker

posts, signs, bridge end markers, culvert ends, headwall, guardrails, sight rails, kerb and channel, weight pits, side drains, culvert waterways, bridge approaches and abutments, and rest area furniture. Additionally shall be the Bridge Decks Kerb area to allow no vegetation growth on Bridge Decks.

Unsealed Rural Roads: Sprayed area is to be the edge of the Unsealed Pavement to Watertables with a full width spray of to allow water to flow freely to Watertables with a maximum distance from edge of the Unsealed Road Pavement to the Water table at least 1.5m and Pavements with no Water table a maximum of 1.5m from the Unsealed Road Pavement edge. Additionally isolated areas requiring site visibility to allow clear vision for a standard 4 door car driver to have clear/safe visibility. The work required by this Section shall be completed in accordance with TNZ C21.

Stormwater Open Drain Spraying: Spraying of the open drain network is to be undertaken in the following towns.

- Dannevirke.
- Woodville.
- Pahiatua.
- Eketahuna.

Spraying of noxious weeds shall is also included in the Roadside Spraying contract with an annual budget set against it. Regional Council monitors control of noxious weeds within the district will advise us of what needs to be controlled and instruction will gave given to the contractor to respond. Due to inconsistency this work, responses is paid for on a dayworks basis.

### **Detritus and litter collection**

The Council undertake a number of litter and amenity cleaning functions within the roading network. These include; mechanical road sweeping, footpath sweeping, cycleway and cycle path sweeping/cleaning, general litter collection, and clean-up of illegal dumping. These activities are managed and physical works completed under the Road Network Alliance Contract.

### **Unsubsidised rubbish bin clearing**

Rubbish Bin clearing along Urban roads is managed under the Road Network Alliance Contract with physical works sub-contracted out.

Bins are emptied every morning and on demand via CRM as required.

### **Unsubsidised CBD footpath cleaning**

CBD Footpath Cleaning is managed under the Road Network Alliance Contract, with physical works sub-contracted out.

Footpaths within Dannevirke and Woodville are cleaned 5 times a year with a High-pressure Hot-water blaster. Pahiatua will be added to the schedule following the completion of the Main Street Upgrade Project scheduled for July 2021.

### **Woodville stock effluent facility**

The Tararua District Council maintains the Woodville Stock Effluent Facility located at the approach to the Manawatu Gorge, this effluent facility has a storage tank that requires clearer when full. The storage tank has a sensor on it to alert Council as to when it is full. On receiving an alert, an certified Environmental Waste Contractor is sent to empty the tank. The waste is then disposed of at an approved facility.

Structural maintenance occurs as required.

### **Reactive operations (minor events and emergency works)**

#### **Slip and debris removal**

Slip and debris removal is a critical reactive activity to maintain access to our network.

Many of our rural roads are located in close proximity to meandering streams/rivers; positioned in steep and unstable cuttings; or running down steep gradients have a high prevalence for erosion, slips and slumps. Maintaining these small slips and sediment build-up is critical, as blocked water-channels can lead to water crossing the road and lead dropouts or heavy scouring.

The Tararua Alliance Inspection and Patrol-people monitor and where possible clear any minor slips and debris as they travel the network. Where they cannot clear the item/s themselves, they will report this through to the Alliance Management and/or Supervisory staff where it is programmed for clearing. Response times are based on the criticality of the asset being impacted.

#### **Minor events**

The Minor Event work category is funded from the local roads maintenance activity and applies to any works that would otherwise qualify as "Emergency works" except that the total cost of the works is less than \$100,000 per event.

This work category applies to the following:

- Removal of rocks and slip material from roads and cycle ways
- Repairs to road and cycleway surfaces
- Reinstatement of network facilities damaged as a result of a minor event.

#### **Emergency works**

Emergency works normally arise from adverse weather events which cause significant damage to the network. Repairs to the network associated with these events are generally completed, even if expenditure exceeds the available budget, as the damage significantly



lowers the LoS of the network. Other routine work is deferred to keep total expenditure within budgets.

If the extent of an event becomes too severe, or the effects too significant, the Council can apply to NZTA for additional funding under Work Category 141 – Emergency Reinstatement under the categories of Immediate Response and Permanent Reinstatement.

Emergency works costs can vary quite significantly year on year and is largely dependent on the number and severity of weather events and the damage inflicted on the network.

#### Initial Response:

The initial response work category covers the work required immediately after an event to open the road to at least single lane operation. This may include:

- Slip clearance
- Construction of temporary detours
- Temporary reinstatement
- Restoration of roadside drainage.



#### Permanent Reinstatement:

Permanent reinstatement restores the road to its former (or similar) condition and generally involves:

- An engineering appraisal of options;
- Design input;
- Construction of retaining structures;
- Earthwork road retreats; and
- Culvert replacements.

The Tararua Alliance manage the Emergency works initial response, then design and reinstatement. Outside support will be called upon if the scale of the event is too great that the Alliance resources cannot respond in adequate time or design requirements exceed that of the staff.

# 10. Financial Summary

## 10.1 Financial Forecast

### Proposed Expenditure - Waka Kotahi Subsidised Categories

	Current Budget	Proposed Expenditure (including inflation)				% Change
	2021-2024	2024-2025	2025-2026	2026-2027	2024-2027	
<b>111 - Sealed pavement maintenance</b>	\$5,652,224	\$2,860,945	\$3,222,458	\$3,125,160	\$9,208,563	63%
<b>112 - Unsealed pavement maintenance</b>	\$1,637,276	\$753,797	\$768,873	\$784,250	\$2,306,920	41%
<b>113 - Routine drainage maintenance</b>	\$3,358,256	\$2,028,588	\$2,253,303	\$2,481,286	\$6,763,177	101%
<b>114 - Structures maintenance</b>	\$1,441,356	\$676,223	\$689,747	\$703,542	\$2,069,511	44%
<b>121 - Environmental maintenance</b>	\$3,159,625	\$1,320,026	\$1,346,426	\$1,373,355	\$4,039,807	28%
<b>122 - Traffic services maintenance</b>	\$1,270,667	\$463,503	\$472,773	\$482,228	\$1,418,503	12%
<b>125 - Footpath maintenance</b>	\$946,723	\$377,767	\$385,323	\$393,029	\$1,156,120	22%
<b>131 - Level crossing warning devices *</b>	\$86,044	\$35,200	\$35,904	\$36,622	\$107,726	25%
<b>140 - Minor events</b>	\$1,306,948	\$619,850	\$632,247	\$644,892	\$1,896,989	45%
<b>151 - Network and asset management</b>	\$2,147,545	\$1,280,125	\$1,234,091	\$1,324,065	\$3,838,281	79%
<b>Subtotal for operations and maintenance:</b>	<b>\$21,006,664</b>	\$10,416,024	\$11,041,143	\$11,348,430	<b>\$32,805,597</b>	
<b>211 - Unsealed road metalling</b>	\$3,110,512	\$1,215,070	\$1,239,371	\$1,264,158	\$3,718,599	20%
<b>212 - Sealed road resurfacing</b>	\$7,111,695	\$4,494,492	\$5,042,820	\$5,611,284	\$15,148,596	113%
<b>213 - Drainage renewals</b>	\$1,756,744	\$1,146,541	\$1,492,368	\$1,846,795	\$4,485,705	155%
<b>214 - Sealed road pavement rehabilitation</b>	\$5,456,234	\$2,765,606	\$2,933,755	\$3,107,524	\$8,806,885	61%
<b>215 - Structures component replacements</b>	\$2,131,935	\$948,750	\$967,725	\$987,080	\$2,903,555	36%
<b>222 - Traffic services renewals</b>	\$496,048	\$343,124	\$349,986	\$356,986	\$1,050,096	112%
<b>225 - Footpath renewals</b>	\$946,723	\$934,569	\$953,260	\$972,326	\$2,860,155	202%
<b>Subtotal for Road renewals:</b>	<b>\$21,009,891</b>	\$11,848,152	\$12,979,286	\$14,146,152	<b>\$38,973,590</b>	
<b>Total Subsidised budget:</b>	<b>\$42,016,555</b>	\$22,264,176	\$24,020,430	\$25,494,581	<b>\$71,779,187</b>	71%
<b>Unsubsidised – Carpark Renewals</b>	\$300,000	\$100,000	\$100,000	\$100,000	\$300,000	0%

\*Note that there is a figure in for Level Crossing Warning Devices. This is a fund used to pay for Kiwirail works that are done on rail crossings within Taranua. As a Kiwirail led activity this is not actively managed by the Alliance but funding needs to be allocated to pay for the work as it comes in.

## 10.2 Asset Valuation

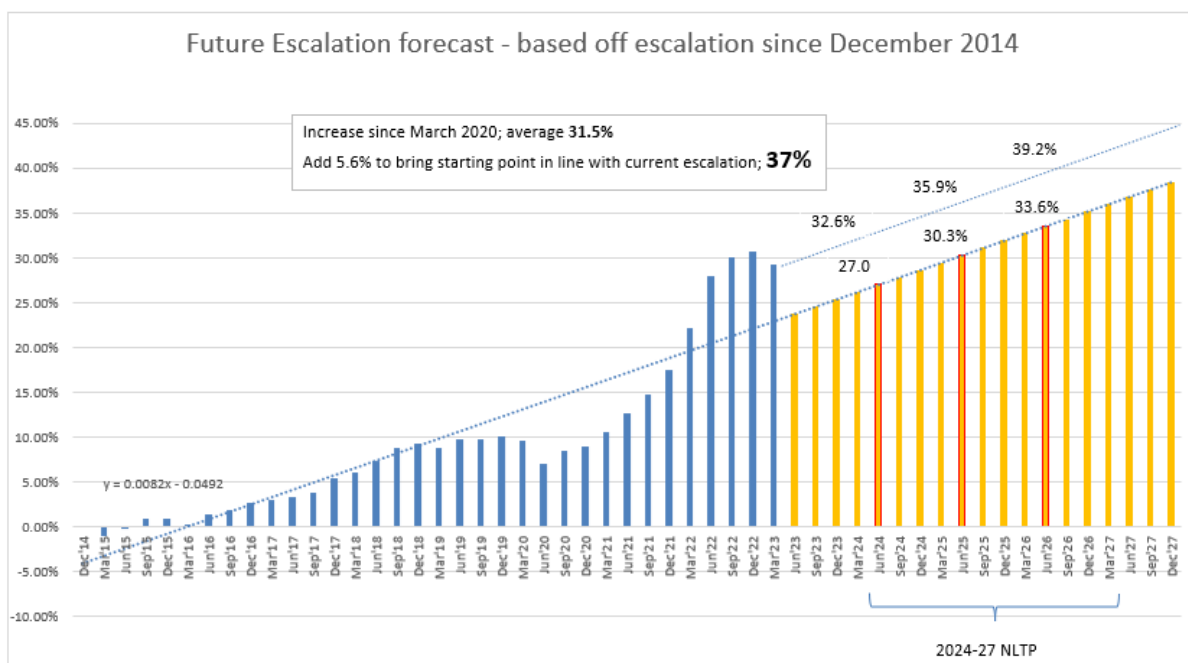
## 10.3 How We Will Pay for It

Through the Financial Assistance Rate (FAR) Tararua District council is offered a 73% subsidy from Waka Kotahi for those Work Categories that are eligible.

Activities that are not subsidised – such as carparks – are fully funded by rates collected by Tararua District Council.

The remainder of the costs that have been subsidised through the FAR are also covered by rates collected by Council

## 10.4 Financial forecast uncertainty



As can be seen in the current market – with escalating inflation and fluctuating prices on materials and resources – there is some uncertainty when making financial forecasts.

The options that have been presented in the Strategic Case chapter of this document account for cost escalation between 25-35%

# 11. Plan Monitoring and Improvements

## 11.1 2023 AMP improvement plan

The items below are the improvement projects that we will be working on during 2021-24. They are derived from the Options analysis within the lifecycle management sections of this document. We have aligned them with the REG Pillars of Success which give a broad context to the type of project they are.

As opportunities for improvement arise over the course of the funding period, they will be added to the Asset Management Improvement plan document.

Project Name	Description	REG Pillar	Priority	Timeframe
Bridge Componentisation Project	Determine the best methodology to break down bridges into components and over the funding cycle update each bridge into RAMM.	Systems	Medium	30/06/27

## 11.2 Maturity Assessment

In November 2022 Downer NZ Ltd conducted an internal audit on Asset Management within the Tararua Alliance.

The Asset Management Maturity Assessment is based on the standard ISO 55001 – Asset Management.

The audit returned a score of 72.6% placing the Asset Management Maturity at “Proficient”. This score also indicates that Asset Management within the Tararua Alliance would be eligible to meet ISO 55001 accreditation requirements.

## A. Legislative

B. The bylaws are accessible to the public on the Council website. [www.tararua.govt.nz](http://www.tararua.govt.nz)

	Bylaw	Description
Chapter 2: Public Places	Vehicular Crossings Bylaw	Any person wishing to construct, repair, remove or widen any vehicular crossing shall first obtain a permit from the Council.  If in the opinion of the Council any crossing is in a bad or unsafe state of repair, Council may require the owner of the land which the crossing provides access to, to repair, reconstruct, or renew such crossing.
	Road and Building Identification Bylaw	The Council requires properties and /or buildings to be numbered. Council shall have power at any time to alter the number of any building where in the Council's opinion it may be necessary or advisable to do so.  No person shall permit or allow vegetation to encroach on to or over any public place so as to obstruct or interfere with the free movement of persons using that public place
	Stopping, Standing and Parking	This Bylaw controls places vehicles may stop or stand and the length of the period they are stationary. This also applies to refuse receptacles and mobile advertising.
Chapter 25: Traffic	Metered Areas, Parking Meters and Zone Parking	The Council may from time to time amend this bylaw in accordance with the Local Government Act 2002 to:  (a) Declare any road or part of a road to be a metered area or zone parking;  (b) Declare any piece of land owned or controlled by the Council and not being a road or part of a road, including any parking place or transport station to be a metered area or zone parking;  (c) Declare the time allowed for parking in such metered areas and areas of zone parking beyond which it shall be unlawful to remain parked;  (d) Subject to section 150 of the Local Government Act 2002, fix the fees payable for the parking of vehicles within the metered area and areas of zone parking.
	Unlawful Parking	A person shall not park any vehicle or vehicle combination in any parking space except as permitted by the provisions of this bylaw.
	One Way Roads	A person may only drive a vehicle or ride any horse or bicycle along the roads or parts of roads listed as a 'one-way road' in Schedule A of this chapter of this bylaw, in the direction specified.
	Heavy Traffic Prohibitions	This bylaw permits Council to restrict heavy traffic access on parts of its network.
	Weights of Vehicles or Loads over Bridges or Culverts	The Council may amend this bylaw in accordance with the Local Government Act 2002 to regulate the weights of vehicles or loads that may pass over bridges or culverts or to provide that any such regulation be removed.
	Offences and Penalties	Without limiting section 112 of Chapter 1 Introductory of this bylaw, every person commits an offence against this chapter of this bylaw, who:  (a) Fails to comply in all respects with any prohibition, restriction, direction or requirement indicated by the lines, markings, traffic signs and other signs or notices laid down, placed, made or erected on or upon any road, public car park, reserve or other places controlled by the Council under the provisions of this chapter of this bylaw;

	(b) Fails to comply with any condition, duty, or obligation, imposed by this chapter of this bylaw. A person may not be subject to proceedings under this bylaw, if that person is also, for the same facts, being proceeded against for a breach of the Land Transport Act 1998.
Speed Limit Bylaw	The Tararua District Council makes this bylaw to set speed limits as specified in the schedules. The roads or areas described in the schedules specified in this bylaw are declared to have the speed limits specified in the schedules and maps.
Road Encroachment Policy	The Council reserves the right to restrict or prohibit the grazing of specific areas of roadsides, if it is felt necessary, to maintain the integrity of the constructed road or for the safety of road users.

# Versions

Version	Date	Notes
V1.1	14 March 2024	Changes to Vision Statement and Alignment with Draft GPS 2024