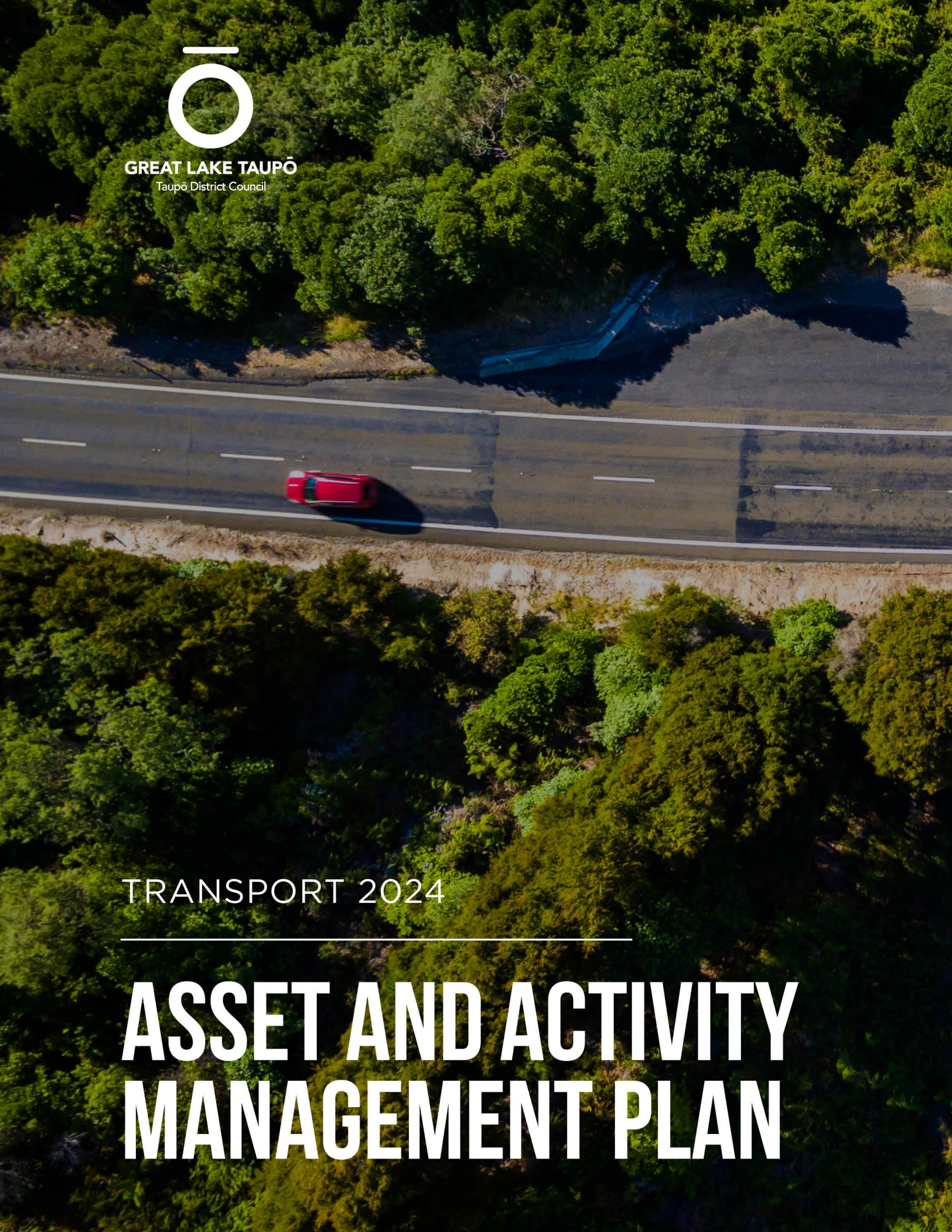


GREAT LAKE TAUPŌ
Taupō District Council

TRANSPORT 2024

ASSET AND ACTIVITY MANAGEMENT PLAN

Table of Contents

1 Definitions

As built	Refers to a survey or drawing of the actual assets that have been constructed, recognizing that they can sometimes vary from what was planned before work started on site. As-built drawings are needed to ensure that asset information systems contain data on the asset as it has been constructed, not how it was planned in theory.
Community Outcomes	Under section 5 of the Local Government Act 2002, community outcomes "means the outcomes for that district or region that are identified as priorities for the time being". Community outcomes are what New Zealanders want for their local community, now and in the future. Assets have a role in supporting the achievement of those aims.
Critical Assets	Those assets with a high consequence of failure. They are often found as part of a network, in which, for example, their failure would compromise the performance of the entire network.
Development Contributions	Funds paid, typically by developers, to local authorities to help with the cost of growth. These contributions are authorized by Part 8 of the Local Government Act 2002.
Vested Assets	Assets that are transferred to a public entity at nominal or zero cost. Typically, this might result from a situation where a developer has installed assets as part of developing a site and passes them to a public entity to manage, maintain, and deliver services through. The fair value of these assets has to be determined as they are integrated into the organization's asset information system so that they can be appropriately managed.
Carriageway	That portion of road or bridge devoted particularly to the use of vehicles, inclusive of shoulders and auxiliary lanes. Divided roads are considered to have two carriageways.
Road reserve	The area from the property boundary on one side of the road to the property boundary on the other side of the road.
Treatment length	A treatment length is defined as a uniformly performing contiguous section of road and performing differently from the adjacent sections.

2 Acronyms / Abbreviations

AADT	Average Annual Daily Traffic
AM	Asset Manager
AMP	Asset/Activity Management Plan
AMS	Asset Management System
AuditNZ	Audit New Zealand
CAPEX	Capital Expenditure
CBD	Central Business District
CEO	Chief Executive Officer
CLoS	Customer Levels of Service
Council	Taupō District Council
DSi's	Deaths and serious injuries
DC	Development Contribution
DIA	Department of Internal Affairs
dTIMS	Deterioration modelling system
EDA	Equivalent Design Axles
ES	Environmental Services Group at Taupō District Council
ETA	Eastern Taupō Arterial
FSi's	Fatal and Serious injuries
GIS	Geographical Information System
GMS	Growth Management Strategy
HCV	Heavy Commercial Vehicles
HPMV	Heavy Productivity Motor Vehicles
LDS	Land Disposal Site
LGA	Local Government Act
LoS	Level of Service
LTP	Long Term Plan
MAV	Maximum Acceptable Value
MOTSAM	Manual of Traffic Signs and Markings
NAASRA	National Association of Australian State Roading Authority
NZTA	New Zealand Transport Agency
ONRC	One Network Road Classification
OPEX	Operational Expenditure
PHRMP	Public Health Risk Management Plan
PRAMP	Property Asset Management Plan
RAMM	Road Asset Maintenance Management
RMA	Resource Management Act
RPS	Environment Waikato Regional Policy Statement
RRPMs	Raised Road Pavement Markers
SAMP	Solid Waste Asset Management Plan
SAMS	Structural Asset Management Services
SLG	Senior Leadership Group (CEO, 2nd Tier Managers)
SLIM	Street Light Inventory Management
SPR	Special Purpose Road
SWAMP	Stormwater Asset Management Plan
TDC	Taupō District Council
TIO	Transport Investment Online (WK NZTA)
TRAMP	Transport Asset Management Plan
VPD	Vehicles per day
WAMP	Water Asset Management Plan
WRC	Waikato Regional Council
WWAMP	Wastewater Asset Management Plan

3 Executive Summary

3.1 Transport Activity Background

Council provides the transport activity to allow people and goods to move around the district safely and efficiently by any transport mode including cycling, walking or passenger transport.

- The Asset Management Policy supports Council's long term strategic goals found in the LTP of:
- Ensure that the Taupo District remains a great place to live.
- Promote economic development.
- Protect our water resources and use them wisely.
- Maintain the quality infrastructure that we have.
- Keep rates and debt affordable.

The objective of Council's Asset Management Policy is to:

- ensure service delivery is optimized to deliver agreed community outcomes and levels of service for both residents, visitors, and the environment.
- optimize expenditure over the life cycle of the assets.
- risks are managed appropriately.
- provide a service delivery that is sustainable.

The following principles will be used by Council to guide asset management planning and decision making:

- effective consultation to determine appropriate levels of service.
- Integration of asset management within Council's strategic, tactical, and operational planning frameworks including corporate, financial, and business planning
- Informed decision making using a lifecycle and risk management and inter-generational approach.
- Transparent and accountable asset management decision making
- Sustainable management of assets for present and future needs

3.2 Strategic Issues

Our key strategic issues for Taupo District which we will need to address over the coming years are identified below.

	Problem Statements	Benefit Statements
Resilience and Network Security	Transport network is becoming increasingly vulnerable to climate change, which is, putting communities, especially smaller communities at risk and affecting the ability to maintain route security.	The transport system is resilient and prepared for the effects of climate change.
Safe System (safety)	System failures on the network and user behaviours expose people to risk especially on rural roads, resulting in the unacceptable occurrence of deaths and serious injuries.	Creating whole of life and asset management across all of council infrastructure to reduce current and future financial impact and where no one in the district is killed or seriously injured.

Inclusive system/Accessibility	Increasing population with a fixed income finding it difficult to access necessities of life and social opportunities,	Creating an integrated transport system that provides transport options that are sustainable and accessible to all.
Climate change	Land use and transport planning has led to transport being a part in contributing to gas emissions.	Reduce the impact to the environment and ensure the transport system is sustainable.

We have developed a Transport Strategy, which has been adopted by Council at the time of developing this version, and this will provide strategic network and priorities for the Taupō District roading network.

This strategy has provided priorities for this version of the AMP. The strategy is yet to be endorsed by Waka Kotahi.

3.3 Our transport assets

Council is responsible for the management of road and traffic assets with a replacement value of approximately $787 million (as per the latest valuation August 2023). Since the last AMP an additional 13km of sealed road has been vested to Taupō District Council. To provide a safe transport network, Council manages the assets listed below:

Asset	Quantity
Roads – sealed	762km
Roads - unsealed	51.1km
Footpaths	370km
Street lighting	5689 lanterns
	3582 poles
Traffic services	11,440 signs
Traffic signals	3 intersections, 1 midblock crossing
Bridges	19 road bridges (2 with shared ownership)
	7-foot bridges
Culverts	81 large culverts (diameter greater than 2m)
	2,267 small culverts (diameter less than 2m)
Kerb and Channel	630km
Cycle ways	24.5 km
Shared paths	24.28 km
Parking	101,562.46 m2
Structures	10 Taupo urban bus shelters

3.4 State of our assets

The last NZTA Road Infrastructure Assessment Survey was undertaken in June 2018, and it identified the transport network was in very good shape from a road safety point of view and most of the opportunities for improvement were not major issues. The couple of items noted from the audit were.

- Condition of the unsealed road network
- Aging pavements while in still good condition the majority of pavements are well passed their design lives.

3.5 Levels of service

A key objective of this Activity Management Plan (AMP) is to match the level of service provided by the asset with the expectations of customers. This requires a clear understanding of customers' needs, expectations and preferences. The levels of service defined in this section will be used:

- to inform customers of the proposed type and level of service to be offered
- to enable customers to assess suitability, affordability and equity of the services offered.
- as a focus for the AMP tactics proposed to deliver the required level of service
- to measure the effectiveness of this AMP
- to identify the costs and benefits of the services offered

While a large amount of the Transportation assets has a high expected service life, this could be impacted by several issues. These include long term funding (not meeting or receiving Waka Kotahi subsidy for a project, a reduction in either Waka Kotahi subsidy and/or no increase in local share), local government amalgamation (assets being delivered through a regional regime) and protentional of privatisation.

Our Council has adopted a number of performance measures which contribute to our community both customer and technical levels of service are used.

Our current levels of service focus on the Department of Internal Affairs which will continue for this AMP, but the AMP will also include the new Customer Levels of Service for ONRC.

Mobility

Reliability: the consistency of travel times that road users can expect.

Resilience: the availability and restoration of each road when there is a weather or emergency event, whether there is an alternative route available, and the road user information provided.

Speed: indicates the optimal speed for each road. The optimal speed is the speed that is appropriate for road function (classification), design (including safety) and use. Optimal speeds support both safety and economic productivity.

Safety

How road users experience the safety of the road.

Amenity

The level of travel comfort experienced by the road user and the aesthetic aspects of the road environment.

Accessibility

The ease with which people are able to reach key destinations and the transport networks available to them, including land-use access and network connectivity.

3.6 Demand Forecasts

Consideration has been given to the optimistic discussions with developers, actual consent numbers over the past three years, demographic considerations and officers' estimates when estimating the potential lot/new build numbers outlined in the *DC Policy* and the *Growth Model*.

The table below outlines those estimates for the next ten years. The areas that are not predicted to have any growth due to current capacity levels, such as, Hatepe, Motuoapa, Whareroa, and Five Mile Bay/Waitahanui

have been removed. The total estimated new lots for the district over the next LTP period (2024-2034) is estimated at approx. 3000 new builds.

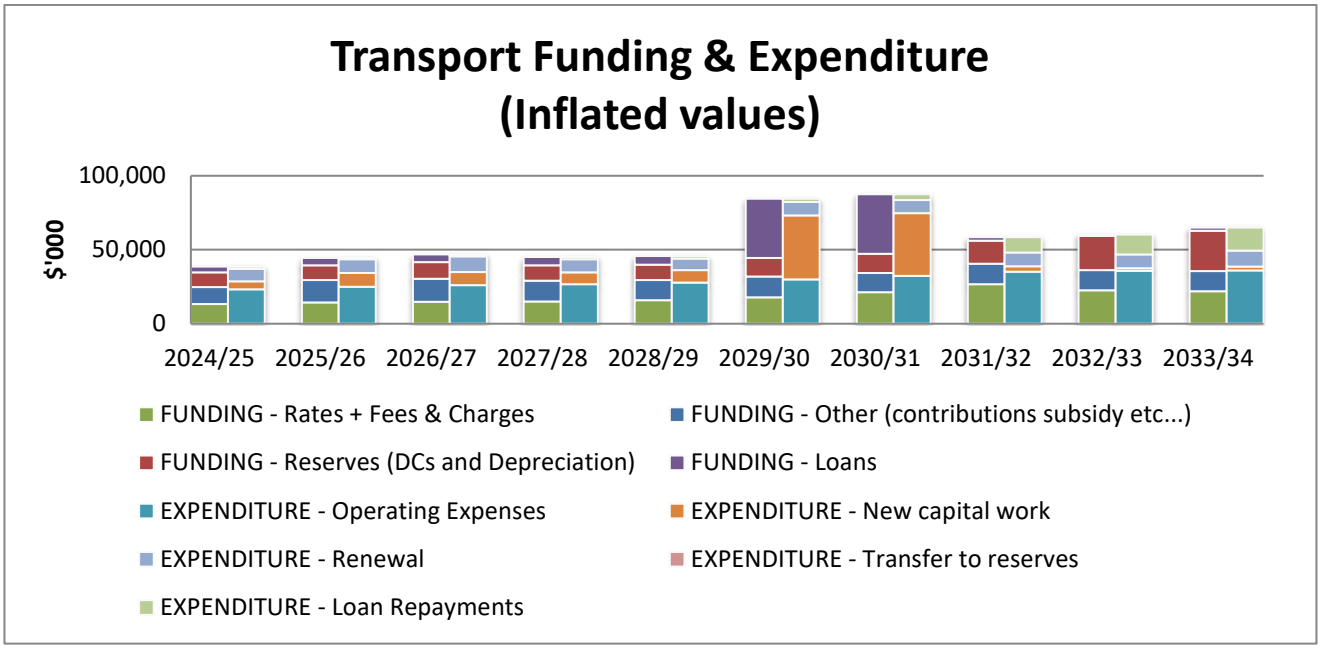
Cumulative New Builds by Community Catchment								
	2025	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
Taupō Township	722	1,351	2,131	2,900	3,703	4,444	5,119	5,663
Tūrangi	33	172	286	376	464	523	573	623
Marotiri	0	0	0	10	10	10	10	10
Mapara	120	234	365	509	614	707	707	707
Northern Rural	12	28	48	71	96	121	146	171
Lake Taupo Bays	47	142	197	274	385	457	471	471
Eastern Rural	0	0	0	0	0	0	0	0
Total	**934**	**1,927**	**3,027**	**4,140**	**5,272**	**6,262**	**7,026**	**7,645**

The estimated growth of the district; and water, wastewater, and transportation catchments; models are found in the *DC Policy* and *Taupō Growth Model*.

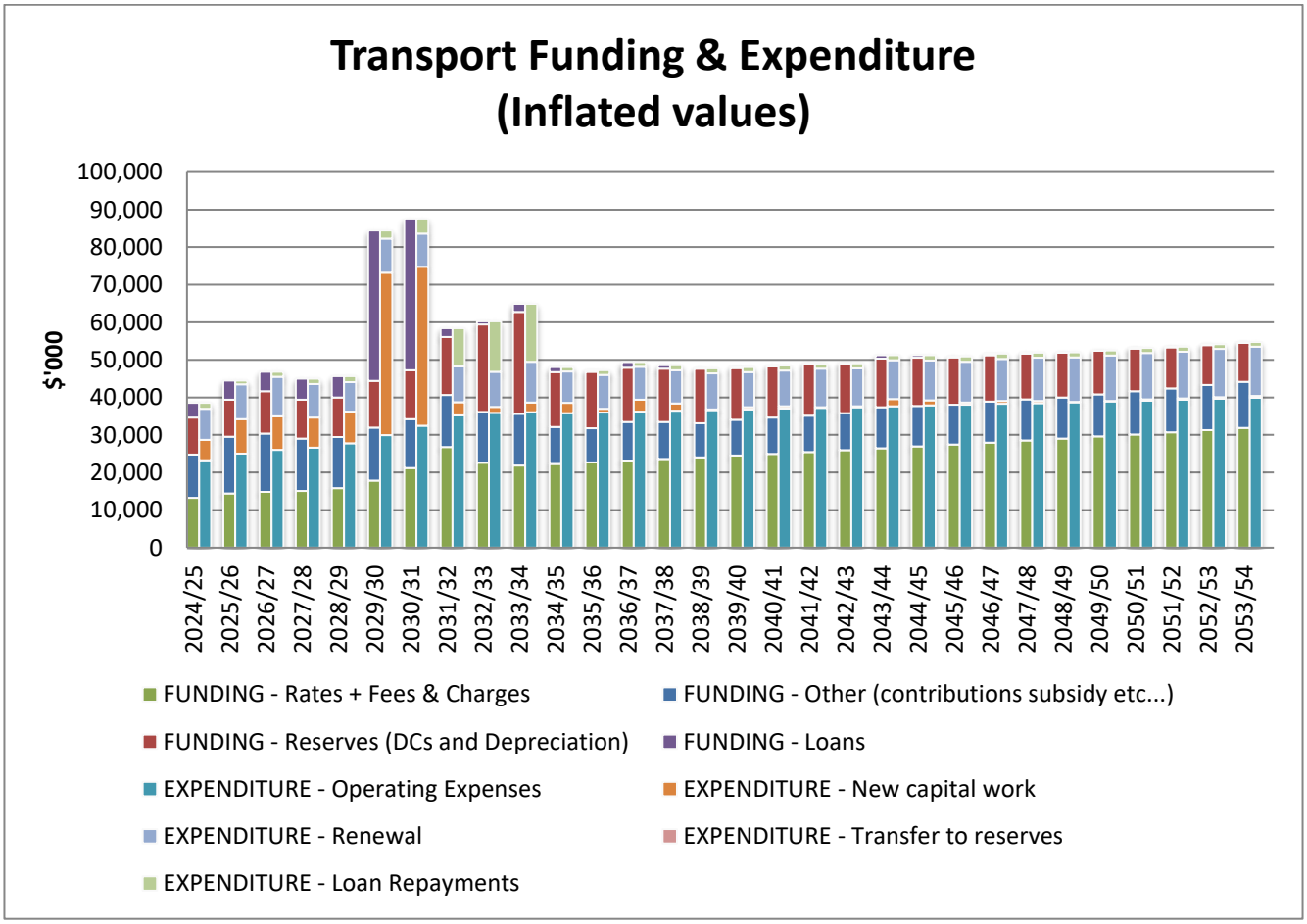
3.7 Financials

Our district is relatively young and as the Taupo district has free draining soils, the roads generally last longer than in other parts of the country, which means many of our infrastructure assets including roads are in good condition and will not need renewing or upgrading for some years. Budgets within the AMP have been confirmed during the Long-Term Plan (LTP) process.

The ten-year financial forecast was determined by the continuation/evaluation of current maintenance and renewal strategies within each of the components, i.e., pavements, footpaths, lighting etc and identification of new works. Note this is based on draft LTP budgets which are still to be consulted on. Below graph shows how Council will fund the Transport activity.



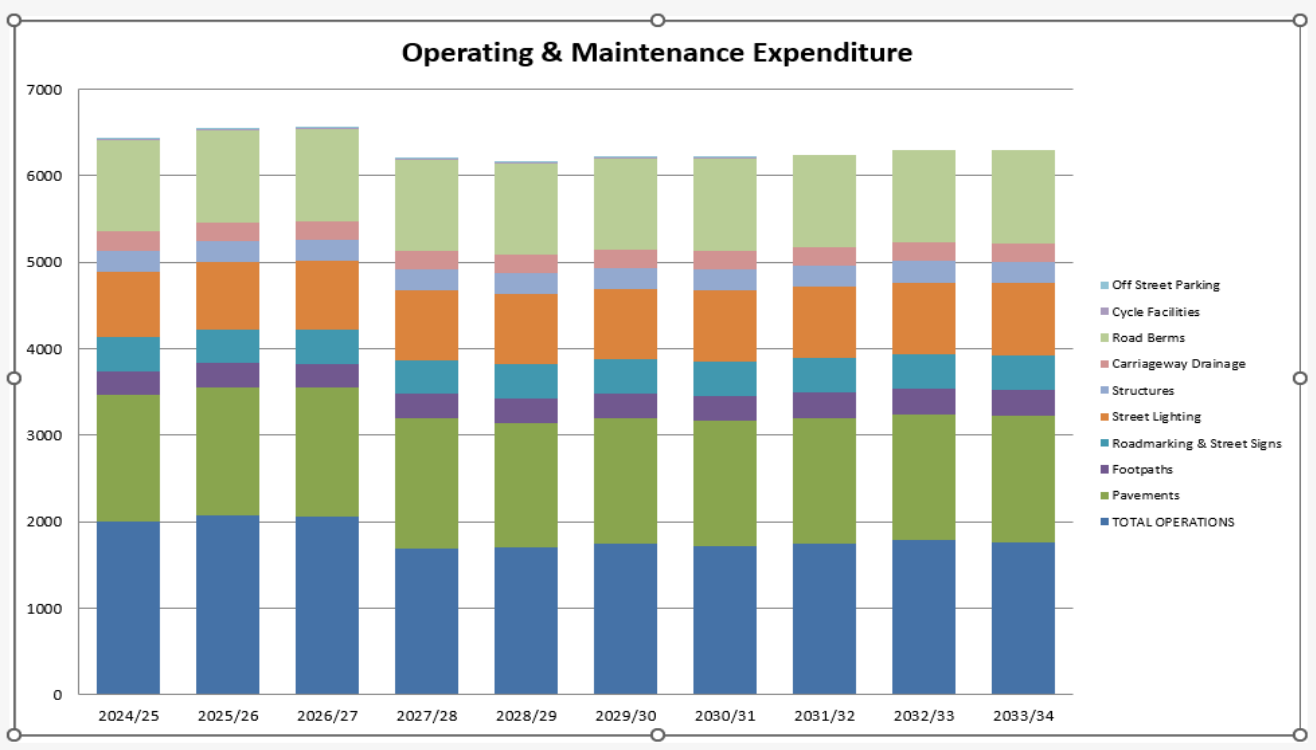
The 30-year projections are summarised below.



3.7.1 Maintenance works

Operation and maintenance costs are budgeted to average approximately $6.4 million for the next 10 years, which is $1.0M higher than the average cost over the last 10 years, mainly due to higher energy prices, traffic

management cost increases and an increase in tree and vegetation removal. Most of the maintenance is likely to be subsidised with only $532K per year being funded fully by the community.



3.7.2 Renewal works.

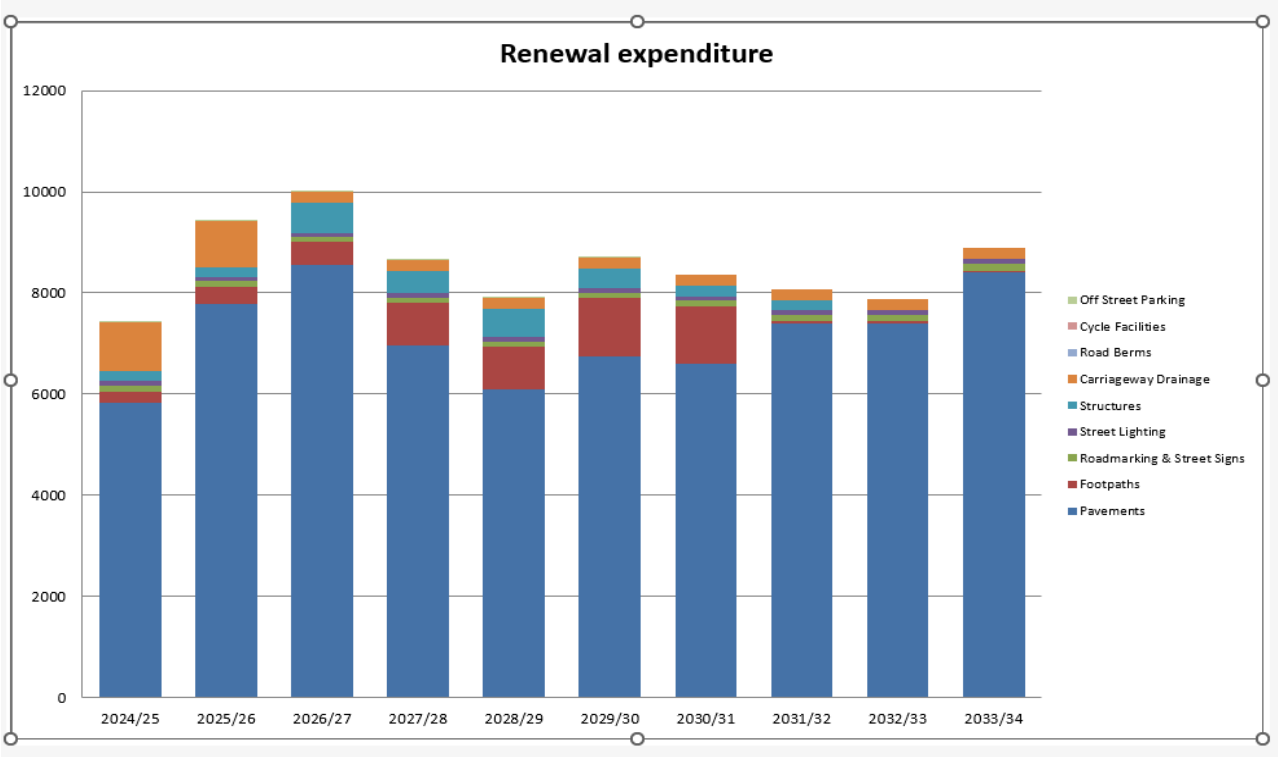
In 2023 TDC has recently run a deterioration modelling (dTIMS) exercise following on from the one in 2020. This is to provide a more accurate long-term programme for predicting reseal and rehabilitation costs and optimal timing. The suggested programme from the latest dTIMS model has an investment range (Low to High scenarios) from $2.5M to $6M per year for the renewal funding requirement. We have had an external review of validating the data and developing our forward works programmes, which is now showing we need to invest further up to $8M per year.

All budget scenarios showed that the roughness and rutting will continue to increase around the network at a very slow rate. The sections with high rutting will be mostly addressed by the higher budgets but the low will result in an increase in rutting at a higher rate. The analysis has also shown that increasing the budget would not increase the annual reseal length from around 38km in the long term. In the short term however any additional 20km a year is needed to address the backlog. The Normal $5.5M scenario will improve the current surface age in all ONRC groups. It is also noted the arterial and primary collector road will age again after the initial improvement due to the high cost of AC resurfacing and the stronger focus on rehabilitation treatment later in the analysis.

The increase in programme quantities is based on the model recommendations and comparing the outputs with common practice and lifecycle achievements. These recommendations do need to be verified and checked in areas such as data accuracy and quality of pavements and achievement of longer design lives. It is proposed to spend on renewals an average of $8.4M per year over the next 10 years with an average of $493K per year being unsubsidised.

Renewal costs vary according to the age and performance of the plant and network. Because the network is relatively young and good draining soils has meant Council hasn't yet had to invest heavily in renewals. Now, depreciation is valued at an average of $11.2 million per year.

The current average achieved lives for AC and chipseal are 14 for arterial and 17 years for collector roads. This would indicate an average renewal rate of approximately 41 km a year for chipseal and 0.7 km for AC sections. The outputs of the analysis indicate an average chipseal renewal rate of 58 km/year in the first 9 years. This will then reduce to an average of 38km/year from year 10 onwards. The AC renewal rate is lower than typical renewal rate of 0.7km a year. The life of AC sections has been extended beyond the anticipated 14 years in average. The higher need for rehabilitation treatment has also limited the budget allocation to AC resurfacing. The difference among different budget scenarios is pavement rehabilitation. The pavement renewal rate for normal budget of $5.0M is around 0.8% per year. This means the theoretical pavement renewal cycle with the normal budget is 125 years.

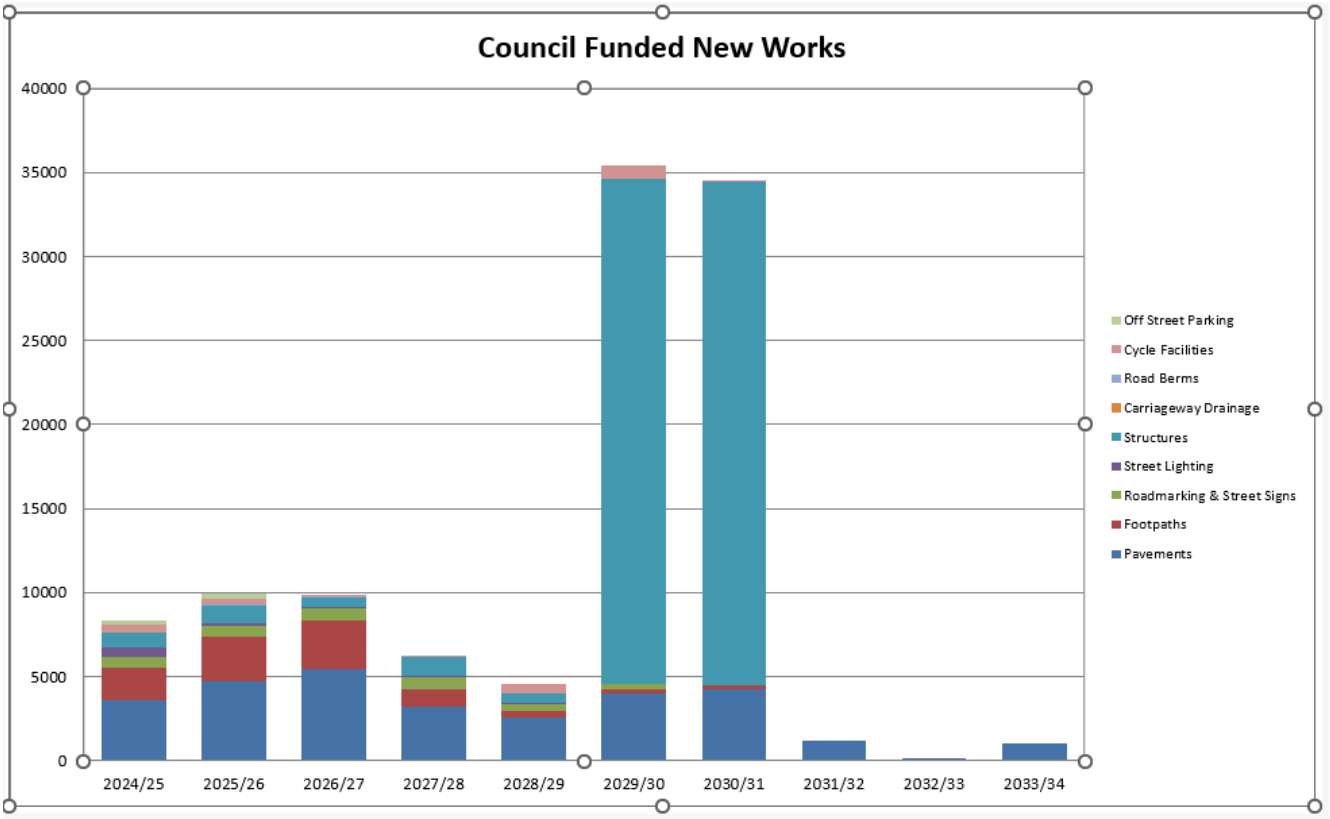


3.7.3 New works

Capital expenditure is budgeted at an average of $11.4M (Subsidised and unsubsidised) per year to improve capacity and safety with an average of $8.5M per year being unsubsidised. Council submits a three-yearly land transport programme to Waka Kotahi seeking subsidy for major transport projects. The largest components of the capital programme are:

Project	Value	Period
Poihipi Road widening continuation	$1.69M	2024/2025 to 2026/2027
Broadlands Road	$1.65M	2024/2025 to 2030/2031
Whangamata Road	$2.70M	2024/2025 to 2030/2031
Tirohanga Road	$2.15M	2024/2025 to 2025/2026
Seal extension (unsubsidised)	$6.0M	2024/2025 to 2031/2032
Northern Gateway project (unsubsidised)	$65.3M	2024/2025 to 2030/2031

Northern Gateway project which may see a new bridge connection has been moved in to the 10-year plan, which is the reason an increase in unsubsidised capital expenditure compared with the last 10-year period. An investigation for the project is in process and will need to coincide with what Mercury have planned to replace the Control Gates.



Note: Second bridge has been moved into the 10-year period and timing will depend on what the current investigation produces. This should be completed by the time of the final AMP is published.

Taupo District Council received Crown Infrastructure Partners funding in 2020 for some "shovel ready" projects, one being the Taupo Town Transformation project which saw changes to the road network and pedestrian amenity and the surfacing of shared path alongside East Taupo Arterial and kerb and channel renewal in Turangi which have now all been completed. The result of these projects will mean there is likely to be an impact on our future maintenance budgets along with renewal as we are also planning to revitalise other areas of the CBD with improvements to footpaths and street furniture in future years, as an ongoing programme.

3.8 Lifecycle management tactics

3.8.1 New works

New works are planned because of growth or where a change in level of service is required or where improvements are planned for quality and/or safety purposes. New works are planned at a longer time frame according to the Councils funding ability.

3.8.2 Renewal

Replace assets as their condition falls below the level of service, rather than at theoretical end of life based on age of asset. This includes replacement and rehabilitation of existing assets to their original condition and capacity.

3.8.3 Operations & maintenance

To maintain the asset in good repair and condition, to increase its lifecycle and decrease its renewal component. The operations team via contractor has scheduled preventive maintenance programmes to optimise the life of the asset and reduce renewal cost.

3.8.4 Disposal

Where transport assets are surplus to requirements or no longer meet the required level of service, they are renewed, and the existing asset is disposed of currently. E.g., signs, streetlights.

3.9 Risk management

Risk management is an important element in the development and management of Council assets. The high-risk areas in transport are:

- vehicle crashes, due to weather conditions such as ice and/or snow. This is mitigated by our road safety improvements (low cost/low risk programme), regular road maintenance, road safety campaigns and design of roads to best practice standards.
- damaged or blocked roads and road structures, due to slips fallen trees, floods, and storms. This is mitigated by regular road maintenance programmes and condition assessments.
- Ensuring our road network is secured and places minimal disruptions to road users and those communities that rely on our ability to maintain route security.

3.10 Asset Management Practices

Council uses a range of decision-making tools to establish its maintenance, renewal, and new works expenditure, including process, analysis and evaluation techniques for life cycle asset management; information systems to store and manipulate data; and data and information from a number of sources (technical, financial, customer service).

3.11 Plan Improvement Programme

Councils are required to have plan improvement programmes to improve their asset management planning. Council staff will continue to work through the various elements of the improvement plan.

Our top improvement items are:

- Improving quality data and continue to improve our REG quality score
- Continuing with condition assessments
- Further data collection and verification of data
- Future forward works programme to be developed through RAMM.
- To continue with verification of all data


SEALED ROADS
762KM
51.1KM
UNSEALED ROADS
370KM
OF
FOOT
PATH
10 URBAN
BUS SHELTERS
19 ROAD BRIDGES
(2 WITH SHARED OWNERSHIP)
7 FOOT BRIDGES
TRAFFIC SERVICES
11,440
SIGNS &
MARKINGS
ROAD
CLOSED
543.3KM
KERB
AND
CHANNEL
81
LARGE CULVERTS
(DIAMETER GREATER THAN 2M)
2,267
SMALL
CULVERTS
(DIAMETER LESS THAN 2M)
101562.46M2
PARKING
STREET LIGHTING
LANTERNS
4797
3481
POLES
24.5KM CYCLEWAYS
24.28KM
SHARED
PATHWAYS

4 Introduction

4.1 Purpose of the Transport Activity Management Plan

Taupō District Council is responsible for creating, upgrading, and managing a range of community owned assets such as the road network. To ensure all this is completed in an efficient and affordable way activity management plans are required.

The size of the transportation investment and importance of providing transport services to the community demands excellence in the management of these assets. The community expects the transportation network to be managed in such a way that costs are minimised while providing the levels of service the community desires.

This Activity Management Plan (AMP) is the tool for combining management, financial, engineering and technical practices to ensure that the level of service required by customers is provided at the lowest long-term cost to the community.

This AMP is therefore concerned with outlining optimal life cycle management strategies and providing details of the associated costs. The identification of future needs, management options and cash flows provide the ability to even out peak funding demands and account for asset depreciation loss of service potential.

The main benefits derived from AMP planning are:

- Improved understanding of service level options and standards.
- Minimum lifecycle (long term) costs are identified for an agreed level of service.
- Better understanding and forecasting of asset related management options and costs.
- Managed risk of asset failure.
- Improved decision making based on costs and benefits of alternatives.
- Clear justification of forward works programmes and funding requirements.
- Improved accountability over the use of public resources.
- Improved customer satisfaction and organizational image.

Our Transport Strategy provides a strategic network and priorities for the Taupō District roading network of which has provided priorities for this version of the AMP and future system improvements.

4.2 Background

Why we provide a transport network to the community?

Our transport network shapes our towns and how we interact with them. It is our means of connecting people and places. It connects us to job opportunities, education, health services, shops, and essentials – like groceries and medicine. It connects us to our friends, families, and communities. It connects us to social and cultural places – like maraes or churches. It connects us to recreational and social activities. It connects goods to market, supporting our jobs and livelihoods.

4.3 Legislative Requirements

The recent focus on asset management planning, results from the Local Government Amendment Act 2002 (November 2010 amendment). This Act places an emphasis on strategic financial planning and requires local authorities to:

- Prepare and adopt a Long-Term Plan (LTP) with 10-year planning horizon every three years, considering asset creation, realization, and loss of asset service potential.
- In determining their long-term financial strategy, consider all relevant information and assess the cost/benefit of options.
- Manage assets prudently, in the interests of the district and its inhabitants and ratepayers.
- Clearly identify significant forecasting assumptions and risks underlying financial estimates.
- Identify any significant negative effects that any activity within the group of activities may have on the social, economic, environmental, or cultural wellbeing of the local community.

The preparation and implementation of an AMP from which long-term financial strategies will be developed, is a means of TDC complying with these requirements.

- Section 10 Purpose of local government

  (1) The purpose of local government is –

  a) To enable democratic local decision-making and action by, and on behalf of, communities; and

  b) To meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.

  (2) In this Act, good quality, in relation to local infrastructure, local public services, and performance of regulatory functions, means infrastructure, services, and performance that are.

  (a) Efficient.

  (b) Effective; and

  (c) Appropriate to present and anticipated future circumstances

- Section 17A Delivery of Services

  (1) A local authority must review the cost-effectiveness of current arrangements for meeting the needs of communities within its district or region for good-quality local infrastructure, local public services, and performance of regulatory functions. Morrison Lowe undertook a Section 17A review prior to us re-tendering the Road maintenance contract which is due for renewal on 1 July 2024.

4.4 Asset Management Policy

The Asset Management Policy supports Council's long-term strategic goals found in the 2024 LTP of:

- Ensure that the Taupō District remains a great place to live.
- Promote economic development.
- Protect our water resources and use them wisely.
- Maintain the quality infrastructure that we have.
- Keep rates and debt affordable.

4.4.1 Objective

The objective of Council's Asset Management Policy is to:

- ensure service delivery is optimized to deliver agreed community outcomes and levels of service for both residents, visitors, and the environment.
- optimize expenditure over the life cycle of the assets.
- risks are managed appropriately.
- provide a service delivery that is sustainable.

4.4.2 Principles

The following principles will be used by Council to guide asset management planning and decision making:

- effective consultation to determine appropriate levels of service.
- integration of asset management within Council's strategic, tactical, and operational planning frameworks including corporate, financial, and business planning
- Informed decision making using a lifecycle and risk management, and inter-generational approach.
- Transparent and accountable asset management decision making
- Sustainable management of assets for present and future needs

4.4.3 Corporate Framework

This Asset Management Policy links to Council's LTP, Infrastructure and Financial Strategy and Asset / Activity Management Plans (AMPs). It builds on Council's strategic goals by promoting an integrated approach to the management of service delivery and across all asset classes.

4.4.4 Structured Assessment of Asset Management Practice

Council has undertaken a structured assessment of the appropriate level of asset management practice for each of the asset classes. This structured assessment follows the guidelines provided in Section 2.1.3 of the International Infrastructure Manual (IIMM 2011v4).

4.4.5 Maturity Assessment

In the first quarter of 2021 the maturity level of each of the Asset Management Plans has been assessed through an external review process to determine the actual level of maturity. This review will form the basis for the further refinement of each of the AMP's Improvement plans.

4.5 Key Stakeholders

Below is a list of key stakeholders with their main interest in the transport AMP and how we continually engage with them. These key stakeholders are people or organizations that have a long-term continual interest and/or involvement in the function, operation, and improvement of our transport network.

4.5.1 External and Local Stakeholders

External and Local Stakeholders		
Stakeholder	**Stakeholders main interest**	**Engagement Methods**
Taupō District Council ratepayers, residents, customers, and visitors	Recognised as large & significant stakeholders. Reliable road network and transportation services at an affordable cost.	Broad methods such as phone, service requests, general correspondence, email, meetings, Facebook, social media, face to face, meetings (informal).
Access Taupō group	Recognised as large & significant stakeholders. Mobility issues, safe & accessible routes.	6 weekly meetings with Access Taupō group to discuss issues, emails. Accessibility audits
All commercial and private road users	Recognised as large & significant stakeholders. Reliable road network and transportation services at an affordable cost that considers their favoured mode of transport.	Broad methods such as phone, service requests, general correspondence, email, meetings, Facebook, social media, face to face, meetings (informal).
Bike Taupō	Recognised as a significant advocacy group. Advocate for safer cycle network on and off road. Cycle trail development.	Occasional correspondence - phone, informal meetings, email updates, Bike Taupō newsletters, website.
Consultants and Contractors	Commercial opportunities Project development Maintenance contracts Project designs	Formal/informal meetings Occasional correspondence Short term agreements Offer of service.
Emergency services (Ambulance, Fire and Police).	Road safety partners Safe and reliable road network.	Occasional correspondence with Ambulance and Fire services. Police representatives are part of the Road Safety Partnership Group. Regular contact for road safety/community programmes.
Event planners	Traffic management plans, road safety.	Meetings, TMP plan review
Residents Association Groups	Transportation issues at a community level e.g., new footpaths and larger projects such as road widening etc	Meetings, emails, phone.

External and Local Stakeholders		
Stakeholder	**Stakeholders main interest**	**Engagement Methods**
Local businesses/industries	Transportation services to suit commercial needs and expansion at an affordable cost. Parking restrictions – on street parking spaces	Occasional correspondence Via Taupō Town centre
Schools (including BOT)	Safety for school children (urban and rural) Walking and cycling School bus routes including bus infrastructure (rural areas) Cycling skills in schools, Road safety/school travel plan	Road safety community programmes, school travel plans,
Taupō Town centre	Transportation services to suit commercial needs and expansion at an affordable cost. Parking restrictions – on street parking spaces	Occasional correspondence Informal meetings

4.5.2 Taupō District Council Internal Stakeholders

Taupō District Council Internal Stakeholders		
Stakeholders – Internal	**Stakeholders main interest**	**Engagement Methods**
Asset Managers	Implementation of infrastructure and service management activities.	Continual discussion via informal meetings, face to face, regular asset manager meetings.
Chief Executive/SLT	Compliance with regulations, service reliability, quality, and economy	Updates when required
Communication team	Project updates, event updates	Councillor weekly update, communication plans, emails, phone, meetings etc
Community engagement team	Accessible transport network Neighbourhood events Accessible audits	Informal meetings, phone, email
Contract Managers	Responsible for implementation of infrastructure and service management activities	Continual discussion via informal meetings, face to face
Council committees	As per delegated authority	Regular meetings

4.6 Purpose of ownership

The purpose of transportation assets is to provide a sustainable, safe, convenient, comfortable, and cost-effective road system for the movement of people, goods and vehicles throughout the district.

We have the option of owning transportation assets or supporting private sector developers/landowners in the provision of roads through development of private access roads and rights of way. Links to our organizations, vision, mission, objectives, and goals

The Transportation AMP aims to meet the following Community Outcomes:

4.6.1 Economy

Our communities prosper in a thriving local economy with a diverse range of rewarding employment opportunities.

4.6.2 Environment

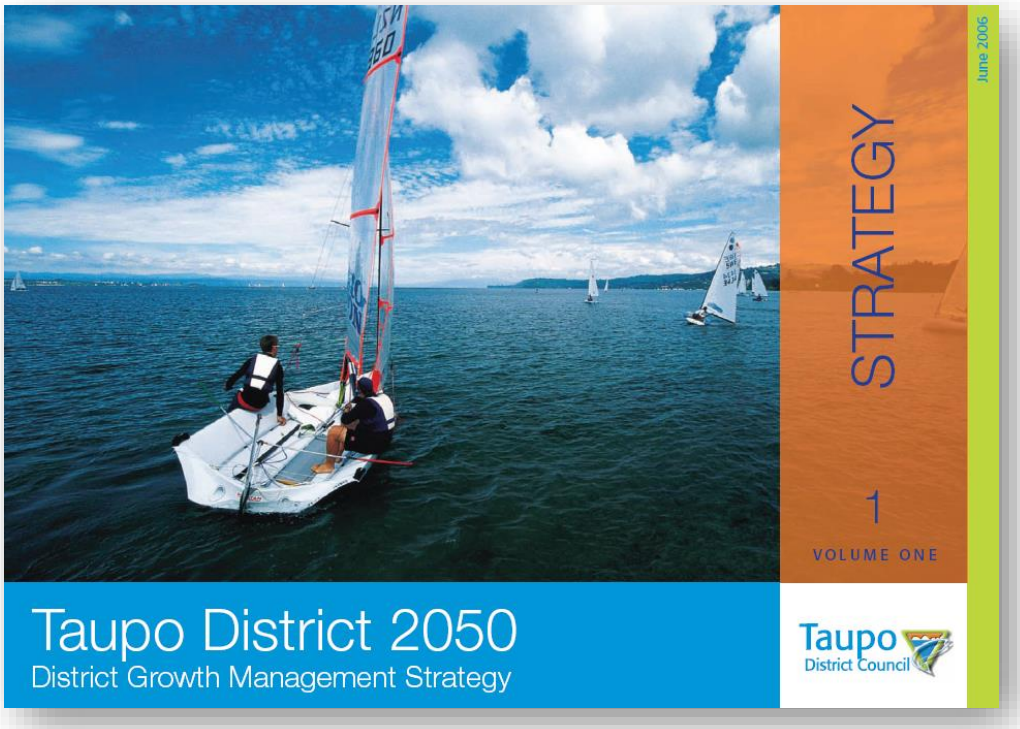
A shared responsibility for all the places we are proud of.

4.6.3 Engagement

Council relates to its communities by advocating for their social and cultural well-being.

Community Outcomes are considered when determining life cycle strategies, levels of service, etc. Council's response to the Community Outcomes acknowledged that managing growth is one of the biggest issues for TDC over the next 10 years, and in 2023 reviewed their growth management TD2050.

TD2050 provides a policy framework to guide where and how future growth should occur and identifies a series of actions to achieve this desired pattern of urban growth. At the core of TD2050 are the 7 Strategic Directions. These provide the framework of interrelated policies that guide decision making on growth related issues. Over time they will be achieved by putting into effect identified policies and undertaking the specific actions identified in TD2050. The Strategic Directions, policies, and actions out of TD2050 that are specifically relevant to the transportation activity are:



4.6.4 Strong Communities - Strategic Direction 5:

- Identify and plan for social and community infrastructure needs in advance of development (Policy 5.2).

4.6.5 Sustainable Economy – Strategic Direction 7:

- Ensure that economic activities reflect the need to preserve the natural environment that sustains the district's economy (Policy 7.1).

4.6.6 Integrating Land Use, Infrastructure & Funding – Strategic Direction 8:

- Manage the sequence of development in growth areas so that services are available from inception of new or expanding communities (Policy 8.1).

4.6.7 Transport Modes and Connections – Strategic Direction 9:

- Maintain and enhance the district's strategic transport networks to link industries to move goods and people efficiently (Policy 9.1)
- Provide for a comprehensive and integrated range of present and future public and private transport options within the district (Policy 9.2)
- Manage the road system to achieve integration, choice, and balance by developing an efficient and safe network and making the most of existing infrastructure (Policy 9.3)
- Facilitate the development and implementation of a corridor approach to transportation and integration with the pattern of land use (Policy 9.4)
- Consider a range of funding alternatives in respect of transportation provision in the district (Policy 9.5)

4.6.8 Leadership, Partnership and Collaboration – Strategic Direction 12

- Develop collaborative working relationships with other key stakeholders to achieve effective implementation (Policy 12.1)
- Include agreed growth assumptions in all Asset Management Plans.
- Ensure Asset Management Plans support the patterns of development defined by TD2050 are aligned with the LTP, proposed District Plan and funding policies.

4.7 Asset Management's Contribution to Corporate Objectives

Our goal as Council, as set out in the LTP relating to the road network is:

To provide an effective, efficient, sustainable, and safe transportation network which allows people to move easily and is essential for the economic and social wellbeing of the community.

4.8 Assumptions

4.8.1 Financial

Financial			
	Assumption	Potential risk/assessment	Mitigation measure
1	All costs are in current dollars and no present value analyses have been done.	Not the required funds to undertake capital works	Councils LTP and annual plan spend can be adjusted annually to meet Councils revenue and finance policy.
2	Costs are based on best estimates from various sources.	Projects being delayed or deferred due to cost estimates.	Engineering estimates.
3	The subsidy from Waka Kotahi will continue to be 51% for the next 3 years over all transport activities. The special purpose road – Huka Falls Road will continue to be 100% for the next 3 years when it will reduce to 51% subsidy.	There is a risk the financial assistance rate will change with the introduction of the ONF.	Gap analysis to be undertaken.
4	Levels of service and funding have been based on historical data. Significant changes in these will affect funding accordingly.	The community desires change to level of service which are not reflected in the document.	Council undertakes three yearly satisfaction surveys. Council undertakes pre LTP consultation to gauge the community for difference service level needs.
5	Valuation completed in August 2020 has been used as basis for asset values.	Time between the completion of the AMP and the last revaluation	Council undertakes an annual price variance assumption report
6	Allowance has been made for vested assets.	The level of allowance for vested assets is incorrect.	Councils LTP and annual plan spend can be adjusted annually to meet Council's revenue and finance policy.
7	The source of funds for the future replacement of significant assets	There is a risk that sufficient funds will not be available to pay for the planned capital projects. This may be due to	Council will assess the availability of funds as part of the annual budget process and if funds are not available, they

Financial			
	Assumption	Potential risk/assessment	Mitigation measure
	is stated in the revenue and Financing Policy.	growth not providing sufficient funding from development or the community does not have the ability to pay or to have rates rise to fund these projects.	will re-prioritise projects and/or defer projects.
8	Assume the revenue received from Rates is as per expected.	As above	As above
9	The useful lives of significant assets are as per the accounting policies documented in the TYP. Depreciation is charged at 50% for the first year and 100% in subsequent years.	There is a risk that assets will wear out more quickly than forecast and require replacement earlier than planned. Asset lives have been incorrectly calculated meaning a funding shortfall.	Council has asset depreciation checked externally. Asset lives are compared to the latest asset information nationally.
10	Development Contributions will continue to be collected and remain available to fund network infrastructure.	If Development contributions are less than assumed, the Council may need to increase its rates to cover any shortfall or delay/defer projects.	Road network provision is provided by developers apart from quality improvement device's which are seen as a benefit to the whole community.

4.8.2 Non-Financial

Non-Financial			
	Assumption	**Potential risk/assessment**	**Mitigation measure**
1	Assume the growth projections occur as per the current growth model predictions and based on the assumptions from TDC 2050 (refer pages 57 & 58 of TDC 2050).	The projections are based on several assumptions and therefore subjected to some uncertainty. Growth could either be higher or lower than expected. Projections are based on population data and land development data.	Council has based its plans for the management and additional infrastructure on the population projections. Regular review of the model takes place.
2	Contractors will be available for the development and construction of projects.	With the number of projects and building work happening in the district there is a risk contractors will not be available for work. Projects will be delayed due to lack of	Council can extend tender periods to enable contractors more time to schedule in works.

Non-Financial			
	Assumption	**Potential risk/assessment**	**Mitigation measure**
		budget allocated or overpriced by contractors.	
3	There will be continued growth in public participation in the democratic process and Council will need to respond to this growth.	Projects could be delayed due to the submission and hearing process or changes in levels of service.	Planning for projects need to take the public participation into account. Project plans to allow adequate time for consultation. Council's LTP an annual plan spend can be adjusted annually to meet Council's revenue and finance policy.
4	There will be no unforeseen legislative changes or central government policy changes that will affect this asset.	There is a risk that legislative change will bring about changes to Council's responsibilities.	Any legislative responsibilities that change may increase or reduce the Council's expenditure and income.
5	Economic and labour market constraints may have a direct effect on recruitment.	If Council is unable to recruit to the required level to complete the works programme for the year this could have impact on Councils credibility	Council may have to hire consultants to provide support; this could increase the cost-of-service delivery which will need to be funded through the annual plan process.
6	Traffic growth will vary within the district but generally be consistent with projected population growth.	The risk that traffic growth will increase at a rate beyond what is expected. If new infrastructure or projects are required and not expected this could put pressure on Council's budgets or extent of works could be reduced.	Continual monitoring of traffic volumes and predictive modelling required.
7	That Councils resource consents, where applicable for its activities will be renewed as required or approved in an appropriate manner.	Delay to projects being commissioned or installed.	Will need to ensure early consultation with iwi and hapu regarding infrastructure projects. Ensure adequate funding is allocated to fund processes outlined in agreements and increased environmental requirements.
8	Covid will not significantly impact the delivery of the activity.	Delays may occur to projects or programmes.	Allow for projects or programmes be flexible or able to be modified i.e., timing.

5 Significant negative effects

In general, providing a safe road and footpath network has both positive and negative benefits/effects. The table below outlines the negative effects and the mitigation measures.

Negative effect	Mitigation measures
• The environmental effects from vehicles include air emissions, potential runoff, and transport related waste from roads.	• Ensure run-off from road surfaces will be collected and/or managed and treated where appropriate particularly to protect Lake Taupō. • Support national and regional regulations on vehicle exhaust limits. • Traffic management (plans) in place to reduce congestion.
• Noise of heavy vehicles and/or engine braking.	• Namely mitigated by the completion of the ETA with heavy vehicles using the bypass. All major transport projects must comply with the District Plan and consent conditions, if applicable.
• New roads can change the amenity of an environment and can have an impact on the community by creating physical separation in neighbourhoods;	• Will be mitigated by introducing walking and cycling facilities and include urban design features where possible. • Adequate public consultation.
• The cost of providing the service on rate payers, especially to the smaller communities.	• Adequate public consultation via TYP.
• Number of traffic crashes resulting in death and injury.	• This will be incorporated into road safety practices in the design and construction of roads. • Undertake localised crash reduction studies & implement improvements through appropriate engineering measures. • Community road safety programmes & campaigns addressing high risk areas. • Annual minor improvement projects. • Set safe and appropriate speed limits.

5.1 Asset Management Plan Complexity

5.1.1 Outline of Approach

Senior Leadership Team have identified the need for robust asset management planning. They have identified the level of Asset Management planning by asset type either as core or advanced. The Transport AMP has been identified as Advanced.

Core asset management plans are those which produce an AMP based on providing current levels of service and meet minimum legislative requirements by supporting a long term (10 year plus) cash flow forecast and accounting for changes in the service potential of assets. Core AMPs define existing levels of service and identify costs based on renewal accounting principles.

Advanced AMP's identify processes to optimise lifecycle AM strategies and provide a greater degree of confidence in the resulting cash flow predictions. Advanced AM functions include predictive modelling, risk management, optimised renewal decision making (ORDM) and service level reviews.

The Transportation Asset Management Plan 2024 follows the IIMM framework, and it has been developed and collated internally by the Transportation team. In a recent review of the AMP undertaken by Waka Kotahi (NZTA), it has been considered to reflect an "Intermediate" level of development; however, areas such as Risk Management and Levels of Service are at an advanced level.

The difference between core and advanced is that at an advanced level:

- Future demand is predicted.
- High knowledge of asset owned including condition assessment and performance.
- Knowledge of current utilisation and ultimate capacity
- Ability to predict failure modes.
- Ability to analyse alternative options.
- Ability to optimise maintenance and operational activities.

The complexity of this version of the Transportation Asset Management Plan sits in between Core and Advanced as further work is needed to understand the current utilization and capacity through further modelling of the transportation network and mainly the last three bullet points above.

As it currently stands, this AM Plan has limitations in the following areas:

5.1.2 Limitation of the AMP

- Levels of Service require detailed consultation to make these more current.

Asset condition and performance assessment need to be verified through investigations and the renewal programme modelled using condition rating data.

5.1.3 Organisational Structure

Our organisational structure (Taupō District Council) is structured to deliver the key strategic directions of the Ten-Year Plan.

This being:

- Working Together
- Growth and Economic Development
- Strong, Safe and Healthy Communities
- Sustainable Environment

Transportation activities come under the Strong, Safe and Healthy Communities strategic direction. The Transportation division (asset manager) sits within the Infrastructure Group which manages all TDC's transportation assets.

The Transportation team has two teams.

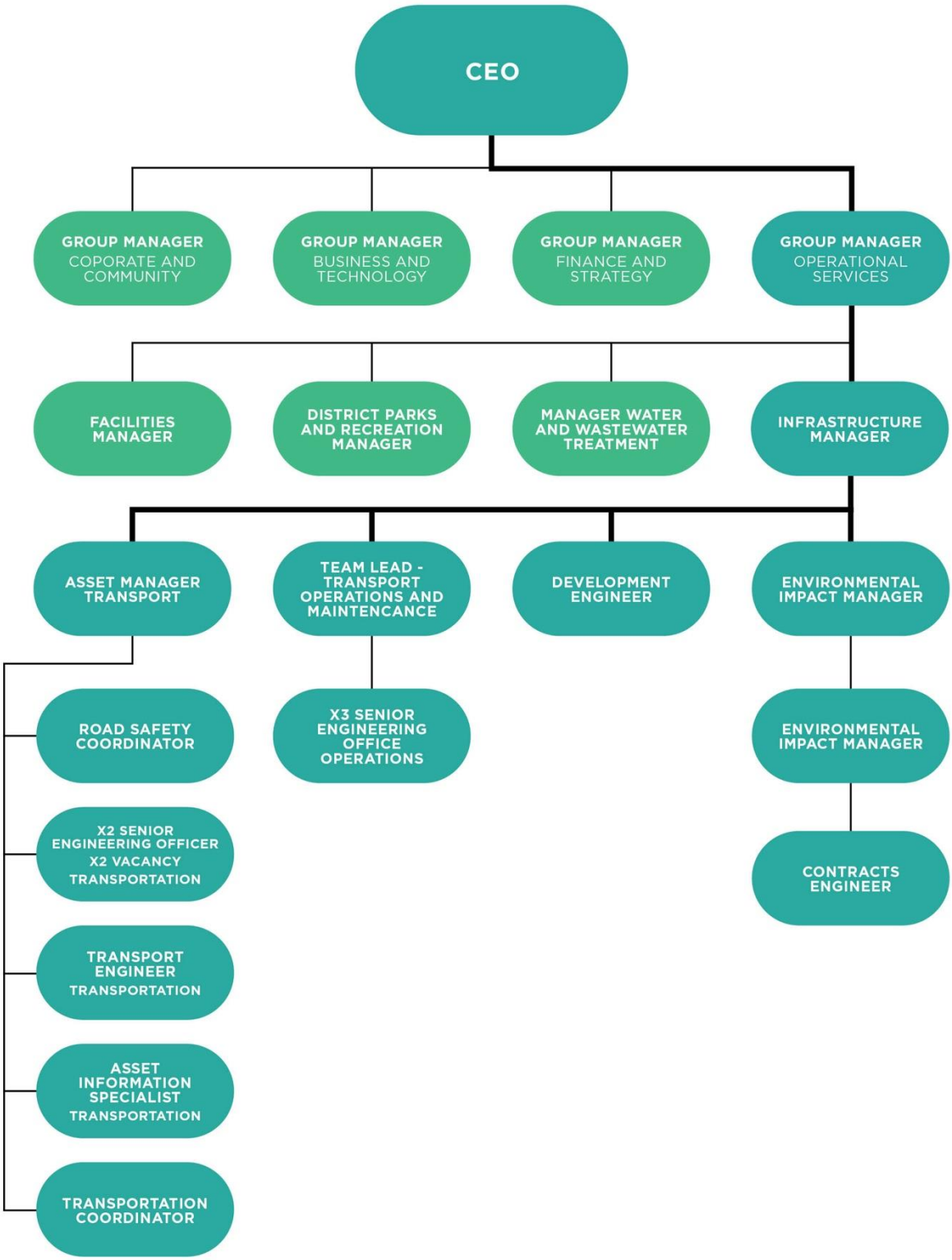
1. Transportation Operations team which delivers professional services for design, procurement, and contract administration (through a business unit agreement). The Transportation Operations team has an agreement for the provision of Waka Kotahi Subsidised services.
2. Transportation Asset team delivers asset management planning, forward planning, budgeting, and programming as well as some project management. The team also delivers road safety, passenger transport service and demand management.

In addition to the Transportation team members, the Transport activity can draw on the following in-house resources from:

The Finance & Administration team are responsible for the development of the Asset Management System and Asset Management Plan financials; and Development Engineer ensures that any new road networks conform to TDC's Code of Practice.

Figure 1 - View overlooking Lake towards Acacia Bay

5.2 Organisational structure



6 Strategic Case

Our Transportation activity management plan outlines how it will deliver its services to the ratepayers and road users to allow people and goods to move around the Taupō District safely and efficiently by any transport mode including cycling, walking and or passenger transport.

The AMP contains the strategy and a programme of works setting out the districts planned transport and road investment. This business case approach assists Council and its co-investor, the Waka Kotahi, New Zealand Transport Agency (NZTA) to determine the right amount of work is being done at the right time and for the right reasons. It is a balancing act between meeting the wants and needs of our communities while keeping the rates affordable and sustainable and our roads safe.

6.1 Links to National, Regional and Local Strategies

The Transport Asset Management Plan has links back to local, regional, and national strategies and other planning documents. Figure 2 explains this relationship.

Figure 2 - Relationship between local, regional and national strategies

6.1.1 National Links

Government Policy Statement

Te Tauākī Kaupapa Here a te Kāwanatanga mō ngā waka whenua | Draft Government Policy Statement on land transport 2024/25-2033/34. The Government Policy Statement on Land Transport (GPS) sets out the governments priorities for expenditure from the National Land Transport Fund over the next 10 years. Currently the draft GPS is out for consultation which provides the Governments transport strategic priorities and guides investments, below shows the role the GPS plays in land transport.

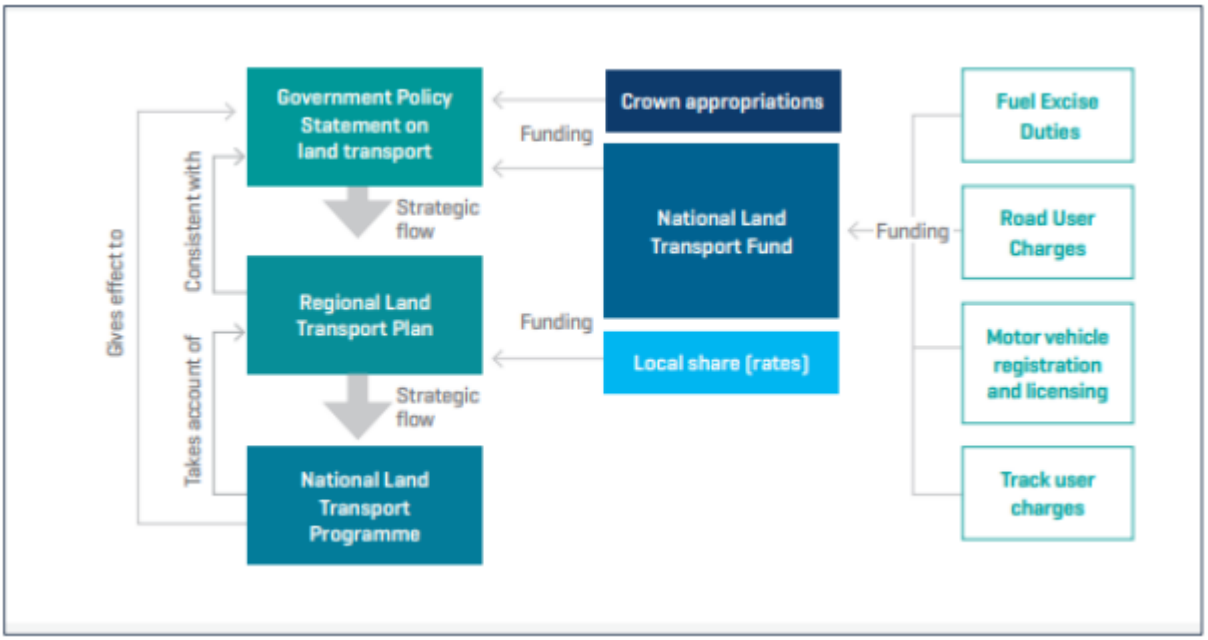


Figure 3 – The role of the GPS in the land transport planning and funding system.

The draft GPS 2024 also identifies a set of priorities for transport investment over the next 10 years. The GPS sets the balance between investing in new projects and ensuring we maintain and repair our existing infrastructure. It will also focus on the four key strategic priorities as below.

- Economic Growth and Productivity
- Increased Maintenance and Resilience
- Safety
- Value of Money

The draft GPS also recognises the importance of local and rural roads in connecting our communities and businesses to key routes, and the importance of ensuring the whole network is maintained to a reliable standard and maintaining the road network is a priority in GPS 2024.

Arataki

Arataki is Waka Kotahi's view of how the land transport system needs to function and change over the next 30 years and steers what should be done to achieve this. The plan outlines six key external factors, or drivers, that will shape and change the land transport system and the challenges and opportunities to be addressed to

make progress on the five transport outcomes from the GPS. Arataki also has strategic network plans one for the current state and one for the future state. These plans show that Cambridge to Taupō and Taupō to Tūrangi are both Nationally strategic highways and require transformational change in the future. Regional Links

The Regional Land Transport Plan (RLTP) sets out the regional direction for land transport. The current Waikato RLTP highlights the following priorities:

Summary of RLTP 10-year priorities
Strategic corridors • protecting and improving priority strategic corridors (road and rail) • improving network resilience, route reliability and safety on key strategic corridors • resolving rail constraints in the upper North Island • supporting the region's covid-19 recovery
Managing growth • providing multi-modal transport solutions to support housing and growth in high growth areas. • future-proofing priority transport corridors to achieve urban growth outcomes
Road safety • implementing priorities in Road to Zero for the Waikato 2020 road safety strategy • planning and implementing safe and appropriate speeds and safe network improvements, particularly around schools
Access and mobility • shaping urban form that supports better multi-modal transport options. • growing public transport and active mode share in urban and high growth areas • transition towards a public transport system with rapid and high frequency corridors in greater Hamilton • growing interconnected cycle, micro-mobility and pedestrian networks in urban areas • enhancing passenger rail and planning for expansion in the Hamilton to Auckland corridor • improving access and mobility for rural areas and the transport disadvantaged
Climate change • transforming to an environmentally sustainable, low carbon transport system
Maintaining what we have • maintaining existing transport assets • maximising efficiencies across the transport system
Integrated planning • advocating for the implementation of agreed regional priorities. • implementing agreed planning outcomes

Our transport strategy aligns with these objectives through the first four priorities: Safe, Inclusive, Walking and Cycling Friendly, and Creating Vibrant Town Centres.

6.1.2 Local strategic links

Within Taupō District Council we have finalised a district wide transport strategy. This sets out the vision, how we will deliver on the vision and how we will measure and report on success. It has seven priorities for our district.

1. Safe - Safety remains the top priority. We want Taupō to be a safe district for people to live and visit.

2. Inclusive – Accessible and affordable so that getting around is not a barrier to anyone. There is a significant portion of our community that find getting around a real challenge and require a more inclusive system that is safe and accessible to for all users.
3. Walking and cycling friendly to support sustainable choices - We want walking and cycling to be popular, easy, and safe. To be popular, walking and cycling must be attractive and convenient. Having great walking and cycling opportunities helps make Taupō a great place to live and visit.
4. Supporting the vibrancy of our towns and fostering social and economic interactions - Our towns are the heart of the district. They are where we get together for economic and social interactions. We want welcoming town streets that attract local shoppers and visitors and foster economic and social opportunities.
5. Well connected to the rest of New Zealand - Taupō district needs strong connections to the rest of New Zealand to support economic and social opportunities. Our connections need to be efficient, affordable, and swift – closing the gap between Taupō district and the rest of New Zealand.
6. Resilient and reliable - Our transport networks provide vital and important connections. Keeping communities connected to necessary goods and services, jobs, and customers.
7. Maintaining predictable and reasonable travel times in the face of growth.

The Long-Term Plan (LTP) sets out councils overall financial priorities for the next 10 years. This includes available funding for our transport network and systems. The LTP is closely linked to the 30-year infrastructure strategy. The infrastructure strategy sets out future challenges that face our district.

This activity management plan for transport links back to both our strategic priorities in the transport strategy and both the regional and national strategic documents.

6.1.3 Link Summary

Table 1 explains the links between the national, regional, and local strategic priorities and objectives. Similar themes have been used to show linkage between the different strategic documents.

	SAFETY	BETTER TRAVEL OPTIONS ACCESS	CLIMATE CHANGE ENVIRONMENT	VALUE FOR MONEY	IMPROVING FREIGHT CONNECTIONS
GPS	ALIGNS	ALIGNS	ALIGNS	N/A	ALIGNS
ARATAKI	ALIGNS	ALIGNS	ALIGNS	N/A	ALIGNS
RLTP	ALIGNS	ALIGNS	MINOR/OTHER OBJECTIVE	MINOR/OTHER OBJECTIVE	ALIGNS
TDC TRANSPORT STRATEGY	ALIGNS	ALIGNS	MINOR/OTHER OBJECTIVE THROUGH IMPROVEMENT FOR WALKING AND CYCLING		MINOR/OTHER OBJECTIVE
TDC TRANSPORT AMP	ALIGNS	ALIGNS	MINOR/OTHER OBJECTIVE THROUGH IMPROVEMENT FOR WALKING AND CYCLING		

Table 1 – Links to strategic objectives

6.2 Taupō District Context

6.2.1 Geographic Area

Our district covers a land area 6333 km^2 in the centre of the North Island and is part of the Waikato Region. Lake Taupō sits in the heart of our district and is the start of the Waikato River. The Central Plateau is to the south of the district which is a premier international and domestic tourist destination with the great walks and other alpine activities.

6.2.2 Map of our District

Figure 2 - Taupō District Council

6.2.3 Key Transport Roads and Movements Regional Network Connections

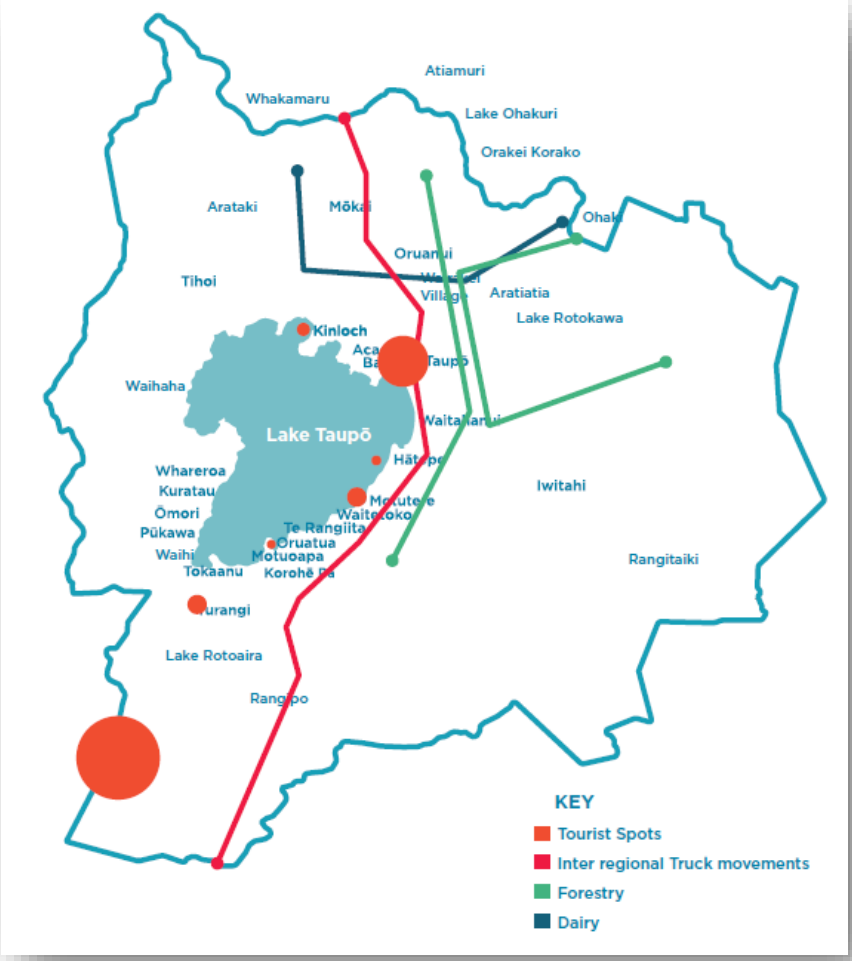


Figure 3 Key Transport Routes and Regional Connections

Our regional connection roads mainly consist of State Highways as shown in Figure 5. These are controlled and maintain by NZTA Waka Kotahi. In our district the state highways are our main connections to both our local communities and other neighbouring regions. They carry most of our freight and vehicle movements in the district.

6.2.4 Overview of Our Transport Assets

Our district is made up of many transport assets with the key one being the roads we drive on. There are two key types of roads.

1. Sealed Roads - roads that are sealed or have a surface that protects the road from water.
2. Unsealed – roads that have road metal to protect the road structure from damage from vehicles.

Footpaths in our district mainly consist of concrete paths.

Our district has 26 bridges which include both foot bridges and road bridges. Our district also has a 79 large culverts and underpasses.

70% of our streetlights are now LEDs. These lights are on a mixture of our own poles and utility owned poles. This means our district has 3038 poles.


SEALED ROADS
762KM
51.1KM
UNSEALED ROADS
370KM
OF
FOOT
PATH
10 URBAN
BUS SHELTERS
19 ROAD BRIDGES
(2 WITH SHARED OWNERSHIP)
7 FOOT BRIDGES
TRAFFIC SERVICES
11,440
SIGNS &
MARKINGS
ROAD
CLOSED
543.3KM
KERB
AND
CHANNEL
81
LARGE CULVERTS
(DIAMETER GREATER THAN 2")
2,267
SMALL
CULVERTS
(DIAMETER LESS THAN 2")
101562.46M²
PARKING
STREET LIGHTING
LANTERNS
4797
3481
POLES
24.5KM CYCLEWAYS
24.28KM
SHARED
PATHWAYS

6.2.5 One Network Framework (ONF)

The ONF is how we classify our transport network in our district. It is to help deliver a consistent approach for delivering and maintaining our transport network compared to the rest of New Zealand.

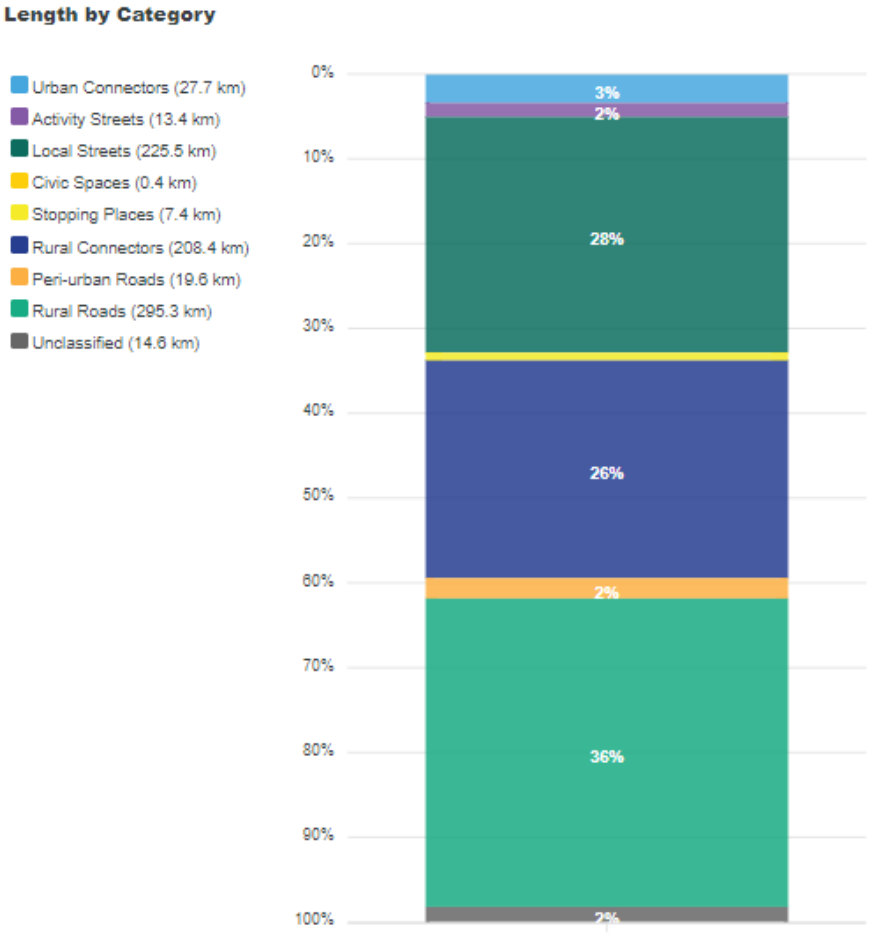


Figure 4. One Network Road Classification of Our Network

6.2.6 Population and Growth

The current population of Taupō district is 41,040 and is likely to continue to grow. Our current growth model medium scenario population predictions as shown below, predict the population to grow to about 70,200, by 2060. Population growth is shown to higher than previously predicted and this was because net migration was being under predicted.

Total Population					
2021 = 41,040	**2025**	**2030**	**2040**	**2050**	**2060**
Low Scenario	42,100	44,300	48,900	54,100	59,400
Medium Scenario	42,500	45,800	53,000	61,400	70,200
High Scenario	42,900	47,300	57,200	69,000	81,800

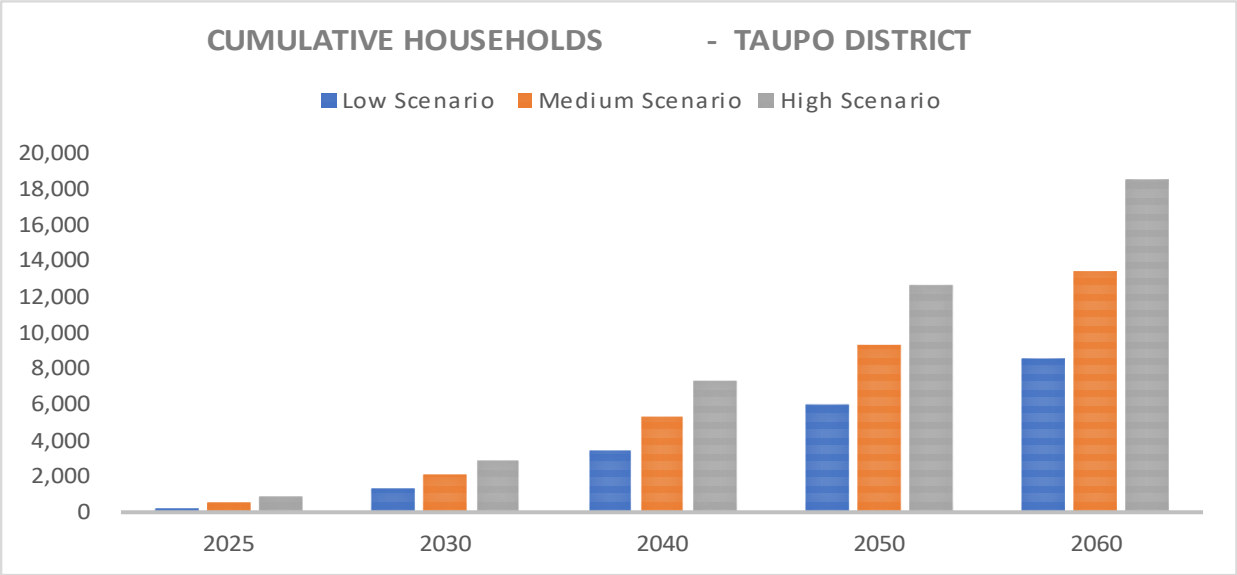


Figure 6 Cumulative households

Projected lots for the areas of Taupō (Acacia Bay, Brentwood area) as well as Huka Heights and Poihipi Road out to Kinloch Road will strengthen the need for transport investment particularly in the rural road networks. Figure 7 shows the key population centres in our district.

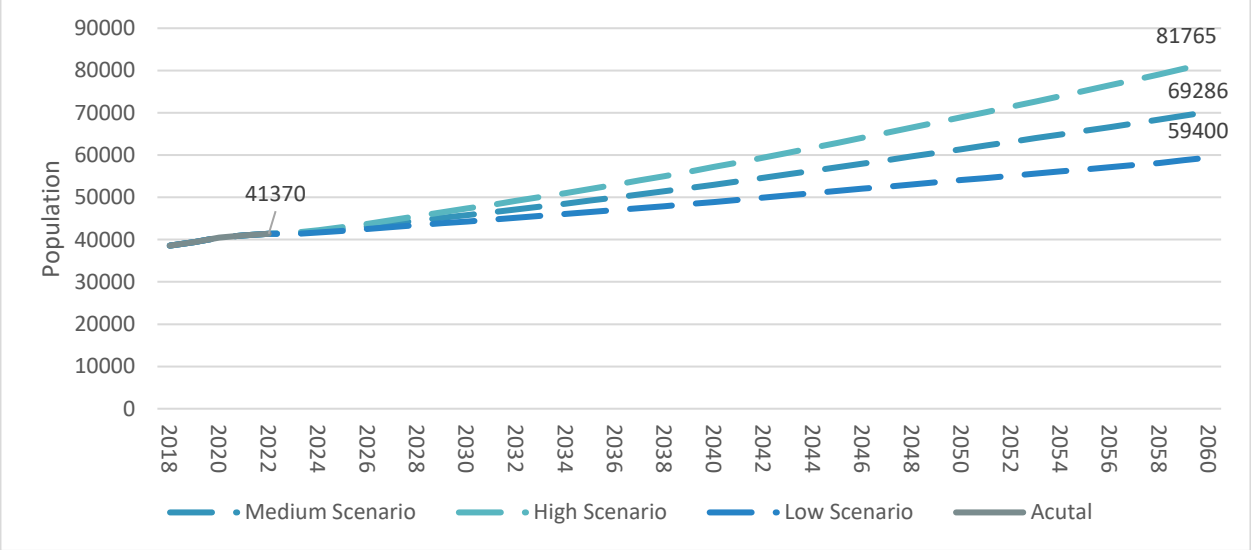


Figure 7. Current and Predicted Population Growth for Our District

6.2.7 Population Centres in Our District

Figure 8- Main Population Centres in Our District

6.2.8 Economy – Key productions and major industries

Economically Taupō District has an important place in the national and regional economies with its focus on Tourism and events. While most of the Taupō District falls within the Waikato region it is important to note that the district falls within the jurisdiction of four separate regional councils and is important to each of these regions.

Growth in tourism has continued and this is evidenced in several ways with approximately 20% of jobs in Taupō relating to the tourism industry and an increase in visitor and event numbers. Taupō is heralded as the events capital of New Zealand. Due to this central location, Taupō hosts many of the major walking and cycling events such as the International Ironman, Oxfam Trail walker, and the famous Lake Taupō Cycle Challenge which last year attracted 11,000 participants and is now part of the Golden Bike World Series.

Geothermal energy generation is continually growing industry in the Taupō District. It has the lowest cost base of energy production and is a 100% renewable resource. In more recent years, geothermal energy has been harnessed for its direct heat value and is being used for growing fruit and vegetables in greenhouses, drying milk powder, and for kiln drying timber products. This has opened opportunities for other Industries to develop in the Taupō Area.

Geothermal energy, forestry and wood processing, agriculture, aquaculture, and tourism industries are the main source of GDP in our district. Our district GDP was reported to be $2,977M in September 2023.

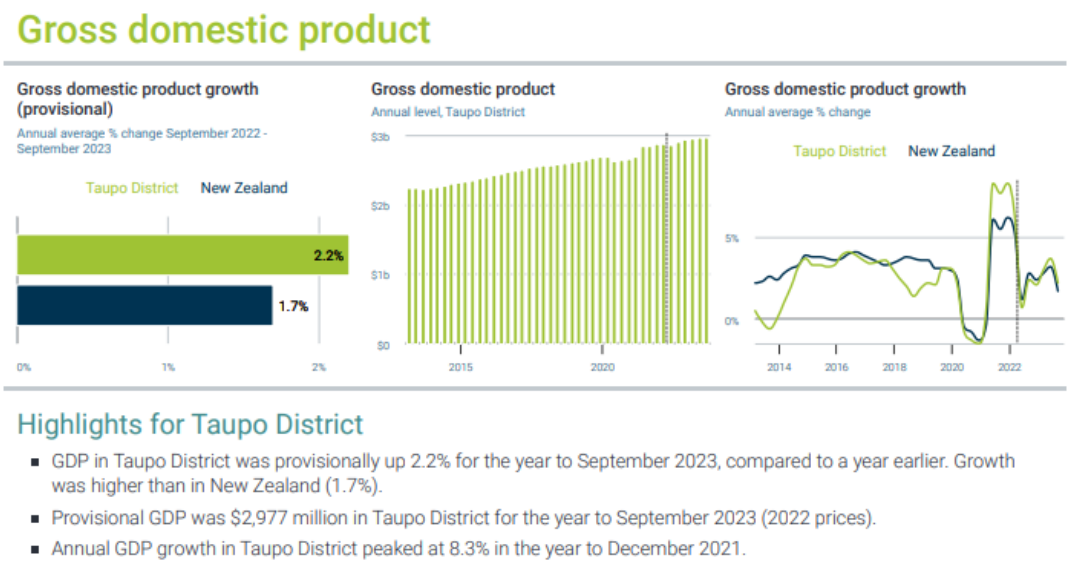


Figure 9 - Taupō District GDP as found in Infometrics, quarterly economic monitor.

6.2.9 Transport Mode Use

Our district has a high car usage which is typical for a provincial district. Reasons behind this is due to the ease of travel, relatively low travel times and high amount of parking availability and the limited availability of alternative modes. Figure 10 below indicates how we travel to work compared to other provincial areas.

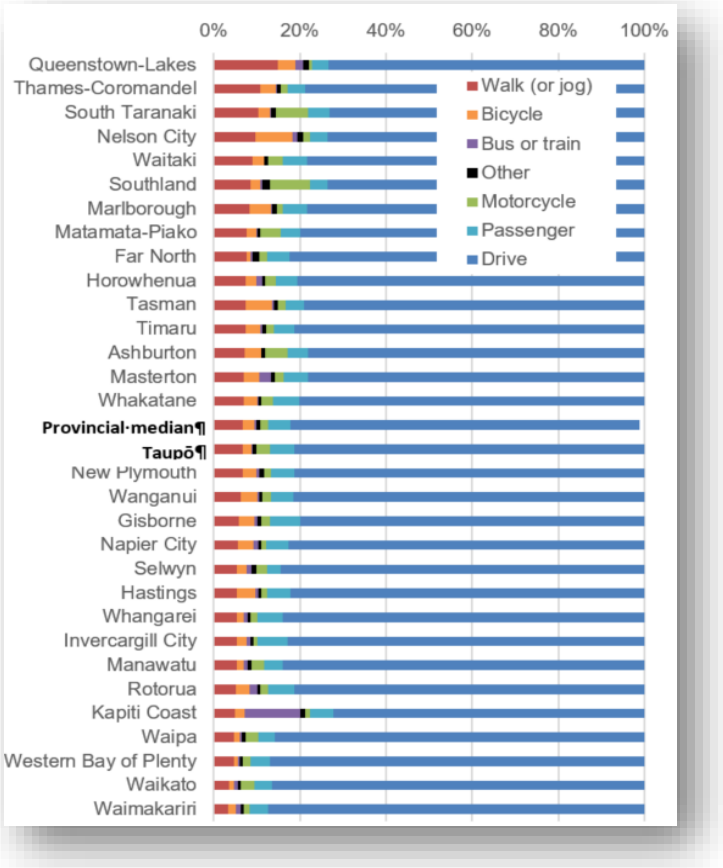


Figure 10 - Comparison between provincial areas related to "Home to Work travel"

6.3 Customer Level of Service (CLoS)

Our Council has adopted a number of performance measures which contribute to our community both customer and technical levels of service are used.

Our target levels of service are derived from the following principles:

Community outcomes: Provide guidelines for the scope of current and future services offered and manner of service delivery and define general levels of service which the community wishes to receive.

Community expectations: Information gained from customers on expected quality and price of service.

Figure 5 – SH5 Fatigue stop.

Statutory requirements: Legislation, regulations, environment standards and Council bylaws that impact on the way assets are managed (i.e., resource consents, building regulations, health and safety legislation). These requirements set the minimum level of service to be provided.

Strategic and corporate goals: Provide guidelines for the scope of current and future services offered and manner of service delivery and define specific levels of service which the organisation wishes to achieve.

The One Network Framework (ONF)Classification: This supports a major shift in the way we manage the road network at both national and regional levels. The most important concept behind the ONF is that it incorporates land use (Place) and road use (Movement) together to better place the customer at the centre of every investment decision.

The associated Customer Levels of Service for each functional category have been developed to reflect the following fit for purpose outcomes.

1. Mobility
    a. Reliability: the consistency of travel times that road users can expect.
    b. Resilience: the availability and restoration of each road when there is a weather or emergency event, whether there is an alternative route available, and the road user information provided.
    c. Speed: indicates the optimal speed for each road. The optimal speed is the speed that is appropriate for road function (classification), design (including safety) and use. Optimal speeds support both safety and economic productivity.
2. Safety
    a. How road users experience the safety of the road.
3. Amenity
    a. The level of travel comfort experienced by the road user and the aesthetic aspects of the road environment.
4. Accessibility
    a. The ease with which people are able to reach key destinations and the transport networks available to them, including land use access and network connectivity.

Our current levels of service focus on the Department of Internal Affairs (DIA) which will continue for this AMP and the AMP will also include the new Customer Levels of Service for ONRC.

6.4 Strategic Focus

We have identified three key problems that face our current transport system in the Taupō District as below.

The 4 key problems are discussed individually by respectively identifying:

Resilience and Network Security	Transport network is becoming increasingly vulnerable to climate change, which is, putting communities, especially smaller communities at risk and affecting the ability to maintain route security.	The transport system is resilient and prepared for the effects of climate change.
Safe System (safety)	System failures on the network and user behaviours expose people to risk especially on rural roads, resulting in the unacceptable occurrence of deaths and serious injuries.	Creating whole of life and asset management across all of council infrastructure to reduce current and future financial impact and where no one in the district is killed or seriously injured.
Inclusive system/Accessibility	Increasing population with a fixed income finding it difficult to access necessities of life and social opportunities,	Creating an integrated transport system that provides transport options that are sustainable and accessible to all.
Climate change	Land use and transport planning has led to transport being a part in contributing to gas emissions.	Reduce the impact to the environment and ensure the transport system is sustainable.

- Evidence
- Consequence of not addressing issue
- Proposed strategy
- Future Benefits

These problem statements link back to our Transport Strategy and both regional and national strategies.

6.4.1 Safe System – Unforgiving rural roads and urban intersections exposes road users to risk.

6.4.1.1 Evidence

Taupō district has had a high number of deaths on council roads in the last 5 years, marked by a few crashes with multiple fatalities. Figure 11 shows an increase in both road deaths and serious injury crashes. Taupō District Council's transport strategy has identified this as our top priorities and issues in our district.

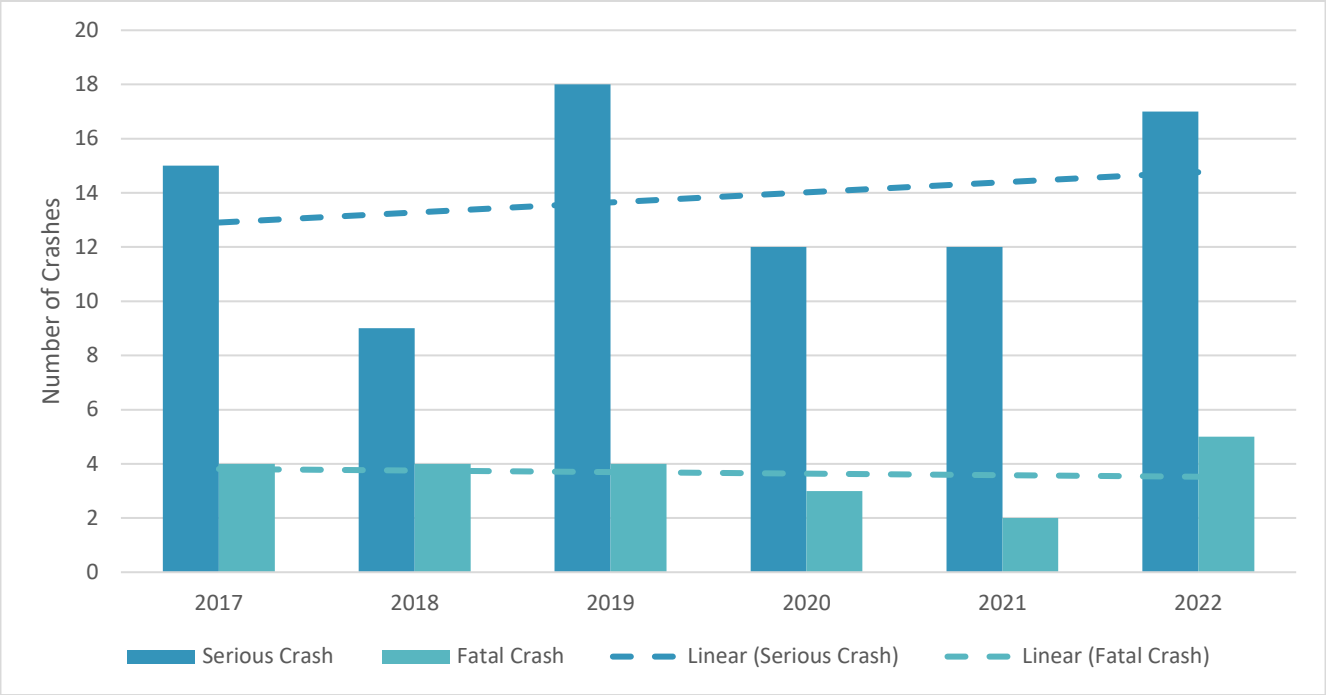


Figure 6 -Number of Deaths and Serious Injury Crashes in the Taupō District

The most notable areas of concern are rural roads. Figure 13 includes fatal, serious and minor injury crashes in the Taupō District for both urban and rural intersections and midblock urban and rural roads over a 5-year period. Since 2017 the number of crashes has remained high with an increase in midblock crashes in the past couple of years. In the last year there have been a significant increase in death and serious injury crashes on midblock rural roads as shown below in Figure 12.

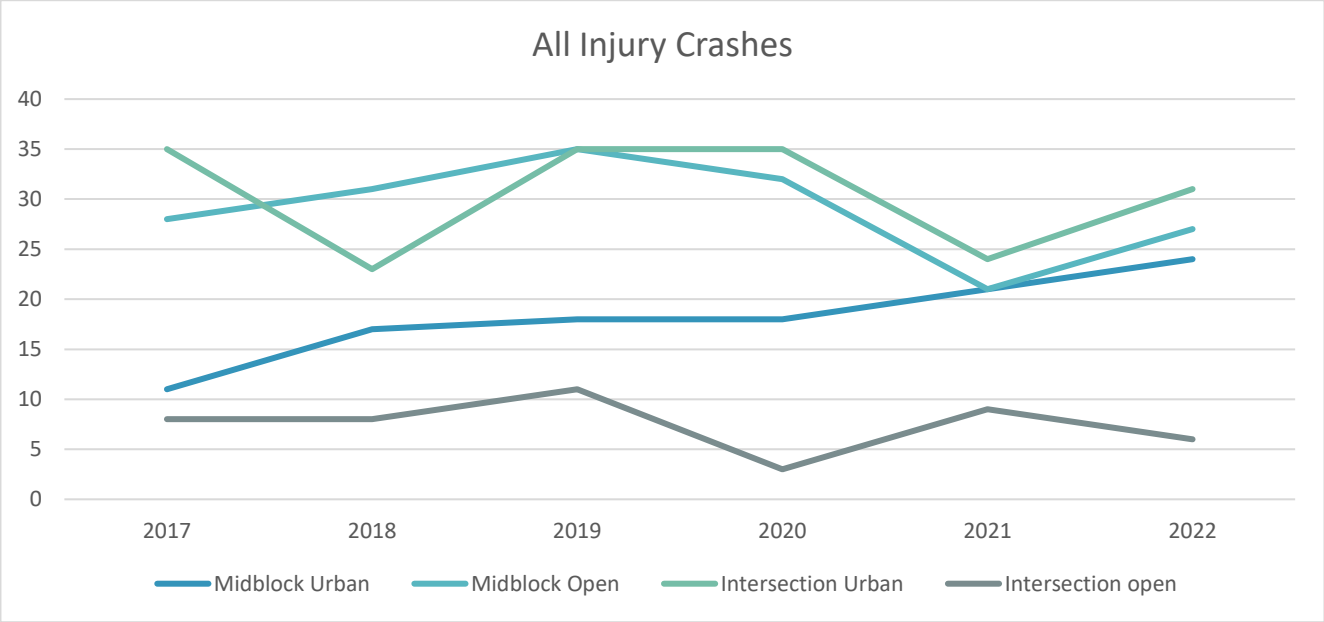


Figure 12 – Number of injury crashes

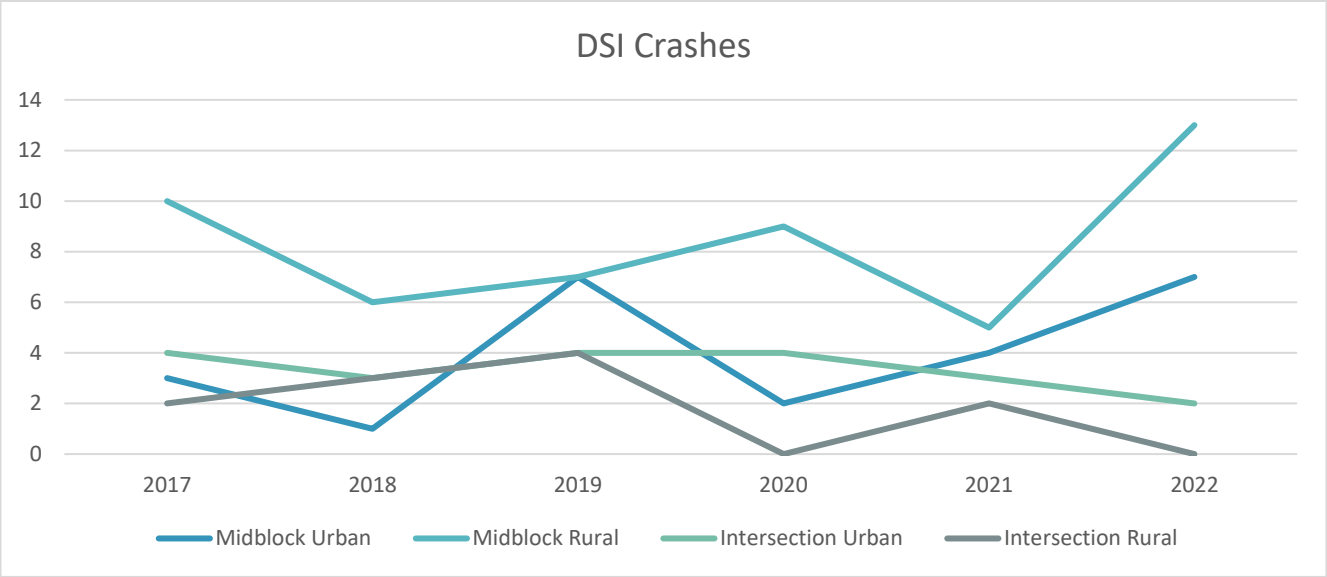


Figure 7 - Number of injury and crashes in Taupō

The top four contributing factors for our district are poor observation, alcohol, speed, and failed to give way or stop. Poor observation and failed to give way or stop, generally causes crashes at intersections which links to our districts problem around urban intersections and a larger portion of our intersections have priority control.

Speed is also a leading contributing factor of crashes in our district. Speed management planning and the review of speed limits is a priority specified in our Transport strategy.

6.4.1.2 Consequence of not addressing issue

- Continued level of risk of death and serious injury crashes
- Continued social cost and negative social effect on the community especially first responders.
- Delay or long detours to users due to road closures

6.4.1.3 Proposed strategy

- To undertake rural road safety assessments and deliver a Rural Road Safety Programme of works – This will identify work on our rural roads to improve safety of all users. It will prioritise our higher risk rural roads.
- To undertake urban road safety assessments and deliver an Urban Road Safety Programme of works – This will include high risk intersection and have special consideration for pedestrians and cyclists.
- To implement and regularly review speed management plans – this plan will prioritise speed changes around schools and urban centres where there are large number of pedestrians.
- To deliver a programme of safety awareness and education – this includes our road safety promotion programme, cycle skills training in schools, and other programmes to educate on how to safely use our transport network/system.

6.4.1.4 Future Benefits

- Protect our community from transport related deaths and serious injuries.
- Reduce social harm to our community and social costs.
- Reduce the number of road closures and time delays.

6.4.2 Inclusive System – Increasing population with a fixed income finding it difficult to access health care and social opportunities.

6.4.2.1 Evidence

The median household income is approximately $56,600, with 1 in 4 have less than half the median household income. This is shown in figure 14. The cost of transport (including obtaining driver licences) to a household is the third highest expense as seen in figure 15. This means that many households are finding access to employment, health care and education difficult to afford.

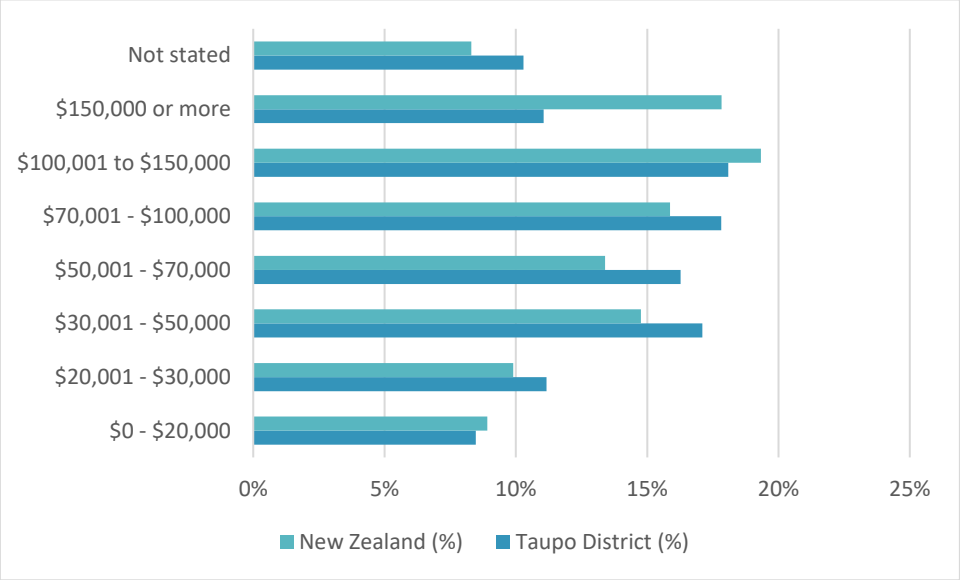


Figure 8 - Household Incomes in Taupō (Stats NZ 2018 Census)

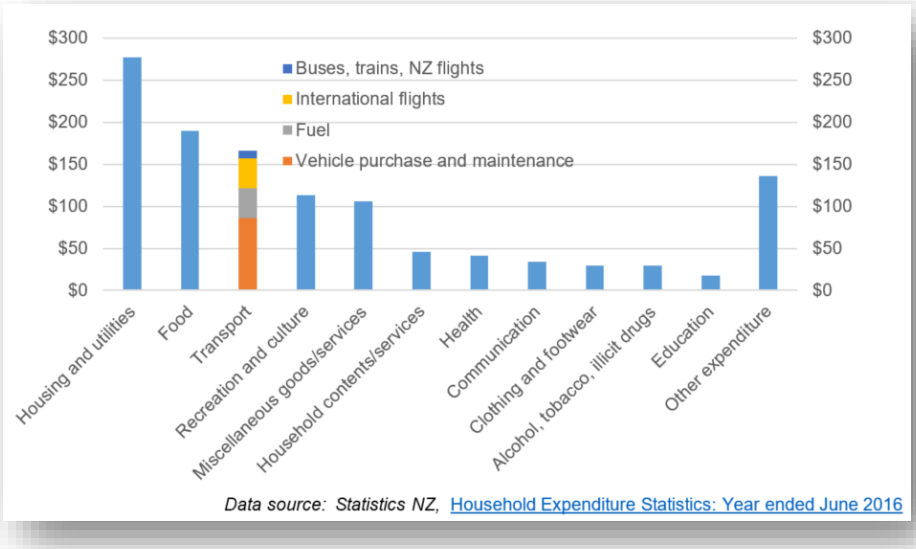


Figure 9 Average Weekly Household Expenditure in the North Island

Our district has an aging population which generally has a fixed income, meaning there is limited money available for transport related expenditure. This can mean there needs to be alternative transport modes otherwise it can create a barrier for accessing to essential services and health care. Figure 16 shows that in 15 years' time, one in four people will be 65 or older.

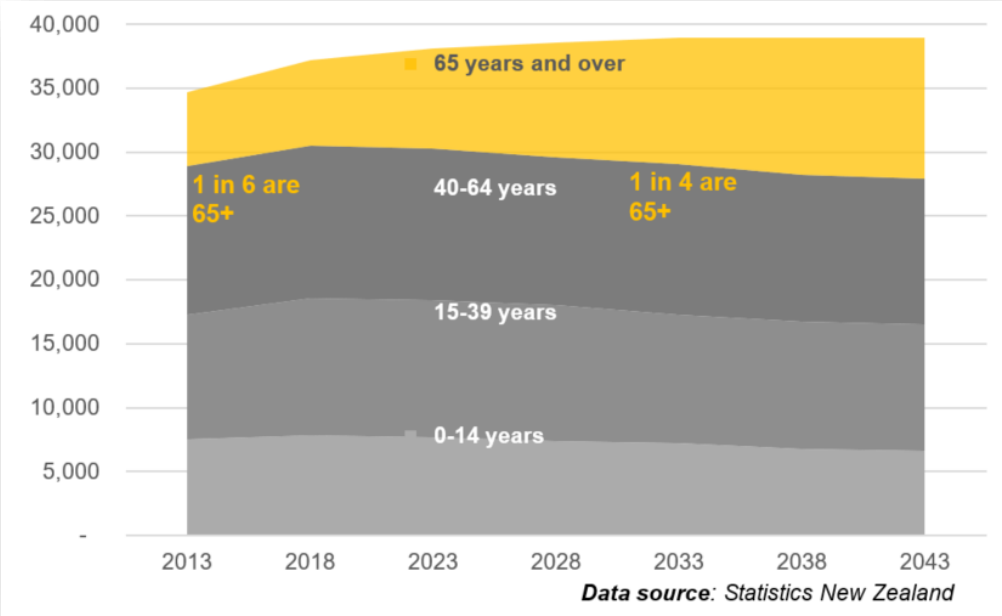


Figure 10 - Aging Population in Our District

Walking and cycling is a very affordable means of transport for those who can physically able. Public transport and mobility schemes are available and are an affordable alternative mode of travel where walking and cycling is not a viable option.

Accessibility audits have been conducted in many areas of our community. Overall, the main issues from these include.

- Safety and security (including safety of crossing roads)
- Public toilets

	Walk	Cycle	Bus	Drive
Provincial median*	6.7%	2.7%	0.5%	81.2%
Taupō district	6.7%	2.2%	0.2%	81.2%

- Easy transition from footpaths to roads to cross the road.
- Smooth path surfaces
- Many narrow paths
- Seating including heights/materials used.
- Impediments and obstacles

6.4.2.2 Consequence of not addressing issue

- Segregation of members of the community that find getting around difficult.
- Reduced health care opportunities.
- Reduce overall wellbeing of the community, with many not being able to afford high increase in rates due to fixed income.
- Community reliance on private vehicles

6.4.2.3 Proposed strategy

- To provide reliable and accessible public transport – work with Waikato Regional Council to provide low-cost accessible public transport services.
- To make our towns and villages accessible and age friendly – Make improvements and fix issues identified in the accessibility audits.
- To develop a network of shared paths, both paved and off-road that connect communities.
- To continued maintenance of footpaths and drainage to keep these areas free from hazards such as tree roots and leaves.
- To undertake walking and cycling counts on key routes to measure success, support funding applications, and promote awareness.
- To undertake a programme of cycling and pedestrian safety assessments and improvements

Future Benefits

- Improved connectivity and accessibility to health, education, and work.
- Increase uptake of more active modes and public transport which in-turn could reduce congestion,
- Increased economic with the creation of accessible towns.
- Reduction in emissions with a reduction of private vehicle use
- Independence for those who are unable to drive and/or live alone.

6.4.3 Sustainable System – Under investment of renewals and aging infrastructure increasing maintenance costs with limited funds.

6.4.3.1 Evidence

Our road network mainly consists of chip seal roads which have an expected life of between 15 and 20 years (depending on traffic volumes and type of seal).

Figure 11 shows the surface age distribution of our chip sealed road by ONF classification. The figure shows that 39% or our Urban Connector chip sealed roads have a surface seal age of 16 years or older. These roads typically have the highest volumes of traffic in our district and are vital to the day-to-day functioning of the district. Across all our chip seal roads this value increases to 48% having a surface seal age of 16 years or older. The high surface age is due to these roads continually being deferred due to limited funding available and historically low signs of distress.

However, seals will not last forever and those close to or beyond their design life require close monitoring to ensure that the pavement, which is significantly more expensive to maintain, is not damaged due to the deferred seals.

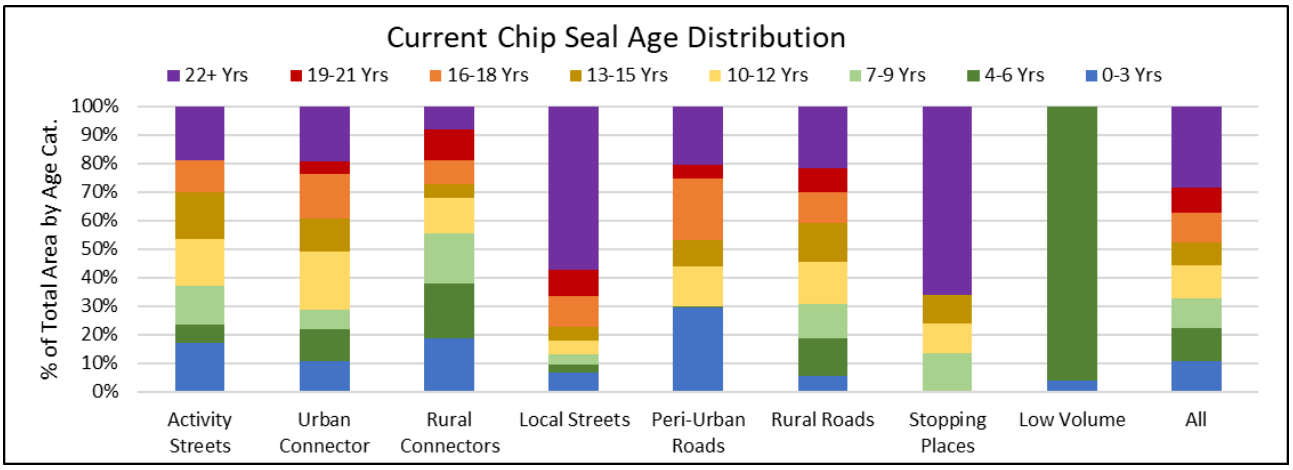


Figure 11 - Age surface distribution

In addition to aging seal surface, we also have aging pavements with most of our pavements still the original pavement that was constructed when the road was first sealed and/or formed. Due to this we now have aging pavements with 36% of pavements over 50 years old. However, our pavements are generally in good condition, and only pavements that are experiencing additional traffic loadings through increasing traffic volumes and / or heavy trucks, are showing signs of failure. Figure 12 shows the age distribution of our pavements by ONF classification.

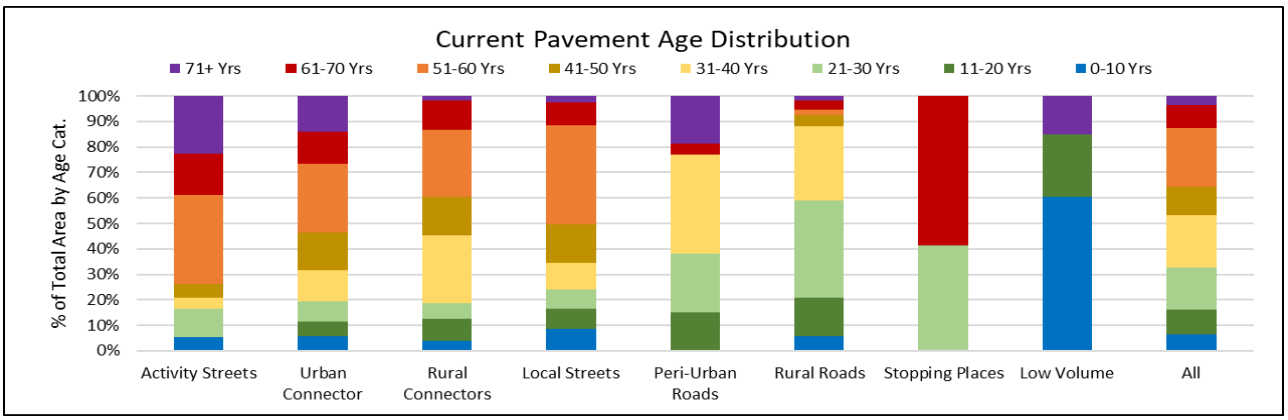


Figure 12 - Pavement age distribution

Another factor to our deterioration rate is that most of our pavements are “low cost” pavements. These are generally pavements which consist of compacted pumice subgrade and 130mm (or less) of basecourse. For our lower traffic volume roads this seems to be adequate. However, these low-cost types of pavements are not adequate for high traffic volumes or roads with high volumes of heavy vehicles and are showing signs of failure. Typically, the failure is in the form of rutting which creates a road safety risk to users especially during rain events and for motorcyclist.

Following our latest dTIMS model (2023) we commissioned a local consultant to undertake visual inspections of our network to validate the proposed 10-year renewal programme. The focus of the visual assessments was to assess the condition of the treatment lengths and adjust the programme to align with the network’s needs along with constructability (e.g., programming works in similar areas where possible).

The consultants prioritised the roads based upon their ONF classification with local streets, rural roads and stopping places a lower priority due to their relatively low traffic volumes along with the fact that maintenance is typically easier on these roads due to less constraints. Whereas urban connectors, rural connectors, main streets, and activity streets were given higher priority due to a combination of higher traffic volumes, vehicle speeds (rural connectors) and maintenance on these roads causing significant disruption.

Along with reviewing all the locations the consultant also revised the pricing used to reflect the existing rates in the local market, due to our road maintenance contract coming to an end in early 2024. The consultant was able to confirm some works could be deferred or taken care of through maintenance, however, there were also several sites added to the dTIMS programme due to significant surface/pavement failures.

As dTIMS assumes 3 levels of investment our consultant also produced programmes for 3 levels of investment. The cost of each programme is summarised in the table below.

There is a substantial difference between the 3 levels between the 2021 dTIMS model and the current 2023 model and visually validated programmes. This is largely due to historic work being deferred and therefore the need of the network increasing. The difference between 2023 dTIMS model and the 2023 visual validation is largely due to the increased rates being used along with the additional sites identified.

	Low Investment	Normal Investment	High Investment
2021 dTIMS model	$1.9 million / annum	$2.25 million / annum	$2.6 million / annum
2023 dTIMS model	$2.5 million / annum	$5 million / annum	$6 million / annum
2023 visual validation	$2.5 million / annum	$5.5 million / annum	$8 million / annum

It can be seen that underfunding in the next 3 years significantly increases the risk of aged surfacing at the end of the 10-year period. It should be noted that the similarity of the $5.5m and $2.5 outcome is due to the required pavment renewal works restricting the amount of investment into seal renewals in both these programmes.

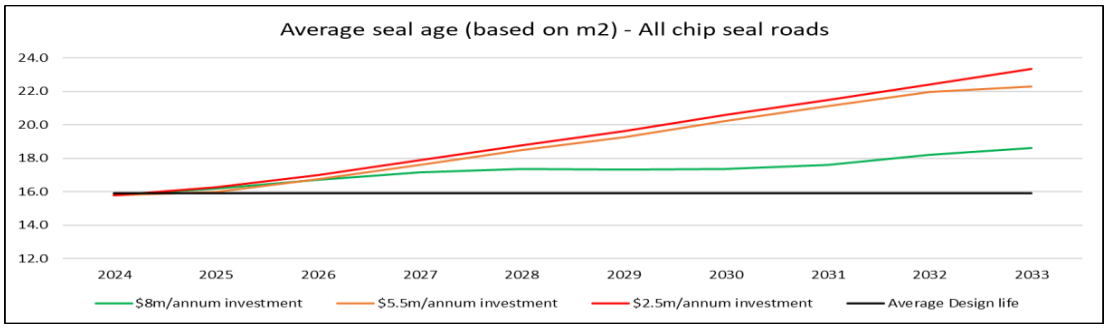


Figure 13 - Average surface age by budget scenario for chip seal roads

Other assets are also coming to end of life. Figures 19 & 20 show the age distribution for footpaths, and Kerb and channel in our district. Most of these assets were installed with the formation of the road and therefore are generally aging all together.

Footpaths are aging, but generally not at end of life due to much of the network being concrete. 17% of the footpath network is older than 50yrs. The failures on the network, are generally caused be tree root damage which in turn case trip hazards.

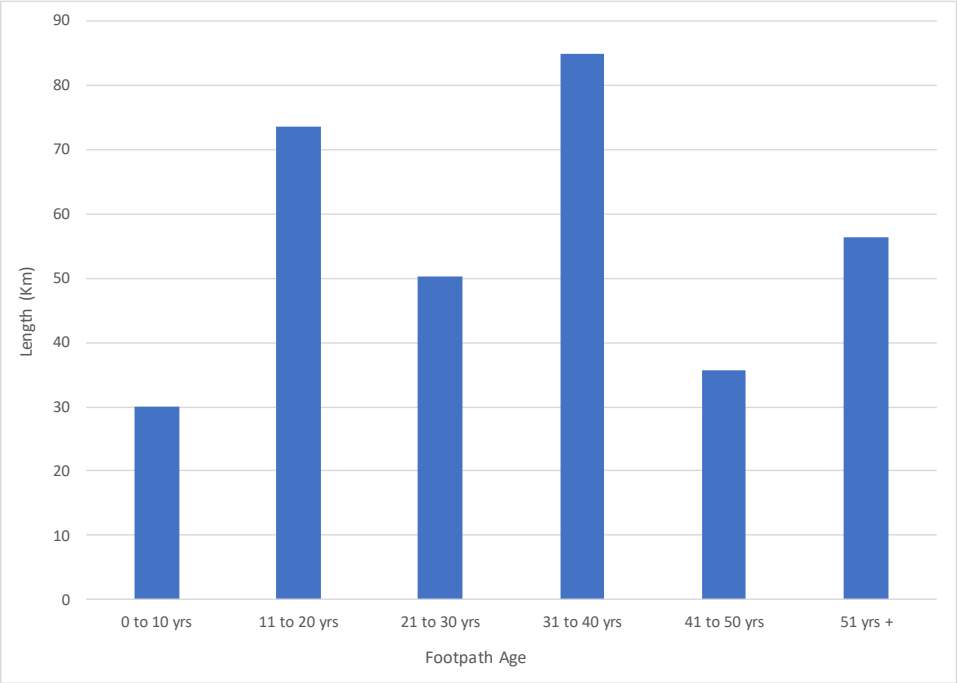


Figure 14 - Footpath age distribution

Approximately 35% of the kerb and channel in the network is older than 51 Years. Taupō District Council has received a one-time investment from Crown Infrastructure Partners (CIP) for the renewal of 32 Kms of kerb and channel in Turangi. This would still leave over 100 more kms of kerb and channel that is older than 51 years, and therefore further investment is still required especially in Taupo.

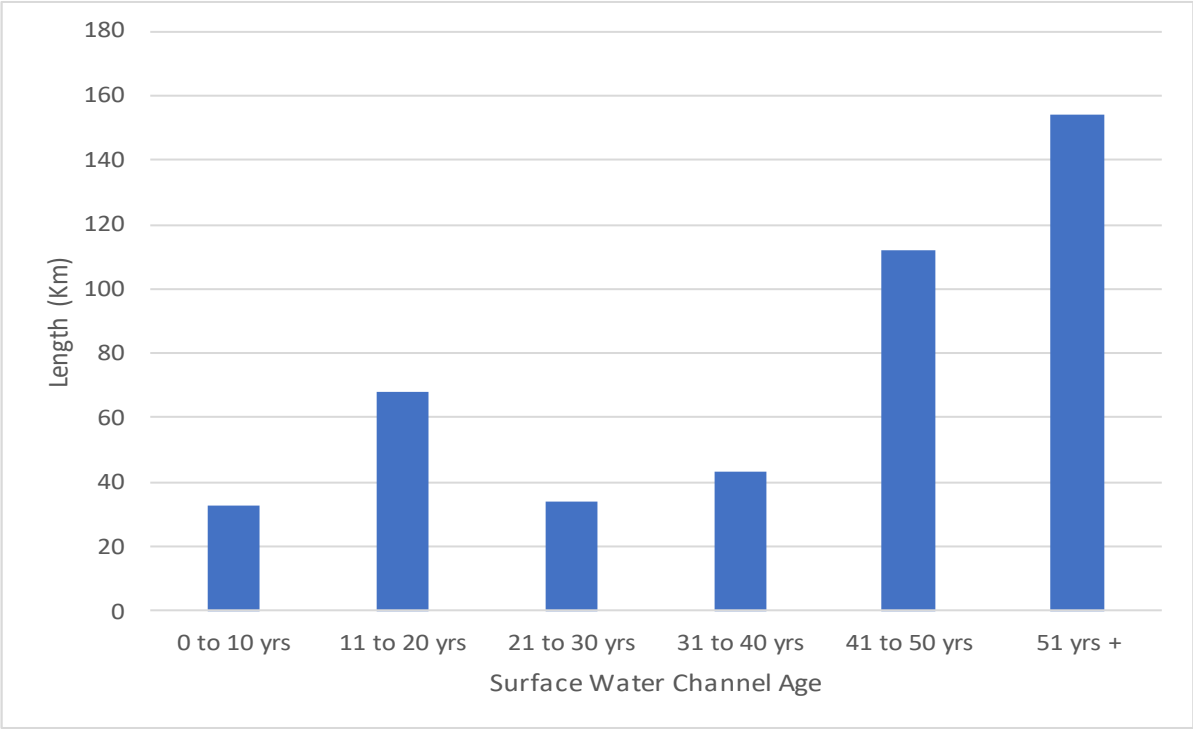


Figure 15 - Kerb and Channel Age Distribution

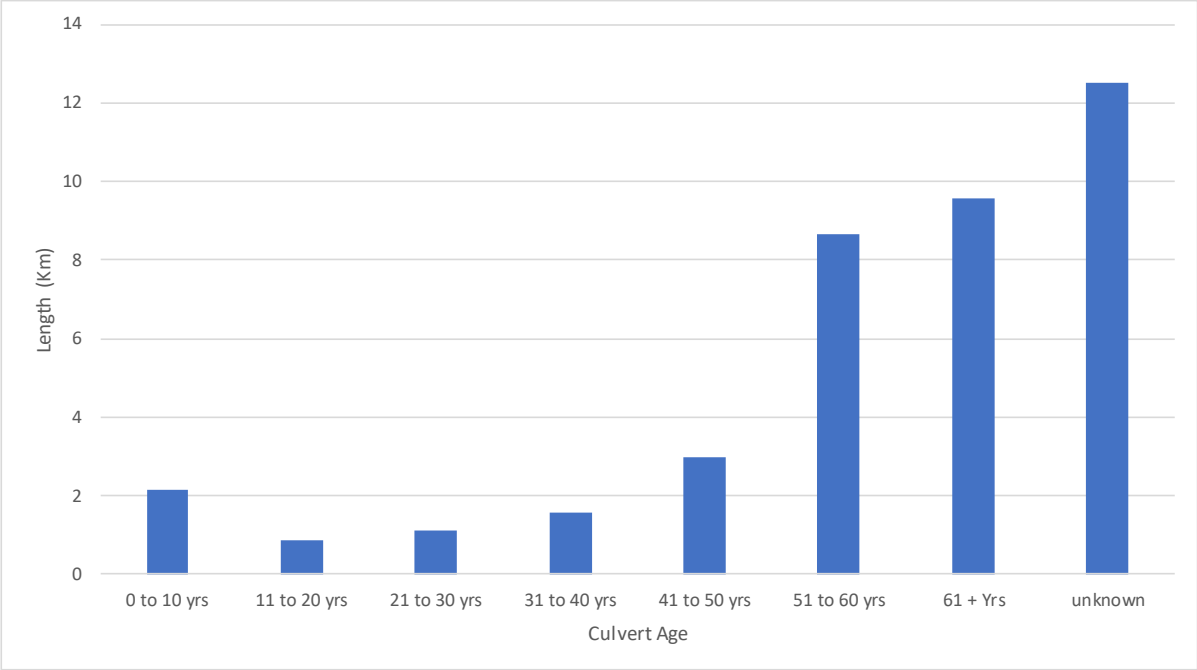


Figure 16. Culvert Age Distribution

6.4.3.2 Consequence of not addressing issue

- Continued degradation of pavement surface leading to reduced level of service and water infiltration into the pavement causing failure and higher cost for renewal.
- Deferred work will likely increase maintenance cost for future years further reducing the renewal budget / programme which exacerbates the issues. This will also put pressure on the limited resources within the Taupō region to undertake maintenance and there will be a high probability that contractors from further afield will be required, resulting in significantly higher maintenance costs.

- Potential for a large amount of work needing to happen in a short time frame with a large cost and limited resource in the region.
- Increase safety risk for road users which will likely result in more crashes, especially on higher speed roads.
- With the current pavement renewal rates of less than 1% a year, the percentage of network with high number of seal layers will increase gradually and create a risk of seal instability as show in the Figure 23 below.

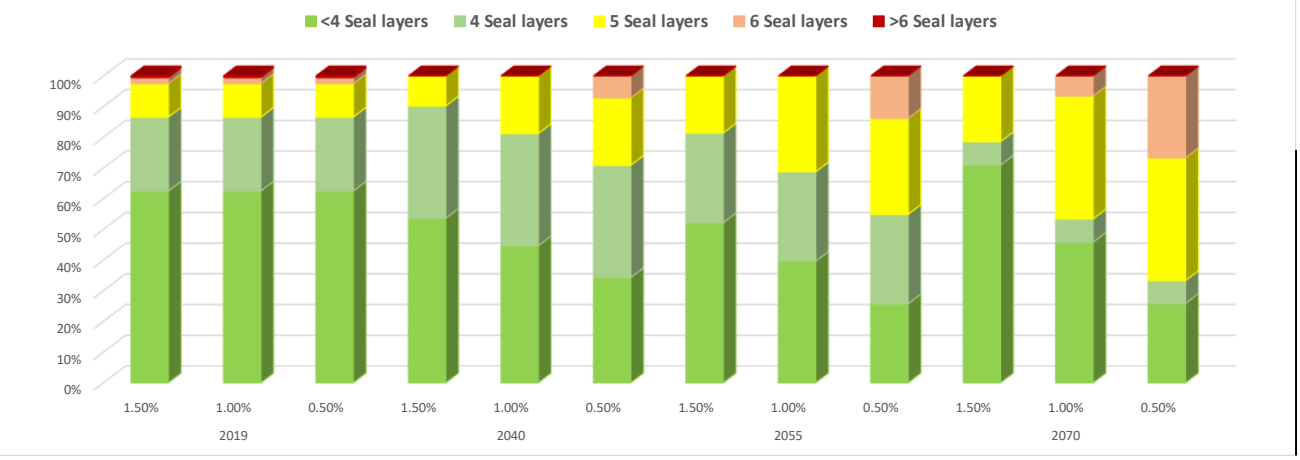


Figure 17. Sealed Length Distribution Depending on Number of Seal Layers and Annual Rehabilitaion Rate

6.4.3.3 Proposed strategy

As a minimum deliver the $5.5 million / annum roading programme created using a combination of dTIMS modelling and visual inspections. Although the programme is below the need of the network it does allow for pavement and seal renewals over the next 3 years. A higher level of investment will likely be required for the next investment period to limit the effects of an aging network. However, this programme will be a significant increase on the existing renewals programme and will likely stretch the local resource. It will also allow the local resource to build so that higher levels of investment required in the future can be met.

Our strategy will also include the continued monitoring of the network alongside dTIMS modelling to allow maintenance and renewals programmes to be updated in line with the network's deterioration. In theory, the higher level of investment compared to previous years should mean we can increase the amount of preventative maintenance which can be planned and reduce the amount of reactive maintenance which often cost more and gives little long-term benefits.

Our road maintenance contract will be renewed in early 2024 and we are taking the opportunity to incorporate the renewals programme into this contract. This has two significant benefits, firstly it secures rates for the work which reduce the risk of cost escalation. Secondly it will commit resource so that the programme can be delivered and give the contractor the confidence to invest in their staff and equipment. To increase renewals of aging drainage assets and prioritize oldest assets which have a higher risk of failure.

6.4.3.4 Future Benefits

- Focus of the maintenance budget is to be on preventative maintenance rather than reactive which will work alongside the renewal programme to preserve our asset.
- Maintain expected CLoS for the community.
- Reduce risk of pavement failures on our network due to water infiltration.

7 Future Demand

7.1 Factors Affecting Demand

There are a number of other factors that influence demand for the Transport asset within the Taupō District. These are described below and include:

- Growth in development and therefore population
- Community expectations
- Tourism/Events

Other factors which influence the demand on the Transport asset however not described in detail are:

- Usage Efficiency
- Vehicle ownership
- Leisure trends

7.2 Demand Management

Demand management is:

"The modification customer demands for services in order to maximize use of existing assets or to reduce or defer the need for new assets."

A unique feature of demand management in Taupō District is the managing of the fluctuating demand. Taupō has a large percentage of unoccupied dwellings which means that the base demand as compared to dwelling numbers is low. However, this demand increases significantly during peak holiday periods, tourist seasons and when there are large events in town.

TDC currently uses the following techniques to manage demand for roading:

- Bylaws and legislation (including the District Plan)
- Traffic management devices
- Parking restrictions
- Passenger transport
- Provision of walking and cycling infrastructure.
- School travel planning

Other areas which may be used in future are:

- Education through increased customer consultation.
- User charges, which may be required by roading reforms.
- Possible paid parking.
- Restricting vehicle movements while making walking and cycling easier

7.3 Plans Related to Growth

In addition to the general Council planning documents such as the Proposed District Plan there are other planning documents that relate to demand in relation to the Roading asset. These include:

- Taupō District Council - Transport Strategy
- Growth Management Taupō 2050 - The Council's asset management plans need to align with the Growth strategy to ensure efficient and affordable provision of infrastructure for the identified growth areas.
- Taupō Commercial & Industrial Structure Plan
- Kinloch Structure Plan
- Taupō West Structure Plan
- Mapara Valley Structure Plan
- Southern Structure Plan

7.4 Growth

7.4.1 Growth management strategy

In June 2006 the Council adopted Taupō District 2050 (TD2050), the Growth Management Strategy for the District. The growth management strategy identifies where urban growth is anticipated so that land use and infrastructure planning can be aligned. TD2050 has been incorporated into the District Plan by way of plan changes, particularly Plan Change 21 which identifies the future urban growth areas.

This strategic approach to integrating land use and infrastructure is intended to be supported by subsequent structure planning of the urban growth areas to identify the detailed settlement pattern and infrastructure servicing. Council has prepared structure plans for:

- Kinloch
- Mapara Valley
- South-western Bays Settlements (including Turangi); and
- Commercial and industrial areas within Taupō Township

7.4.2 Growth review summary – October 2014

A growth model was developed based on the anticipated population increase and associated residential lot increases in TD2050. The growth model is reviewed and updated every three years prior to the review of the asset management plans and development of the long-term plan. The review of the growth model is based on census data estimates, feedback from developers and analysis of resource consents.

Decisions on development works consider the short and long-term effects of growth when determining what is required. Council's method for determining growth is outlined in detail in its *Development Contributions (DC) Policy*. This is determined in conjunction Council's decision-making processes and planning documents such as the *10-Year Plan*, the *Asset Management Plans,* and others.

Taupō District is home to 39,300 people who usually live here. 31 percent of the district's dwellings are unoccupied, many of these are holiday homes. We are also the holiday destination for hundreds of thousands of visitors each year.

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Demand is affected by a mixture of economic and population growth factors, including:

- Demographics – The 2018 census has seen Taupō's population grow by 11% since 2013. Taupō's population is likely to continue to grow with it peaking in 2035. Taupō is seeing an aging population that has a significant impact on the levels of service required. This occurrence is likely to see the need for smaller houses with less people per dwelling.
- Community expectations – Council sets the communities levels of service has part of its 10-Year Plan process based on community feedback and the decision-making processes.
- Employment – Taupō is driven primarily by its unique characteristics, which is determined generally by tourism (labour intensive with lowly paid jobs), and conversely forestry and the energy generation (fewer opportunities and better paid).
- Land use changes – Residential development in Taupō has continued. Taupō continues to be in a good position to react to any upturn in the residential market given the amount of consented residential development and level of infrastructure built over the past 10 years. Kinloch has seen a rise in building due affordable land price. This has had the effect of increasing the permanent population significantly.
- Commercial and industrial activity – Taupō has also seen an increase in further commercial and industrial developments including, Geothermal power and hydrogen production facility, Miraka's Milk Processing and UHT Plant at Mokai.
- National and regional policy and legislative requirements – National policy, government spending, and the management of tax structures, provides an important direction and can either encourage or place constraints on the ability of areas to develop. Regional policy, through the management of natural resources impacts significantly on the ability of an area to grow. Taupō foresees some prohibitive costs on development for certain areas that can be significant particularly when near lakes and waterways.
- External factors – The COVID -19 pandemic is still around and may have likely impacts on costs and resources.

Council needs to take consideration of this growth when determining demand and levels of service.

7.4.3 Growth MODEL- Estimates for LTP 2024-2034

A *Taupō District Growth Model* has been in place since 1 July 2004 and was initially developed with the projected growth identified in TD2050. The *Taupō District Growth Model* and *Growth Model Review* have been updated and included in the current *Development Contributions Policy*, to reflect changes in the economy and the timing of key infrastructure.

The 2014 changes to the growth figures show a significant change in growth in the Taupō region. The projections are based on actual development numbers and realistic estimates of growth outlined in the *DC Policy* and *2015 Growth Model Review*.

The current and predicted levels of development within the region have been scaled back significantly. It is dangerous from a financial aspect to overestimate the level of future growth. Where growth is overestimated the requirement for capital expenditure is overstated, essentially elevating costs to the ratepayer with limited ability to collect development contributions.

Under the *DC Policy* the cost of growth-related infrastructure is the responsibility of the developer. If the development does not occur as projected but the project still proceeds, the cost of the growth-related capital expenditure is transferred onto the rate payer, therefore ultimately increasing rates.

Growth in the number of lots and dwellings in the district has impacts on infrastructure demand. Growth also increases the number of rating units, and therefore has a revenue impact.

7.4.4 New lots to be created.

Consideration has been given to the optimistic discussions with developers, actual consent numbers over the past three years, demographic considerations and officers' estimates when estimating the potential lot/new build numbers outlined in the *DC Policy* and the *Growth Model*.

The table below outlines those estimates for the next ten years. The areas that are not predicted to have any growth due to current capacity levels, such as, Hatepe, Motuoapa, Whareroa, and Five Mile Bay/Waitahanui have been removed. The total estimated new lots for the district over the next LTP period (2024-2034) is estimated at approx. 3000 new builds.

The estimated growth of the district; and water, wastewater, and transportation catchments; models are found in the *DC Policy* and *Taupō Growth Model*.

Cumulative New Builds by Community Catchment								
	2025	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
Taupō Township	722	1,351	2,131	2,900	3,703	4,444	5,119	5,663
Tūrangi	33	172	286	376	464	523	573	623
Marotiri	0	0	0	10	10	10	10	10
Mapara	120	234	365	509	614	707	707	707
Northern Rural	12	28	48	71	96	121	146	171
Lake Taupo Bays	47	142	197	274	385	457	471	471
Eastern Rural	0	0	0	0	0	0	0	0
Total	**934**	**1,927**	**3,027**	**4,140**	**5,272**	**6,262**	**7,026**	**7,645**

7.4.5 Occupancy per dwelling

The long-term trend for more than fifty years has been for a decrease in the number of people per dwelling. This is true across all ages. Occupancy among aging populations is especially low, with widowed partners typically living alone.

Household Equivalent Unit (HEU) is used to show occupancy in our district. Current Census data shows the HEU is approximately 2.6 people per household. With an aging population the HEU will fall, so that for a given population more dwellings will be needed.

In Taupō District, this figure is complicated by unoccupied dwellings (e.g., holiday homes) which form 31% of the district's dwellings. However, because of this high number of possibly empty homes for a significant part of the year Council needs to consider peak usage and populations when determining demand. This peak demand is particularly relevant when considering demand on infrastructure, such as water and wastewater outlined in detail in the *DC Policy* and *Taupō Growth Model*.

7.4.6 Assumptions

- The world economy will continue to reflect uneven growth.
- Population changes drive 60-70% of household formation in the district.

7.5 Meeting changing demand

Changing demand can be met by using several methods including.

- Other non-asset-based methods e.g., Travel Demand Management with promoting reduced trips and use of modes other than the private motor vehicle.
- Capital Expenditure – building new assets.
- Operational/maintenance expenditure – there may be a change to the cost to operate or maintain due to growth or to changes in demand or new assets created.

7.5.1 Travel Demand Management

A unique feature of demand management in Taupō District is the managing of the fluctuating demand. Demand increases significantly during peak holiday periods, tourist seasons and when there are large events in town.

TDC currently uses the following techniques to manage demand for transport:

- Bylaws and legislation (including the District Plan)
- School Travel Plans
- Traffic management devices
- Passenger transport
- Walking and cycling facilities
- Road safety education through increased customer consultation
- Parking restrictions

Other areas which may be used in future are:

- Parking charges
- Speed Management

7.5.2 Change in climate.

Transportation network will be impacted by climate change particularly the linkages along the Lakefront including some of the reserve land. This will impact the cycleway and walkways which could be compromised due to rising lake levels, and this will create new opportunities or challenges in maintaining connected networks. This will be managed by paying attention in the planning, design, and construction of new paths near overland flow paths or adjacent to coastal areas or being mitigated by water flows by energy companies. With climate change there will be increase in temperatures and possible heavier rainfalls. This will mean for the Transport asset some changes may be applied to surface materials and/or for maintenance interventions such as roads which normally had frost or ice may in the future not need signage and/or grit spread. On the reverse, roads in low lying areas may require additional signs and maintenance etc. A link to the storm-water AMP and Parks & Reserves AMP may assist in identifying overland flow paths and the impact to the road network.

7.5.3 Capital expenditure due to changes in demand.

The development of 1304 lots in the district in the coming ten years will require new infrastructure as well as necessitating the upgrading of the current network to cater for the additional demand. The table below outlines the infrastructure required, the cost of this infrastructure and the timing of the provision of components with a Council cost share. Refer to Appendix I for Project Sheets.

Area	Project	Cost to Council ($,000)	Construction timing	Notes
Acacia Bay	Collector Road 2 (Off Acacia Bay Rd between Lochaber Dr and Brentwood Av).	$0	2045+	As the development sizes trigger the necessity for a collector road individually there is no upsizing component required of Council. Therefore, the cost of this will be entirely on the developer.
Taupō	Second Bridge crossing	$400K Planning. $400K Design $65M construction	*2025/2026 to 2030/31	*WSP have completed an investigation and are waiting on the final report. This investigation will confirm timings need, land purchase if any etc.
Taupō	Poihipi Rd widening	$approx. 500K (for each stage)	Continuation construction from 2024/25	
Taupō	Spa Rd/Tauhara Rd intersection improvements	$2.05M	Design completed, construction from 2033	This intersection was included in post ETA enhancement projects. Possibly funded by TDC and NZTA.
Taupō	Collector Road (from Ashwood Park to Broadlands Rd	$0 (see note)	When required	The subdivision development in the area triggers the construction of this route. Fully funded by Developer as the Industrial blocks develop.
Taupō	Collector Road (through East Urban Lands council subdivision)	$0 (see note)	When required	As the development sizes trigger the necessity for a collector road individually there is no upsizing component required of Council. Therefore, the cost of this will be entirely on the developer.
Taupō	Lake Terrace/Maunganamu intersection upgrade	$200K	From 2024/2025	Developer funded once traffic volume per day has been triggered. Budget is to repay development contribution. This may be constructed by time this AMP is finalised.

Area	Project	Cost to Council ($,000)	Construction timing	Notes
Kinloch	Collector Road (on the south side of Whangamata, near the intersection of Whangamata and Kinloch)	$0	When required	As the development sizes trigger the necessity for a collector road individually there is no upsizing component required of Council. Therefore, the cost of this will be entirely on the developer.
Turangi	Proposed road access (On the west side of Taupahi St, between Kutai St and Koura St)	$0	When required	Access to development from Taupahi Rd.

Table 2: Capital Projects Required to Service Taupō District Growth

7.5.4 Operational expenditure due to changes in demand

The development in the district will also have an impact on operational costs.

Area	Project	Additional Operational Cost per annum	Timing
Acacia Bay	Collector Road 2 (Off Acacia Bay Rd between Lochaber Dr and Brentwood Av)	$1,000	2045+
Acacia Bay	Norman Smith St Upgrade	$5,000	2022+
Acacia Bay	Second Taupō Town River Crossing	$8,000	2029+
Taupō	Poihipi Rd widening	$5,000	Stage 1 to 3 completed.
Taupō	Spa Rd/Tauhara Rd intersection improvements	To be estimated during design phase	Design completed. Construction deferred 2029/30
Taupō	Collector Road (through East Urban Lands council subdivision)	$26,000/yr.	When required
Kinloch	Collector Road (on the south side of Whangamata, near the intersection of Whangamata and Kinloch)	To be estimated during design phase	2025/26+ or when required
Western Lakeshore	Tukino Rd Extension	$1,500/yr.	Unknown

Table 3: Operational Budget Required to Service Taupō District Growth

7.6 Infrastructure acquired from developers.

TDC will also acquire several assets from developers. An estimate of the quantities of these is outlined in the table below based on the past 3 years.

Asset type	Total
Pavements	13km
Footpaths	12.8km
Streetlights	227
Bridges	0
Structures	24(traffic island)
Kerb and channel	16.23km
Cesspits	198
Stormwater piping	0km

The additional maintenance and operations costs resulting from these new assets are included in the cash flow projections.

7.7 Community Expectations

Customers are primarily concerned with expansion of existing network services such as:

- Seal extension (rural customers).
- Footpath construction and safe cycle facilities.
- Streetlight upgrades/extensions.
- Crash reduction/safety related projects.
- Bus Services.

Customer opinion is to be gauged more thoroughly as part of increased consultation, as detailed in the improvement plan.

7.8 Tourism

The effect of tourism is to increase the population and perceived growth over short periods.

The 2018 census indicated that the Taupō District had a population of 37,203. However, the number of people staying in the Taupō district during the peak tourism season of the Christmas/New Year school holiday period has been estimated to be 1.77 times that number and possibly more when large events are on. We design assets for peak demand based on historical data and we base this on lots rather than permanent population.

8 Levels of Service

A key objective of this Activity Management Plan (AMP) is to match the level of service provided by the asset with the expectations of customers. This requires a clear understanding of customers' needs, expectations and preferences. The levels of service defined in this section will be used:

- to inform customers of the proposed type and level of service to be offered
- to enable customers to assess suitability, affordability and equity of the services offered.
- as a focus for the AMP tactics proposed to deliver the required level of service
- to measure the effectiveness of this AMP
- to identify the costs and benefits of the services offered

While a large amount of the Transportation assets has a high expected service life, this could be impacted by several issues. These include long term funding (not meeting or receiving Waka Kotahi subsidy for a project, a reduction in either Waka Kotahi subsidy and/or no increase in local share), local government amalgamation (assets being delivered through a regional regime) and possibly privatisation.

The target levels of service for current transport industry standards and are based on:

Community Outcomes: Provide guidelines for the scope of current and future services offered and manner of service delivery and define general levels of service which the community wishes to receive.

Customer Expectations: Information gained from customers on expected quality and price of services.

Statutory Requirements: Legislation, regulations, environmental standards, and Council By-laws that impact on the way assets are managed (i.e.: resource consents, building regulations, health and safety legislation). These requirements set the minimum level of service to be provided.

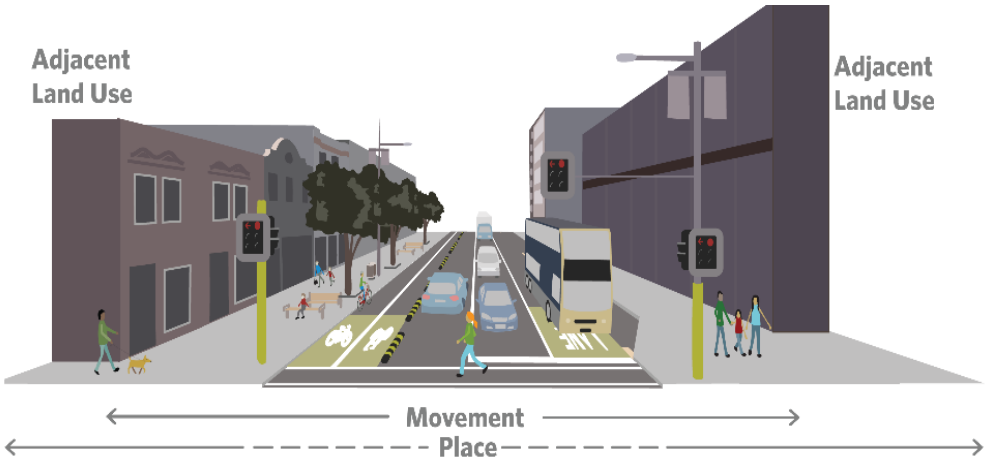
Strategic and Corporate Goals: Provide guidelines for the scope of current and future services offered and manner of service delivery and define specific levels of service which the organization wishes to achieve.

The significant service for Transportation is to allow for the safe and efficient movement of people and goods. The significant assets are bridges/structural assets, main arterial roads.

8.1 The impact of the new ONF elements

The new ONF is set to become a key input into activity management plans (AMPs) and will support the monitoring of journey and network performance and writing of investment documentation for three and 10-yearly LTP and RLTP/NLTP funding rounds. Because the new ONF is still in draft phase and being tested and refined, the entire Levels of Service section in this document will have to be revised in future. The impact of the new levels of service and performance measures will be substantial since the focus is specific to "Movement and Place" strategies. A new analysis around complex mode share within the movement function will be a new action to implement and manage.

NZTA states that "an important feature of the new framework is that the ONF classification is intended to represent the aspirational, strategic importance of the corridor – looking ahead to the desired state in 10–15 years. Declaration of a corridor's future state intention will then help to guide planning processes over the medium term to identify gaps or intervene to achieve that aspiration. "



Once the new ONF is completed and the Movement and Place framework levels of service/performance measures, training and new tools and templates are available, Council will implement accordingly.

8.2 Changes to Level of Service in the current plan

The proposed changes to levels of service for this Transport Asset Management Plan are the ones based on the ONRC Customer Levels of Service outcomes.

Capital expenditure to improve the level of service includes.

- Footpaths
- Passenger transport
- Localized widening projects to improve safety of road users.

Budgets were revised between draft and final AMPs to ensure a financially sustainable budget council wide. The level of service implication of these budget changes is shown in table 9-1 within the Financial Summary section.

8.3 Types of Levels of Service

8.3.1 Operational

Current operational levels of service for transport are scheduled in Table 6.2. The levels of service stated are "how we maintain our existing assets" for our customers.

8.3.2 Implementation

The implementation levels of service stated within Table 6.3 are "the standard we build a road asset to".

8.3.3 National

Levels of service have been developed based on the One Network Road Classification customer service outcomes (CLoS). The associated Customer Levels of Service for each functional category have been developed to reflect the following 4 fit for purpose outcomes.

8.3.3.1 Mobility

a) Reliability: the consistency of travel times that road users can expect.
b) Resilience: the availability and restoration of each road when there is a weather or emergency event, whether there is an alternative route available, and the road user information provided.
c) Speed: indicates the optimal speed for each road. The optimal speed is the speed that is appropriate for road function (classification), design (including safety) and use. Optimal speeds support both safety and economic productivity.

8.3.3.2 Safety

How road users experience the safety of the road.

8.3.3.3 Amenity

The level of travel comfort experienced by the road user and the aesthetic aspects of the road environment.

8.3.3.4 Accessibility

The ease with which people can reach key destinations and the transport networks available to them, including land use access and network connectivity.

There are very few legislation requirements for Transportation asset, therefore the risk they aren't met is low/rare. Generally, resource consents are generally required where large earthworks are required. Reporting on Waka Kotahi technical criteria are reported to Waka Kotahi via the yearly achievement report, each July. Traffic Management plans are required for all events occurring on or within the road reserve and are approved by the relevant road controlling authority

8.4 Levels of Service

Below is a table to ONRC Customer Levels of Service (CLoS) with the highlighted rows being the ones we currently measure and/or report on. Note: These levels of service haven't been consulted with the wider community.

ONRC Outcome Measure	Los Description	Customer outcome measure	How we measure it	Current performance
SAFETY				
OM1		The road and roadside are becoming safer to drive on as shown in the five-year trend in serious and fatal injuries.	Arterial to Access (Low Volume): No. (with 5-year trend being established) by classification.	
OM2	Collective Risk	The roads and roadsides are being maintained in a way that means I feel safe when driving them.	Report Risk rating and crashes per km by classification.	
OM3	Personal Risk	The roads and roadsides are being maintained in a way that means I feel safe when driving them.	Report Risk rating and crashes per 100 million vehicle km by classification.	
PM7	Road Safety education	Reduce the likelihood of crashes occurring by promoting Safe Road Use.	Report to Waka Kotahi per year on road safety programmes.	Completed as part of achievement report
PM9	Service requests	Reduce the likelihood of crashes occurring by providing a safe road.	Percentage requests meeting RCA set timelines in LTP as per DIA guidelines. Target 90% are responded to within 5 working days.	2022/2023 = 90% 2021/2022 = 90% 2020/2021 = 92% 2019/2020 = 92%
PM10	Forgiving roads	Reduce the likelihood of crashes occurring by providing a safe road.	Percentage target set by RCA as per DIA guidelines by classification.	Audit undertaken every 3 years. Achieved.
PM12	Surface Friction	Reduce the likelihood of crashes occurring by providing a safe road.	Comply	
PM13	Vulnerable Road Users	Reduce the likelihood of crashes occurring by providing a safe road.	No. as part of 5-year trend by classification.	
PM14	Guard Rails and Barrier	Minimize the consequences of crashes when they do occur by providing forgiving roads and roadsides.	Report no. of faults in a 10% quarterly sample. Provisional service level is Always effective.	

ONRC Outcome Measure	Los Description	Customer outcome measure	How we measure it	Current performance
RESILIENCE				
ONRC Outcome Measure	LOS Description	Customer outcome measure	How we measure it	Current performance
PM1	A Plan for Resilience	The possibility that my journey is impacted by an unplanned event is minimized by providing the customer confidence to make the journey through robust routes and viable alternatives.	Arterial to secondary collector: Plan is in place and operations, including implementing preventative actions, to mitigate against moderate scale events and above that will interrupt customer journeys. Access to Access (Low Volume): Plan is in place and operational, including implementing preventative actions, to mitigate against significant scale events that will interrupt customer journeys.	Have detour maps for SH1 detours in place.
PM4	A Response Plan	The impact of unplanned events on my journey is being minimized by being prepared to respond.	Arterial to Secondary Collector: Plan is in place and operational. The plan, reflective of breadth, scale, likelihood and consequence of event and lifeline considerations, details plan for prioritisation for restoration of passage and access depending on classification and route criticality. It includes for continuity of essential needs until access is restored. Access to Access (Low Volume): Plan is in place and operational. Plan reflects lower classification and is reflective of breadth, scale, likelihood and consequence of event and lifeline considerations. It details plans for continuity of essential needs and for people to be prepared until access is restored.	To be developed

ONRC Outcome Measure	Los Description	Customer outcome measure	How we measure it	Current performance
AMENITY				
OM1	Smooth travel exposure	The smoothness of my journey is as I would. expect when I consider the importance of the road.		
OM2		The average ride comfort level of the sealed road meets specified levels (Local Gov. Maintenance Levels).	Arterial: Provisional service level is Urban<=100, Rural<=100 NAASRA Primary Collector: Provisional service level is Urban<=110 Rural<=110 NAASRA Secondary Collector: Provisional service is Urban<=120 Rural <=120 NAASRA Access: Provisional service is Urban<=120, Rural <=120 NAASRA Access (Low Volume): Provisional service is Urban <=140, Rural <=140 NAASRA	

ONRC Outcome Measure	Los Description	Customer outcome measure	How we measure it	Current performance
ACCESSIBILITY				
OM1	Access to Public Transport	The bus services are what I would expect in an area like this.	Proportion of the population living within 500m of a bus stop and 1km from a rail or bus rapid transit station by classification.	To be developed
PM6	Bus Journeys	Ease of access to and through the network by providing infrastructure that allows users to perform their role.		Bus stops have the correct signage and markings
PM8	Active Road Users	An accessible network, for everyone by providing accessibility to active road users.	Arterial: Some separation of road space in urban areas. Strategy in place. Primary collector to Access (Low Volume) Should expect mixed use environments with some variability in the road environment, including vehicle speed. Strategy in place.	Transport strategy includes active modes. Measuring of demand to be developed. Accessible audits are undertaken and working through actions and recommendations.
PM9	Network Access	An accessible network, for everyone by providing accessibility to utilities.	Process to be referenced in RCA Asset Management Improvement Plan.	To be developed
PM11	Network Access	An accessible network, for everyone by providing accessibility for freight and goods to move productively.	To be developed.	To be developed

ONRC Outcome Measure	Los Description	Customer outcome measure	How we measure it	Current performance
VALUE FOR MONEY				
OM1		The road network is being maintained efficiently and effectively to deliver the CLoS Outcomes of the ONRC.	AMP and AMP Improvement Plan contains the technical output measures of the ONRC (where the means of measurement states this) and will continually improve the cost efficiency and effectiveness of service delivery as detailed in these measures.	Completed
EM1	Pavement Rehab	Assurance that the work we do is necessary is coordinated and is delivering value for money by doing work at the right time.	Report achieved quantities for previous year, planned quantities for current year and requested quantities for proposed year for each classification.	2022/23 12782.0m2
EM2	Chip Seal Resurfacing	Assurance that the work we do is necessary is coordinated and is delivering value for money by doing work at the right time.	Report achieved quantities for previous year, planned quantities for current year and requested quantities for proposed year for each classification.	2022/23 54171m2
EM3	Asphalt Resurfacing	Assurance that the work we do is necessary is coordinated and is delivering value for money by doing work at the right time.	Report achieved quantities for previous year, planned quantities for current year and requested quantities for proposed year for each classification.	2022/23 3751 m2
EM4	Unsealed Metaling	Assurance that the work we do is necessary is coordinated and is delivering value for money by doing work at the right time.	Secondary collector to Access (low volume): Report quantity delivered for previous year, planned for current year and requested for proposed year for each classification.	2022/23 3822 m3
EM6	Average Life	Assurance that the work we do is necessary is coordinated and is delivering value for money by doing work at the right time.	Pavement No. Surfacing No.	

ONRC Outcome Measure	Los Description	Customer outcome measure	How we measure it	Current performance
EM8	Pavement Rehab	Assurance that the service provided is at the best price and we are continually seeking better ways for doing things by delivering the service at the best price.	Report actual costs for previous year, planned costs for current year and requested costs for proposed year by classification. Lane km by classification and network vehicle km travelled calculated by Asset Register for each classification.	2022/23 $739,401
EM9	Chip Seal Resurfacing	Assurance that the service provided is at the best price and we are continually seeking better ways for doing things by delivering the service at the best price.	Report actual costs for previous year, planned costs for current year and requested costs for proposed year by classification. Lane km by classification and network vehicle km travelled calculated by Asset Register for each classification.	2022/23 $383,286
EM10	Asphalt Resurfacing	Assurance that the service provided is at the best price and we are continually seeking better ways for doing things by delivering the service at the best price.	Report actual costs for previous year, planned costs for current year and requested costs for proposed year by classification. Lane km by classification and network vehicle km travelled calculated by Asset Register for each classification.	2022/23 $790,864
EM11	Unsealed Metaling	Assurance that the service provided is at the best price and we are continually seeking better ways for doing things by delivering the service at the best price.	Report achieved costs for previous year, planned costs for current year and requested costs for proposed year by classification. Lane km reported by Asset Register (vkt N/A) for each classification.	2022/23 $127,966

8.5 Link to project expenditure

The following table show the current levels of service for the asset and the links between the levels of service adopted and the current budget. Everything we do, we do to provide a level of service to the community.

Transport Budget		Link to LOS
Subsidised Programme		
Activity Class 1		
Structural Maintenance		
111	Sealed pavement maintenance	O1, O2, O3, O6, O7, O8
Special purpose roads		O1, O2, O3, O6, O7,
112	Unsealed pavement maintenance	O1, O2, O3, O6, O7
113	Routine drainage maintenance	O1, O2, O3, O6, O7
114	Structures maintenance	O1, O2, O3
Corridor Maintenance & operations		
121	Environmental maintenances	O1, O2, O3, O4
	Special purpose roads	O1, O2, O3, O4
122	Traffic Services maintenance	O1, O2, O3, O6, O7
	Special purpose roads	O1, O2, O3, O6, O7
	New road markings & signs	O1, O2, O3, O6, O7
124	Cycle Path maintenance	O1, O2, O3, O6, O7
Network & asset management		
151	Network & asset management	ALL
	Special purpose roads	ALL
Activity Class 3		
Structural renewals		
211	Unsealed Road metalling	O1, O2, O3, O6, O7
212	Sealed Road resurfacing	O1, O2, O3, O6, O7
213	Drainage renewals	O1, O2, O3, O6, O7
214	Pavement rehabilitation	O1, O2, O3, O6, O7
215	Structures component replacements	O1, O2, O3, O6, O7
Corridor renewals		
222	Traffic services renewals	O1, O2, O3, O6, O7
	Lighting (after undergrounding)	O1, O2, O3, O6, O7
231	Associated improvements	O1, O2, O3
	Major drainage	O1, O2, O3
	New culverts	O1, O2, O3
Activity Class 5		
311 Road studies		
	Crash reduction studies	O6, O7
323 New Road infrastructures		
324 Road Reconstruction		

Transport Budget	Link to LOS
Road Widening (Broadlands)	T1, T4, I1
Road Widening (Poihipi)	T1, T4, I1
Road Widening (Waipapa)	T1, T4, I1
Poihipi Rd Straightening	T1, T5, I1
Broadlands Rd curve easing (RP5.2-5.4)	T1, T5, I1
341 Minor Safety Improvements	
Minor improvements	ALL
Activity Class 8	
412 System Use Studies	
Taupō Walking and Cycling Strategy update	O4, T3, T4,
AMP Review/Study	ALL
Community Projects	
431 Community Programme	O6, O7, T5
Walking and cycling	
451 Footpath Construction	T3, I1,
452 Cycle Strategy Implementation	T4
Activity Class 9	
511 Bus services	ALL
512 Total mobility services	O8
Unsubsidised Maintenance	
Maintenance Management - RAMM	O1, O2, O3, O6, O7
Street Cleaning 70 % + Misc.	O1, O2, O3, O6, O7
Footpath Maintenance	O4
Berm reinstatement	T3, I1
Street Lighting	O3, O6, O7
Festive Lights	
Kerb and Channel Repairs	O1, O2, O3
Verge Maintenance	O1, O2, O3
CBD Paver Maintenance & Reseal	O3, O4
Street Landscaping	O3, O4
Blister Islands	T5, O4
Off Street Park Maintenance & Reseals	O1, O5
Bus Shelters	O3, O8
Taupō Welcome Sign Maintenance/Replacement	O3
Land Purchase & Legal Costs	T1, T2, T5
Roadway Maintenance	O1, O2, O3
Residential assistance for undergrounding aerial services	T5
Professional services	ALL
Off street park reseals	O5
Reserve Road reseals	O1, O2, O3
Footpaths isolated damaged sections	O4
New Works	
Parking	
On Street Parking (25Pks)	T1, T5, I1

Transport Budget	Link to LOS
Miscellaneous Improvements	
CBD Streetscape Upgrade	T3, T5, I1
Post ETA enhancements	
Tongariro St traffic calming	T1, T2, T3, T4, I1
Arrowsmith/Kiddle intersection	T1, T2, T3, T4, T5, I1
Mere/Taharepa/Lake Tce intersection	T1, T2, T5, I1
Wharewaka & Lake Side Tce's intersections	T1, T2, T3, T5, I1
SH5/Lake Tce intersection	T1, T5, I1
Miro/Tauhara intersection	T1, T5, I1
4-laning Spa Rd	T1, T5, I1
Lake Tce traffic calming & realignment	T1, T3, T4, T5, I1
Tauhara/Spa Rd intersection	T1, T3, T4, T5, I1
Retaining Walls General	T5, I1
Retaining Walls Wylie Tce (Acacia Bay)	T5, I1
Huka Falls lookout	T5
New road marking and signs	T1, T5
Road Upgrading (realignment/widening)	
Poihipi Rd straightening	T1, T4, T5
Rural Road Berm Widening	T3, I1
Wharewaka realignment	T1, T5, I1
Broadlands Rd curve easing (23.3-23.5km)	T1, T5, I1
Poihipi Rd (E of SH32 realign)	T1, T5, I1
New Kerb and Channel	
Mangakino Streets - Upgrade Program (K&C + Pavement + Footpath)	T1, T3, T5, I1
Kerb and Channel Replacement End of Life	T1, T3, T5, I1
Seal Extension	T1, T2, I1

Table 4: Link between Level of Service and Budget

8.6 Consultation

8.6.1 Ratepayers and Residents Consultation

Consultation on community outcomes and resultant levels of service was completed in 2005 in conjunction with the 2006 Long Term Plan (LTCCP). Through the LTCCP consultation the following community outcomes were derived.

- Lakes, Rivers, Landscapes – places we are proud of
- Healthy people, healthy communities
- Safe and Secure
- Thriving and prosperous
- Vibrant and diverse

For this LTP round Council have identified a different set of outcomes which are listed below.

- Economy
- Environment
- Engagement

At present resident contact is generally on a one-on-one situation in the handling of customer complaints or in council and community board meetings. Regular advertised public forums are held to encourage and provide for ratepayer opinions and concerns to be heard. Submissions and suggestions for desired project and improvement work for Council consideration and inclusion into the LTCCP are called for during consultation.

In addition, Taupō District Council (TDC) has meetings with key stakeholders:

- As part of the planning process, TDC has consulted with New Zealand Transport Agency, Police, and Regional Council and where appropriate local community groups/advocacy groups.
- Contact has been established with the Heavy Haulage Association Inc., Road Transport Authority and AA over proposed major projects and issues.
- Bi-monthly meetings with New Zealand Transport Agency on State Highway and funding issues.

8.6.2 Customer feedback

Asset Managers described the performance aspirations for specific Council activities that are primarily driven by customer needs and categorized the level of service desired for each of the services Council provided. The results of this work were collated, and a self-completion survey was derived. Nineteen thousand surveys were sent out 752 responses were received by July 2005.

Specific objectives of the survey were to.

- Understand the level of importance of given services.
- Identify levels of satisfaction with current levels of service.
- Determine the desire for changes to current levels of service.
- Determine willingness to pay for improved levels of service.
- Ascertain quantum/magnitude or speed of change desired.

The survey included separate questions for the road service as well as the proposed Taupō Town Second Bridge Crossing. Results include:

- 74% of respondents are happy with the current level of service for road in general. However almost one half of respondents (49%) desire a significant increase to the level of service for the second Taupō Bridge crossing.
- 21% of respondents desire a moderate increase to the level of service. Approximately 65% of those people which desire a level of service increase are willing to pay $192-$200 (with a current cost of $191). Only approximately 35% of those people wanting an increase in the level of service are willing to pay more than $200. These results indicate that the community is happy with the status quo, and they would not be willing to incur any significant increase in the cost of the service.

This consultation suggests that the public is generally happy with the current level of service therefore there have been no significant changes to level of service from previous.

Since 2019 we have had Co-lab arrange a customer satisfaction survey of our community questioning some road attributes such as road condition, signage, road safety, repair quality etc. Versus Research were commissioned to undertake the two-yearly satisfaction survey of residents. The latest survey results showed we have significant declines in repair times (decrease of 16% since 2021), roadside verges (decrease of 13% since 2021) and roadside drains (decrease of 11% since 2021). Attributes with the highest level of satisfaction are road markings, signage, clarity and cleanliness, while lowest satisfaction was observed for repair time.

9 Programme business case / lifecycle management

This section comprises of unsubsidised and Subsidised programmes. Section 10 - Financial summary identifies the unsubsidised items. This section contains the programme business case/life cycle management plans for the following nine key asset groups:

- Pavements
- Footpaths shared paths and cycleways.
- Drainage
- Street Lighting
- Bridges and Large Structures
- Environmental Maintenance
- Traffic Services (signs, markings and traffic controls)

This section also includes the programme business case for the activities:

- Network Asset and Management
- Emergency works
- Low Cost, Low Risk Programme and Road Safety Promotion
- Passenger transport and total mobility scheme

9.1 Links to the Strategic Case

Taupo District Council adopted a Transport strategy, supported by Waka Kotahi. Central Government's draft policy statement (GPS) identifies the national priorities. The Regional Land Transport Strategy has a focus on accessibility and improvements to road safety.

Within this section there is some comment on the decision making for each asset type with the decision being based on the data produced from RAMM and other supporting sources such as dTIMS Modal and the Road Efficiency Group (REG).

The ONRC was used to maximise benefits and improve the efficient use of limited funding. This is done by focusing funding on key strategic corridors. The One Network Framework (ONF) will be integrated when fully developed.

9.1.1 Delivery service structure

Our investment approach into the future will be based on strategic directions form transport provided by the Government Policy Statement on Land Transport Funding, Arataki – Waka Kotahi 10-year plan, the Regional Land Transport Plan and the Council's Long-Term Plan and Transport strategy (community outcomes). These have defined problems/definitions, ONF classifications and managing the roads in line with the ONF customer outcomes.

Pavements and large structures (Bridges, culverts, retaining walls) are critical assets where failure would have a significant impact. This has been discussed in further detail in the Risk Management section.

The transportation is made up of two teams, a team of four who manage maintenance contractors via a contract and a team which plans, investigates and design new projects and manages long term budgets.

Background data for the asset type including asset description, capacity, performance, condition and valuations is included within this section.

This section contains the *management strategies,* to achieve the levels of service defined in Level of Service section. These strategies are divided into four main work categories (routine maintenance, renewal, capital and disposal).

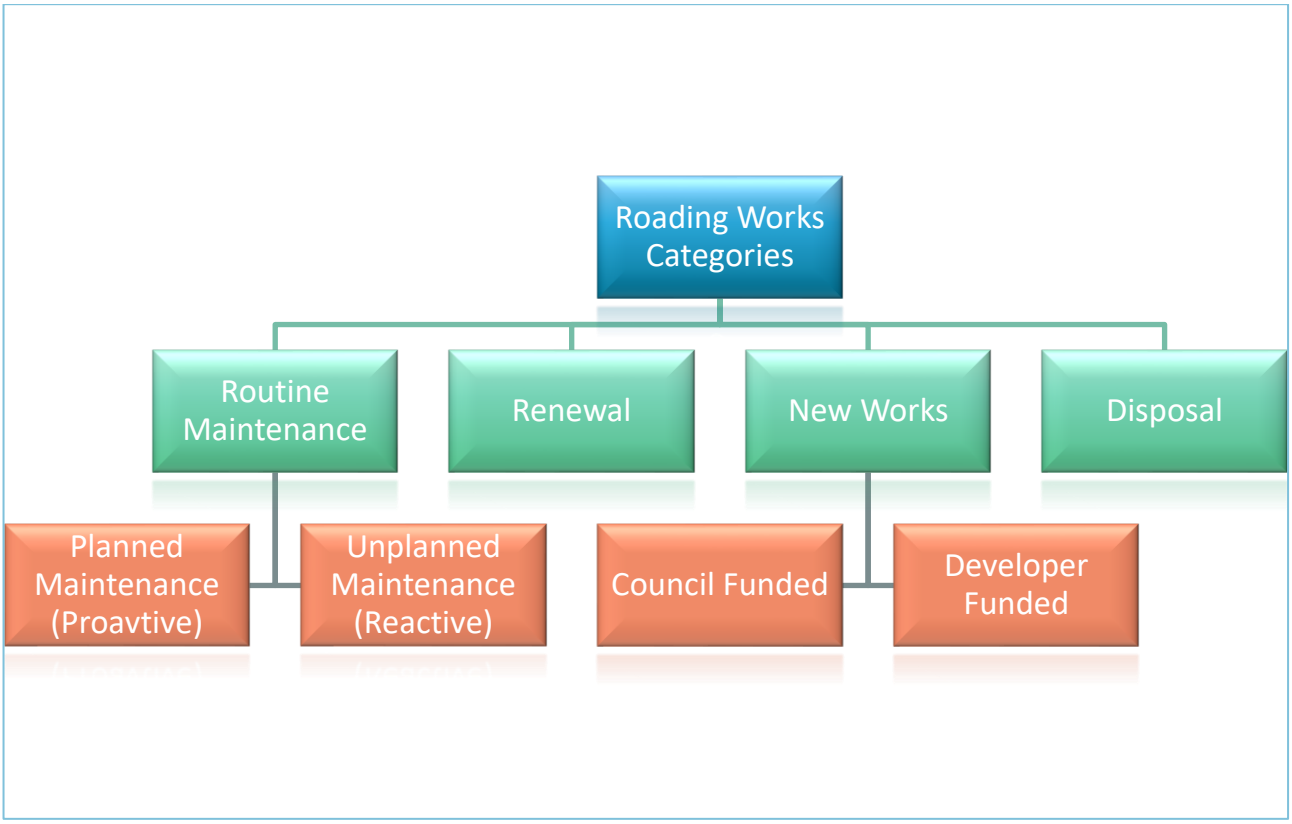
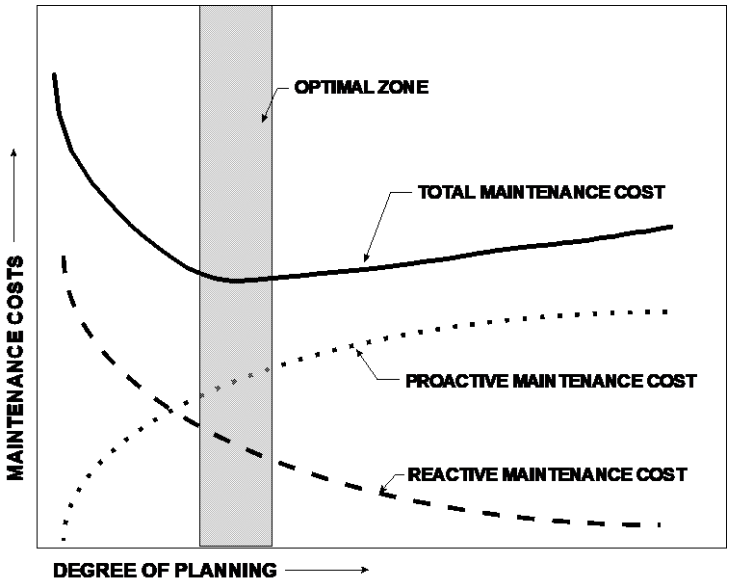


Figure 18 -Asset Works Categories

The work categories are defined as follows:

Routine Maintenance	Routine maintenance falls into two broad categories as follows: • Planned (Proactive) Maintenance: Proactive inspection and maintenance works planned to prevent asset failure. • Unplanned (Reactive) Maintenance: Reactive action to correct asset malfunctions and failures on an as required basis (i.e., emergency repairs). A key element of asset management planning is determining the most cost-effective blend of planned and unplanned maintenance as illustrated in the following figure. 
Renewals	This includes replacement and rehabilitation of existing assets to their original condition and capacity. These works are contracted out separately to the maintenance contract in order to always get a competitive price.
New Works	Creation Works: New works which extend or upsize assets, which are required to cater for new development and growth. Creation works fall into two separate categories as follows: • Council funded - Works funded and constructed by TDC. • Developer funded - Works funded by developers as part of sub divisional development or by way of contributions that are then vested in Council.
Asset disposal	Where assets become surplus to requirements or no longer meet the required level of service, they are renewed and the existing asset is removed either sold as surplus where possible or disposed of, which occurs normally at the end of useful life. A forecast of the 30-year expenditure for each asset group in each of the categories outlined above has been provided in the Financial Summary section of this AMP.

9.1.2 Status of our Procurement Strategy

Our most recent procurement strategy was endorsed by NZTA in December 2022.

9.1.3 Service Delivery and Rationale

The Transportation service is carried out by several providers as tabulated:

Service	Provider	Rationale
Asset Management	Council	To maintain the knowledge of the asset in house.
Management of Maintenance Contracts	Council business unit	To maintain control of the costs of the services and is part of the requirements by NZTA.
Minor Design/Investigations	Council	In house knowledge and resource available.
Major Design	Tendered	To capitalise on external expertise resource/ experience and take advantage of competitive pricing/competition.
Road Maintenance	Tendered	To capitalise on external expertise resource/ experience and take advantage of competitive pricing/competition.
Streetlight Maintenance	Tendered	To capitalise on external expertise resource/ experience and take advantage of competitive pricing/competition.
Signs & Markings Maintenance	Tendered	To capitalise on external expertise resource/ experience and take advantage of competitive pricing/competition.
Construction of new footpaths / cycleways	Tendered	To capitalise on external expertise resource/ experience and take advantage of competitive pricing/competition.
Reseals (combined with Road maintenance contract)	Tendered	To capitalise on external expertise resource/ experience and take advantage of competitive pricing/competition.

Table 5 - TDC Service and Providers

9.1.4 Transportation Contracts

The following table shows a summary of all TDC maintenance and renewals contracts as currently in 2023.

Contract Name	Contract No.	Approx. Value ($)	Term (yrs)	Comments	Maintenance/ Renewal/ Creation
Rehabilitation	Varies	Varies	Per year	Contract gets put out every year	Renewal
Road maintenance & reseals 2018-2024	TDC 1718/219	$26,634,455	81 months	Contract expiring June 2024. Currently out for tender which closes April 2024 with a value of approx. $64M	Maintenance Renewal Creation
Pavement Remarking	Contract CN000479 - Road Marking - Transportation (2023 - 2026)	$ 819,620.50	3+1+1	Roadrunners commenced 01/07/2023	Creation Renewal
Streetlight Maintenance	Contract CN000475 - Streetlight Maintenance (2023 - 2026)	$ 999. 315.00	3+1+1	Horizon Networks 01/07/2023	Maintenance Renewal Creation

Contract Name	Contract No.	Approx. Value ($)	Term (yrs)	Comments	Maintenance/ Renewal/ Creation
Electricity Supply Contract			3 Years	Commenced 01/07/2022	Maintenance
Passenger Transport	WRC contract		9 years – extended for 3 years	New contract let in October 2022 for a 9-year term.	Operations

Table 6 - TDC Maintenance and Renewal Contracts as of July 2020 (Notes: *Energy supply only – does not include network charges)

9.1.5 Contract types

An increase in existing contract prices especially related to maintenance, reseals and aggregate is the reason for an increase in the maintenance budget. The increase also specifically relates to Traffic Management and disposal to land fill costs which increased substantially. Lump sum contract and measure and value contracts are the two types of contract procurement Taupō District Council utilize for project tendering. Where the estimated cost of the project is less than $50,000, a lump sum contract is generally used. If greater than $50,000, a schedule of quantities is provided to enable a measure and value contract be tendered.

Lump sum contract: More than one contractor is asked to supply a fixed price quote for the project. The contractor is responsible for the measurement of quantities.

Measure and value contract: The quantities in the Schedule of Prices are measured by the Engineer, which is provided for the purpose of evaluating tenders. Each item of work is carried out at the fixed rate set out in the Schedule of Prices. The sum shall be adjusted by any additions or deductions under the contract.

9.1.6 Methods for tendering and evaluation

TDC has a Procurement Strategy which provides a roadmap as to how to best optimise procurement value over the coming three years. This strategy takes into account the TDC Procurement Policy and Guidelines; as well as the NZTA Procurement Manual and MBIE Procurement guides.

Tender Evaluation Method	Contract $ Value		
	$0-50,000	$50,001-$100,000	$100,000+
Expedited Procedures (Negotiation)	√	×	×
Expedited Procedures (Limited Invitation to Tender)	√	√	×
Lowest Price Confirming Tender	√	√	√
Quality-Price Trade Off Method	√	√	√
Weighted Attribute Method	√√	√	√

Table 7 -Physical Works - Method Selection Matrix (Key **(×) = not permitted (√) = permitted)**

Note: For projects with a dollar value of less than $100,000 the expedited procedures are generally the most appropriate methods because administration costs will be less and hence a more reasonable proportion of total contract value.

Reference: Section 2. New Zealand Transportation Agency Procurement Manual.

9.2 Lifecycle management per asset (Subsidised)

Assets are discussed individually (and coloured) by respectively identifying and discussing:

Please note in the tables where there is a strike through in an amount, this shows the change from the original budget allocations with the Waka Kotahi indicative funding bid.

- Our Assets
- Links to the ONRC customer outcomes and strategy
- Levels of service
- Evidence and existing approach
- Gap analysis
- Options
- Programme

9.2.1 Pavements (Sealed and Unsealed)

Work Category	Overall asset outcome/objective
Work Category 111 - sealed pavement maintenance, Work Category 214 – sealed road rehabilitation Work Category 112 – Unsealed Maintenance Work Category 211 – Unsealed Road Metaling	*To provide a pavement network that is suitable for the safe and efficient movement of people, has a suitable all weather safe surface that is appropriate to its location and function in terms of providing skid resistance, noise reduction and smoothness, and has a structure suitable for legal traffic loading requirements.*

9.2.1.1 Our Assets

Valuation Overview	
Valuation of Formation of Road	$271,022,000
Valuation of Pavement Asset	$141,028,000
Valuation of Top Surface	$106,160,000

Asset Overview (Sealed)	
Total Length of Sealed Road	761 Kms
Length of Chip Seal	710 Kms
Length of Asphalt surfacing	57 Kms
Length of Other Surfacing	11 Kms
Average Depth of Pavements (Urban)	135 mm
Average Depth of Pavements (Rural)	109.9 mm
Average Width of Pavements (Urban)	8.5 m
Average Width of Pavements (Rural)	7.4 m
Asset Overview (Un-Sealed)	
Total Length of unsealed Roads	51 kms
Average Depth of Pavement	101 mm
Average Width of Pavement	4.8 m

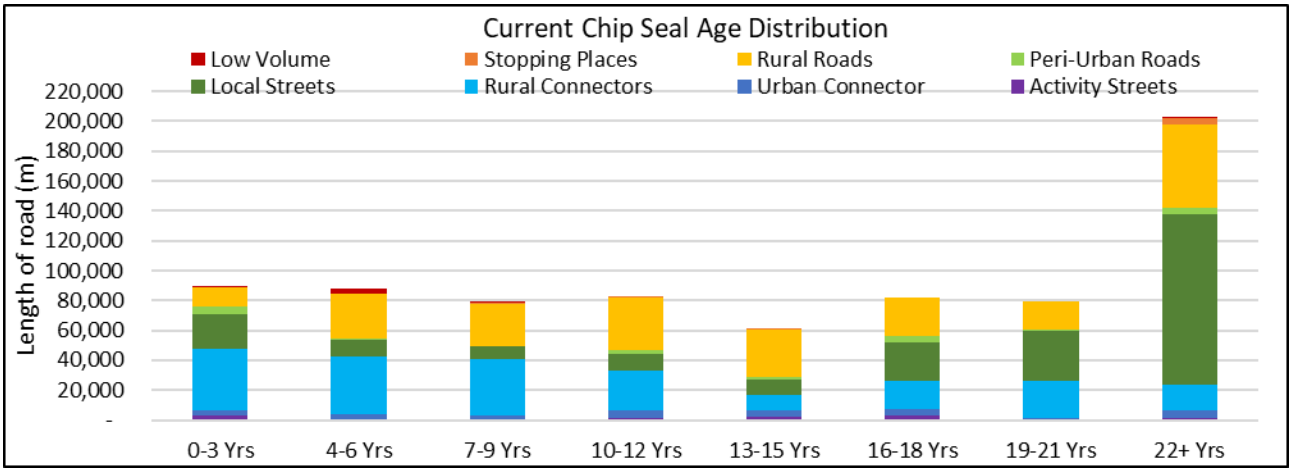


Figure 25 Chip seal age distribution

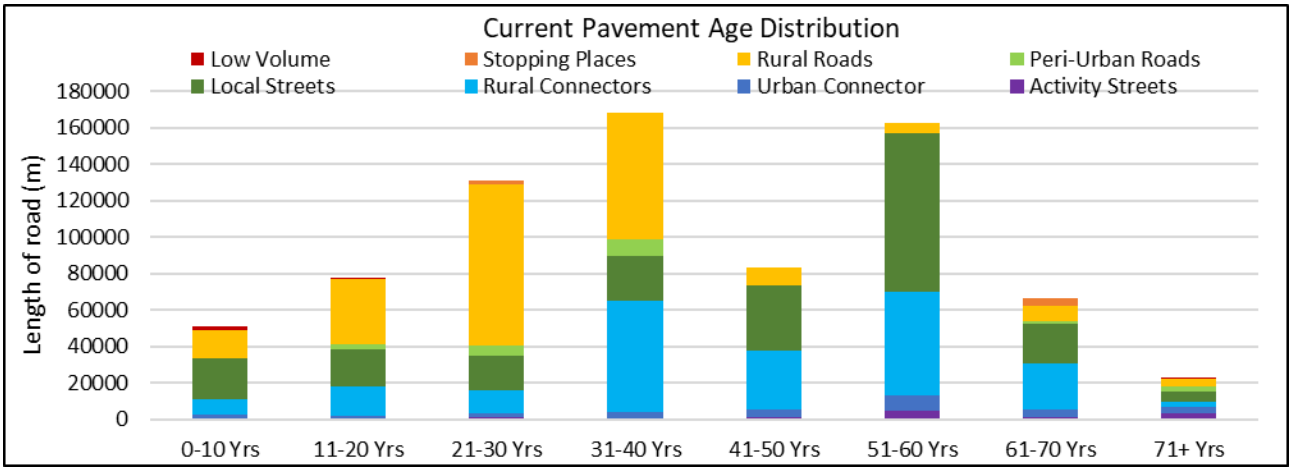


Figure 19 - Pavement and Surface age per ONF

9.2.1.2 Links to the ONRC customer outcomes and strategy

The links to the ONRC customer outcomes for this activity is Safety, Resilience, Amenity, Accessibility, Cost Efficiency.

9.2.1.3 Evidence and existing approach

Pavement Maintenance

Pavement maintenance is carried out by our contractor to ensure that the levels of service outlined in the Level of Service section of this document are met. This work category includes the following activities:

- Potholes are repaired by the Contractor on a cyclic basis.
- Edge break, dig-out repairs, minor smoothing, surface defects and crack repairs are repaired on a tasking basis at tendered rates.
- Ice gritting, snow cleaning, bleeding treatment and accumulated chip removal are carried out by the Contractor on demand, at tendered rates.
- Clean up of slips, batters and drop-outs occur as necessary.

Compared to other councils our sealed pavement maintenance costs are below average which is generally related to having free draining subbase.

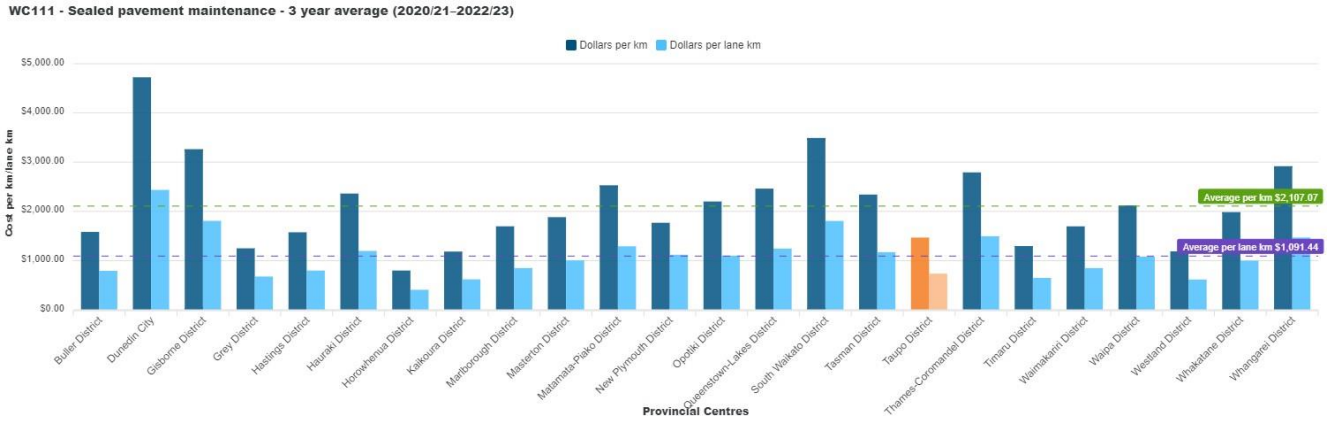


Figure 20 – Sealed Pavement Maintenance - Cost per km/Lane km by Peer Group

Maintenance of unsealed roads network involves grading to remove surface defects, restore shape, maintain cut outs and spot metaling.

- Grading cycles vary depending on the traffic volume and topography, depending on cycle times.
- Grading is done by the road network maintenance contractor on a cyclic basis.
- Dig out and sub-base pumice reshaping is completed on a tasking basis at tendered rates.

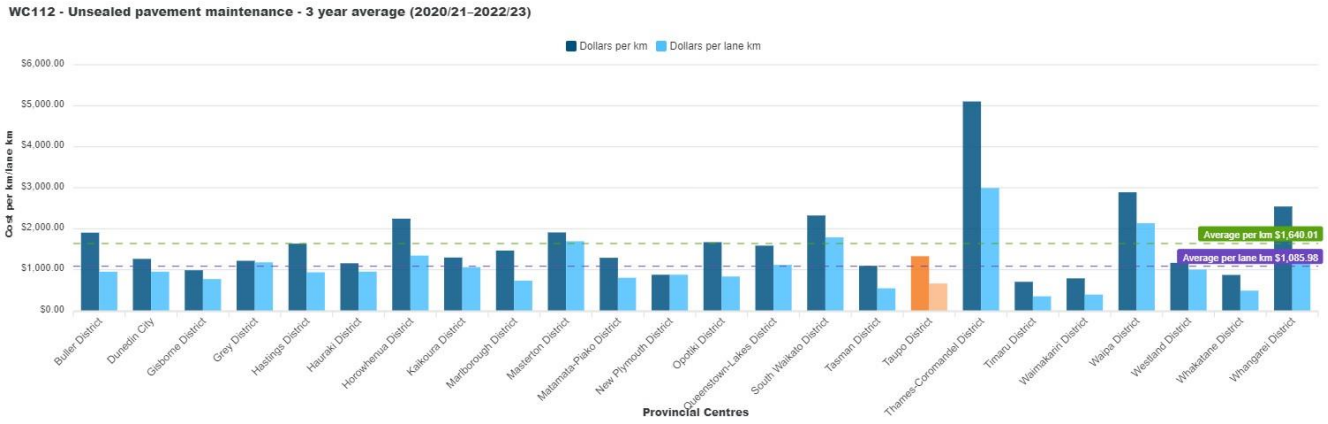


Figure 21 - Unsealed pavement - Cost per km/lane by Peer Group

Pavement and Surface Renewal

Renewal expenditure is major work that restores an existing asset to its original capacity or the required condition. By renewing pavements at the right time as required the quality level of service is met and provides best whole of life cost.

The types of pavement rehabilitation/ renewal work undertaken are summarized in the following table.

Work Type	Objective	Methods
Replenishment of aggregate	To maintain the unsealed road surface	Aggregate is spread on demand.
Resealing/ Resurfacing	To maintain a waterproof and skid resistant road surface	Chip sealing Slurry seal Asphaltic Concrete (Refer to "Resurfacing" for definitions)
Reconstruction/ Rehabilitation	Strengthen road sub-base and/or base-course.	Reconstruction: Remove the existing base course and/ or sub grade and replacing with new material Rehabilitation: Increase the strength of existing base -course/ sub-base materials by:

		adding a stabiliser (hydrated lime or cement) and re-compacting constructing an additional layer of road metal on top of the existing pavement construction
Smoothing	Smooth irregularities in road surfaces where the structural condition of the carriageway is sound.	Placement of an additional surfacing on the existing sealed surface to smooth out irregularities. The materials used depend on traffic volumes/ road geometry and road condition.

The required level of rehabilitation/renewal vary depending on:

- The age profile of carriageway surfacing and structure.
- The condition profile of carriageways.
- The level of on-going maintenance demand and costs.
- The differing economic lives of the materials used.

As mentioned in the strategic focus section of this report, we undertook dTIMS modelling along with visual inspections to produce the current forward works programme. This process has highlighted the need for increased funding to ensure both the safe operation and resilience of the road network. Currently our resurfacing is carried out annually through a competitive tendering process whilst repairs are included in the road maintenance contract. Moving forward we plan to incorporate the renewals programme into the maintenance contract which will allow us to secure pricing and resource to ensure the programme can be delivered.

When selecting the most suitable surfacing material for each treatment length the impact of that material on the total pavement life and the life cycle cost is considered. The following factors are considered during material selection:

- Engineering requirements - Traffic volume, percentage of HCVs, and road geometry.
- Existing conditions - The flexibility of the existing road formation and pavement type
- Environmental conditions - The proximity of dwellings to the carriageway and potential for noise and vibration nuisance.

The main types of pavement surfaces used by TDC are:

Using Chip seal, AC (including slurry) and unsealed for the pavement surface is typical for a provincial district where low traffic volumes does not create enough need for rigid and semi rigid surfacing.

The Taupō District Council network historically achieves good seal lives compared to its peer networks as shown in Figure 34 below. This is likely due to the pavements having a free draining pumice subbase. This means that even though there is micro cracking in the old seals, water is still able to drain through the pavement and not cause excessive surface damage especially on our access and low volume roads (typically ONF classifications: low volume, rural roads and local streets).

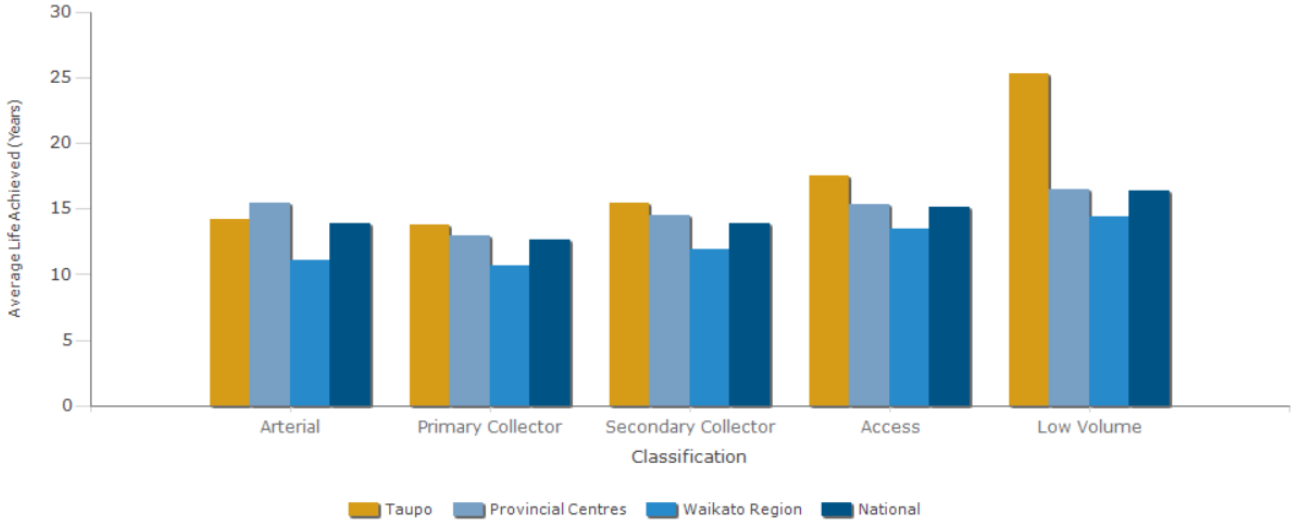


Figure 22. Chipseal Resurfacing Average Life Achieved, Four Year Average

In the last five years there has been a significant decrease of reseals on low volume (typical ONF class. rural roads) and access roads (typical ONF class. local streets) in our district as shown in the figure below. This can then be related to high age of these surfaces. This is essentially starting to form a back log of required reseals. There has historically been adequate level of resurfacing for our primary collectors and arterials (typical ONF class. Urban connectors, activity streets and rural connectors). The under investment in lower volume roads has led to over 48% of our chip sealed road being greater than 16 years old (see Figure 30, above).

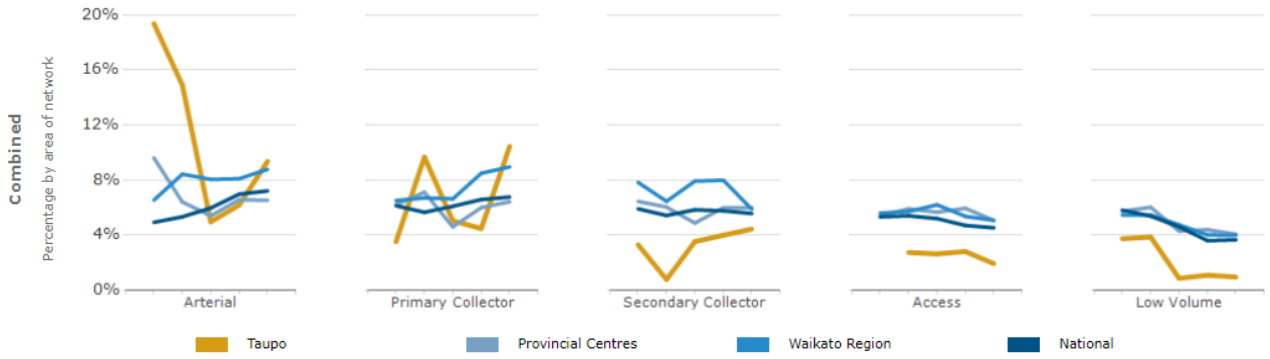


Figure 23 Comparative Time Series of Chipseal Surfacing Renewed Annually

Some of our pavements are nearing end of life as many of our roads were built around the 60s and 70s. It cannot yet be accurately predicted when the districts pavements will completely fail as it is highly dependent on the underlying subgrade strength and traffic loadings. This means continued condition assessments are required to determine a cost-effective renewal plan for the next 30 years.

The majority of sub grade in our district is pumice, leading to low-cost pavements being possible. The pumice provides very good natural drainage, which assists with the longevity of our pavements. However, some of these low-cost pavements with relatively thin base courses (median thickness is 130mm) are now showing signs of failure with the increase in Heavy Productivity Motor Vehicles (HPMVs) as shown with the number of consent application in the below table. From field inspections there is more evidence of increased rutting on our network. This needs monitoring to ensure timing of rehabilitation works are optimised and a backlog of rehabilitation works doesn't occur.

Year	Number of HPMV Permits
2023 (up to October)	171
2022	275
2021	181

Table 8. Number of HPMV Consents Issued Each Year

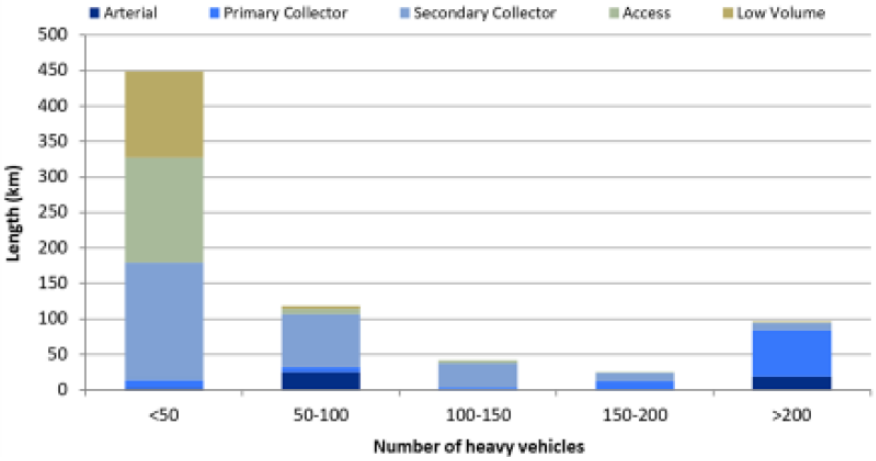


Figure 24 Heavy Vehicle Counts by ONRC Classification

Pavement Creation

The section covers strategies for the creation of new assets (including those created through subdivision and other development) or works which upgrade or improve an existing asset beyond its existing capacity/performance in response to changes in traffic needs or customer expectations.

The creation of new pavements addresses several levels of service, including accessibility, efficiency, quality, reliability and road safety. A summary of the future needs is included in the Future Demand section.

New projects which are eligible for Waka Kotahi funding are justified and prioritized through the Best Business Case approach which accounts for:

- The pavement design that is used on seal extensions on collector and local rural roads makes use of pumice sub grade strength combined with relatively low traffic loadings to maximize unsubsidised seal extension programmes.
- The standard for sub divisional roads is TDC's "Code of Practice for Development of Land".
- General widening is normally justified on economic basis except where there may be a need for a cycle lane. Our transport strategy has identified Poihipi Road, Whangamata Road, Broadlands Road and Waipapa Road requiring further widening and improvement projects over the next 30 years.

9.2.1.4 Gap analysis

For sealed pavements:

To determine the need of the Taupō District roading network we recently undertook dTIMS modelling along with visual inspections of the network to validate the programme that was produce. There were several assumptions made due to some of the RAMM data including maintenance cost. Prior to the next modelling we will need to reduce these and improve the data which is a continuous process. The visual validation led to some treatments being deferred but it also highlighted additional treatment lengths needing to be included in the programme.

The combination of dTIMS modelling and visual inspections means that we are confident with the identified need and programmes produced. As part of the visual validation our consultant also updated the rates used to reflect current market rates in Taupō. This has resulted in three programmes for renewal spend.

- High investment of $8 million per annum (nothing $6M was identified in the dtims report)
- Mid investment of $5.5 million per annum

- Low investment $2.5 million per annum

A summary of each programme can be seen in Appendix A.

The increase in programme quantities is based on the model recommendations and comparing the outputs with common practice and lifecycle achievements.

Figure 25 indicates for different investment how the surface cracking would be managed in the next 30 years. It shows that a high level of investment better manages the surface network but will still result in Taupō District Council managing a network which has 3% cracking.

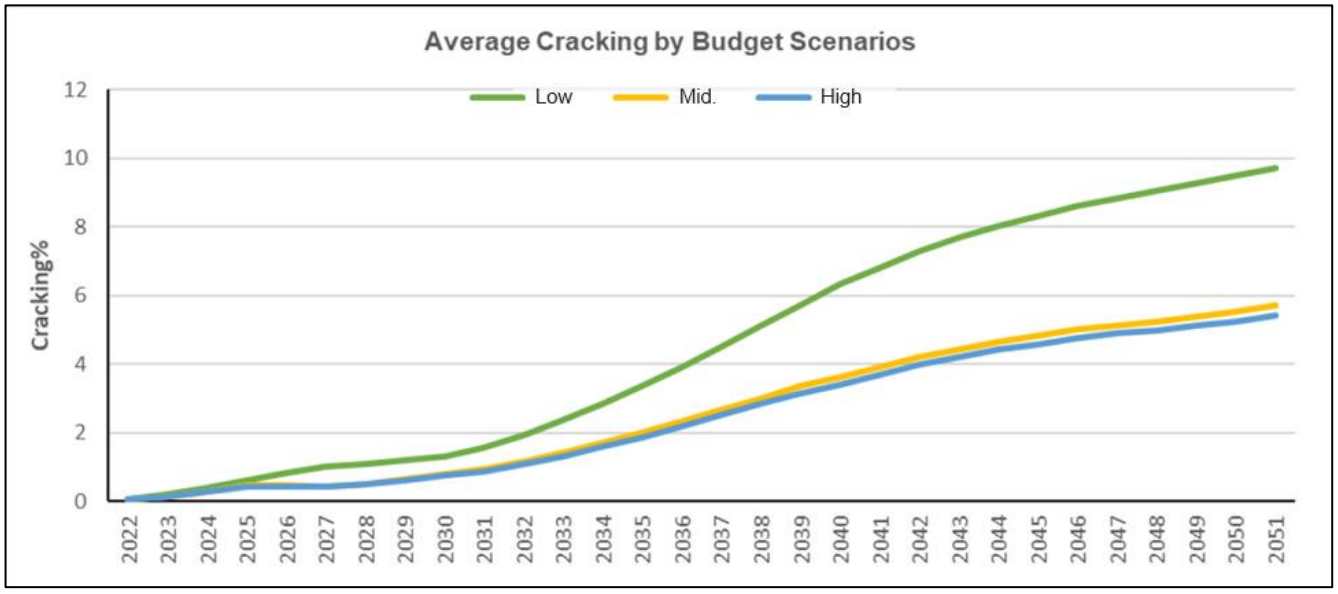


Figure 25 Predicted Cracking on the Network in the Future for Different Levels of Investment

Aging pavements that are showing signs of deteriation (mainly rutting) are occuring more frequantly. These are generally on our urabn collector and rural connector classified roads with a higher proportion of heavy vehicles. On average almost half of our road surfaces have past their design life and are showing signs of aging.

Some of our asphalt surfacing in our local streets, particularly residential subdivisions, is beginning to show signs of age and require renewing. TDC will now need to develop an asphalt renewal policy. This will inform of the best strategy for renewing these surfaces that will consider the best whole of life cost and the environmental conditions (roughness, vibrations, and noise).

For unsealed pavements:

Need to know how much maintenance is occurring between the cycle times and what is happening in the pavement base sites that are long distances from available quarry material.

There needs to be some consideration of whether we need to reconstruct unsealed pavements to improve shape and water run off with the potential benefit of reducing maintenance.

9.2.1.5 Options (Preferred option highlighted)

		Option 1	Option 2	Option 3
Sealed Pavement	Maintenance	Continue with status quo	Extend Status Quo with recommendations from dTIMS. Several assumptions have been taken due to the lack of data in RAMM.	Extend maintenance to prolong the need for renewals
	Renewal	Continue with status quo	Extend Status Quo with recommendations from dTIMS. Several assumptions have been taken due to the lack of data in RAMM.	An increased renewal programme derived from the dTIMS model to reduce future maintenance costs and provided other benefits including safety
	New	Only inclusion of new developers' roads	Continue current programme of Widening for Safety when it aligns with the renewal programme	Increase Widening programme and continue the seal extension programme

		Option 1	Option 2	Option 3
Unsealed	Maintenance	Continue with status quo	Continue with status quo with a review/ investigation of the base pavement quality and life span	
	Renewal	Continue with status quo	Continue with status quo with a review/ investigation of the base pavement quality and life span	Increase metaling

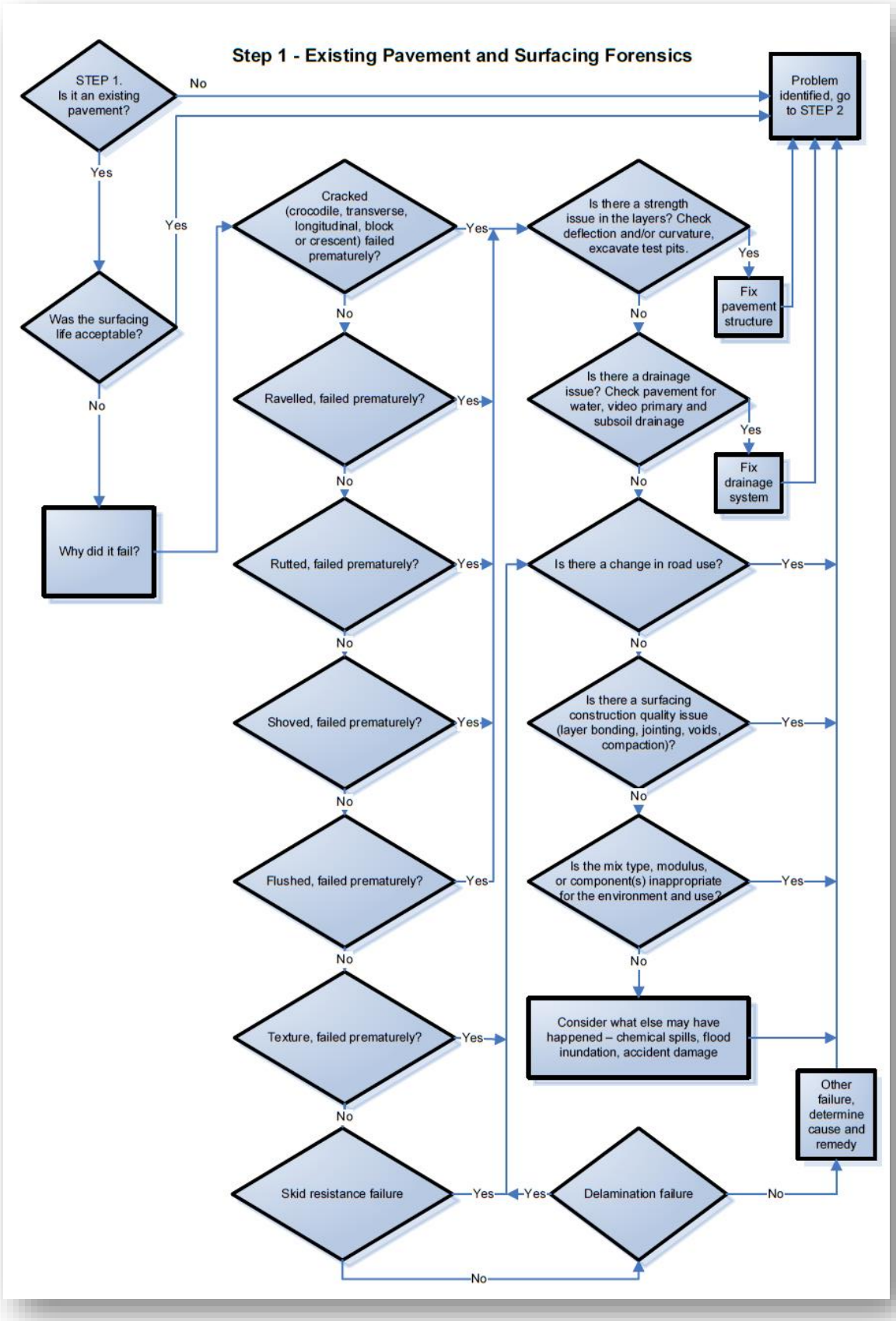
Selection of Seal Type

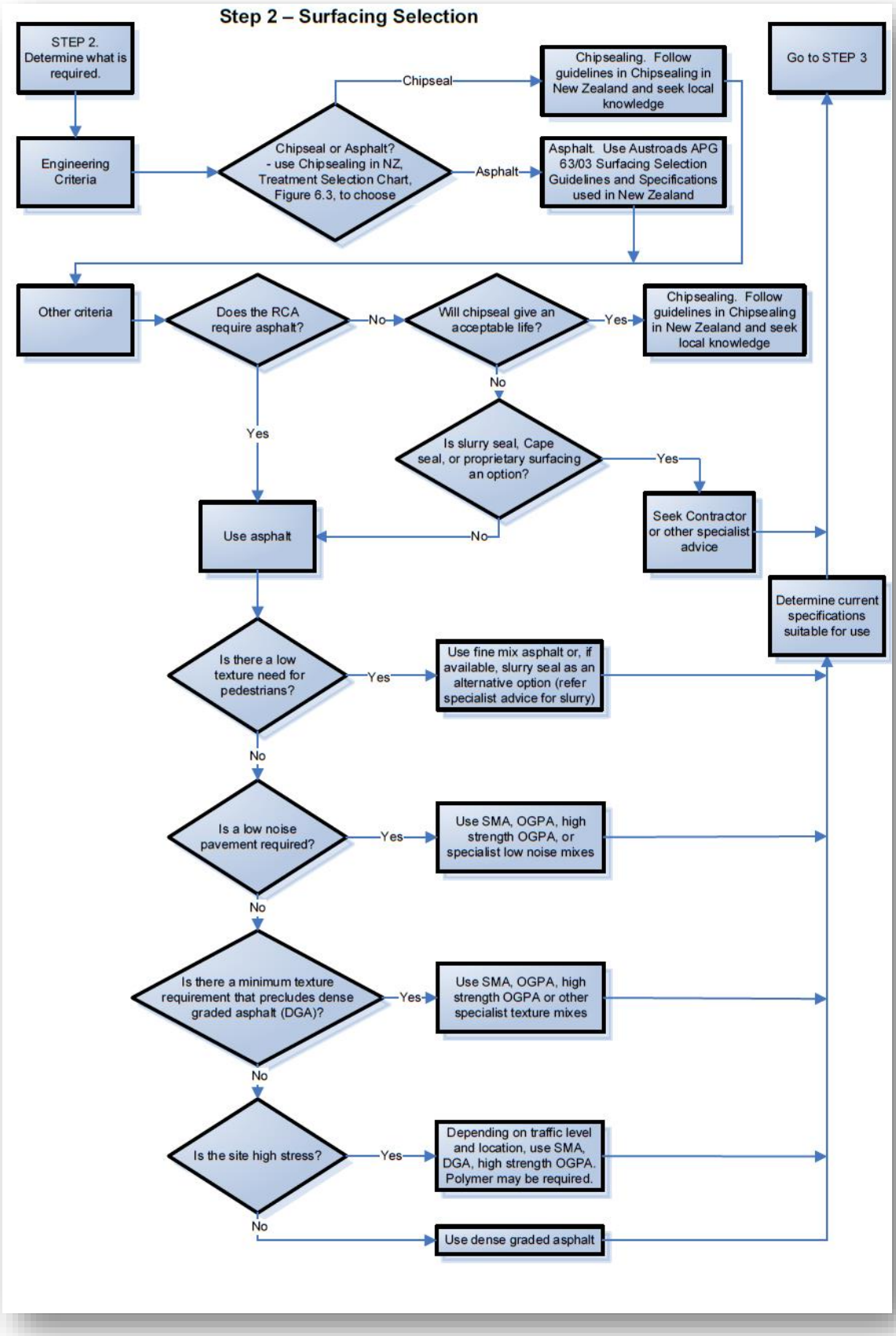
The aim of the selection of the most appropriate surfacing treatments is related to the treatment that delivers the most optimal whole of life solution in terms of value for money. Resealing will be done through chip seal surfacing except for where consideration has to be given to the following bullet points:

- High stress areas which relate to a higher number of turning movements, bends with severe flushing, road intersections, stripping or skid resistance.
- High concentration of heavy vehicle traffic. (Commercial and industrial areas)
- Low texture requirements for certain users like cyclists or pedestrians.
    - Midblock pedestrian crossings and areas with low speed and low volume
- Areas where low noise must be considered.
- Special treatments depending on design requirements (steep gradients or cross-fall)
- Volumes of traffic exceeding 10,000 vehicles per day (which is highly unlikely in our District)

All other road surfaces which don't have the characteristic of the above-mentioned bullet points will be Chip Sealed. From a maintenance and renewal point of view this translates to roads that was previously sealed with asphaltic concrete will typically be resealed with chip seal. Final selection of surface treatment is dependent on pavement deflections, traffic loadings, local requirements and NZTA specifications.

Consideration is given to the flow charts from the *"Asphalt surfacing treatment selection guidelines, version 2.1, September 2012"*.


Step 1 - Existing Pavement and Surfacing Forensics
STEP 1. Is it an existing pavement?
No
Problem identified, go to STEP 2
Yes
Was the surfacing life acceptable?
Yes
No
Why did it fail?
Cracked (crocodile, transverse, longitudinal, block or crescent) failed prematurely?
Yes
Is there a strength issue in the layers? Check deflection and/or curvature, excavate test pits.
Yes
Fix pavement structure
No
Ravelled, failed prematurely?
Yes
Is there a drainage issue? Check pavement for water, video primary and subsoil drainage
Yes
Fix drainage system
No
Rutted, failed prematurely?
Yes
Is there a change in road use?
Yes
No
Shoved, failed prematurely?
Yes
Is there a surfacing construction quality issue (layer bonding, jointing, voids, compaction)?
Yes
No
Flushed, failed prematurely?
Yes
Is the mix type, modulus, or component(s) inappropriate for the environment and use?
Yes
No
Texture, failed prematurely?
Yes
Consider what else may have happened – chemical spills, flood inundation, accident damage
Other failure, determine cause and remedy
No
Skid resistance failure
Yes
Yes
Delamination failure
No
No


Step 2 – Surfacing Selection
STEP 2. Determine what is required.
Engineering Criteria
Chipseal or Asphalt? - use Chipsealing in NZ, Treatment Selection Chart, Figure 6.3, to choose
Chipseal
Chipsealing. Follow guidelines in Chipsealing in New Zealand and seek local knowledge
Asphalt
Asphalt. Use Austroads APG 63/03 Surfacing Selection Guidelines and Specifications used in New Zealand
Go to STEP 3
Other criteria
Does the RCA require asphalt?
No
Will chipseal give an acceptable life?
Yes
Chipsealing. Follow guidelines in Chipsealing in New Zealand and seek local knowledge
No
Yes
Is slurry seal, Cape seal, or proprietary surfacing an option?
Yes
Seek Contractor or other specialist advice
Use asphalt
No
Determine current specifications suitable for use
Is there a low texture need for pedestrians?
Yes
Use fine mix asphalt or, if available, slurry seal as an alternative option (refer specialist advice for slurry)
No
Is a low noise pavement required?
Yes
Use SMA, OGPA, high strength OGPA, or specialist low noise mixes
No
Is there a minimum texture requirement that precludes dense graded asphalt (DGA)?
Yes
Use SMA, OGPA, high strength OGPA or other specialist texture mixes
No
Is the site high stress?
Yes
Depending on traffic level and location, use SMA, DGA, high strength OGPA. Polymer may be required.
No
Use dense graded asphalt

9.2.1.6 Sealed Pavement programme

Work Category		10 Year Programme ($,000)									
		24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
111	Sealed Pavement Maintenance	1258	1272	1286	1310	1246	1255	1265	1274	1283	1293
111	Sealed Pavement Maintenance (SPR)	5	5	5	5	5	5	5	5	5	5
212	Sealed Pavement Resurfacing	3500	3616	4800	3800	3435	3400	3200	3300	3300	3300
214	Sealed Pavement Rehab	2000	3500	3500	3000	2500	3200	3300	4000	4000	5000

For the first year we are suggesting $5.5M programme moving towards the high budget scenario in future years. Pavement resurfacing figure includes both AC and Chipseal. This will assist us to see if this is deliverable given the number of events, we have on during summer construction period intend to package a contractor with a three-year programme of works.

9.2.1.7 Unsealed Pavement programme

Work Category		10 Year Programme ($,000)									
		24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
112	Unsealed Pavement Maintenance	110	110	110	110	110	110	110	110	110	110
211	Unsealed Pavement Renewal	66	64	62	60	58	56	54	52	50	48

9.2.2 Footpaths, shared paths and cycleways

Work Category	Overall asset outcome/objective
Work category 125 – footpath maintenance	*To provide a safe and efficient network of footpaths and access ways catering for pedestrians. Cycle ways may be formed as separate facilities or be incorporated by road marking or delineation, on carriageways or footpaths.*
Work category 124 – cycle path maintenance	
Work category 225 – footpath renewal	
Work category 224 – cycle path renewal	
Work category 451– walking facilities	
Work category 452 – cycle lane facilities	

9.2.2.1 Our Assets

Asset Overview	
Total Length of Footpaths and Shared Paths	394 Kms
Percentage of Urban network with at least one footpath connection	67%
Average Age of footpaths	29 Years
Valuation of Paths	$53,209,000

The 93% of footpaths and shared paths in our district are concrete which has an 80-year design life. Figure 42 shows the age distribution of our footpaths. This shows that most of our footpaths have 50% of their design life remaining.

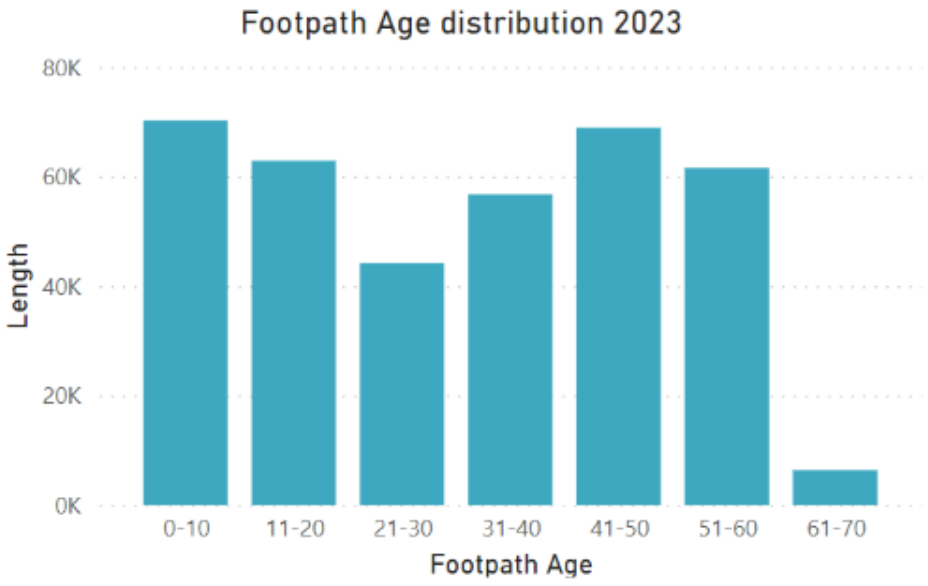


Figure 26 - Footpath age distribution

9.2.2.2 Links to the ONRC customer outcomes and strategy

The links to the ONR customer outcomes for this activity is Safety (PM10). The links to the ONRC customer outcomes for this activity is Safety, Resilience, Amenity, Accessibility, Travel time reliability, Cost Efficiency.

9.2.2.3 Levels of service

The current level of service for footpaths is that 80% of footpaths in the district fall within the level of service standard for the condition of footpaths that is set out in the AMP (maintenance intervention when displacement greater than 10mm for Taupō CBD, Taupō urban areas and Turangi and other urban areas). This performance measures are required by the DIA. Taupō District Council is currently meeting this level of service as measured every three years by condition rating of footpath survey. Any new footpaths and renewals are to comply with the Pedestrian Planning and Network Guide, considered the best practice document for NZ.

9.2.2.4 Evidence and existing approach

Footpath and Cycleway Maintenance

Very little maintenance is required for the concrete paths stock. Most of the maintenance is replacing small subsided, displaced or cracked sections of footpath (less than 50m long).

Other activity is generally confined to grinding any minor irregularities in levels between concrete slabs or smoothing and feathering with hot mix on sealed paths.

Footpath maintenance addresses several levels of service including quality and road safety.

Base maintenance: including replacement of isolated damaged sections less than 50m. Maintenance cost will increase as network grows. This increase will be in proportion to the increased value of new footpaths. Maintenance will also increase due to root damage and identified trip hazards.

Footpath and Cycleway Renewals

Footpath renewal ensures that the level of service for quality is maintained as well as ensuring it is consistent with the affordability level of service.

Most renewals are due to lifting of the footpath by tree roots. Renewal consists of removal of tree-roots, before re-pouring of the slab. The criterion for renewal is a relative displacement of greater 10mm in the CBD, where a section of greater than 50m is replaced.

Where damage by a particular party can be proven, the offending property owner (or developer) is required to replace the damaged section. Damage deposits or bonds are not required from developers. As Taupō footpaths are young they are not yet needing to be renewed for end of life.

Footpath and Cycleway Creation

For creation, the general philosophy has been to infill areas and to improve connectivity of the network. The level of expenditure is governed by engineering judgement and political will. Maintenance costs are comparable for these surfaces. Renewal costs can be as much as twice the figures above due to the necessity to remove the existing footpath.

Priority for footpath extension is given where:

- There is high berm wear or safety issues.
- Berms close to high use facilities (i.e., shops, schools, churches, rest homes and parks)
- Works involves safety related works on arterial and primary routes.

Mobility impaired pedestrians prefer smooth footpaths especially those in wheelchairs who find the cobblestones cause some discomfort and this has also been identified through the Access Taupō group.

Audits

Accessibility audits have been completed in Turangi, Mangakino and Taupō over the last 4 years. The audits include which includes public areas including AC Baths and the lakefront footpath up to Napier Road. There are still further audits to be completed. These audits assist us with the programming of works for footpath repairs and are based on the needs of the mobility impaired which in turn benefit the whole communities access requirements.

9.2.2.5 Gap analysis

There are still a few streets without a footpath on one side of the road. Very few pedestrian counts are undertaken on a regular basis to see where people are walking and from.

Recommendations from the accessibility audit have been prioritised and programme to be implemented using our existing footpath maintenance budgets.

Type	Alignment Distance from Boundary	Width (m)	Proposed width
Subdivisions	1.5 m	1.4	1.5 to 1.8
Existing Residential	0.6 m	1.4	1.5 to 1.8
Commercial	0 or 2 m	2.0 or 4.0	2.0 or 4.0
Industrial	0.6 m	1.4	1.5 to1.8

Table 9 - Standards for New Footpaths

The reason for changing the alignment for sub divisional footpaths is that the 0.6m standard can caused concern for safety at property entrances and problems with construction on established streets where batters existed on berms or there was sensitive overhanging vegetation. The new footpaths being constructed in existing residential areas need to work around existing services and hence are in accordance with the old requirements. Existing residential paths are located at least 0.6m from kerb face where berms slope back towards property boundaries.

With a recent increase in demand for wheeled transport devices on our footpaths, current standard widths are no longer appropriate. This is to improve the safety of all users of these paths so that people can safely pass each other. Therefore, a width of 1.8m is being proposed as the new desired width for new and renewal of footpaths, where appropriate.

Note: When code of practice comes up for review the 1.5 to 1.8m width may be considered.

9.2.2.6 Options (Preferred option highlighted)

	Option 1	Option 2	Option 3	Option 4
Maintenance Footpaths	– identify maintenance issues via customer service requests (status quo).	use accessibility audits/footpath condition rating to identify and prioritize maintenance of footpaths.	A combination of both where we use customer service requests and the high to medium priority from accessibility audits	

Maintenance Cycle Facilities	– identify maintenance issues via customer service requests (status quo).	Use condition rating to identify and prioritize maintenance of Cycle Facilities		
Renewal Footpaths	identify renewal sections via customer services requests	use accessibility audits/footpath condition rating to identify and prioritize renewals of footpaths.	A combination of both where we use customer service requests and the high to medium priority from accessibility audits	
Renewal Cycleways	identify renewal sections via customer services requests	Use condition rating to identify and prioritize maintenance of Cycle Facilities		
New Footpaths	Status quo to ensure there is a footpath on at least one side of every road.	Status quo of 1.4m wide footpaths but widen all new footpaths to 1.5 to 1.8m where requested or shared path or known aged pedestrians.	Upgrade all footpaths to 1.5 to 1.8m so at least one side of the road has one wider footpath than the other.	All new subdivisions are required to have 1.5 to 1.8m wide footpath to cater for aged population.
New Cycleways	New cycleways as identified through service requests	Develop new cycleways as per Transport Strategy		

9.2.2.7 Footpath programme

Work Category		10 Year Programme ($,000)									
		24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
125	Footpath Maintenance	260	260	260	260	260	260	260	260	260	260
225	Footpath Renewals	40	40	40	40	40	40	40	40	40	40
451	New Footpaths		250	250	250	250	250	250	250	50	50
124	Cycle path Maintenance	15	15	15	15	15	15	15	15	15	15
224	Cycle path renewals	0	0	0	0	0	0	0	0	0	0
452	Cycle Lane Facilities	50	50	50	50	50	50	50	50	50	50

9.2.3 Drainage

Work Category	Overall asset outcome/objective
Work Category 113 – routine drainage maintenance Work Category 213 – drainage renewals	*The purpose of carriageway drainage is to:* • *To divert and collect storm run-off from the roads, footpaths, berms and in some area's upstream catchments.* • *To achieve minimum stormwater quality criteria as set out by the regional council and TDC stormwater catchment management plans.* • *To comply with TDC's comprehensive stormwater discharge consent.* • *To convey storm water overland in the event of a large rainfall event.*

In the urban areas this is predominately achieved by kerb and channel. Additional functions of kerb and channel is to:

- Delineate and protect the road edge.
- Protect the berm and pedestrians using it.

In the rural area carriageway drainage is achieved by the construction of water tables where necessary. Large culverts (>2m diameter) are classed as bridges and are included in the Structures Section of the Business case.

9.2.3.1 Our Asset

Valuation Overview	
Total Length of Kerb Channel	630 Km
Number of Catch Pits	5547
Length of rural road culverts	36.7 Km
Average Age of Assets	38 years
Valuation - Drainage	$68,418,000

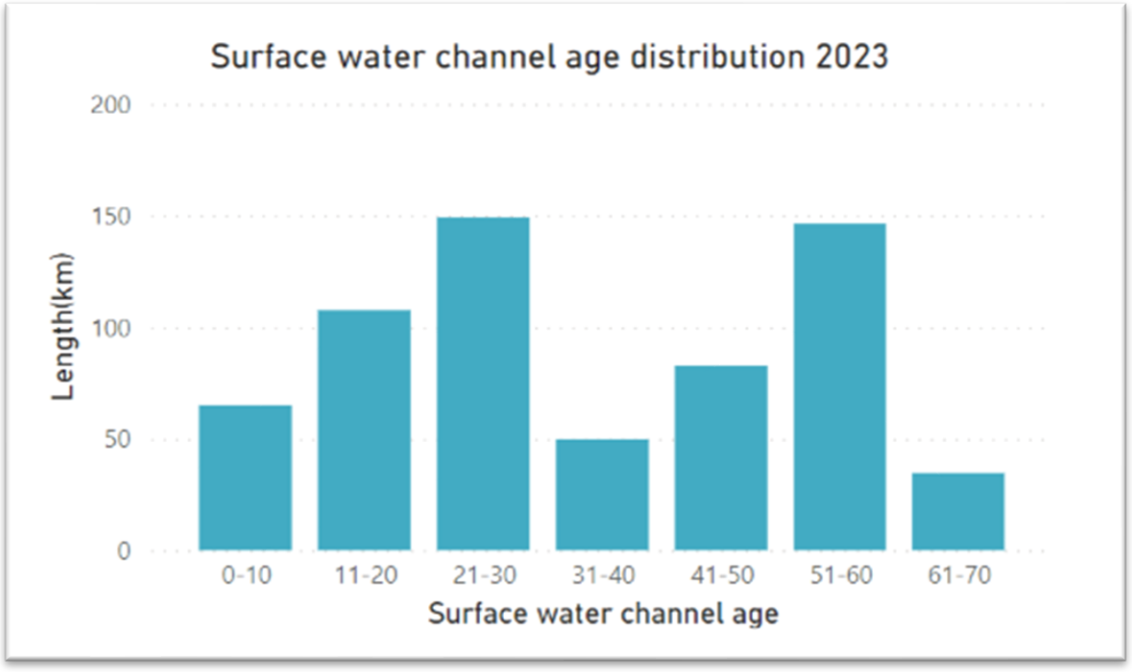


Figure 27 - Channel age - Surface water

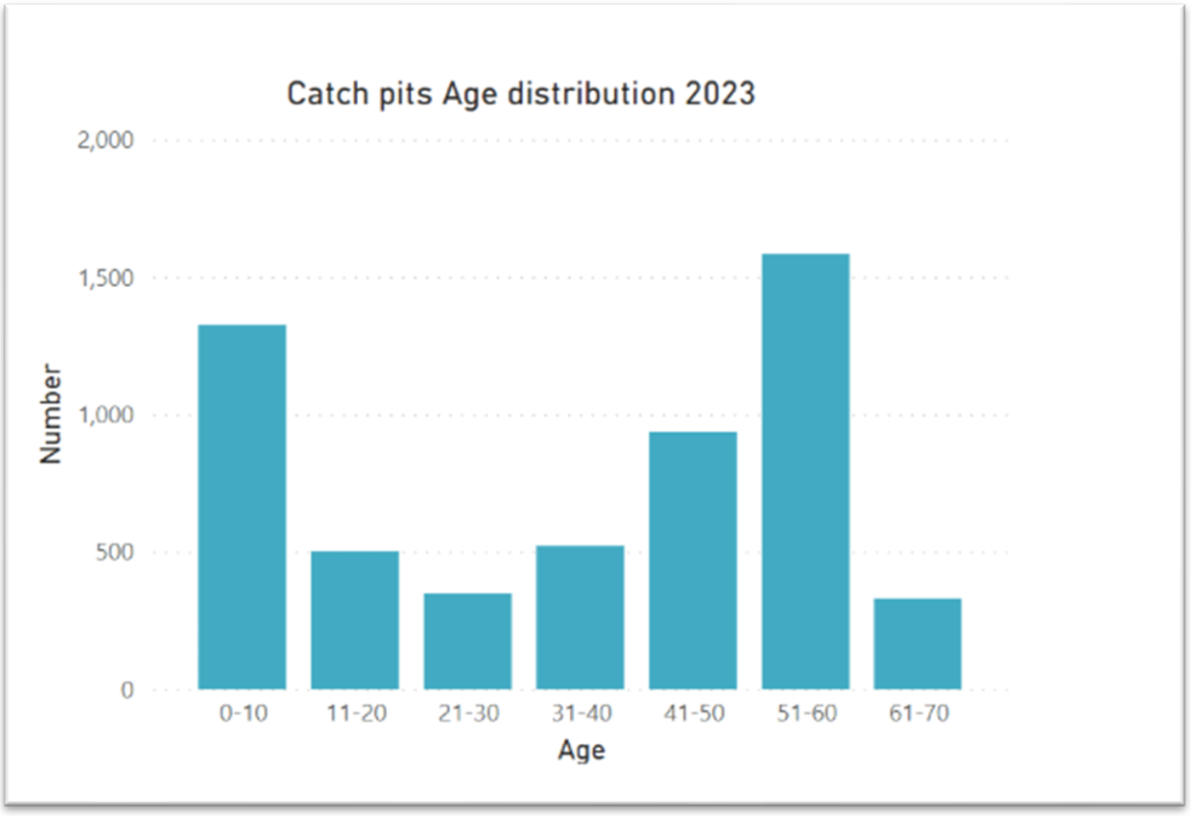


Figure 28 –Catch pits - Age Distribution

The age profile of the catch pits is very similar to the kerb and channel as these assets are closely link (shown in figure 35 and figure 36). Therefore, when assessing for renewals these assets should be assessed together.

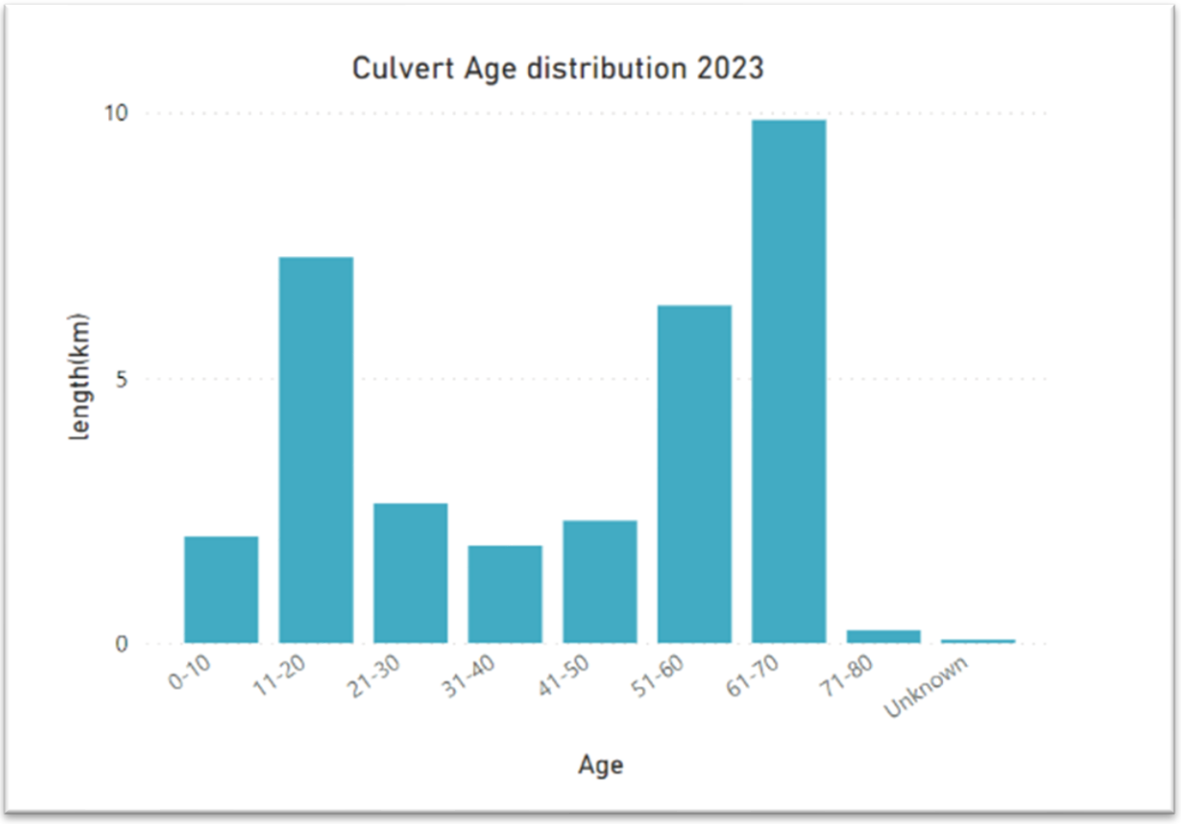


Figure 29 Culvert Age Distribution

9.2.3.2 Links to ONRC customer outcomes and strategy

The links to the ONRC customer outcomes for this activity is Safety, Resilience, Amenity, Accessibility, Travel time reliability, Cost Efficiency.

9.2.3.3 Levels of service

Currently we don't measure Resilience, or Accessibility for this activity. There are customer expectations that litter and leaf fall in urban areas should be cleaned more regularly particularly prior to any large storm events. Most customers rely on a network that is free from surface flooding and associated asset and property damage.

9.2.3.4 Evidence of existing approach

Carriageway drainage maintenance and inspections

Kerb and channel are maintained by channel sweeping and the cleaning of catchpits. This is completed in accordance with storm water quality criteria as set out in the storm water catchment management plans and district resource consent conditions.

- The contractor is required to undertake general routine inspections and maintenance including the following.
- Inspection of the network at 2-month intervals and detailed culvert inspections of all culverts at 6 monthly intervals.
- Sumps are cleared annually so that detritus which has accumulated up to the level of the invert of the outlet shall be removed by adequate suction.
- Kerb and channels are to be cleared quarterly so that detritus shall be removed from the channel such that the maximum depth of ponded water does not exceed 10mm after clearing.
- All stormwater structures shall have 90% of their waterway area, and blockages cleared within one week except where the blockage threatens the integrity of the road, and it is to be cleared immediately.
- Repair of kerb and channel where the length is less than 50m is classified as maintenance.

Carriageway drainage renewal

Repair of kerb and channel where the length is greater than 50m is classified as renewal. Some kerb and channel are renewed as part of upgrading of CBD footpaths, or due to end-of-life failures. Catch pits and Kerb and channel are nearing end of life both in Turangi and Taupo. The condition of these is monitored to determine if a larger renewal is needed.

Culverts in our district are check. With many culverts nearing end of design life (as shown in Figure 38), condition assessment is currently being completed and a forward works programme is being developed. This would be a risk base programme.

Carriageway drainage creation

Installation of kerb and channel is progressively done within the district, as some areas have been deficient in this asset. Areas lacking kerb and channel are:

- Turangi Industrial Area – isolated sections
- Atiamuri
- Tokaanu
- Acacia Bay – isolated sections

- Pukawa – as road has reverse camber, drainage along centre of road.
- River Road
- Mangakino
- Omori – isolated sections
- Waitetoko
- Kinloch – isolated sections
- Tauranga-Taupō

9.2.3.5 GAP analysis

Climate change may impact this activity by the impact on the duration/intensity and frequency of storm and weather events. It is difficult to monitor if the structures fail due to weather events of the structure may have failed (end of life). This will need to be monitored to determine whether addition investment is required to upgrade infrastructure to continue to meet the customer level of service.

Unclear if there is any lack of capacity in the drainage assets or structures. Many of the culverts have lack of data e.g., installation date in RAMM is unknown so difficult to know when to plan for renewals or replacements. This may be mitigated by a detailed review and condition assessment of drainage assets to improve data records.

Swale drains for new urban subdivisions will need further consideration on how we maintain these in the future.

Increase in the amount of debris in drainage system cause increase in street cleaning and clearing of catch pits.

Swale drainage has started to be used in new residential developments. This is likely to incur addition maintenance costs, but the extent of this is unknown. These assets may require council to provide more mowing (environmental maintenance) and cleaning of catch pits.

9.2.3.6 Options (Preferred option highlighted)

	Option 1	Option 2
Maintenance	Status Quo –. Maintain current level of service	Increase level of service for street cleaning Repairs to kerb and channel due to tree roots
Renewal	Status Quo – maintain level of renewals	Increase renewals based on increasing age and deteriorating condition

9.2.3.7 Programme

Note: Under drainage renewals, the years where there is increased budget from$560,000, we have identified culverts for renewals.

Work Category		10 Year Programme ($,000)									
		24/25	25/25	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
113	Drainage Maintenance	400	400	400	400	400	400	400	400	400	400

213	Drainage Renewals	1170	1120	620	370	470	320	220	220	220	220

9.2.4 Streetlights

Work Category	Overall asset outcome/objective
Work Category 122 – traffic services maintenance	• *Provide enough street lighting levels for the safe and efficient movement of vehicles, cyclists and pedestrians.*
Work Category 222 – traffic services renewals	

9.2.4.1 Our Asset

Asset Overview		
	Subsidised (Council Roading)	Unsubsidised (Parks and Facility)
Total Number of Street Lights	5689	317
Total Number of Street Light Poles	3582	240
Number of LED Street Lights	3316	196
Valuation	$9,708,000	$209,387

We have now completed our P Category LED conversion upgrade which covers 90% of the network.

Figure 46 indicates the age and type of poles owned by council. There are two main types of poles in our district: Steel and Concrete. Our concrete poles are being replace over time as they are aging (see age distribution in Figure 46). We have 1138 lights that are on power poles owned by the lines company.

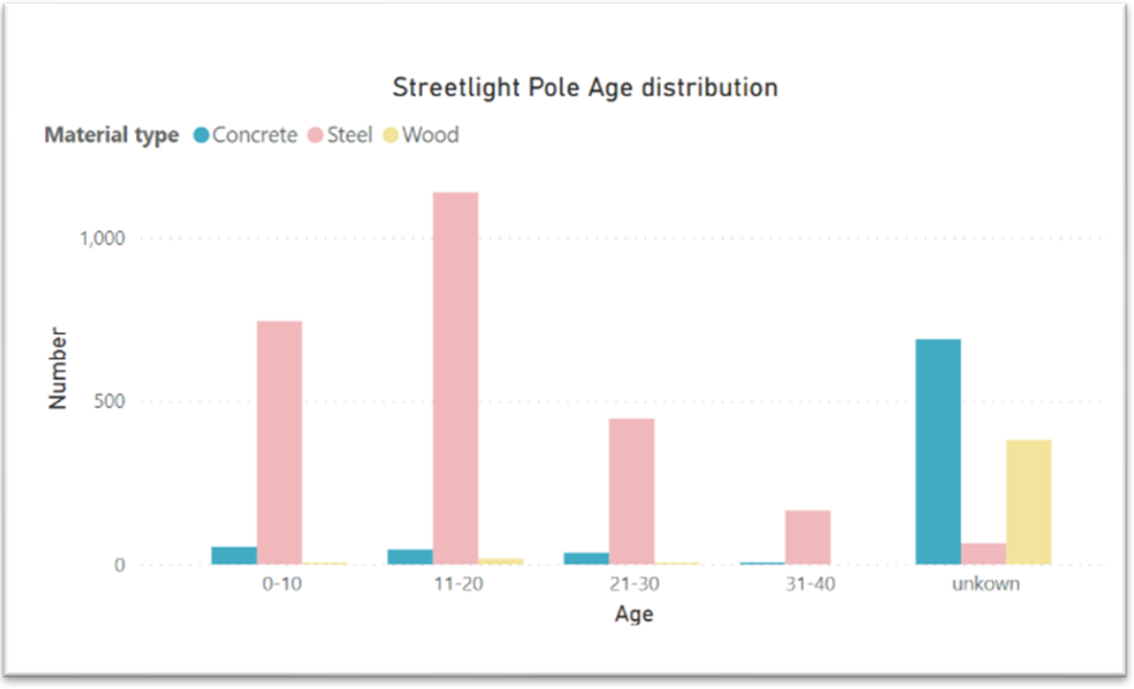


Figure 30 - Streetlight age distribution

9.2.4.2 Links to ONRC customer outcomes and strategy

The links to the ONRC customer outcomes for this activity is Safety, Resilience, Amenity, Accessibility, Travel time reliability, Cost Efficiency.

9.2.4.3 Levels of service

The expected customer levels of service are the AS/NZS1158 standard for streetlighting and the arterial and collector roads are generally compliant, but many local roads provide a lower level of lighting than expected due to inadequate pole spacing for LEDs.

9.2.4.4 Evidence of existing approach

Streetlighting maintenance

Council put out a 3-year contract in 2023 and extended with one year. With LEDs covering most of our network the maintenance costs are reducing. However, we have seen a shift in the power cost as we are now paying more for lines charges.

Streetlighting renewal

Key issues/activities for street lighting renewals are:

- The Contractor is paid set rates for replacement where necessary.
- To progressively upgrade streetlights on arterial and collector routes to appropriate standards and to remove potentially hazardous concrete poles.
- Streetlights are also renewed as they reach their end of life.

Streetlighting creation

Council has adopted AS/NZS 1158: 2005 (New Zealand Street Lighting Standard) as a standard for new subdivisions and upgrades. Generally arterial routes would be illuminated to V4 level whilst collector and local streets would be illuminated to P3 level. New lighting is generally developer installed to AS/NZS 1158:1999. TDC's main policy or intention is to have a consistent illumination along the road and in accordance with NZ standards to light major intersections on regional and district arterial routes to ensure lighting is appropriate dependent on the hierarchy of the road Infill lighting is often carried out where spacing of lights is significantly below the specified standard.

Flag lights on rural roads are installed as minor safety works when determined necessary.

Savings related to LED Coversion programme

There is a significant decrease in consumption (kWh/ year) since the conversion programme. A smaller reduction in cost versus usage is due to the portion of fixed charges that makes up the streetlight costs. The network charges are charged at a certain rate irrespective of whether the streetlights are LED or the old technology luminaires. As soon as the P-Category lights have been converted which is the largest portion of the network the energy consumption and cost will come down further.

9.2.4.5 GAP analysis

Testing and condition inspections are required to determine the condition and life expectancy of the poles. The condition of the light poles is unknown in many cases and the number of faulty poles or poles that are nearing the end of life or failure. Some of the poles in the newer subdivisions have been selected on style and fashion rather than life expectancy, however many have LED lights already installed though these might not

meet Waka Kotahi's M30 Specification for streetlights. The cost of replacing special / heritage style pole and luminaire is generally much high cost.

Additional LED lighting columns are needed to the network to bring the lighting standard up to specification. It is however not known how many additional lights are needed. Any addition lighting would be prioritized with V category lights getting priority. This would impact on potential savings gain from changing to LEDs.

In the future, lines company may choose to underground power lines. This will mean that we may need to plan for installation of new streetlight pole to maintain streetlighting in the urban areas.

The inclusion of a smart control system will enhance the management of the network and will provide additional benefits including further cost savings however this needs further investigation.

9.2.4.6 Options (Preferred option highlighted)

	Option 1	Option 2
Maintenance	Retain current level of service	Reduce maintenance costs and existing power costs
Renewal	Increase pole renewals based on age and the replacement of concrete poles as a roadside hazard	Focused renewals of the oldest poles and worst condition
New	Service request and other capital projects	Fill in, and address level of service gaps

9.2.4.7 Programme

Work Category		10 Year Programme ($,000)									
		24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
Subsidised											
122	Streetlight Maintenance	650	665	680	685	690	695	700	705	710	715
222	Streetlight Renewals	80	80	80	80	80	80	80	90	90	90
Unsubsidised											
	Streetlight Maintenance	110	110	110	115	115	115	120	120	120	125
	Streetlight Renewals	0	0	0	0	0	0	0	0	0	0
	Low cost/Low risk programme	50	50	50	0	0	0	0	0	0	0

Note: New streetlights is also included in Low-cost low risk programme of works so above total is not inclusive of this. Note: Streetlight maintenance also includes energy costs.

9.2.5 Traffic Services

Work Category	Overall asset outcome/objective
Work Category 122 – traffic services maintenance	*To provide signs, markings and other traffic control devices that are easy to see, understand and that contribute to the safety and effectiveness of the road network.*
Work category 123 – operational traffic management	
Work category 222 – traffic services renewals	

Traffic services cover road marking, traffic signs and other control devices (roundabouts, splitter islands etc.). Each of these are explained in more detail below. The purpose of road marking is to delineate the road/pavement/footpath/service lanes to guide traffic movements and indicate road use restrictions.

Signs are provided to aid the safe and orderly movement of traffic. They may contain:

- Regulating instructions which road users are required to obey.
- Warnings of temporary or permanent hazards which may not be self-evident.
- Directions and distances to destinations.
- An indication of road user services and tourist features/establishments.
- Other information of general interest to road users.

Traffic controls in this section refer to traffic safety barriers, medians, roundabouts, traffic signals, calming devices and local area traffic management (LATM) systems. Their purpose is to regulate, warn or guide traffic. Their effectiveness as traffic control devices depends on them being:

- Logical.
- Readily identifiable.
- Appropriately selected and located.
- Reliable

9.2.5.1 Our Asset

Asset Overview	
Traffic Signs	6422 number
Traffic Signals	3 sets of traffic signals and 1 midblock crossing
Line Marking	940 Kms
Electronic Signs	7 Permanent and 3 Portable
Traffic Facilities (Edge Marker Posts /Raised Pavement Markers)	14085
Valuation	$3,364,000

9.2.5.2 Links to ONRC customer outcomes and strategy

Traffic services links to the strategic case via reducing the number of serious and fatal injuries, reducing social cost and time delays which may be caused by road crashes etc.

The activity links to all ONRC customer outcomes - Safety, Resilience, Amenity, Accessibility, Travel time Reliability, Cost Efficiency but mainly Safety – (CO 1 – the number of fatal and serious injuries on the network, CO2 – collective risk (fatal and serious injury rate per km), CO 3 – personal risk (fatal and serious injury rate by traffic volume).

9.2.5.3 Levels of service

The current level of service is set by the Department of Internal Affairs which is the percentage of customer service requests relating to roads and footpaths responded to in line with the timeframes set out in the Taupō Districts relevant document. For Taupō it is set at 5 working days response time. This relates to all levels of road classification.

Our traffic signals are connected to SCATS and are controlled by Tauranga Transport Operation Centre (TTOC) via agreement with Tauranga City Council. SCATS (Sydney Coordinate Adaptive Traffic System) is monitor for performance and alarms if any failures occur. They can then be responded to as appropriate.

9.2.5.4 Evidence of existing approach

The maintenance/renewal varies each year depending how many RRPMs need replacing.

Safety works are the main influence in new works expenditure. The trend for higher safety standards and traffic growth means this expenditure is likely to increase.

Remarking reseals immediately after sealing is written into reseal contracts and is part of the pavement/surface renewal cost.

Roadmaking maintenance and renewal

TDC lets a contract for three years on a one plus one plus one-year basis, to spray all markings, at least once per year. Some high use roads are marked twice a year. As this is completed on an amount basis it is classified as maintenance and not renewal.

The volume of work has steadily increased with past seal extension programmes. However, current seal extensions are on low volume, local roads that generally do not meet the guidelines for pavement marking.

The Contractor maintains the RRPMs within the road marking contract.

Reflective glass beads are being used on all markings except parking and no stopping lines. TDC have changed their road marking contract to use waterborne paints. These paints are reported to hold beads better and provide better reflectivity and a longer life than other comparable paints. Waterborne paints also have a low environmental impact. The markings will be monitored to confirm that they will provide a good quality marking at minimum cost.

Roadmarking creation

The current tactical practice is in accordance with Traffic Control Device (TCD) Rule and/or RTS5 Guidelines for rural roads.

Signs maintenance

Signs are maintained by network contractor on a cyclic Lump Sum basis. Replacement of posts and relocation of signs from service poles to posts is classified as maintenance.

Signs renewals

The following is what makes up our sign renewal programme.

- Replacement of signs.
- Physical damage or loss of reflectivity (renewal) is repaired on a tasking basis.
- Marker posts are maintained on a cyclic basis. This usually consists of replacement of defective marker posts.
- A computerized sign inventory system is operated that can record a request for work and tasks completed.

Sign creation

All traffic signs are designed and located to meet the requirements of the Traffic Control Devices Rule.

TDC has adopted white on green upper/lower case street name blades of high reflectivity.

TDC has adopted a general policy on signage to minimize the plethora of signs being requested by the community groups and clubs plus to avoid any unnecessary advertising signs.

Key activities for new signs are:

- Signs are required for new subdivision paid for by developer and installed by TDC.
- Upgrading of edge marker posts to New Zealand Transport Agency's standards.
- Installation of new warning signs as necessary.

Traffic control maintenance and renewal

Signal maintenance contract run through TTOC. The renewal of signal assets will be determined on age and condition. The signal assets are still relatively new and therefore maintenance and renewal cost are reality low. Note the distance from suitable signal maintenance contractors does mean that the cost to do maintenance works.

Traffic control creation

Traffic control devices are generally installed after specific investigations and/or crash studies. As such, they comprise of a visible, but low maintenance item that is not a 'critical asset'. It is likely that installation of new traffic controls will be as required. Expenditure for such items will generally be out low-cost low risk and if over $2 million a business case will be needed.

Safety barriers/guard-rails installed at some potentially dangerous sites.

Below in figures 38 to 41 are snapshots taken from the ONF reporting tool showing the crash trend over the last 5 years. This crash graph shows that a decreasing trend on both rural and urban connectors, with a more significant reduction observed in rural connectors. However, activity streets demonstrate an increasing trend in crashes over the past five years. Comparing to the peer group within the Waikato region, our district has a higher number of crashes on activity streets. Therefore, there is a need for more efforts to reduce crashes on activity streets.

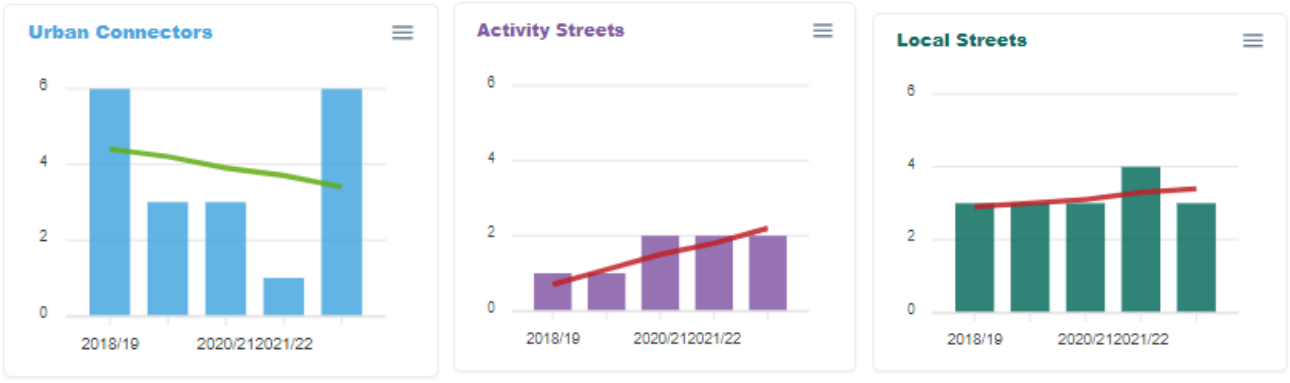


Figure 38 Urban street category crash trend 2018 - 2023

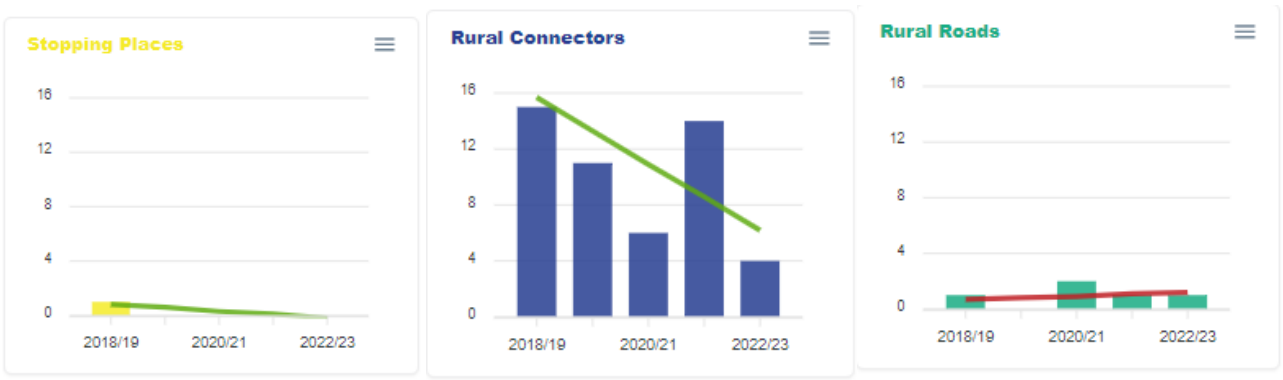


Figure 39 Rural street category crash trend 2018 – 2023

Figure 40 Comparative five years Trend by ONF street category

There continues to be an increase in the number of crashes especially at urban intersections, and therefore there is more of a focus on improving urban intersection which generally will mean the creation of new traffic control devices. During five years, the majority of crashes are on rural and urban connectors. This indicates more focus on these two street categories and the installation of traffic control devices.

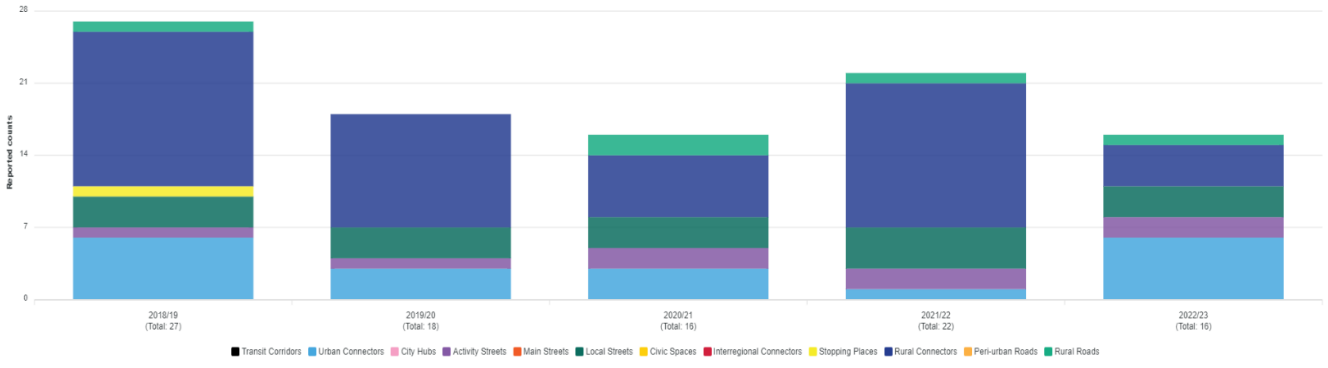


Figure 41 ONF street category crash in 2018-2023.

9.2.5.5 GAP analysis

Current practice with traffic services maintenance is based on a reactive programme rather than proactive. This is done by either the contractor or customer identifying items that need repair.

Need to see if a proactive programme could be achieved for traffic service maintenance.

Need to identify any difference between existing road hierarchy lighting and ONRC.

Local roads are currently not rated for risk (Kiwirap) so unable to report against the measure, consider once risk ratings have been established.

Need to look at the number of faults for each traffic service – lighting, signs, markings and see if there are any trends based on location and/or per road classification.

9.2.5.6 Options (Preferred option highlighted)

	Option 1	Option 2
Maintenance	Continue with maintenance of signs, markings and signals as per existing contracts	Increase frequency of Marking and cleaning of signs for higher volume roads as per ONF
Renewals	To investigate and develop a programme based on road classification and/or number of faults in network. Prioritise higher classification roads.	To develop a programme of works focused on where high crash rates are occurring to tie back into strategic case for reducing serious crashes
New	Add additional signs and markings base on merit of service requests.	Construct signals based on safety and accessibility for vulnerable road users.

9.2.5.7 Programme

Work Category		10 Year Programme ($,000)									
		24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	332/33	33/34
122	Traffic Services Maintenance	1043	1058	1073	1078	1083	1088	1093	1098	1103	1108
122	Traffic services Maintenance (SPR)	2	2	2	2	2	2	2	2	2	2
123	Operational Traffic Management	50	65	80	100	100	100	100	100	100	100
222	Traffic Services Renewals	210	215	220	220	220	220	220	250	255	260

9.2.6 Structures

Work Category	Overall asset outcome/objective
Work Category 114 – structures maintenance	*The purpose of road bridges, culverts, retaining walls and other structures is to provide continuous resilience in all-weather roading over rivers, streams and uneven terrain.*
Work category 215 – structures component replacements	

Detailed inspections of roading bridges and culverts with a diameter greater than 3.4m2 are inspected bi-annually in a joint contract with the local NZTA State Highway Bridge Network Inspections Contractor. The bridge inspection programme inspected 97 structures including 27 bridges, 50 large culverts and 29 underpasses.

The consultant also investigated structure susceptibility to overload and developed an overload analysis programme to assist overweight permit application processing.

9.2.6.1 Our Asset

Asset Overview	
Bridges (including pedestrian bridges)	27 number
Large Culverts	49 number
Underpass	32 number
Retaining Walls (greater than 1.5m)	1.11 kms
Guardrails and Handrails	2.13 Kms
Minor structures	77
Valuation	$108,216,000

Large Structures include the following.

- Bridges
- Large culverts
- Retaining walls
- Underpasses

Minor structures include the following.

- Bus shelters
- Guardrails
- Retaining wall less than 1.5 m
- Speed Control Devices
- Bicycle Infrastructure

The age distribution for bridges and large culverts/underpass is shown in figure 48 below. This shows that most of our bridges are between 40 and 60 years old.

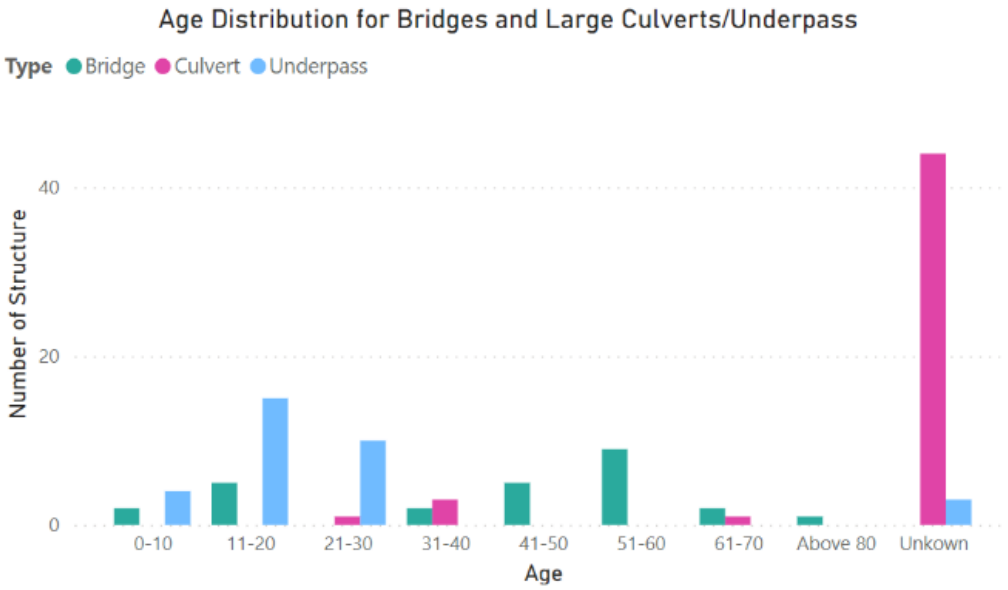


Figure 31 Age Distribution for Bridges and Large Culverts

9.2.6.2 Links to ONRC customer outcomes and strategy

The links to the ONRC customer outcomes for this activity is Safety, Resilience, Amenity, Accessibility, Travel time Reliability, Cost Efficiency.

This activity links to the Government Policy Statement in terms of economic growth and productivity (freight movements), value for money with the adoption of the ONRC and road safety.

9.2.6.3 Levels of service

Currently we don't measure Resilience, or Accessibility for this activity.

9.2.6.4 Evidence of existing approach

The historical data shown in the table below has been sourced from Council's NCS MagiQ system (,000's).

Work Type ($,000)	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2017/ 18	2018/ 19	2019/ 20	2020/ 21	2021/ 22	2022/ 23
Maintenance	12	35	23	31	25	44	75	49	48	124
Renewals	0	0	0	0	0	0	0	0	0	0
New Works	0	0	0	0	0	0	0	0	0	0
TOTAL	12	35	23	31	25	44	75	49	48	124

Structures maintenance/renewals

Detailed Inspections of Roading Bridges and large culverts are inspected biannually. The inspections are followed up by a defects report provided by the Bridge Inspector. The maintenance/renewal programme is then produced and prioritised from the defects list, working within the available budget (unless urgent safety work in excess of the budget is required).

The current budget is insufficient to fully fund the maintenance requirement and available funds are utilised to complete a routine vegetation control programme of all structures, the identified priority works and any other lesser priority maintenance that may be associated with that particular structure at that time of repair being undertaken.

Works of lesser priority are presently being monitored and deferred until such time that funding allows this work to proceed. This is not sustainable, and a plan needs to be developed to manage this work in a cost-effective way.

Figure 43 shows that most of our bridges are in good to average condition, therefore our current approach to maintenance and renewal is appropriate.

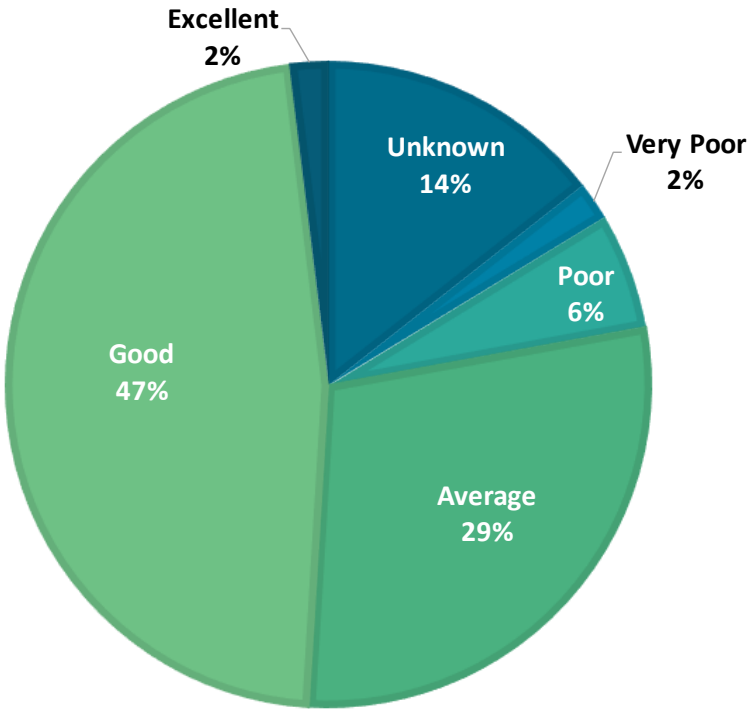


Figure 32. Overall Bridge and Large Culvert Condition Rating

Structures creation

TDC actively encourages the installation of stock underpasses, especially on arterial routes. Council generally makes a minor contribution to these where funding allows in terms of New Zealand Transport Agency policy. Upon completion the ownership of the underpass is vested in Council.

The Taupō CBD Structure Plan details the need to construct a second bridge crossing the Waikato River to provide sufficient capacity to link Taupō Township with the developing areas to the west. Currently, we have deferred a Single Stage Business Case for the northern access, which includes confirmation of future bridge location and other network improvements to delay the need for a second bridge crossing. This is programmed into the LTP as a placeholder based of the need for a more resilient network for both transport and 3 waters.

9.2.6.5 GAP analysis

During the review it was identified several structures would benefit from special inspections (rather than general) due to the additional access requirements being necessary for specific structural vulnerabilities.

Information regarding journey/travel time disruption from flooding issues is unknown as currently it is not recorded. Lack of knowing what alternative routes is available if the bridge is no longer able to be maintained due to funding.

Need to keep updating RAMM data with condition details, structural checking for HPMVs, date of installation of bridges and culverts. Also structures such as retaining walls need to be included in an inspection regime. Improved data collection may mean less risk of sudden failure of structures and therefore increased network availability.

9.2.6.6 Options (Preferred option highlighted)

	Option 1	Option 2	Option 3
Maintenance	Continue regular maintenance plus high priority maintenance identified in inspections	Continue regular maintenance plus Medium and high priority maintenance identified in inspections	Continue regular maintenance plus all maintenance work identified in inspections
Renewal	High priority Renewal identified in inspections	Medium and high priority Renewal identified in inspections	All Renewal work identified in inspections
New	Case by case as need is identified through the business cases process		

9.2.6.7 Programme

Work Category		10 Year Programme ($,000)									
		24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
114	Structures Maintenance	119	619	619	619	119	119	119	119	119	119
215	Structures Component Replacements	0	0	200	300	300	300	200	200	0	0

The structure component replacement relates to the retaining wall structure replacement following the investigation of embankments and slips as part of the proactive resilience focus.

Structures maintenance

The increase in budget from $90K per year from the last AMP to $119K per year is based on the latest bridge inspection reports which we are receiving from the new Structural Asset Management contract (SAMS) and the increase in HPMVs/HV traffic volumes. Based on the most recent report it has been identified we need to increase our structural renewals to at least $600K per year for maintenance, so will need to increase this during the annual plan process. We will be discussing with our neighbouring councils to see if there is a structural maintenance contractor we can source for our district.

We have formalized an agreement between Otorohanga District Council via the assistance with CoLab, on the management of the shared bridges and have allowed additional budget per year.

9.2.7 Environmental Maintenance

Work Category	Overall asset outcome/objective
Work Category 121 – environmental maintenance	*The purpose of road berms is to: provide a buffer area between carriageway/footpath and property for public use including installation of utilities, street planting and road support structures*

Rural carriageway drainage is usually in the form of water tables within these berms.

9.2.7.1 Our Asset

We have a stock effluent disposal site on Oraunui Road near the intersection with Poihipi. This is managed by TDC contractor.

9.2.7.2 Links to ONRC customer outcomes and strategy

The links to the ONRC customer outcomes for this activity is Safety, Resilience and Accessibility.

9.2.7.3 Levels of service

To maintain roadsides for both safety of road users and the resilience of the network and to provide access to small communities or at least provide them with alternative routes.

9.2.7.4 Evidence of existing approach

Routine maintenance programmes are focused on maintaining the network to ensure road safety is not compromised by vegetation overgrowth and hazards such as detritus, and surface ponding.

The historical data shown in the table below has been sourced from Council's NCS MagiQ system (,000's). The increase in the last financial year was due to the weather events we experienced.

Work Type ($,000)	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2017/ 18	2018/ 19	2019/ 20	2020/ 21	2021/ 22	2022/ 23
Maintenance	626	659	551	473	491	572	562	584	843	1310
Renewals	0	0	0	0	0	0	0	0	0	0
New Works	0	0	0	0	0	0	0	0	0	0
TOTAL	626	659	551	473	491	572	562	584	843	1310

Berm maintenance (urban)

Urban property owners are expected to maintain berm frontages. TDC mows six monthly at TDC's expense if not maintained. Overhanging vegetation is to be removed by property owner. If not removed, the vegetation is cut back and TDC aim to recoup costs.

Landscaping within the road reserve (e.g., on round-a-bouts, kerb extensions, street trees) is maintained by the Parks and Reserves division of TDC. All expense for this is currently contained within their budgets.

Berm maintenance (rural)

General maintenance comprises of repairs of scour, maintenance of rural water tables, re-grassing etc., by network contractor on a km/month basis. Major repairs such as repair of major scour, dropouts, slips, tree trimming as well as berm reshaping are completed as tasked works.

Vegetation mowing – the mowing width is a 2.5m wide grass strip on straights, 3m on curves, full width on selected high visibility areas by Contractor on a per km basis. During the Council deliberations it was decided to do further mows along Wairakei Drive to retain the amenity value for tourist and visitors to the district.

Spraying to control weed pests (e.g., scrub and broom etc.) within and beyond the 2.5m strip is done on a separate contract.

Commercial activity on berms is not permitted, but rural grazing is permitted in allocated areas. Farmers may be given permission to graze berms (by license) as this provides additional vegetation control. This grazing shall be a minimum of 2.5m from the edge of seal so not to be a safety hazard or hamper mowing operations.

Dairy herd crossing of berm and stock effluent spillage is an issue. TDC is encouraging farmers to install stock underpasses or to seal the crossing point to enable flushing after stock crossing. TDC has installed an effluent disposal area at the Oruanui Sale Yards to address the issue of stock effluent discharge onto berms in that area.

9.2.7.5 GAP analysis

Environmental issues associated with illegal discharges of effluent by stock trucks, difficult to control if we are unaware of the locations.

Need to identify routes where loose chip and detritus occurs and prioritize there routes particularly where we have major cyclist and motorcyclist using the routes.

Swale drainage has started to be used in new residential developments. This is likely to incur addition maintenance costs, but the extent of this is unknown. These assets may require council to provide more mowing (environmental maintenance) and cleaning of catch pits.

9.2.7.6 Options (Preferred option highlighted)

	Option 1	Option 2	Option 3
Maintenance	Status quo	Decrease environmental/routine maintenance	Increase environmental/routine maintenance

The preferred option is option 3. The increase in level of routine maintenance is required on some of our main arterials and the key tourist routes into Taupō, especially based on recent weather events, where we experienced a number of mature pine trees fall during cyclone Gabrielle. Also, an increase in litter collections prior to mowing and a couple of climatic events where we have had to clear more snow than previous years. We will be undertaking an investigation which will also look at vegetation concerns and possible slips as part of the proactive resilience focus.

9.2.7.7 Programme.

Work Category		10 Year Programme ($,000)									
		24/25	25/26	27/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
121	Environmental Maintenance	716	721	726	731	736	741	746	751	756	761

121	Environmental Maintenance (SPR)	4	4	4	4	4	4	4	4	4	4
221	Environmental Renewals	0	0	0	0	0	0	0	0	0	0

9.2.8 Network and Asset Management

Work Category	Overall asset outcome/objective
Work category 151 – network and asset management	*Management and control of the road network and road assets. This provided require information and management to get the best whole of life value of our assets*

9.2.8.1 Links to ONRC customer outcomes and strategy

Network and asset management is the implementation of a well-planned and procured maintenance asset management plan.

Network and Asset Management provides data and information to implement value for money a provided value for money asset management.

9.2.8.2 Levels of service

Response time to customer service enquires (differentiated by ONRC)

9.2.8.3 Evidence of existing approach

Some of our pavements are nearing end of life as many of our roads were built around the 60s and 70s. It cannot yet be accurately predicted when the districts pavements will completely fail as it is highly dependent on the underlying subgrade strength and traffic loadings. This means continued condition assessments are required to determine a cost-effective renewal plan for the next 30 years. Further collection and improvement of our data will help council decisions and allow us to better manage all our assets. This next LTP period we are looking to invest in investigations around resilience and network security in an attempt to proactively manage the network and this will include slips and embankment studies along with vegetation control, guardrail assessments and increase in data collection. We have allowed budget for consistent data collection. These are all to be completed in the first 3 years of the LTP ready for the next planning period 2027-2030.

Figure 44. shows that our funding level for network management is below the peer group and national average.

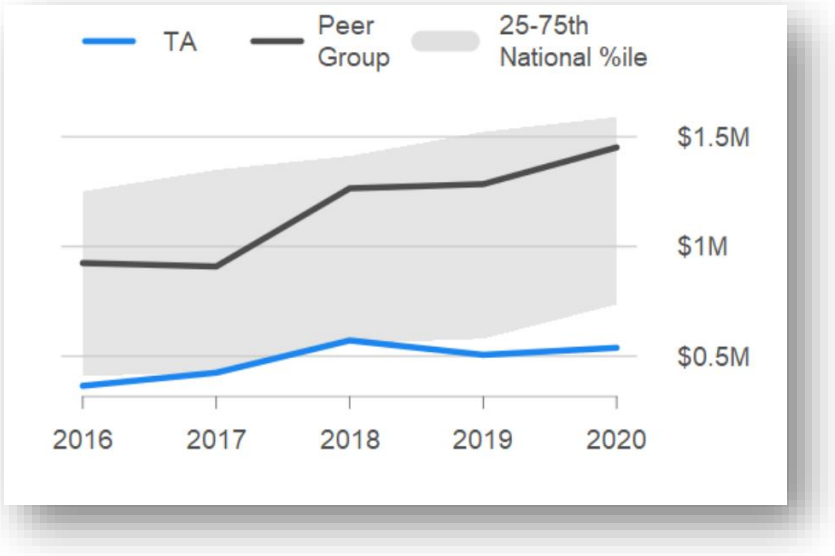


Figure 44. Investment Management, Network and Property Management Costs

Historically we have been spending.

Work Type ($,000)	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2017/ 18	2018/ 19	2019/ 20	2020/ 21	2021/ 22	2023/ 24
Maintenance	409	356	354	415	374	510	500	507	710	708
TOTAL	409	356	354	415	374	510	500	507	710	708

9.2.8.4 GAP analysis

There may be opportunities for collaboration to deliver some services through the CoLAB/RATA.

A district wide speed management plan is to be developed. There is a need to review speed limits against the NZTA safe and appropriate speed maps and the speed management guide for our district a plan for associated infrastructure changes so that the surrounding road environment matches the proposed speed changes. Public consultation is required though out this process.

Early indications of the review show that most urban roads have been identified as roads to be reduced from 50km/hr to 40km/hr or less. Some unsealed low volume access roads are showing a proposed reduction of 100km/hr to 80km/hr. These will need to be included in the speed management plan for more discussion with the community, some will be difficult conversations, and some will require some engineering work prior to these being adopted.

9.2.8.5 Options (Preferred option highlighted)

	Option 1	Option 2
Management	Status quo	Increase Traffic / pedestrian and cycling counting. Increase pavement condition data.

9.2.8.6 Programme

Work Category		10 Year Programme ($,000)									
		24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
151	Network and Asset Management	1119	1216	1197	943	959	1000	971	987	1028	999
151	Network and Asset Management (SPR)	5	5	5	5	5	5	5	5	5	5

Network asset management programme includes.

- WRTM modelling
- RAMM rating and RAMM upgrade fees.
- Road legalization
- Revaluation review (every 3 years)
- AMP external review
- dTIMS
- Business Unit
- SCRIM and other high-speed data collection
- Consistent data collection
- Specialist consultants
- COLAB membership
- Traffic counting contract through RATA.
- Regional speed management plan development
- Guardrail assessment
- Bridge inspections via SAMS contract
- Slips and embankment investigation.
- Junoviewer

9.2.9 Emergency Work

Work Category	Overall asset outcome/objective
Work Category 141 – emergency works	*To repair and make safe the transport network after an event that causes damage to our network.*
Work Category 140 – minor events	

9.2.9.1 Links to ONRC customer outcomes and strategy

The links to the ONRC customer outcomes for this activity is Safety (CO1 - the number of fatal and serious injuries on the network, CO2 – Collective Risk, CO3 – Personal risk), Resilience (CO1 – number of vehicles impacted by unplanned events, CO2 – number of instances where road access is lost).

9.2.9.2 Levels of service

No current levels of service.

9.2.9.3 Evidence of existing approach

No evidence collected on road closures or unplanned events. These events are often unpredictable, and currently there is no evidence to reduce or increase funding for this activity.

9.2.9.4 GAP analysis

For any road closure or unplanned event there should be some record of the event, initial response and the permanent reinstatement timeframes. From this we can identify any changes possibly required in response times or reinstatements can be made.

9.2.9.5 Options (Preferred option highlighted)

	Option 1	Option 2	Option 3
Maintenance	Status quo	Increase Response Times	Decrease Response Time

There is no evidence for change. The current level of service still provides adequate response times to ensure public safety.

9.2.9.6 Programme

Work Category		10 Year Programme ($,000)									
		24/24	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
140	Minor Events	100	100	100	100	100	100	100	100	100	100
141	Emergency Works	0	0	0	0	0	0	0	0	0	0
	Total	100	100	100	100	100	100	100	100	100	100

9.2.10 Low Cost/Low Risk Improvements

Work Category	Overall asset outcome/objective
Work Category 341 – Low-Cost Low risk Roading Improvements	*To make improvements to our network to improve safety and other key outcomes describe in the AMP and in our Transport Strategy. Also, to promote the importance of road safety in our community.*

Work Category 324 - Road Improvements	
Work category 432 – road safety promotion	

9.2.10.1 Links to ONRC customer outcomes and strategy

The links to the ONRC customer outcomes for this activity is Safety (CO1 - the number of fatal and serious injuries on the network, CO2 – Collective Risk - whereby the number of FSi's per km is reducing and CO3 – Personal risk – whereby the number of FSi's by traffic volume is reducing).

This activity is directly related to the ONRC LOS, and also linked to the National Safer Journeys strategy and the Waikato Regional Road safety strategy.

9.2.10.2 Levels of service

The current Council level of service relates to annual change in Fatal and Serious injuries (FSi) from the previous year, where the FSi is attributable to the road conditions, in addition there is a measure for Smooth Travel Exposure with a target of 90%.

Reducing the number of serious and fatal injuries on network each financial year as part of a 5-year trend. This is measured using the NZTA crash analysis system.

9.2.10.3 Evidence of existing approach

Figure 33. Reported Serious Injuries and Fatalities Each Year in Taupo District

The above graphs shows that the number of Serious Injuries and Fatalities (DSIs) in our district is increasing overall with significant increases on our arterial and secondary collector roads.

Classification	Collective Risk
Arterial	0.082
Primary Collector	0.046
Secondary Collector	0.016
Access	0.004
Low Volume	0.004

Table 1. Collective Risk by ONRC Classification in Taupo District

Collective risk highlights which road links have a high number of fatal and serious crashes occurring on them which can be used to determine where the greatest road safety focus should be made from investment in engineering. Table 11.

Classification	Personal Risk per 100M VKT
Arterial	9.722
Primary Collector	4.988
Secondary Collector	8.514
Access	5.570
Low Volume	12.028

Table 2. Personal Risk by ONRC Classification in Taupo District

Personal risk shows the likelihood of a driver, on average being involved in a fatal or serious road crash on a particular road classification. The measure is limited to rural sections only and the ranges are low risk is anything lower than 4, medium anything lower than 6.9 and high is over 9. The above shows our secondary collectors, low volume and arterial should be the roads to focus on for road safety improvements.

9.2.10.4 GAP analysis

The deficiency database doesn't currently align with the ONRC road classification, currently the priority is based on the type of treatment/improvement, cost of treatment, crash history and other multi criteria.

9.2.10.5 Options (Preferred option highlighted)

	Option 1	Option 2	Option 3
New Improvements	Decrease the level of funding	Maintain the current level of funding	Increase the level of funding

Option 3 is preferred based on the continuation of fatal and serious crashes on the network. Taupō District has continued to have serious and fatal crashes and therefore needs to continue to address crashes where at all possible. We will continue to use the NZTA deficiency network database to record and prioritize all our network deficiencies identified by customers, contactors and/or staff.

9.2.10.6 Programme

Work Category		10 Year Programme ($,000)									
		24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
432	Road Safety Promotion	245	245	245	245	245	245	245	245	245	245
424/425	Low cost/Low risk footpath projects	5825	7505	7005	2830	1130	1430	550	0	0	0

	Total	6070	7750	7250	3075	1375	1675	795	245	245	245

Low cost/low risk (formerly minor improvements)

These projects are prioritized using multi-criteria (NZTA deficiency database). Minor improvements also include projects such as lighting improvements to address night-time crashes, guardrail installations, pedestrian refuge islands and/or similar facilities, walking and cycling improvement projects and intersection improvements. Note: The first 4 years are high as it includes a footpath connection from Waitahanui to the airport along State Highway 1 estimated at $3M over a 4-year period.

Road Safety Programme

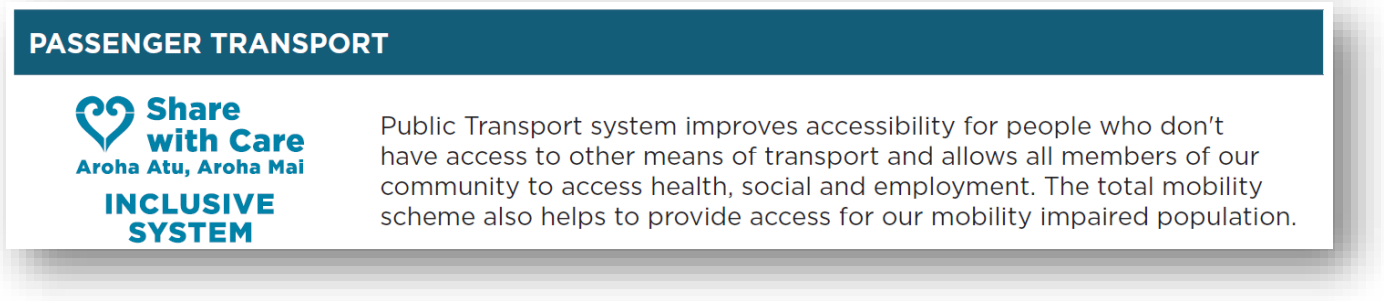
Road safety programme is based on the safer journeys document and the communities at risk register.

9.2.11 Passenger Transport

Work Category	Overall asset outcome/objective
activity 511 - bus services	*To offer contracted bus public transport services to the community. Further also to provide door-to-door subsidised taxi or specialist transport provider trips for people with disabilities.*
activity 517 – total mobility services	

9.2.11.1 Links to ONRC customer outcomes and strategy

The links to the ONRC customer outcomes for this activity is Accessibility (OM1) – Access to Public transport is available. The customer measure is the bus services is what I would expect in an area like this. The technical measures are the proportion of the population living within 500m of a bus stop.



9.2.11.2 Levels of service

We currently don't have a service level for passenger transport however we used to have a performance measure of increasing passenger numbers using the service per year so this will need to be developed further. We need to confirm the Taupō service is classed as either a rural or urban service.

A new Electric bus came into service on 4 December 2023, named EVIE which provides the community with an increase in level of service with a much more comfortable service with air conditioning, kneel on request, free wifi, USB charges, cameras, GPS information and no diesel fumes when waiting at bus stops. The new bus named EVIE is the first for Taupo and the Waikato region and a start towards carbon emission reduction. The bus can do the full Taupo Connector service and be easily charged up overnight that the Tranzit depot.

9.2.11.3 Evidence of existing approach

Historical passenger numbers have been declining however a review of the current bus service has identified a need for the community particularly those that have no access to a vehicle. The review undertaken included community surveys to focus the bus service on where people want to travel and a on demand service – Connect to Taupo was started in October 2022 with passenger numbers increasing especially from Turangi to Taupo service. Figures 45 and 46 show patronage numbers for Taupo Connect service and connect to Taupo service.

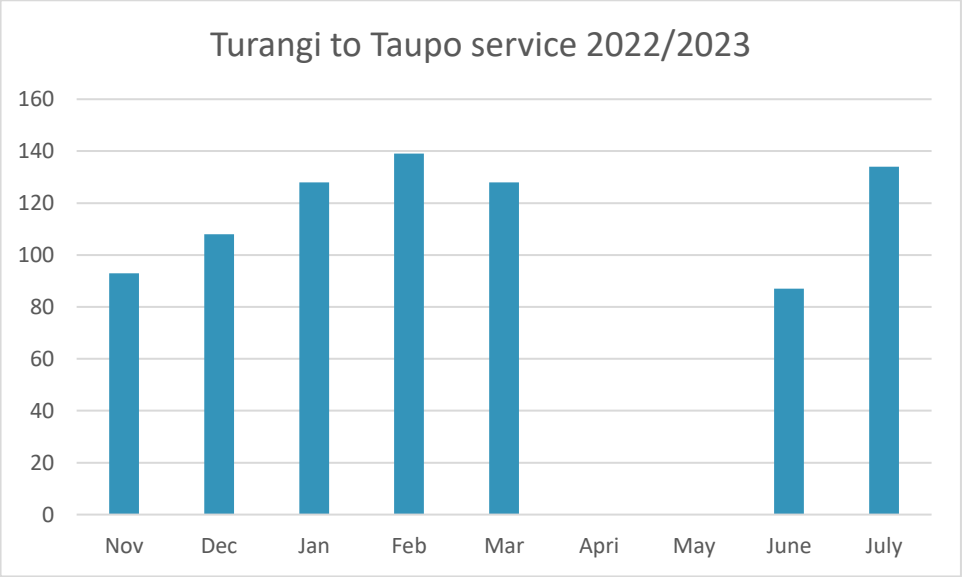


Figure 46 Note: Data was unable to be sourced at time of draft for April and May months.

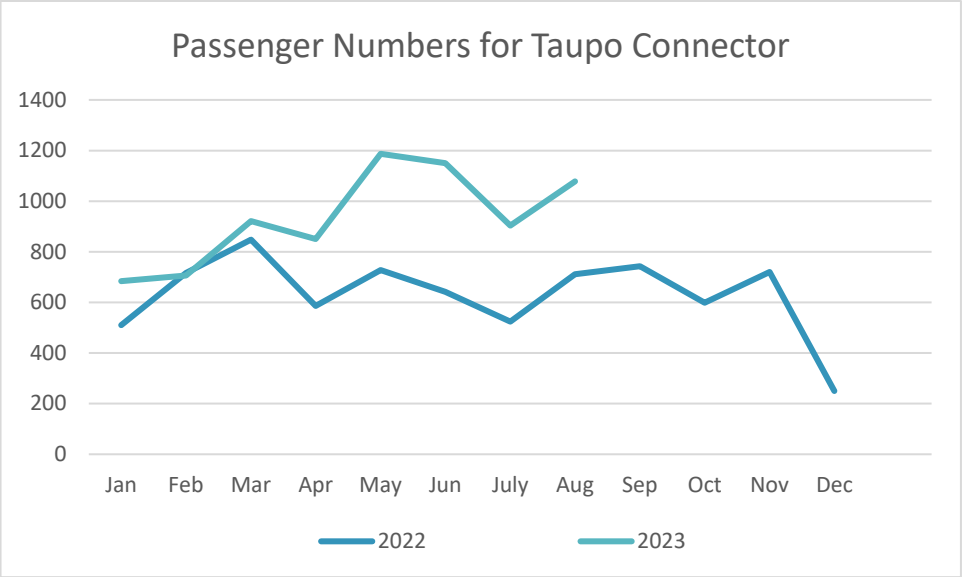


Figure 47 Passenger numbers also seem to be increasing on the Taupo Connector service.

Total mobility scheme – numbers have been increasing which would be due to the urban boundary being removed. Anyone in the Taupō District can apply to be part of the scheme if they meet certain criteria however the maximum subsidy for any fare is capped at $12.50. We have been advised the total mobility scheme may become regionally funded however this has yet to be confirmed at the time of writing the AMP.

9.2.11.4 GAP analysis

The review of the current bus service has been completed and a new contract was awarded to Tranzit group and became effective on 1 October 2022. From the two user groups there appears to be some shortfalls of the current bus route mainly with the school children in the afternoons, but overall, the route seems to cover a good area of the community, with some concerns about Acacia Bay, Nukuhau, and Waitahanui not being covered.

Following the feedback along with the Taupo Connector 33 service, a new smaller 11 seat bus service called the Connect to Taupo service has been included in the new contract to cover the smaller communities. The service now connects those in Turangi, Kinloch, Wairakei Village, Mangakino and Tokoroa to Taupo for at least one day per week. While not ideal it allows the community to work around the scheduled timetables. The Turangi to Taupo service has become very popular with numbers of passengers exceeding the number of seats. We are working with Waikato Regional Council to look at some options to look at cost neutral options with one being changing some of the less popular services to provide an additional service or have a booking system where you can confirm you bus seat.

9.2.11.5 Options (Preferred option highlighted)

	Option 1	Option 2	Option 3
Passenger Transport	Status quo - leave the bus service as is and retender with current budget of $250K.	Increase budget to cover the new service and the Connect to Taupo service proposed.	Consider smaller electric vehicles for the Connect to Taupo service. Due to the distances these need to travel, we will need to ensure the charging infrastructure is included before this occurs.
Total Mobility Scheme	Status quo – budget allocation of $35K.	Due to the increase in patrons an increase of budget is required of $5K. Note this may be funded regionally.	Review the maximum subsidy fare of $12.50, to look to reduce

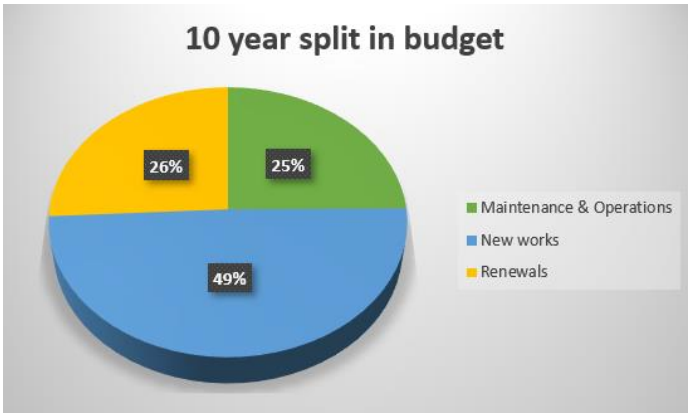
9.2.11.6 Programme

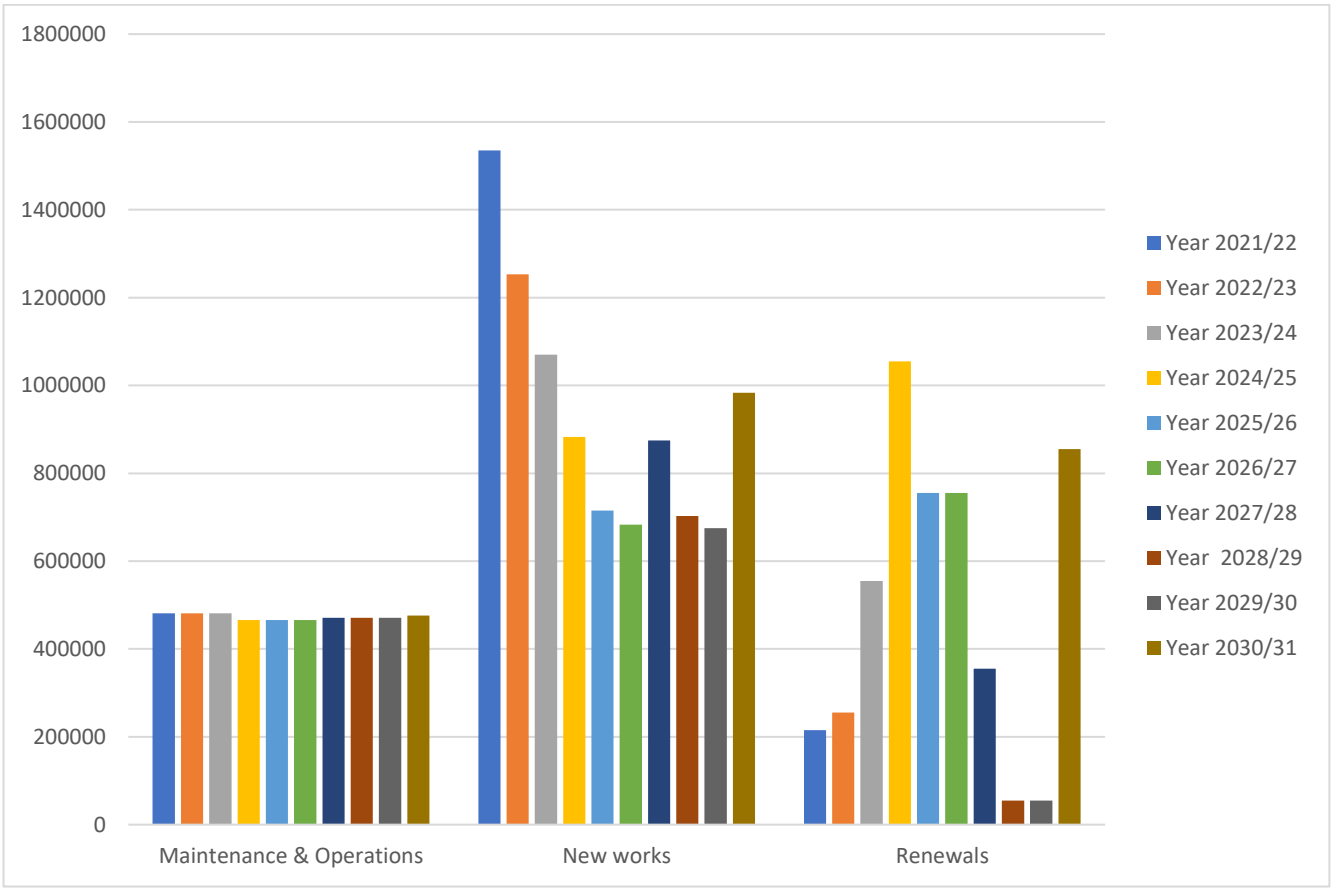
Work Category		10 Year Programme ($,000)									
		24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34
511	Public Transport Services	350	350	350	350	350	350	350	350	350	350
517	Total Mobility Scheme	40	40	40	40	40	40	40	40	40	40
	Total	**390**	**390**	**390**	**390**	**390**	**390**	**390**	**390**	**390**	**390**

9.3 Unsubsidised programme

All activities unsubsidized by NZTA are programmed according to affordability related to the entire Council's needs.

The diagram below indicates the trend of the 10-year proposed expenditure budget of all unsubsidized works. Typical of a maintenance and operations budget the forecasted expenditure stays similar, where renewal and new works have different years of planned expenditure related to planned project implementation. The programme of works indicates the specific projects and programmes increasing and decreasing the forecasted annual budget.





Category	Activity	Sum of 10 Year programme /project value	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	Scope
Maintenance & Operations	Street Cleaning 70 % + Misc.	$ 1,470,000	$ 147,000	$ 147,000	$ 147,000	$ 147,000	$ 147,000	$ 147,000	$ 147,000	$ 147,000	$ 147,000	$ 147,000	Funds available for all street cleaning that is not subsided through NZTA subsidised Work Categories, for example drainage. This activity includes cesspit cleaning, carriageway pavement cleaning and leaf sweeping during seasonal changes.
Maintenance & Operations	Berm Reinstatement	$ 100,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	Provides for the levelling and re-grassing of verges after the completion of footpath construction work - generally one-third of footpath costs.
Maintenance & Operations	Street Lighting	$ 910,000	$ 85,000	$ 85,000	$ 85,000	$ 90,000	$ 90,000	$ 90,000	$ 95,000	$ 95,000	$ 95,000	$ 100,000	**Urban infilling** (urban streets & intersection dark spots filled in to provide more uniform & appropriate level of lighting), **Urban Amenity Lighting** (unsubsidised power and maintenance of non-carriageway lighting in locations such as parking lots, security, decorative etc.) **T/T Area under Veranda Lighting** (Operation of under veranda lighting not complying with NZTA subsidy requirements).
Maintenance & Operations	Festive Lights	$ 200,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	Operation and maintenance of Christmas lights, trout display, Christmas tree and maintenance of streetlight banners.
Maintenance & Operations	Verge Maintenance	$ 400,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	Maintenance of road frontages, particularly in areas with high vegetation on steep batters. Funds ensure any unkempt urban verges and embankments are cut and maintained periodically. Funds also allow Council to assist with batter excavation and levelling of some berms where owners agree to construct retaining structures
Maintenance & Operations	Off Street Park Mtce	$ 60,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	$ 6,000	Maintenance and marking of all off-street parking areas.
Maintenance & Operations	Bus Shelters	$ 100,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	Maintenance of bus shelters in urban areas.
Maintenance & Operations	Taupo Welcome Sign Maintenance/ Replacement	$ 20,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	$ 2,000	Maintenance and/or replacement of the Taupo welcome signs.
Maintenance & Operations	Land Purchase & Legal Costs	$ 100,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	Miscellaneous land purchase and unsubsidised legal costs associated with

Category	Activity	Sum of 10 Year programme /project value	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	Scope
													road legalisation and settlement procedures arising during the year.
Maintenance & Operations	Roadway Maintenance	$ 30,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	A nominal amount for minor unsubsidised maintenance work on approved roadways whilst legalisation matters are being pursued by the owners.
Maintenance & Operations	Professional Services	$ 1,000,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	The planning, design, supervision and contract administration for the implementation of the unsubsidised maintenance programme along with additional annual asset valuation recording and updating.
Maintenance & Operations	Weed spraying	$ 500,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	Spraying weeds
Maintenance & Operations	Traffic management specialist	$ 330,000	$110,000	$110,000	$110,000								To allow for specialist to approve and audit Traffic management plans etc.
Maintenance & Operations	Code of Practice review	$ 20,000	$20,000										To review and upgrade the Transport section of the existing code of development to include up to date best practice for new developments.
	Total	**$ 5,320,000**	**$618,000**	**$598,000**	**$598,000**	**$493,000**	**$493,000**	**$493,000**	**$498,000**	**$508,000**	**$508,000**	**$513,000**	

Category	Activity	Sum of 10-year programme /project value	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	Scope
Renewals	Off street park reseals	$ 200,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	$ 20,000	Provides second coat sealing for new parking areas and reseals for other surfaces at the end of serviceable life.
Renewals	CBD enhancements	$ 1,100,000			$ 100,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000				To renew footpaths in the CBD and continue with upgrading the town following the completion of TTCT project (shovel ready project).
Renewals	Festive Light renewal	$ 10,000	$ 10,000										To renew some of the festive lights with new LEDs and designs
Renewals	Reserve Road Reseal	$ 500,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	$ 50,000	Provides a progressive resealing programme of reserve and lake access roading which is not eligible for subsidy
Renewals	Service Lane upgrades	$600,000	$150,000	$150,000	$150,000	$50,000	$50,000	$50,000					
Renewals	Turangi mall paving	$ 400,000				$ 200,000	$ 200,000						
Renewals	Bridge renewal for Napier Road footpath bridge	$700,000	$700,000										This is to be added to WC 225 shared paths rather than structural bridge renewal as per NZTA instruction.
	Total	**$4,930,000**	**$930,000**	**$320,000**	**$420,000**	**$820,000**	**$820,000**	**$1,120,000**	**$1,050,000**	**$50,000**	**$50,000**	**$50,00**	

Category	Activity	Sum of 10-year programme /project value	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	Scope
New works	Lake Terrace and Ruapehu Street traffic calming	$ 300,000	$150,000	$150,000									
New works	Accessibility audit improvements	$ 1,000,000	$ 200,000	$ 200,000	$ 200,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000				To install cobble paths, pave berms outside business etc. Contribution required from adjacent property.
New works	On Street Parking	$ 400,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000	$ 40,000 -	$ 40,000 -	$ 40,000 -	$ 40,000	$ 40,000 -	To provide on street carparking spaces. Contribution of 50% from adjacent property owners
	Titiraupenga Street and Roberts Street improvements	$ 600,000	$350,000	$250,000									
	Lake Terrace/Mere Road traffic calming	$ 1,135,000			$35,000			$100,000	$500,000	$500,000			
New works	Two Mile Bay carpark and parking at Mapou Street	$ 150,000	$ 50,000	$ 100,000			$ -	$ -	$ -	$ -	$ -	$ -	Mitigation of flooding properties and provide additional carparking spaces to cater for the additional demand on spaces especially during summer periods. This is on the Cnr of Lake Terrace near Matuku Street, opposite Two-Mile Bay sailing centre and/or off Mapou Road.
New works	Footpaths through Kurutau walkways	$ 500,000	$200,000	$150,000	$150,000								Formalise links through walkways to avoid trip hazards and improve accessibility
New works	Pukenamu Road closure	$ 100,000	$ 100,000 -	$ -	$ -	$ -	$ -	$ -		$ -	$ -	$ -	Closure of Pukenamu Road once roundabout complete
New works	ANZAC Memorial Drive lighting	$ 120,000	$ 120,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	New lighting to be installed following completion of Anzac Memorial Drive upgrade.
New works	Cycle/shared path on Lake Road, Mangakino	$ 500,000	$ 250,000	$250,000									To connect the NZ cycle trail from the Mangakino section along Lake Road. Currently the trail is on road.

Category	Activity	Sum of 10-year programme /project value	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	Scope
New works	Bus shelters (School bus routes)	$ 70,000	$ 20,000 -	$ 10,000	$ 10,000 -	$	$ 10,000 -		$ 10,000 -		$ 10,000 -		More bus shelters are required in school bus routes. We will install at least one bus shelter evert two years, according to the priorities in matrix.
New works	New road marking & signs	$ 385,000	$ 60,000	$ 50,000	$ 60,000	$ 25,000	$ 45,000	$ 25,000	$ 25,000	$ 25,000	$ 25,000	$ 45,000	Provides the new road marking and signs after the completion of new road construction.
New works	Northern Gateway project					$400,000	$400,000	$30,000,000	$30,000,000				Timing dependent on investigation currently in progress.
New works	Rifle Range Rd and Mere Rd intersection	$ 2,700,000			$200,000	$1,500,000	$1,000,000						Intersection upgrade
New works	Pedestrian bridge over Tongariro Street	$ 1,600,000										$100,000	Outside 10-year plan, this is to link the Riverside Park area to the new Countdown development. A temporary one is put up as part of the events in town each year, but this is to make it a permanent fixture.
New works	Infill lighting	$ 120,000	$ 40,000	$ 40,000	$ 40,000								To install new streetlighting where there are gaps in the urban network.
New works	Lighting of Rakaunui Road	$ 200,000				$100,000	$100,000						To install lighting on Rakaunui Road as there is currently no street lighting, and it is for safety reasons due to the number of HV movements.
New works	Omori playground parking	$ 132,000	$132,000										To install formal parking spaces on Omori Road near the playground.
New works	Omori Road and Pukawa path (DOC land)	$ 450,000				$50,000	$200,000	$200,000					
New works	Underpass enhancements	$ 100,000	$50,000	$50,000									
New works	Kinloch footbridge	$ 300,000				$300,000							
New works	Napier Road and Lake Terrace intersection	$ 2,080,000					$80,000	$1,000,000	$1,000,000				
New works	Arrowsmith Ave and Shephard Road intersection	$ 1,050,000				$50,000	$500,000	$500,000					

Category	Activity	Sum of 10-year programme /project value	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	Scope
New works	Tauhara Road and Spa Road intersection	$ 2,050,000									$50,000	$1,000,000	
New works	Omori Road retaining wall	$ 700,000	$700,000										
New works	Broadlands Road into Motorsport Park	$ 340,000	$40,000	$150,000	$150,000								
New works	Taharepa Road and Crown Road intersection	$ 1,600,000	$100,000	$500,000	$1,000,000								To improve the safety of both pedestrians using the AC Baths complex and to improve the visibility for motorists.
New works	Mokai Marae safety improvements	$ 100,000	$ 50,000	$ 50,000									To improve safety around the Marae by either signage or speed reduction/traffic calming measures.
New works	Rural road berm widening	$ 90,000	$30,000	$30,000	$30,000								
New works	Napier Road and Crown Road intersection	$ 2,800,000					$ 100,000	$1,200,000	$1,500,000				To provide intersection improvement as development to the south of town increases.
New works	Resilience improvements	$ 900,000		$300,000	$300,000	$300,000							An investigation of the whole network is to be completed first and this budget is used as a place holder to work through the recommendations from the investigations in order to improve network resilience.
New works	Waikato Street resurfacing	$ 50,000		$ 50,000									To work with Taupo-nui-a-tia to improve the road surface on Waikato Street where students currently park.
New works	Guardrail improvements	$ 300,000		$150,000	$150,000								Ties in with resilience improvements as above.
New works	Gate at Off Road Highway	$ 150,000		$150,000									To work with the Tripartite of the Off-Road Highway and look at options to improve safety of the road. Currently the road is private but is used as a public road and this road is used mainly by overweight logging trucks to get to Tenon.

Category	Activity	Sum of 10-year programme /project value	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	Scope
New works	Pihanga Road and Waipapa Road intersection	$ 70,000				$70,000							
New works	Harbour area – Parakiri improvements	$ 200,000		$100,000	$100,000								
New works	Seal extension	$ 4,800,000	$ 600,000	$600,000	$600,000	$600,000	$600,000	$600,000	$600,000	$600,000	$ 600,000	$600,000	To provide for sealing rural metal roads to improve levels of service and safety to motorists and ratepayers and also to minimise metal road maintenance costs. Roads are prioritised according to the "Seal Extension Matrix" which takes into account traffic volume, accident history, residents affected, maintenance costs and seal extension cost. Council is working through the programme as funds allow.
New works	Ute for cycle instructors	$ 65,000	$ 65,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	Purchase vehicle (utility) for road safety team to transport our loan bikes used for the Cycle Skills programme currently being delivered in Taupo schools. This will also be utilised for road safety events and to tow the speed trailer to specific locations when required.
	Maintenance & Operations	**$ 5,320,000**	$ 618,000	$ 598,000	$ 598,000	$ 493,000	$ 493,000	$ 493,000	$ 498,000	$ 508,000	$ 508,000	$ 513,000	
	Renewals	**$ 4,930,000**	$ 930,000	$ 320,000	$ 420,000	$ 820,000	$ 820,000	$ 1,120,000	$ 1,050,000	$ 55,000	$ 50,000	$ 50,000	
	New works	**$ 85,707,000**	$ 2,807,000	$ 3,220,000	$ 2,765,000	$ 3,235,000	$ 3,175,00	$ 33,765,000	$ 33,775,000	$ 1,165,000	$ 225,000	$ 1,585,000	
	Total	**$ 95,957,000**	**$ 4,345,000**	**$ 4,138,000**	**$ 3,783,000**	**$ 4,548,000**	**$ 4,488,000**	**$ 35,378,000**	**$ 35,323,000**	**$ 1,723,000**	**$ 783,000**	**$ 2,148,000**	

10 Risk Management

Risk management is an important element in the development and management of assets. For asset management planning to be robust and sustainable it must be integrated with other corporate risk management processes and that this encompass strategies for Council's most critical assets, provide for the effects of asset failure and be integrated with disaster recovery plans and business continuity plans. Currently asset management planning is listed as a Top 50 Risk in the Council Risk Register.

10.1 Risk Management aims and objectives.

The latest Risk Management Charter 2019/21 (reviewed every 2 years) identifies that the purpose of risk management is the creation and protection of value. It improves performance, encourages innovation and supports the achievement of objectives. The purpose of the risk management framework is to assist the organization in integrating risk management into significant activities and functions. The effectiveness of risk management will depend on its integration into the governance of the Council including decision-making. This requires support from stakeholders, particularly top management.

The aim

The aim is to ensure that the Council has an effective process to support better decision making in the planning and delivery of products and services to the community through its integration into governance and decision making of the Council and good understanding of risks and their likely impacts. It is Council's intention policy to implement and maintain a Risk Management system that reflects best practice and ensure that sound risk management practices are incorporated into Council's planning and decision-making processes.

10.1.1 The objectives

- Align risk management with the Council's objectives, strategies and culture.
- Establish the amount and type of risk that may or may not be taken and ensure that this is communicated to the organisation and stakeholders.
- Communicate value of risk management to the organisation and its stakeholders
- Promote systematic monitoring of risks.
- Ensure that the risk management framework remains appropriate to the context of the organisation.

10.1.2 How to achieve Council's objectives

- Emphasizing that risk management is a core responsibility by establishing and communicating clear.
- roles, responsibilities and reporting lines within the Council for risk management.
- Allocating appropriate resources for risk management.
- Ensuring effective and timely communication with, and the active involvement of all staff that directly contribute to and shape the decisions and activities of the Council.
- Consistent identification, analysis, evaluation, treatment and recording of risks.
- Ongoing monitoring and evaluation of outcomes and ongoing improvement of risk management.

10.2 Current Risk Management Status

Taupō District Council has a Risk and Assurance Committee, chaired independently by an external party to council. This committee provides governance and oversight of the effectiveness of risk management and internal control and assurance practices. Council recognizes that to be effective, risk management must become part of the Council's culture, or run as a separate program. Further, risk management must become the responsibility of every employee, contractor, volunteer and elected member of the Council.

TDC is also a member of the Waikato Utility Lifelines group and the wider Waikato Civil Defense and Emergency Management Group.

The Transportation maintenance contracts includes an afterhours emergency response for network issues and customer complaints. After hours staff (the Palmerston North call center) receives calls and forward emergency calls directly to the contractor who are required to respond in a certain time.

10.3 Roles and responsibilities for risk management

Audit & Risk Committee	• Approve the Council's risk management charter and risk management guides. • Overseeing the risk management process across Council and sets out the details for levels of monitoring required by the Committee. • Receiving reports on the approved internal Audit Strategy/Plan.
Chief Executive and Senior Leadership Group	• Ensuring that the Council has an effective risk management process in place. • Establishing and maintaining a climate of risk awareness and intelligence. • Developing and maintaining governance mechanisms that effectively monitor risks and their management;
Group Managers	• Ensuring compliance of their groups with the Risk Management Charter and the promotion of a positive risk and compliance culture • Identifying, evaluating, assessing, treating and monitoring the key risks that might potentially prevent them from achieving their objectives;
Managers/Supervisors & Team Leaders	• To manage operational risks effectively in their particular service areas • To monitor and review risks at appropriate intervals
Risk Manager	• To develop and review the risk management charter and processes in accordance with best practice. • To provide advice and support to Leadership Team and Service Managers on the identification, analysis and prioritisation of risks

	• To report on the identification and progress of strategic risks to the Audit & Accounts Committee • To provide risk management training as required to Officers and Members
All Staff	• Maintaining an awareness of risks (current and potential) that relate to their area of responsibility. • Actively support and contribute to risk management initiatives

10.4 Council's risk appetite

The establishment of Council's statement on risk appetite is intended to guide employees in their actions and ability to accept and manage risks. The Council is periodically updated on the effectiveness of the management of key Council potential risk exposures, through reports to the Audit Committee. The risk appetite of Council is defined as how much risk the Council is prepared to accept on achieving its objectives.

The key determinants of risk appetite include, but are not limited to:

- The Council's existing risk profile
- The Council's risk capacity and tolerance or how much risk the Council can support and how much variation it will accept in achieving its objectives.
- The risk attitude within Council towards growth, risk and return.
- The Council's and communities' expectations and its legal and statutory obligations,
- The adequacy of risk management systems and the Council's existing risk profile

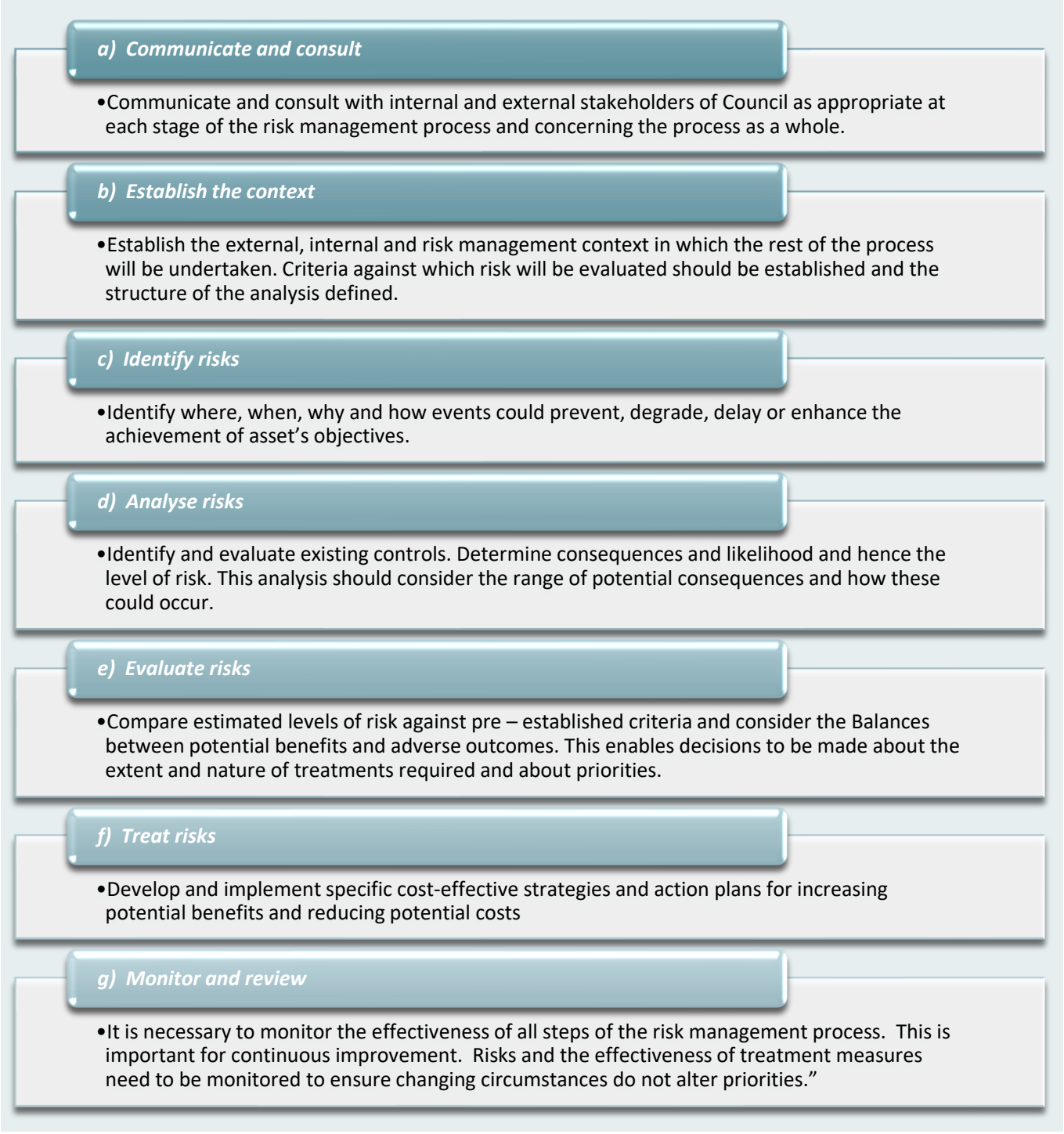
To meet our objectives the Taupō District Council will generally operate within a low overall risk range. The Taupō District Council's lowest risk appetite will relate to financial, environmental, safety and compliance objectives, including employee health and safety, with a marginally higher risk appetite towards its strategic, reporting, and operations objectives. More specifically its appetite for risk is as follows:

No Appetite	Low Appetite	Medium Appetite	High (considerable) Appetite
•· For actions or decisions that have a significant impact on Council's long term financial sustainability •· For anything that has an adverse effect on the natural environment, in particular the districts water resources. •· For anything that unreasonably compromises peoples safety and welfare •· For internal fraud, collusion, theft and associated reputational risk. •· For non-compliance with Legal and Regulatory obligations. •· For unauthorised release of confidential information	•· For system failures or information and data security breaches •· For third party (contractors) failure. •· For risks arising from failure to meet customer & ratepayer commitments. •· For risks arising from breaches of internal policies and standing orders	•For risks associated with the implementation of change and key strategic plans. •For risks associated with implementing business improvements and the Council's vision.	•For developing and implementing improvements to service delivery •For seeking improved efficiency of Council operations

10.5 Risk management methodology & strategy

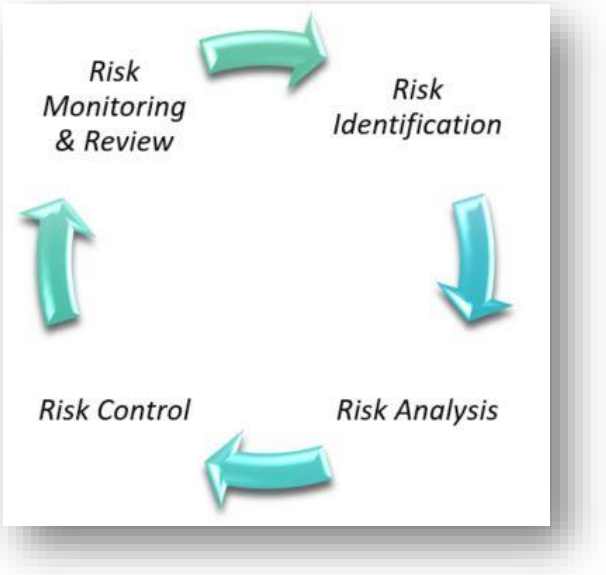
The risk management process is an integral part of good management practice. It is an iterative process of continuous improvement that is embedded into existing practices or business improvement.

10.5.1 Methodology



10.5.2 Overarching strategies:

- Council's Chief Executive will establish and implement a relevant Risk Management system that ensures a systematic method is used to identify, analyse, evaluate, treat, monitor and communicate key risks associated with Council responsibilities in order to manage risk in according to the Council's risk appetite.
- Ensuring that the concept of risk management becomes fundamental to the organisational culture through the philosophy of risk minimisation by doing everything possible to reduce the probability and/or impact of a risk.
- Ensuring the risk management system is consistent with recognised industry standards in particular ISO 3100:2018 & AS/NZS 4360:2004



The Taupō District Council will use a 4-stage risk management cycle as illustrated in the diagram:

The 4 stages of risk management are part of a cycle. Risk management is dynamic and so the identification/detection stage needs to be carried out continuously.

10.6 Council Funding for Risk

Council looks to provide funding for disaster recovery through a separate reserve. It appropriates funding each year to a Disaster Recovery Fund reserve to enable access to ready cash in the event of a natural disaster. This is intended to assist reinstatement and to finance any short term needs in the time between any disaster and the recommencement of services. As of June 2020, the reserve fund had a balance of approximately $2 million. Council has chosen not to ensure its below ground assets given the position of its reserves.

Secondly the TEL Fund was established in September 1995 when TDC sold its investments in Taupō Electricity Ltd and Taupō Generation Ltd. The use of that sale capital and subsequent investment income generated each year are included in Council's Treasury Management Policy. One requirement of that policy is that the portfolio and funds are managed in a manner that reflects their potential utilization as a disaster recovery fund in the event of a natural disaster within the Taupō district. The value of the fund as of 30th June 2020 is approximately $61.3 million.

Thirdly Council maintains headroom within its Debt covenants with the Local Government Funding Agency (LGFA) that would allow it to borrow significant amounts if Council needed to fund a disaster recovery programme.

With these two funding mechanisms in place Council considers it is prudently but effectively managing the risk of being able to fund both short and long term needs with respect to potential natural disaster and subsequent recovery operations in the district.

10.7 Lifelines Risk Assessment

TDC is a member of the Waikato Utility Lifelines Group. This process has identified components within the TDC road network that may be vulnerable to seismic, flood or volcanic events and the impact of failure of these

assets. The critical assets identified, to date, include major roads and bridges including road links to pump stations etc.

10.8 Risk Register

The specific asset risk register identifies risks, the consequence of the risk, the existing controls in place, treatment options and the level of risk to the asset as assessed and updated by Council Officers. A possible improvement to the register is to provide each treatment options with an associated cost and added to the risk register, however these are yet to be costed by TDC.

10.9 Risk Classification Matrices

10.9.1 Likelihood

Likelihood scale for consideration based on **ANZS 4360** is as follows.

Level	Descriptor	Damage / Failure Indicative Frequency
A	Almost Certain	Once per year or more frequently
B	Likely	Once every three years
C	Possible	Once every ten years
D	Unlikely	Once every thirty years
E	Rare	Once every 100 years
N	Almost Impossible	Once in 10,000 years

Table 3: Risk Likelihood

10.9.2 Consequence

A consequence scale as a result of a risk event occurring based on **ANZS 3460** is shown for consideration as follows.

Level	Descriptor	Description
5	Catastrophic	Extreme Impact of damage or failure
4	Major	High impact of damage or failure
3	Moderate	Medium impact of damage or failure
2	Minor	Low impact of damage or failure
1	Insignificant	Very little impact of damage or failure
N	Negligible / Nil	Assessment is Nil

Table 4: Risk Consequence

10.9.3 Risk Rating Matrix

The rating legend for the matrix, in this example, can be summarized as follows.

- E = Extreme risk
- H = High risk
- M = Moderate risk
- L = Low risk
- N = Negligible risk approaching nil / no risk

With both likelihood and consequence scales in place a qualitative risk analysis matrix/level of risk can be determined.

	Consequences					
Likelihood	**N**	**1**	**2**	**3**	**4**	**5**
A	N	L	M	H	E	E
B	N	L	M	M	H	E
C	N	L	L	M	M	H
D	N	L	L	L	M	H
E	N	L	L	L	L	M
N	N	N	N	N	N	N

Table 5: Risk Matrix

10.9.4 Risk Mitigation Measures

High to Extreme risk would normally involve more detailed studies, action plans and management responsibility specifically assigned.

Moderate risk would be managed by either cost effective treatment, monitoring or response procedures and management responsibility specified.

The Transportation team contracts all include an afterhours emergency response. For after hour response, the Palmerston North call centre receives calls and forwards any calls deemed as emergencies directly to the contractor, who are required to respond in a certain time as per their contract. The call centre has a process to follow in terms of consultation, if roads are to be closed for major periods of time especially when alternative routes are required.

In case of emergencies, overweight vehicles which may not be able to access alternative roads due to bridges and access permissions will have to wait until the roads are reopened.

10.9.5 Summary of Identified High Risks

This is a summary of the high risks; the complete list is included as table 8.5.

Asset Risk	The Risk	Mitigation Measures
Ice/Snow	Vehicle crashes due to extreme weather conditions.	• Weather warnings • Signage such as Ice/Grit • Regular grit runs undertaken by road maintenance contractor on roads where ice is known to form. • Road safety campaigns to highlight "drive to the conditions" especially during winter months.
Vehicle crashes	Roads or road structures are damaged or blocked due to vehicle crashes. Personal injury or fatality	• Ongoing improvements at existing traffic controls via minor improvement works. • Road maintenance contract in place to repair damage and attend to debris. • Crash reduction studies are undertaken every 5 years to look at safety improvements. • Road safety campaigns. • Signage, Policing, education, major works road program, safety audits.

Table 6: Identified High Risks

10.10 Critical Assets

Our investment approach into the future will be based on strategic directions for transport provided by the Government Policy Statement on Land Transport Funding, NZTA Long Term Strategic View, the Regional Land Transport Plan and the Council's Long-Term Plan (community outcomes), defined problems/definitions, ONRC classifications and managing the roads in line with the ONRC customer outcomes.

Of these assets, pavements and bridges/culverts/structures are seen as critical assets where failure would have a dramatic impact. This has been discussed in further detail in the Risk Management section.

Also Refer to Programme Business Case

10.11 Transport Risk Register

Division:	Infrastructure Group	Compiled by:	Jess Raethel	Date:	30/09/2005	Original compilation
Asset:	Transport	Updated:	Claire Sharland	Date:	28/07/2017	Updated volcanic ash fall based on ash modelling by Lifelines project & added new note 32.
		Reviewed by:				

Asset Risks	The risk: What can happen and how it can happen	The consequences of an event happening		Adequacy of existing controls	Consequence rating	Likely-hood rating	Level of risk	Risk priority
		Consequences	**Likelihood**					
NATURAL RISKS								
Earthquake	Roads or road structures damaged or impassable due to an earthquake due to:							
	*Consolidation of fills	Moderate	Possible	PE (See note 1)	3	C	M	See note 27.
	*Fault line vertical or horizontal movement	Major	Possible	NC	4	D	M	See note 28.
	*Triggering of landslides/slips	Major	Possible	PE (see note 2)	4	C	M	See note 27.
	*Bridge deck movement/structure failure	Major	Unlikely	E (see note 3)	4	D	M	See note 27.
	*Dam structure rupture resulting in downstream flooding and over bridge impassable	Catastrophic	Almost Impossible		5	N	N	
	*Failure of control gates causing reopening of original river channel and resulting in SH1 and future local roads in the vicinity impassable	Major	Rare	PE (see note 4)	4	E	L	See note 27
Volcanic Eruption	Local roads and state highways blocked or damaged due to major volcanic activity	Major	Almost Impossible	NC (see note 5)	4	N	N	See note 28.
	State Highways blocked or damaged due to minor volcanic activity, resulting in local roads having to take diverted traffic	Minor	Rare	NC (see note 5)	2	E	L	See note 32.
Volcanic Ash fall	Ash falls deposit and build up on road surfaces possibly resulting in prevention or hindering of traffic movement, traction and/or visibility problems.	Moderate	Likely	NC (see note 5)	3	B	L	See note 32.
Lahar	State Highways possibly un-passable resulting in traffic being re-routed onto local roads	Minor	Unlikely	E (see note 6)	2	D	L	See note 27.
Flooding	Roads or road structures damaged, blocked or destroyed due to flooding	Moderate	Possible	E (see note 7)	3	C	M	See note 27.
Tsunami	Roads or road structures damaged due to tsunami	Moderate	Almost impossible	NC	3	N	N	See note 28.
Fire	Roads damaged or blocked due to scrub/bush fire	Minor	Unlikely	E (see note 8)	2	D	L	See note 27
Lightning	Streetlights damaged due to power outages	Insignificant	Unlikely	E (see note 9)	1	D	L	See note 27
High winds	Roads or road structures blocks/damaged due to debris (fallen trees and/or power lines) and other objects blown into vehicle paths	Minor to Moderate (if power lines down)	Likely	E (see note 9 & 10)	2	B	M	See note 27.
Land slide/slip	Roads or road structures blocked, damaged or destroyed by land slide/slip possible occurring during heavy rain or earthquakes.	Major	Possible	E (see note 2)	4	C	M	See note 27.
Tomo's	Hazard to road users if tomo appears within road carriageway resulting in possible road closure, or one lane traffic movement	Moderate	Likely	NC	3	D	L	See note 28.
Geothermal activity	Roads or road structures damaged or destroyed due to migrating geothermal activity	Moderate	Unlikely	NC	3	D	L	1 (See note 29)
Ice/Snow	Impassable roads due to buildup of snow	Moderate	Unlikely	PE (see note 11)	3	D	L	See note 27.
	Vehicle crashes due to extreme weather conditions	Moderate	Almost certain	PE (see note 12)	3	A	H	See note 27.

Asset Risks	The risk: What can happen and how it can happen	The consequences of an event happening		Adequacy of existing controls	Consequence rating	Likely-hood rating	Level of risk	Risk priority
		Consequences	Likelihood					
Subsidence	Roads or road structures damaged or destroyed due to migrating subsidence	Moderate	Likely	NC	3	B	M	See note 30
Climate change	Global warming may increase the number and intensity of extreme events i.e., more rainstorms. This may affect the construction timing of projects, material life and usefulness of asset.	Moderate	Likely		3	C	M	
Pandemics	National and International outbreaks and epidemics. Sudden rise in infectious disease. Example: COVID19	Major	Likely	(See note 34)	4	B	H	See note 27
EXTERNAL RISKS								
War	Roads and road structures destroyed or commandeered	Major	Almost impossible	NC	4	N	N	See note 28
Terrorism	Roads or road structures damaged or destroyed due to terrorist acts	Major	Almost impossible	NC	4	N	N	See note 28
Protests/Riots	Roads or road structures damaged or blocked due to riots	Minor	Unlikely	NC	2	D	L	See note 28
Vehicle crash(es)	Roads or road structures damaged or blocked due to vehicle crash	Moderate	Almost certain	E (see note 13)	3	A	H	See note 27.
	Personal injury/fatality due to vehicle crash	Major	Almost certain	PE (see note 13)	4	A	E	1 (see note 31)
Contractual obligations not fulfilled by external parties	Delayed works programme potentially resulting in lost funding opportunity	Minor	Unlikely	E (see note 14)	2	D	L	See note 27.
Excessive costs to maintain, renew or create assets	Excessively high maintenance and construction costs due to having to import material from outside the district resulting in less work achievable within budget or price of oil.	Minor	Likely	PE (see note 15)	2	B	M	See note 27.
Lack of contractors to carry out works	Loss of competitive contract rates and increased contract rates due to having to import contractors from outside the district.	Minor	Likely	PE (see note 15)	2	B	M	See note 27.
PHYSICAL RISKS								
Inadequate design, construction, or maintenance of asset	Premature pavement or road structure renewal required	Minor	Possible	E (see note 16)	2	C	L	See note 27.
	Major failure e.g., bridge collapse	Major	Rare	E (see note 16)	4	E	L	See note 27
Premature asset failure	Failure due to not predicting growth rates accurately	Minor	Possible	E (see note 17)	2	C	L	See note 27
Failure of Control Gates	Reopening of original river channel resulting in SH1 and future local roads in the vicinity impassable	Catastrophic	Almost impossible	NC	5	N	N	See note 28.
Failure of underground services	Water mains pipe rupture	Minor	Possible	PE (see note 18)	2	C	L	See note 27
	Trench failure	Minor	Possible	NC	2	C	L	See note 28
Failure of verandahs falling	Verandahs may fall and injure pedestrians on the footpath below particularly in earthquakes	Major	Unlikely	H	4	D	M	See note 33
OPERATIONAL RISKS								
Legislative non-compliance	E.g., Not obtaining Resource Consent, not abiding by LGA, etc.	Moderate	Rare	E (see note 19)	3	E	L	See note 27.
Failure to identify all assets condition and value	Won't have in place an optimum maintenance or renewal programme and budget. Rating for renewal incorrect	Minor	Possible	E (see note 20)	2	C	L	See note 27.
Incorrect assessment of financing required to renew or create assets	Over spent budget and/or delayed project completion	Minor	Likely	E (see note 21)	2	B	M	See note 27.
Community expectation not met	Communities' faith and trust of Council lost	Moderate	Likely	PE (see note 22)	3	B	M	See note 27
Loss of Council reputation	Communities' faith and trust of Council lost	Moderate	Likely	PE (see note 22)	3	B	M	See note 27

Asset Risks	The risk: What can happen and how it can happen	The consequences of an event happening		Adequacy of existing controls	Consequence rating	Likely-hood rating	Level of risk	Risk priority
		Consequences	Likelihood					
Public safety non-compliance	Public safety put at risk	Major	Possible	PE (see note 23)	4	C	M	See note 27
Loss of electronic data/information on assets	No access to data – potential for work to be delayed	Minor	Almost Certain	PE (see note 24)	2	A	M	See note 27
	Partial loss of data – data will have to be recollected, and work delayed	Minor	Almost Certain	PE (see note 24)	2	A	M	See note 27
	Complete loss of data – data will have to be recollected and work significantly delayed	Major	Rare	PE (see note 24)	4	E	L	See note 27.
Loss of Council employees from high staff turnover	Loss of local knowledge, both present and historical	Moderate	Likely	PE (see note 25)	3	B	M	See note 27
Loss of Government subsidy	Less work being carried out if rates remain the same, thus level of service decreased	Major	Unlikely	E (see note 26)	4	D	M	See note 27.
	Major rates increase to fulfil works program and maintain level of service	Major	Unlikely	E (see note 26)	4	D	M	See note 27.
Legislative changes	Legislation change may affect the management of assets could have an effect on the delivery of this plan.	Minor	Unlikely		4	D	M	
Political changes	A change to Council's strategic direction could have profound changes on outcomes and projects associated with this plan.	Minor	Unlikely		4	D	M	See note 25

- **Notes:**

1. Road pavement design
2. Waihi Hill known landslide risk, has warning system.
3. All bridges have been assessed for seismic vulnerability and retrofitted as necessary.
4. If flood gates jam, they will be blown open using explosives, will therefore have time to make evasive measures.
5. There will be some warning before this occurs and preventative measures will be put in place.
6. Lahar warning system
7. Weather warnings, stock banks
8. Vegetation control within road reserve, fire restrictions, fire brigade, firebreaks within forest plantations
9. Utility Providers have controls such as circuit breakers, etc.
10. Vegetation control within road reserve, planning control for tree planting close to road.
11. Weather warning
12. Gritting of roads, weather warning, signage
13. Crash investigation studies, minor safety works, signage, Policing, education, major works roading program, safety audits
14. Contractual laws and clauses
15. Long term (3 year) fixed cost maintenance contracts, annual review of budgets
16. Design standards, peer review, safety audit, construction audit
17. TDC Asset lives are regularly reviewed and assets renewed when their useful life is exhausted.
18. Peer review
19. Peer review
20. Condition rating, regular revaluations
21. Peer review, annual review of budgets
22. Community Outcomes, consultation, communication via website/media
23. Traffic management plans, staff training and education.
24. Daily computer back-ups, virus protection software, some data in hard copy
25. Asset Management Plans, documentation

26. Abide by all requirements of NZTA to ensure subsidy is approved.
27. The existing controls are deemed adequate for this risk.
28. There are no practicable improvements that can be made.
29. Monitoring of known geothermal sites and appropriate measures taken when required
30. Monitoring of known subsidence site and appropriate measures taken when required
31. On-going improvements to existing controls
32. Advise motorists of risks and/or reduce non-essential travel.
33. Need to put some measures in place for inspections?
34. Depend on Government direction and systems in place. TDC echoes the Government strategies and methods.

10.12 Bridge and Structures Risk Assessment

Below is the list of structures on Taupō District network and has been updated based on the latest inspections and RAMM data available.

Component / Segment	Vulnerability Ranking								Impact				Comments
		Seismic											This section needs to be updated based on the latest bridge inspection report
	Importance	Ground Shaking	Liquefaction	Fault displacement	Land Slide	Ground	Flood	Volcanic Ash fall	Seismic	Flood	Volcanic	AADT	
BRIDGES/Culverts/Underpass													
ACACIA BAY ROAD													
ACACIA BAY ROAD CULVERT	2	D	D	D	E	D	C	C	2	2	1	3362	TWIN CULVERT 1.95MM DIA CS CIRCULAR PIPES, 24M LONG, HELCOR
BROADLANDS ROAD TAUPŌ													
PUETO STREAM BRIDGE	3	B	D	D	C	D	D	C	3	2	1	2471	Petroleum wax coating needs to be removed and recoated $60,000 – Medium priority, 2 bearings replaced (2020)
KEREUA STREAM CULVERT	3	D	D	D	C	D	D	C	3	3	1	2471	STEEL CIRCULAR CULVERT 5.0M DIA, 15.0M LONG, ARMCO MULTIPLATE
WAIEHU STREAM CULVERT	3	D	D	D	C	D	D	C	3	3	1	2471	STEEL CIRCULAR CULVERT 8.0M DIA, 25.0M LONG, ARMCO MULTIPLATE
FOREST ROAD POUKANI													M - Investigate separation of concrete lining from multi-plate. Remove corrosion and increase the extent of concrete lining.
MOKAUTEURE STREAM CULVERT	1	D	D	D	E	D	C	C	1	1	1	26	TWIN CSP CIRCULAR CULVERTS 3.6M DIA, 19.0M LONG, ARMCO MULTIPLATE, remove corrosion $40,000 – Low priority
FOREST ROAD STOCK UNDERPASS													Repair deep spalling at box edges - $1,000 – Low priority
KAAHU ROAD POUAKANI WARD													
KAAHU ROAD STOCK UNDERPASS	1	D	D	D	E	D	NA	C	2	NA	1	45	CONCRETE BOX CULVERT 2.00M h X 3.50M w, 12.10M LONG, EMMITTS UNITS
KAKAHO ROAD POUAKANI													
KAKAHO STREAM BRIDGE	2	B	D	D	D	D	D	C	2	2	1	70	Single lane bridge - some de-bonding and shrinkage at joint infill – replace joint sealant $8,000 – Medium priority
HURUHURUMAKO STREAM BRIDGE	2	B	D	D	D	D	D	C	2	2	1	70	Single lane bridge – void beneath abutment D, LHS, need to fill void - $1,000 – Medium priority
KENRIGG ROAD													
KENRIGG RD CULVERT #1													Clean and seal cracks - $3,500 – Medium priority
KENRIGG RD CULVERT #2													Programme concrete lining of inverts - $40,000 – Medium priority.
KINLOCH ESPLANADE KINLOCH													
KINLOCH MARINA FOOTBRIDGE	1	C	D	D	E	D	E	C	1	1	1		Laminated timber beams and deck, timber handrail with netting sides, bridge has cross bracing throughout length, need to source drawings, install mortar pad bearing support, $23,000 – High priority
LISLAND DRIVE													
LISLAND DRIVE BRIDGE (#1)													Review drawings, establish connection details between units - $6,000 – High priority
MAPARA ROAD TAUPŌ													
MAPARA ROAD CULVERT	2	D	D	D	D	D	D	C	1	1	1	300	PRECAST CONCRETE BOX CULVERT 2.40M X 2.40M, 24.0M LONG
MARAMA STREET TOKAANU													
TOKAANU DOMAIN BRIDGE	1	B	D	D	E	D	D	C	1	1	1	20	Steel plate, teflon pad and mortar pad at LH bank, RH bank fixed bearings, repaint entire superstructure - $20,000 – Low priority
MAROTIRI ROAD MANGAKINO													
MAROTIRI ROAD 1 CULVERT	2	D	D	D	E	D	C	C	2	2	1	208	TWIN CONCRETE BOX CULVERTS 1.80M X 1.80M, 29.0M LONG, Repair crack, place additional riprap - $1,400 – Low to medium priority
MAROTIRI ROAD 2 CULVERT	2	D	D	D	E	D	C	C	2	2	1	208	CSP ARCH CULVERT 2.70M X 1.80M,
MATEA ROAD KAINGAROA													
MATEA ROAD 1 CULVERT	1	D	D	D	E	D	D	C	1	1	1	58	CONCRETE BOX CULVERT 2.00M X 2.00M, 20.0M LONG
MATEA ROAD 2 CULVERT	1	D	D	D	E	D	D	C	1	1	1	58	CONCRETE BOX CULVERT 2.15M X 2.15M, 30.0M LONG, clean and seal crack $1,000 – Medium priority
MATEA ROAD 3 CULVERT	1	D	D	D	E	D	D	C	1	1	1	58	CS CIRCULAR CULVERT 3.55M DIA, 46.5M LONG, ARMCO MULTIPLATE
OTANGIMOANA STREAM BRIDGE	1	B	D	D	E	D	D	C	1	1	1	58	Single lane bridge
OHAAKI ROAD KAINGAROA													
OHAAKI STEAM PIPE BRIDGE	3	C	D	D	E	D	NA	C	3	NA	1	210	NOTE - IF CONTROL GATES BRIDGE WENT (SH1) THEN THE IMPORTANCE OF THIS BRIDGE WOULD BE RAISED.
WAIKATO RIVER BRIDGE	3	C	D	D	E	D	C	C	3	2	1	210	NOTE - IF CONTROL GATES BRIDGE WENT (SH1) THEN THE IMPORTANCE OF THIS BRIDGE WOULD BE RAISED.

Component / Segment	Importance	Vulnerability Ranking – Seismic: Ground Shaking	Liquefaction	Fault displacement	Land Slide	Ground	Vulnerability Ranking: Flood	Volcanic Ash fall	Impact: Seismic	Flood	Volcanic	AADT	Comments This section needs to be updated based on the latest bridge inspection report
OHAKURI ROAD ATIAMURI													
HAUWAI STREAM CULVERT	2	D	D	D	C	D	D	C	2	2	1	100	CONCRETE BOX CULVERT 2.45M X 2.45M, 19M LONG
ORAKEI KORAKO ROAD KAINGAROA													Water blasted; wheel guards done in 2020
KAKUKI STREAM BRIDGE	2	B	D	D	D	D	D	C	2	2	1	170	Single lane bridge
OTUKOU ROAD TONGARIRO													
WAIREHU STREAM CULVERT	1	D	D	D	E	D	D	B	1	1	1	7	HUMECAST CONCRETE BOX CULVERT 3.5M w X 2.5M h, 9.5M LONG, repair small area exposed corroding steel $500 – Medium priority
PAERATA ROAD													H - Remove detritus from bearing shelves (done 2020). H - Remove detritus along kerbs. M - Remove corrosion and spot repaint affected areas only. M - Repair spall with exposed reinforcing at Abutment B. M - Repair spall to RHS deck cantilever soffit. Elevated work ac, Painted rails,
WAIPAPA STREAM TRIB BRIDGE	1	C	D	D	E	D	C	C	1	1	1	50	Repair spall exposed steel, repair minor spall RHS deck cantilever, remove corrosion - $5,000 – Medium priority
PAKONUI ROAD													
PAKONUI RD STOCK UNDERPASS													Spall repair - $1,000 – Low priority
POIHIPI ROAD POUAKANI													
POTUNGUTUNGU STREAM CULVERT	2	D	D	D	D	D	C	C	2	2	1	491	CONCRETE BOX CULVERT 2.25M X 2.25M, 30.0M LONG, PRECAST
POIHIPI ROAD CULVERT													Clean and seal cracks, repair spall exposed steel barrel - $1,000 – Medium priority
POKURU ROAD WEST POUAKANI													
MARAEMANUKA STREAM PVTEBRIDGE	1	A	D	D	D	D	B	C	1	1	1	6	Single lane bridge, repair spall exposed steel beam, install fabric wrapped subsoil - $4,500 – Medium priority
PUATAATA ROAD													
PUATAATA ROAD CULVERT													Remove corrosion and concrete line invert - $50,000 – Medium priority
SANDEL ROAD POUAKANI													H - Replace deteriorated mortar bearing pads. M - Investigate suitable coating system for the beams, cross bracing and bearings plates. M - Remove fallen tree downstream of bridge. L - Remove corrosion and repaint bearings. L - Remove corrosion and repaint
SANDEL ROAD STOCK UNDERPASS	2	D	D	D	E	D	NA	C	1	NA	1	80	CONCRETE BOX CULVERT 2.00M h X 3.50M w, 11.2M LONG, EMMITTS UNITS
MANGAKINO STREAM BRIDGE	2	B	D	D	D	D	D	C	2	2	1	62	Single lane bridge – replace mortar pad beam Abutment D half missing - $500 – High priority, Repaint entire structure $100,000 – Low priority
SH 1 D SH 5 JNCT 01N-0617													
CHAD STREET GULLY CULVERT #4													Clean and seal vertical crack, repair exposed steel - $900 – Medium priority
WAITAHANUI FOOTBRIDGE	1	C	D	D	E	D	D	C	1	1	1		NOTE - FOOTBRIDGE VULNERABILITY DEPENDENT ON BRIDGE, NO IMPACT IF FOOTBRIDGE GOES BUT WILL BE WITH BRIDGE (SEE TNZ)
SH 1 E HATPEPE 01N-0639													
TAURANGA-TAUPŌ FOOTBRIDGE													NOTE - FOOTBRIDGE VULNERABILITY DEPENDENT ON BRIDGE, NO IMPACT IF FOOTBRIDGE GOES BUT WILL BE WITH BRIDGE, replace transverse deck planks etc. - $1,000 – High priority and remove corrosion $10,000 – Medium priority
TAHARUA ROAD KAINGAROA													
TAHARUA STREAM BRIDGE	2	C	D	D	E	D	C	C	2	2	1	110	Single lane bridge H - Rebuild pavement on Approach A. H - Remove corrosion and repaint bearing plates. Replace deck joint. M - Remove corrosion and spot paint beam top flanges. Remove all moss build up on beam bottom flanges. L - Repair the damaged kerbs. Need to source drawings and investigate options $5,000 – High priority, replace deck joint, remove corrosion and moss - $10,500 – Medium priority
TAHARUA RIVER CULVERT	2	D	D	D	E	D	C	C	1	1	1	31	TWIN CIRCULAR CS PIPES 3.30M DIA, 18.3M LONG, HELCOR, Remove corrosion and concrete line invert - $60,000 – Medium priority
TAHARUA ROAD CULVERT	2	D	D	D	D	D	C	C	1	1	1	31	CS CIRCULAR PIPE 2.70M DIA, 37.0M LONG, HELCOR
TAHARUA ROAD CULVERT #2													Remove corrosion and concrete line invert to above waterline - $40,000 – Medium priority
TAHARUA ROAD CULVERT #3													Remove corrosion and concrete invert to above waterline - $45,000 – Medium priority. (Investigation of deformed shape of barrel no longer needed).

Component / Segment	Importance	Vulnerability Ranking – Seismic: Ground Shaking	Liquefaction	Fault displacement	Land Slide	Ground	Flood	Volcanic Ash fall	Impact: Seismic	Flood	Volcanic	AADT	Comments
													This section needs to be updated based on the latest bridge inspection report
TIROHANGA ROAD ATIAMURI													
WAIPAPA STREAM BRIDGE	3	C	D	D	D	D	D	C	3	3	1	266	PIERS AND ABBUTMENTS 1955, BEAMS AND DECK REBUILT ON EXISTING PIERS 1965, Replace missing bolts - $2,000 Medium priority
ONGARAHU STREAM CULVERT	3	D	D	D	E	D	C	C	3	3	1	266	TWIN CONCRETE BOX CULVERTS 2.7M w X 2.5M h, 10.3M LONG
TIROHANGA ROAD CULVERT	3	D	D	D	E	D	C	C	3	3	1	249	TWIN CIRCULAR CS PIPES 3.00M DIA, 28M LONG, ARMCO MULTIPLATE. HEADWALLS AND WINGWALLS AT INLET ONLY
WAIHI ROAD TONGARIRO													
OMUHO STREAM BRIDGE	2	C	D	D	A	D	B	C	2	2	1	250	
WAIHORA ROAD													
WAIHORA ROAD CULVERT													Clean and seal cracks, remove silt, clear all vegetation - $8,000 – Medium priority
WAIRAKEI DRIVE													H - Line both culverts. Repairs have been designed and physical works to be undertaken 2018/19.
CONTROL GATES FOOTBRIDGE	1	D	D	D	E	D	E	C	1	1	1		NOTE - FOOTBRIDGE VULNERABILITY DEPENDENT ON BRIDGE, NO IMPACT IF FOOTBRIDGE GOES BUT WILL BE WITH BRIDGE, replace severely corroded SHS support to walkway - $10,000 – High priority
WAIRAKEI STEAM PIPES BRIDGE													Repair small spalls, repair minor exposed steel Pier D - $31,500 – Medium priority
WAIRAKEI STREAM CULVERT TWIN BOX													Investigate re-lining options $50,000 – High priority
WHANGAMATA ROAD POUKANI													
WHANGAMATA ROAD 1 CULVERT	2	D	D	D	D	D	D	C	2	2	1	500	ARMCO MULTIPLATE ARCH PIPE 4.20M w X 2.60M h, 15.0M LONG
WHANGAMATA 2 CULVERT	2	D	D	D	D	D	D	C	2	2	1	500	TWIN CONCRETE BOX CULVERT 3.1M X 3.1M, 13.OM LONG, PRECAST
WHANGAMATA 3 CULVERT	2	D	D	D	D	D	D	C	2	2	1	500	PRECAST CONCRETE BOX CULVERT 2.15M X 2.15M, 50.0M LONG

10.13 Roads Risk Assessment

Below is a list of roads which are at risk from flooding or other high-risk factors.

Component / Segment	Vulnerability Ranking							Impact				Comments
		Seismic										
	Importance	Ground Shaking	Liquefaction	Fault displacement	Land slide	Ground settlement	Flood	Volcanic ash fall	Seismic	Flood	Volcanic	AADT	
Low lying roads													
KOROHE ROAD	2	D	D	D	D	D	A	C	1	2	1	267	
WAIOTAKA ROAD	1	D	D	D	D	D	A	C	1	1	1	50	
GRACE ROAD	1	D	D	D	D	D	A	C	1	1	1	157	
AWAMATE ROAD	2	D	D	D	D	D	A	C	1	2	1	62	Access to sewerage plant
WHARF ROAD	1	D	D	D	D	D	B	C	1	1	1	10	
HEUEHU PARADE	1	D	D	D	D	D	C	C	1	1	1	50	
ORUATUA AVE	1	D	D	D	D	D	C	C	1	1	1	125	
Other Roads													
OHAKURI ROAD	2	D	D	D	B	D	D	C	2	2	1	100	Narrow/cliffs/rock
WAIHI ROAD	2	D	D	D	A	D	C	C	2	2	1	255	Prone to land slides
MAPARA ROAD	2	D	D	C	D	D	D	C	2	1	1	170 - 1200	
TUKAIRANGI ROAD	2	D	D	C	D	D	D	C	2	1	1	60-150	
POIHIPI ROAD	2	C	E	D	C	D	D	C	2	2	1	500 - 3300	
WAIPAPA ROAD	2	C	E	D	C	D	D	C	3	3	1	140 - 1230	
ARIATIATIA - NTH OF DAM	2	D	D	D	C	D	D	C	2	2	1	200 - 800	
TIROHANGA ROAD	3	C	D	D	C	D	D	C	3	3	1	266	
ACACIA BAY / WILY TCE	1	D	D	D	B	D	D	D	1	1	1	30	
HUKA FALLS ROAD	2	D	D	D	C	D	D	D	1	1	1	50-700	

Definitions for the above tables are as follows:

Importance Ranking		Vulnerability Ranking		Impact Ranking	
Extremely important	5	Almost certain	A	Catastrophic	5
Very important	4	Likely	B	Major	4
Important	3	Possible	C	Moderate	3
Some importance	2	Unlikely	D	Minor	2
Not important	1	Rare	E	Insignificant	1

11 Financial Summary

11.1 Impact of COVID-19

COVID-19 could have two potential impacts on council's valuations and financial forecasts. Firstly, there is the impact on market prices for the construction of infrastructure. Secondly, the level of demand for use, which in turn determines the optimised quantum of infrastructure to be valued.

11.1.1 Market Prices

It is too early to be definitive about the impact that COVID-19 will have on the costs of infrastructure construction. Initial forecasts (Rider Levett Bucknall1) are predicting an escalation of two to four percent over the next twelve months. Drivers for this increase include:

- Shrinking capacity (skill labour and supply) leading to a lack of large project
- capacity for tier 1 contractors
- Falling consumer confidence
- Increased risk to stakeholders
- Loss of temporary immigrant workers
- Extra health and safety requirements
- Supply chain disruption and rising exchange rate leading to higher cost of materials (one-third of construction cost)
- More complicated contractual procurement arrangements

The recent release of the March 2020 indices shows little change in the capital goods index. However, this does not include the impact of COVID-19. The effects of COVID-19 are more likely to be subject to short-term increase due to the reasons stated above. Whereas the replacement costs used in ODRC calculations should reflect typical and sustainable market conditions. Therefore, no adjustment has been made for COVID-19.

11.1.2 Optimised Asset

COVID-19 is unlikely to lead to any reduction in the demand for the council's assets. Consequently, the quantum of assets remains appropriate and optimised from a valuation and financial reporting purpose.

11.2 Process of Determining Financial Forecast

The provisional 10-year financial forecast (refer to Appendices for Budget Spreadsheets) for Transport was determined by identifying new works, and the continuation/evaluation of current maintenance and renewal strategies within each of the components, i.e., pavements, footpaths, lighting etc. Changes to the operations (OPEX) and capital projects (CAPEX) expenditure for items within each of the asset types (e.g., pavement, footpaths, lighting, etc) are generally due to maintaining current levels of service, tree root damage to footpaths and increased contract rates.

In this 10-year financial forecast (and beyond) a major reason for budget increases is due to the aging infrastructure Taupō District is facing. The cost to upgrading, replacing, or maintaining was identified as a problem statement which directly influences the OPEX and CAPEX budget planning.

Taupō District Council acknowledges the risk related to an escalated budget and delivering the intended programmes/projects with the same number of resources. Hence, the requested increased budget was realistically calculated whilst considering related opportunities and risks. The historical strategy taken by Council of reviewing expenditure is still relevant and actively managed:

- engaging supply chain early in the procurement process to identify the most appropriate method to get the best value for projects (work packages, local investment etc.)
- assign realistic time frames to projects given the resources available under Councils current funding sources and in relation to impacts in other Asset Management Plans.
- optimise timing of projects.
- generate consistent budgeting philosophies across all Council divisions.
- align expenditure with growth predictions.
- reduce the completion backlog of currently approved works (“bow wave”).

Council wide review of the requested budgets results in a draft financial forecast which considers all the above requirements as well as maintain key Asset Management philosophies. The draft budget also considers the rate setting process.

11.3 Implications of changes between draft and final budgets

The following table outlines the changes between the provisional and draft budgets and their expected implications following public consultation of the Long-Term plan and subsequent Council deliberations and NZTA Waka Kotahi indicative funding allocation:

Project	CAPEX/OPEX	Change from draft version	Implications of change
Rates	OPEX	Change in draft budget will directly affect programmes. Changes have been made across the work categories to reflect this reduction. April 2024 – Council will be consulting on the long-term plan in May/June so there may be changes still to be made following consultation.	Level of service may be affected due to historical under investment and aging infrastructure. No change to level of service or significant impacts to budget.
Operational subsidies (WK)			
Capital subsidies (WK)			
Renewal subsidies (WK)			
Depreciation			
Interest			
Overheads			

Development Contributions	OPEX		Nil
Loans	CAPEX	First submission – September 2023	Change in level of service.
Reserves			
Capital contributions			
Other income			

11.4 Summary of MOR, Minor Improvements & Road Safety Promotion Funding Request for 2024/2027

W/C	Description	Proposed 2024/27 Budget	Current 2021/24 Budget	Difference	Comment for original bid to WK
Maintenance, Operations and Renewals					
111	Sealed pavement maintenance	$ 3,816,800.00	$3,530,400.00	Increase $286,400	Sealed task increase from $775K to $793 then increase in $5K per year. Increase is due to more digouts, repairs required, crack repairs particularly on arterials such as Ruapehu Street. For rural roads we have on low-cost pavements being used by HMPVs. There is also an increase of 13km of new roads added from the last AMP.
111 (SPR)	Special purpose roads	$ 15,000.00	$12,000.00	$3,000.00	
112	Unsealed pavement maintenance	$ 330,000.00	$ 270,000.00	Increase $ 60,000.00	Increase in digouts, scours repairs required due to the increase in HV vehicles utilising unsealed roads.
113	Routine drainage maintenance	$ 1,200,000.00	$ 1,081,000.00	Increase $ 119,000.00	Increase is due to actual spend from last financial. Increase in regular condition inspections of culverts and regular cleanouts of debri, change in climate, increase in minor events, and increase in high shoulder work is all needed for preventative maintenance and to prevent water ponding. Note: with the introduction of swale drains will see an increase in maintenance costs particularly to keep vegetation down.
114	Structures maintenance	$ 1,357,000.00	$ 270,000.00	Increase $ 1,087,000.00	Change based on SAM reports now being received by Beca on regular basis. Note we will need to increase our local share via Annual plan process.

W/C	Description	Proposed 2024/27 Budget	Current 2021/24 Budget	Difference	Comment for original bid to WK
121	Environment maintenance	$ 2,163,000.00	$2,164,000.00	Decrease	No change in budgets but we have put some budget into assessments of the network to look at resilience of the network which will also look at tree and vegetation control with a view to become more proactive in this area.
121	Stock Effluent maintenance (local share)	$ 60,000.00	$ 68,000.00	Decrease $ 8,000.00	This is fully funded by Waka Kotahi and WRC but included in our budgets as we undertake work currently.
121 (SPR)	Special purpose roads	$ 6,000.00	$ 6,000.00		No change
122	Traffic services maintenance	$ 3,174,000.00	$ 2,641,000.00	Increase $ 533,000.00	Based on current energy costs which were forecasted to go down following the LED streetlight conversion however this is not reality.
122 (SPR)	Special purpose roads	$ 12,000.00	$ 6,000.00	$ 6,000.00	100% funded until 2024.
123	Traffic Management - Signals	$ 195,000.00	$ 90,000.00	$ 105,000.00	Maintenance contract currently in place with Tauranga City Council. Cost to manage this has increased due to the changes of the shovel ready transformation project and new software overwrites.
124	Cycle path maintenance	$ 45,000.00	$ 29,000.00	Increase $ 16,000.00	Increase required to improve levels of service with increase in sweeping of cycle lanes until some cycle paths are upgraded.
125	Footpath Maintenance	$ 780,000.00	$ 600,000.00	Increase $ 180,000.00	Increase in footpath length from 304km to 308km. We have also included some of the Parks and Reserves footpaths which provide crucial links for pedestrians.
140	Minor events	$ 300,000.00	$ 135,000.00	Increase $ 165,000.00	Placeholder budget due to the number of weather events.
151	Network & asset management	$ 3,532,000.00	$ 2,173,800.00	Increase $ 713,800.00	Increase is due to the traffic counting programme now being out-sourced, data collection such as FWD, HSD, dTIMS, RATA, WRTM costs. Administration costs have been reviewed as part of the business unit agreement and has seen an increase in

W/C	Description	Proposed 2024/27 Budget	Current 2021/24 Budget	Difference	Comment for original bid to WK
					Business unit charges from $360K to $550K, difference has not been claimed in previous years. Also, budget has been allocated for assessments of network for resilience purposes.
151 (SPR)	Special purpose roads	$ 15,000.00	$ 6,000.00	$ 9,000.00	100% funded until 2024.
211	Unsealed road metalling	$ 192,000.00	$ 207,000.00	Decrease $ 15,000.00	Decrease due to seal extensions continuing each year.
212	Sealed road resurfacing	$ 11,916,000.00	$ 4,500,000.00	Increase $7,416,000.00	
213	Drainage renewals culverts	$2,110,000.00	$ 580,000.00	Increase $1,530,000.00	Increase in first two years to complete kerb and channel in Turangi due to condition and in certain years due to culvert replacements.
214	Pavement rehabilitation	$9,000,000.00	$ 2,728,000.00	Increase $ 6,272,000.00	
225	Footpath renewals	$ 120,000.00	$120,000.00	$ 120,000.00	No change.
222	Traffic services renewals	$ 645,000.00	$ 540,000.00	Increase $105,000.00	Slight increase in light renewals to start replacing some of the aged concrete poles on the network. All others remain the same.
Low Cost/Low Risk Improvements					
341	Low-cost low risk improvements (all work categories).	$ 20,335,00.00	$8,964,000.00		This includes a number of new cycle and footpaths, intersection improvements and resilience projects etc.
Road Safety Promotions					
432	High Strategic Fit & Medium Strategic Fit	$ 735,000.00	$660,000.00	Increase $75,000.00	

Funding of Expenditure

11.4.1 Funding strategy

The focus of this AMP is to identify the optimum (lowest lifecycle) cost for transport and the focus of this AMP is to identify the cost for each asset group necessary to produce the desired level of service. How this cash flow will be funded is outlined in Council's long-term financial strategy.

Current funding sources available for transport include:

- Rates – income generated by the collection of general, separate and differential rates.
- Waka Kotahi New Zealand Transport Agency subsidy – allocation of funding from government resources based on benefits and costs of a project. For all activities in the Transport programme the subsidy rate is 51%. For special purpose road (SPR) – Huka Falls Road is 100% subsidy for the first 3 years, 51% from 2024.
- One off capital contribution – contributions made by individual developers for projects that are of particular benefit to them that are being constructed by TDC.
- Development Contributions – contributions made by developers under the Local Government Act 2002.
- Private (developer) funded works – projects completely built and funded by developers where ownership is handed over to TDC on completion (vested assets).
- Connection Fees.
- Petrol tax.
- Interest on general funds.
- Fees and charges (e.g., overweight permits and vehicle crossing bonds, refer to Taupō District Council website for current Fees & Charges).

11.4.2 Allocation of Funds

The process of allocating funds is generally based on:

- Maintenance and operations are funded from NZTA subsidies and General Rates.
- Renewal works are funded by Depreciation.
- Depreciation is calculated using either the straight line or the diminishing value method to allocate their cost or revalued amounts, net of their residual values, over their useful lives.
- New Works are funded by either or a combination of Development Contributions, Loans, Individual Contributions (e.g., underground power) and Depreciation (if it has not all been used for Renewal Works).

The funding strategy can be found within the Ten-Year Plan.

11.5 Historical and Forecast Expenditure

Detailed historic expenditure for each asset group is included within the lifecycle section for that asset.

Detailed forecast expenditure is provided in greater detail within the spreadsheets in Appendices, included are spreadsheets showing:

- The thirty-year transport programme.
- Thirty-year programmes by asset type (e.g., pavement, footpaths, lighting, etc.).
- The summary income and expenditure budget for 2024/25 to 2033/34.

Taupō District Council internal business cases are available per project or programme where a significant budget increase is requested.

Budgeted transport asset expenditure for the next 10 years is summarized on the following pages.

11.5.1 OPEX: operating and maintenance expenditure.

Total Operation and maintenance costs average approximately $6.4M/year for the next 10 years. This is an increase over the previous five years mainly due to the increased rates that have been obtained through recently let maintenance contracts and due to Council having to maintain new assets created (including assets vested in Council from private developers) for the length of their useful life.

Figure 48 includes both subsidised and unsubsidised budget expenditure. Approximately $532K per year is unsubsidised budget (TDC share) is spent over the next 10-year period and an average of $2.8M/year is subsidised over the 10-year period.

The maintenance is carried out by contractors who are appointed in accordance with New Zealand Transport Agency's competitive pricing procedures. For spreadsheets showing how the operation and maintenance costs have been determined see Appendices.

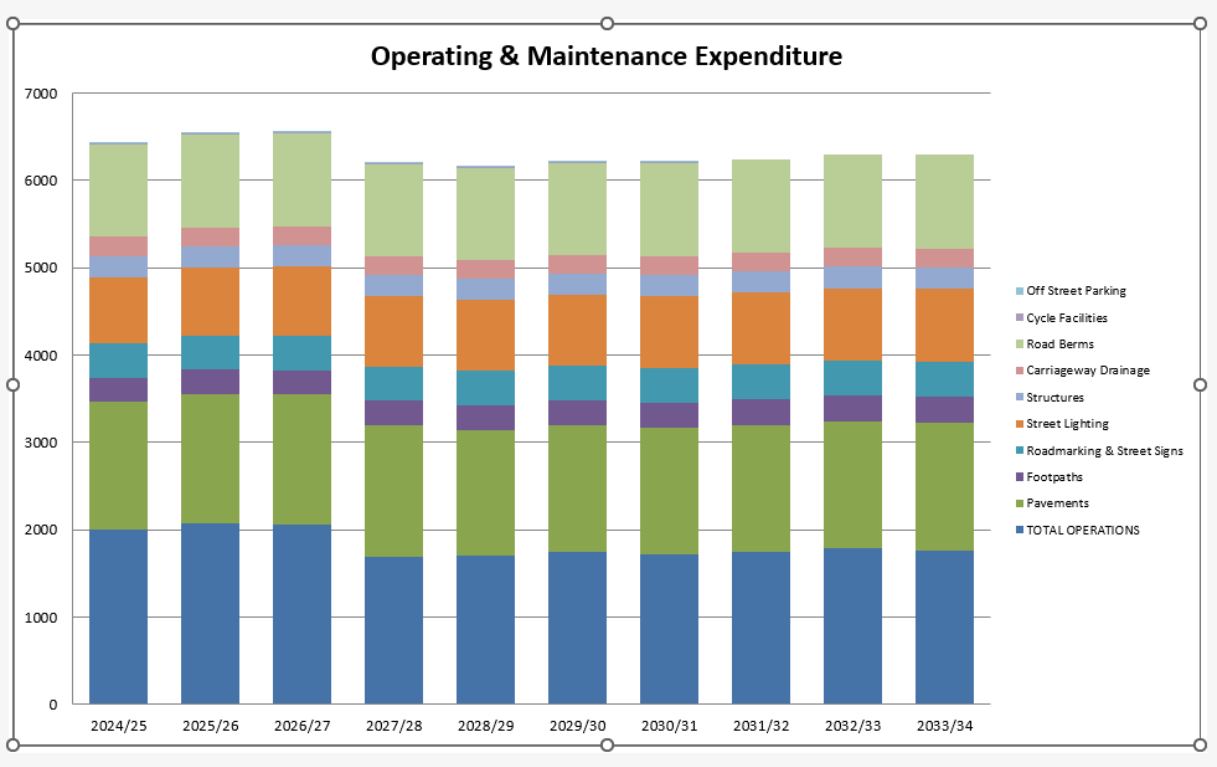


Figure 34 - Operating & Maintenance Expenditure

11.5.2 CAPEX: renewal expenditure

Total renewals costs average approximately $8.43M/year over the next 10-year period. Renewals include any items where an existing asset is replaced for example reseals, pavement rehabilitation, culvert replacement, etc. Renewal costs fluctuate year to year as assets with different expected lives reach the end of their useful lives and need renewing or replacing.

Generally, the timing of renewal for an asset is based on assessment as the asset is nearing the end of its useful life. Loss in service potential is calculated by straight-line depreciation except for land and road formation which are not depreciated. The depreciation rates are applied at a component level and are dependent on the remaining useful life of each component.

Figure 49 includes both subsidised and unsubsidised budget expenditure. Approximately $493K per year is unsubsidised budget (TDC share) is spent over the next 10-year period and an average of $3.4M/year is subsidised.

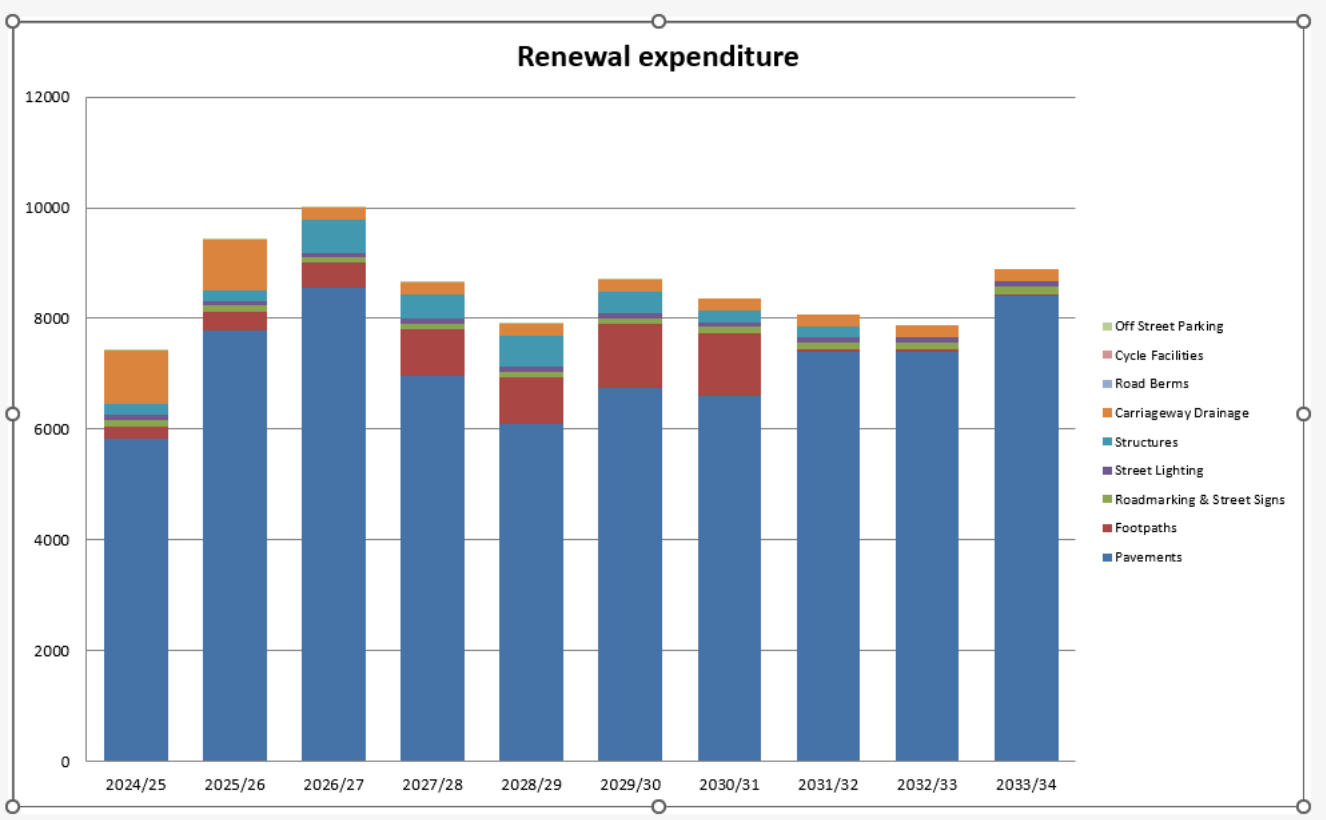


Figure 35 - Renewal expenditure

The total useful lives have been updated and are assumed as follows as per Asset Valuation report (August 2020).

Asset	Life	Asset	Life
Top surface	3-25 years	K&C – concrete	80 years
Surface – chip seal	12 -20 years	Mountable K&C	80 years
Surface – slurry	15 years	Drainage	80 years
Surface – AC	20 -25 years	Catchpits	80 years
Surface – unsealed	4 years	Manholes	80 years
Pavement	45-60 years	Pipes	80 years
Formation	not depreciated (infinite base life)	Signs	15 years
Culverts	55-80 years	Signposts	25 years
Steel	60 years	Streetlights	25-60 years
Concrete	80 years	All lights excluding Schreder LED	25 years
Inlet & outlet steel	60 years	Schreder LED Lights	50 years
Inlet & outlet concrete	80 years	All steel and concrete poles	60 years
Footpaths	35-80 years	Traffic services	
Sealed	35 years	Edge marker posts	10 years
Asphaltic concrete	35 years	Raised pavement markers	6 years
Concrete	80 years	Bridges	90-100 years
Interlocking block	60 years	Bridge	90 years
Kerb and Channel	80 years	Footbridge steel	60 years
Dish channel	80 years	Footbridge wooden	40-60 years
Nib kerb	80 years	Land under roads	not depreciated

A summary of the depreciation of transport assets is presented in the Taupō District Council Annual Report. For spreadsheets showing how the renewal costs have been determined see Appendices.

11.5.3 CAPEX: new works expenditure

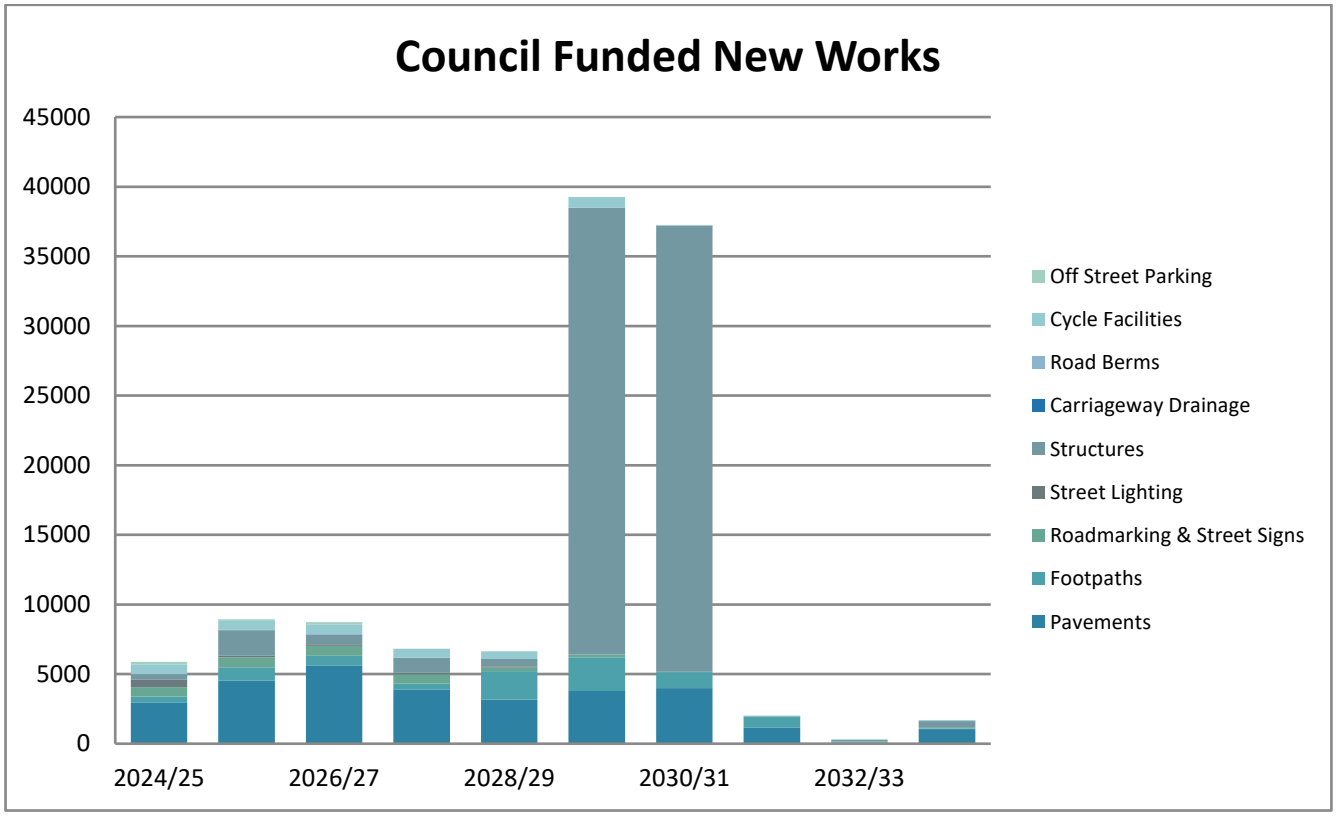


Figure 50 - New work expenditure

Figure 50 includes both subsidised and unsubsidised budget expenditure. The capital works cost approximately $11.4M/year over the next 10-year period but most of this is due to the proposed northern gateway project. From this, approximately $8.7MK/per year will be unsubsidised budget (TDC share) is spent over the next 10-year period and on average $1.29M/year subsidised. Bridge crossing over Waikato River:

An investigation was completed by WSP on the northern access to from the north into Taupō township which determined a short list of options in 2023. Budget has been allocated in year 2024 to start further investigation due to the planned growth on the northern side of Taupo. Construction is planned to begin from 2029/2030 but will be confirmed as part of the study and Council deliberations.

11.5.4 Level of Service

Refer to section LEVEL OF SERVICE of this AMP which outlines how each of the budgeted items relates back to the level of service being provided.

11.6 Total Expenditure and Funding

Overall, the total budget fluctuates depending on capital projects, however in years with no large capital projects the total transport expenditure over 30 years is expected to average approximately $26.2M (with approximately $6.4M per year of maintenance).

Note: Figure 51 is based on inflated figures and sourced from the finance team dated May 2024 (after Council deliberations).

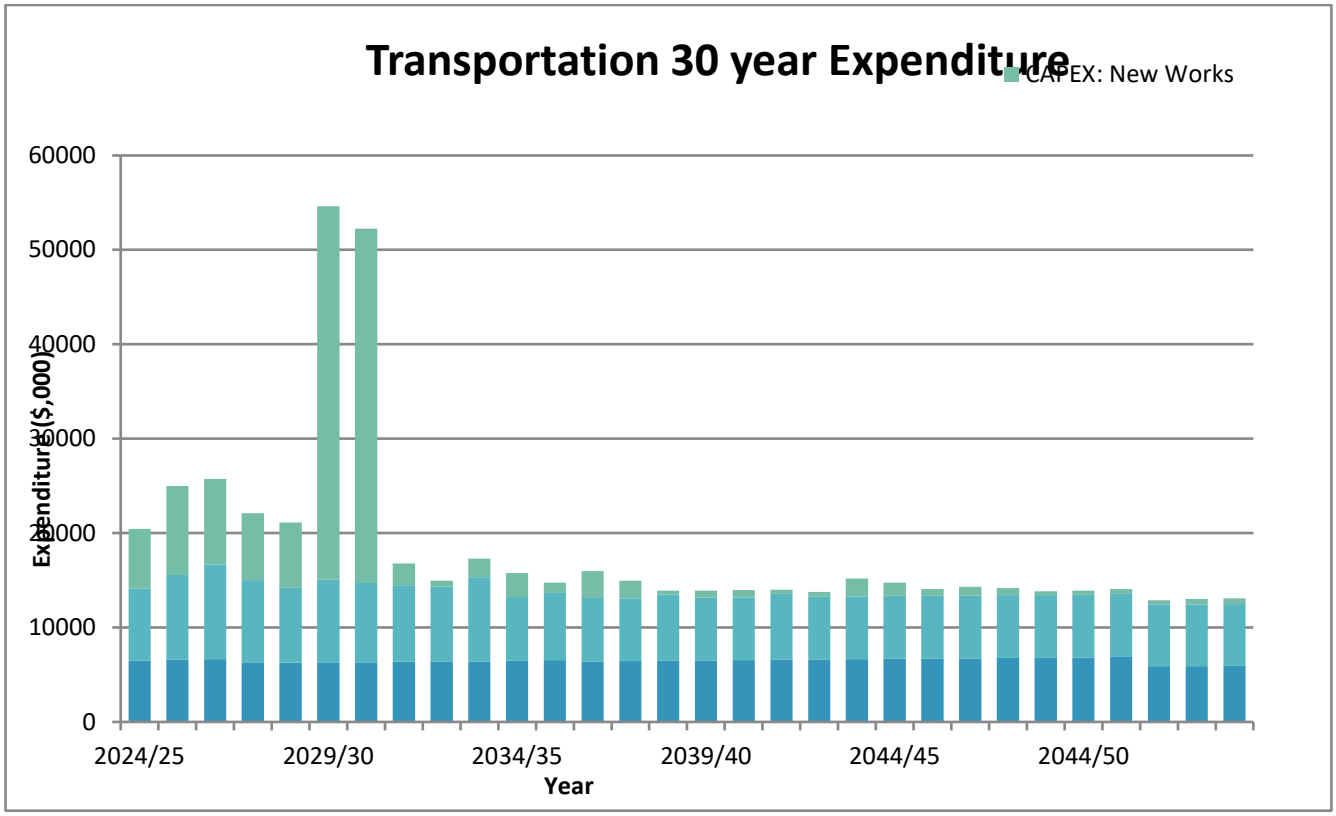


Figure 36 - Expenditure over 30 years

11.7 Valuation of Transport Assets

The valuation of asset components is a fundamental part of the asset management cycle. It provides the critical link between asset management and financial management. Transport assets provide a continuing service to the community and are not generally regarded as tradable. The valuation has been undertaken in accordance with NZ IAS 17 Property, Plant and Equipment and with NZ local authority asset management practice (NZ Infrastructure Asset Management Manual and Valuation/ Depreciation Guidelines). This AMP has been updated with the latest Asset Valuations undertaken in August 2023.

Refer Asset Data section of this AMP document, for a summary of the valuation of transport assets. A full valuation report is available on request.

11.8 Financial Assumptions

The financial assumptions are included in the Introduction section of this AMP.

11.9 Financial Confidence Levels

As per August 2020 Asset Valuations report, confidence ratings were assigned to source data and unit cost rates and to other items as appropriate. The confidence ratings used are summarised:

Grade	Label	Description
A	Very High	Data based on sound records, procedure, investigations and analysis which is properly documented and recognised as the best method of assessment.
B	High	Data based on sound records, procedure, investigations and analysis which is properly documented but has minor shortcomings for example the data is old, some documentation is missing and reliance placed on unconfirmed reports or some extrapolations.
C	Medium	Data based on sound records, procedure, investigations and analysis which is properly documented but has minor shortcomings for example the data is old, some documentation is missing and reliance placed on unconfirmed reports or significant extrapolations.
D	Low	Data based on uncertain records, procedures, investigations and analytics with is incomplete or unsupported, or extrapolation from a limited sample for which grade A or B data is available.
E	Very Low	Data based on unconfirmed verbal reports and / or cursory inspection and analysis.

Note: Grading and Description are based on Table 4.2.7.2 of the "International Infrastructure Management Manual – 2020"

An overall confidence rating of B (±10 to 15%) has been assigned to the 2023 valuation. The breakdown of this is set out in the following table.

Asset Group	Quantity	Unit Costs	Rep Cost	Rem Life	ODRC	Accuracy
Formation	A-B	B	B	B	B	B
Pavement	A	B	B	B	B	B
Top Surface	A	A	A	B	B	B
Bridges	A	B	B	C	C	C
Carparks	B	B	B	B	B	B
Culverts	B	C	C	B-C	B-C	B-C
Stormwater Drainage	B	B	B	B-C	B-C	B-C
Footpath	A	B	B	B-C	B-C	B-C
Kerb + Channel	A	B	B	B-C	B-C	B-C
Signs	A	A	B	B-C	B-C	B-C
Street Lighting	B	B	B	B-C	B-C	B
Structures	C	C	C	C	C	C
Traffic Facilities	C	B	C	C	C	C
Airport Assets	A	B	B	B	B	B

The Council operates RAMM database which is routinely updated and generally has reliable physical characteristics for road pavements, streetlights, signs, bridges, and footpaths. This is expanded upon within each of lifecycle sections. Financial forecasts within the first 3 years are reliable with the reliability decreasing with time. Also, reliability depends on phase of project, with reliability increasing as a project moves from scoping to construction.

Transport Programme

Summary total works

	TOTAL MAINTENANCE & OPERATIONS	**6,604.800**	**6,606.000**	**6,636.200**	**6,301.400**	**6,263.600**	**6,323.800**	**6,319.000**	**6,364**	**6,422**	**6,416**
	TOTAL RENEWALS	**7,666**	**8,675**	**10,162**	**8,610**	**7,843**	**8,656**	**8,284**	**8,112**	**7,915**	**8,918**
	TOTAL NEW WORKS	**5,707**	**9,245**	**8,635**	**6,925**	**6,730**	**39,355**	**37,350**	**2,025**	**325**	**1,685**
	TOTAL ROADING EXPENDITURE (incl NZTA)	**19,977.800**	**24,526.000**	**25,433.200**	**21,836.400**	**20,836.600**	**54,334.800**	**51,953.000**	**16,501**	**14,662**	**17,019**
		13,373.000	**17,920.000**	**18,797.000**	**15,535.000**	**14,573.000**	**48,011.000**	**45,634.000**	**10,137**	**8,240**	**10,603**
	TDC SHARE										
	subsidised maintenance & operations	**2,864**	**2,936**	**2,950**	**2,838**	**2,819**	**2,849**	**2,844**	**2,860**	**2,889**	**2,884**
	unsubsidised maintenance & operations	**743**	**598**	**598**	**493**	**493**	**493**	**498**	**508**	**508**	**513**
	subsidised renewals	**3,154**	**3,947**	**4,627**	**3,817**	**3,441**	**3,693**	**3,545**	**3,950**	**3,854**	**4,345**
	unsubsidised renewals	**1,230**	**620**	**720**	**820**	**820**	**1,120**	**1,050**	**50**	**50**	**50**
	subsidised new works	**1,654**	**3,236**	**2,759**	**1,661**	**1,570**	**1,686**	**698**	**421**	**49**	**49**
	unsubsidised new works	**2,332**	**2,640**	**3,005**	**3,535**	**3,525**	**35,915**	**35,925**	**1,165**	**225**	**1,585**
	TOTAL TDC SHARE OF ROADING EXPENDITURE	**11,976**	**13,977**	**14,659**	**13,164**	**12,669**	**45,755**	**44,560**	**8,955**	**7,575**	**9,426**
	Totals sheet (check)	**$19,978**	**$24,526**	**$25,433**	**$21,836**	**$20,837**	**$54,335**	**$51,953**	**$16,501**	**$14,662**	**$17,019**
	Difference (totals - budgets)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	TOTAL TDC SHARE OF ROADING EXPENDITURE	***14,192***	***16,673***	***16,303***	***13,226***	***11,691***	***43,053***	***42,125***	***8,572***	***7,560***	***9,411***
	Totals sheet (check)	**$22,688**	**$26,556**	**$26,593**	**$21,286**	**$18,737**	**$50,485**	**$49,253**	**$15,751**	**$14,662**	**$17,019**
	Difference (totals - budgets)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 7 - Summary over 10 years - Subsidised and Subsidised.

12 Improvement Plan and Monitoring

12.1 Improvement Plan

Improving the management of Taupō District Council's (TDC) transport assets is a dynamic process.

During the course of updating this plan, activity and asset plan improvement tasks are noted and addressed in the next three years. The continuous improvement is in conjunction with reviewing and improving this plan. Our asset management practices are to deliver the right level of service at the lowest long-term cost to our district's customers. We emphasize improvement tasks which focus on:

- Ensuring the right level of funding is being allocated to maintain the asset service potential.
- Implementing predictive modelling techniques that will allow consideration of alternative long-term cost scenarios.
- Consulting with customers to ensure that their views are considered when selecting the best scenario.

12.2 Background

Audit NZ completed audits in 2009, 2012, 2015,) 2018 and 2022 versions and the recommendations for improvements are summarised in the Improvement Programme table. NZTA undertook a technical audit and procedural audit in 2018 and in 2022 of which the recommendations have been included in the improvement plan.

The Water, Wastewater and Stormwater AMPs are independently peer reviewed by Waugh consultants after each iteration of the AMP. A number of improvements were identified from these reviews to raise these AMPs from core to advanced, where appropriate. The AMP managers collectively work through the Waugh report recommendations, in particular the 0 and 1 scores, to bring all AMPS up to the core level. Any other recommendations not completed during the updated AMP process cycle are added to the Improvement plan with milestone dates which are monitored.

12.3 Improvement Programme

We continue to undertake a detailed audit of all our roading assets in our RAMM database. This audit is to rectify anomalies to arrive at a comprehensive, accurate and defendable position of our roading assets.

Along with this audit, the following table is the current Improvement plan as mentioned was required in the last Waugh review and is based on the REG template. Many of the areas of improvement below have been identified as part of the Business Case approach and the need to produce more accurate data on each asset type/activity.

Project	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Resources	Status Update / Notes	% complete	
											Last period	This period
SYSTEMS												
1	Improvement framework	Adopting improvement framework and maturity assessment.	Improvement plan has been developed based on previous audits, peer reviews and technical reviews.	Agreed framework adopted and signed off by NZTA and RCAs. Regular meetings and monitoring. Supports continuous improvement and NLTP funding conditions. Preparing RCA for 2024 NLTP.	Need to obtain approval from Waka Kotahi on improvement framework	High	Ongoing	Transport Manager & NZTA IA	Budget has been added to the Network and Asset management activity to assist with improvements including traffic counting, speed management etc.	Technical audit 2018 identified the plan needed to set priorities and resources etc.	Ongoing	Ongoing
2	Line of sight	Improve the use of the BCA and line of sight connection in Activity Management Plan and programme of works.	Strategic case has been updated for this AMP, still working on the line of sight from the strategic case to the programme business case.	Test problem statements within each local RCA network. Better understand the scale of regional problems at local level. Improve link of local programme delivery to high level strategy. Improve use of BCA in AMP for next NLTP.	Work collaboratively with other RCAs. Ensure individual ownership and how this applies within each individual RCA.	Medium		Transport Manager			25	
3	ONF integration	Improve how the ONF is linked to business systems	AMP needs to be developed incorporating the ONF;	Business / AMP systems fully integrated with ONRC classification, levels of service, and use of performance measures. Note this will be rep	Work collaboratively with other regional RCAs and Waka Kotahi.	High		Transport Manager			10	
4	Valuations		Currently valuations are run using a combination of RAMM, asset registers and Assetfinda and undertaken by consultants.	Need to look at running these valuations through RAMM valuation model for the next one in 2023.		Low					10	100
5	Financial system		Currently recording administration	Following technical audit in 2018, recommendation is TDC need to document the how	Document methodology, use Finance team's spreadsheet	Low						

Project	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Resources	Status Update / Notes	% complete	
											Last period	This period
			time/costs in timesheets.	these costs are determined and allocated to work categories.								
6	Executive summary	Add more information on the Strategic Case (SC) and Programme Business Case (PBC) in the executive summary		Infographic for the executive summary emphasising SC and PBC	Adding detail to executive summary	Medium	Ongoing but within 2024/2027 AMP timeframe	Transport Manager	Asset manager	Ongoing		
7	Communicate decision making	Better financial information	Valuations are not being utilised to tell a story	Easy to interpret PBC financial comparisons	Valuation of data to inform optioneering	Medium						
8	GPS	GPS & programme delivery	The illustration of the linkage between the Government Policy Statement (GPS) and the programme delivery could be improved	Clear link between GPS and programme delivery	Consider new GPS and workshop how to align our programme delivery	Medium						
EVIDENCE												
1	RAMM database	Upgrade of the RAMM databases	Number of major data quality issues present, which was raised to 62 in the next round, we are currently sitting at 82.	Accurate, complete, and timely RAMM data to better inform investment decisions and facilitate performance management. Improved capability to utilize data	Audit RAMM databases and identify gaps. Develop and implement prioritized action plan. Assess options for future management of RAMM databases	High		Transport Manager	Asset Information team.	Last REG report run the data quality score was 82. The RAMM database quality has increased, and the transport team now has a dedicated internal (to the team) data specialist.	20	75
2	ONF	Collection and reporting of ONF customer performance and	Several ONRC performance measures are not being collected and/or monitored	Collect data to better understand network performance indicators, comparative measures, and guide investment	Draft ONRC data collection plan, collect and store data, analyse and report	High		Transport Manager			0	0

Project	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Resources	Status Update / Notes	% complete	
											Last period	This period
		technical output measures										
3	Satisfaction surveys	Collection and analysis of customer and stakeholder satisfaction with the road networks	Varied approach to customer satisfaction surveys	Review satisfaction survey questions and usefulness of data received.	Define customer user groups, develop plan and programme for collection of data from users' groups, implement and analyse data	Medium		Transport Manager			30	
4	Data collection	Upgrade of the RAMM databases	Traffic counting strategy completed, programme of traffic counting is still to occur. Working with RATA to arrange for Beca to commence.	Review the traffic count data in RAMM database and ensure all estimates are current. Develop traffic counting strategy.	Working on scope details for traffic counting strategy development which will include traffic counting programme maps of existing counts, gaps, RAMM setup etc. Need to show traffic trends in the AMP.	High	Ongoing	Transport Manager	Beca contracted through Co-lab is responsible for our traffic counts	Completed	20	80
5	RAMM database	Review design lives	Review the current values in RAMM database to reflect the local condition and/or achieved pavement life.	Review actual lives versus design lives and update RAMM accordingly.	Review lives for pavement top surface and sub-surface assets.	Medium				Currently our data specialist is working with co-lab on the "Useful lives – Council process" system. This process is integrating a few councils' approach.	10	50
6	Data collection	Parking spaces	Taupo township is complete, parking spaces audit to be done for other areas around the district.	Determine number of parking spaces in each of the parking areas for asset valuation		Low	Ongoing				0	80
7	Data collection	Upgrade of the RAMM databases	Condition rating done for all bridge structures	Undertake condition of all culverts, railings and minor structures and add the condition rating to each asset in RAMM	Update bridge/structure section with the latest information from bridge inspection report. Undertake regular and	Medium	Ongoing	Transport Manager	SAMS contract	Bridge assessments have been included in RAMM and the	50	90

Project	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Resources	Status Update / Notes	% complete	
											Last period	This period
					detailed inspection of culverts.					SAMS contract is going well.		
8	Data collection	Pavement strength	We have put effort into obtaining FWD and highspeed data into RAMM.	Collect data to better understand network performance indicators, comparative measures, and guide investment	FWD data being collected through RATA contract. Will consider high speed data also.	Medium			High speed data and FWD being collected annually.	Completed	100	100
9	Data collection	Lighting	LED conversion complete.	Collect data to better understand network performance indicators, comparative measures, and guide investment	To be done as part of the LED contract, RAMM to be updated by contractor. Verification of WATTAGE to be done in the field.	Low				LED conversion completed at end of June 2021	100	80
10	Data collection	Cyclists and pedestrians	Data is being collected through counters placed strategically, although extra portable counters are being procured for more data collection.	Installation of counters	Data collection will feed into our next AMP, and we can track how many users are on the path. It will assist with evidence for new paths, time of day they are being used, if we need wider paths and assist with recording speeds on the shared paths.	Medium		Transport Manager		Good data is being collected and increase in programme to collect more.	10	70
11	Data collection	Safety measures	Safety measures (CAS) has been included into our AMP.	These outputs will be utilised for performance comparison/ benchmarking with other RCAs (either at a Regional or National level) which would serve as a good foundation to establish targets for key performance indicators.	Confirm safety measures that can be compared between RCA's			Transport Manager			0	80
12	Utilising collected data	Programme Business Case (PBC) option selection		More comprehensive option selections. Various options well explained, and benefits and risks identified	REG tool to be implemented. This tool relates to work categories which optionees risk, cost etc.		Ongoing				0	0
COMMUNICATING												

Project	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Resources	Status Update / Notes	% complete	
											Last period	This period
1	Asset Management plan	Fully integrate the technical asset management plan with BCA AMP to support a cohesive investment story.	Activity management is currently fit for purpose. Need to implement improvements.	Explore potential to integrate and combine for a more cohesive investment story.	Review audit NZ findings and REG guidance. Discuss approach with NZTA IA.	Medium		Transport Manager			35	
2	Planned programme	Communication with NZTA	Identified in specific conditions	Ensure TDC advises NZTA at the earliest opportunity of any changes that material affect the planned programme of works and expected outcomes to be achieved over the NLTP period	Regular review and discussions with NZTA.	Medium		Transport Manager				
3	Reporting	ONRC and TDC performance measures	Yet to confirm ONRC and TDC performance measures	Deliver and report to NZTA the organisations ONRC and our own key performance indicators.		Medium		Transport Manager				
4	Levels of service	Communicating the levels of service with the community	The last levels of service were consulted on 15 years ago.	Waugh reports suggests these should be consulted on with the community	SLT made decision not to proceed with the AMP update						0	0
5	Improvement plan	Communicating to NZTA	Improvement plan has been modified to reflect the REG template.	Last technical audit it was identified TDC need to provide evidence that 18-21 Activity Management plan actions are completed to plan and on time.	Improvement plan has been modified to reflect the REG template and will be updated on a regular basis using this format.							
6	Communicate decision making	Better financial information	Valuations are not being utilised to tell a story	Easy to interpret PBC financial comparisons	Valuation of data to inform optioneering	Medium	Ongoing				0	0
7	GPS	GPS & programme delivery	The illustration of the linkage between the Government Policy Statement (GPS) and the programme delivery could be improved	Clear link between GPS and programme delivery	Consider new GPS and workshop how to align our programme delivery	Medium	Ongoing				0	30
DECISION MAKING												

Project	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Resources	Status Update / Notes	% complete	
											Last period	This period
1	Forward works programme	Programme development	Forward work programme now available on RAMM and 1200 treatment lengths were validated and prioritised.	Use data to develop longer term views in renewal programmes which will assist collaboration and procurement opportunities	Co-ordinated approach to data collection, review of strategic problems and priorities, develop and assess programme options for 2024-2027 bid	High		Transport Manager	Asset Information team	Commencing work on treatment selection lengths and ensure data is accurate before running dTIMS and forward works programme	30	80
2	Forward works programme	Minor improvements	Currently use deficiency database to record all minor improvement projects and network deficiency.	Use ONF to prioritize low cost/low risk projects		Medium						
3	Management and Delivery risk	Benefits delivery	There is no current framework in place to assess this risk formally.	Formally address if the ONRC value for money outputs are correct. To confirm illustrating that TDC is in line with, or below the average expenditure compared to peer group in cost per Km/Lane Km, this difference could be explained further.	Information on how the benefits will be realised needs to be more clearly illustrated.		Ongoing		Asset manager		0	0
SERVICE DELIVERY												
1	Procurement strategy	Review of procurement strategies	Technical audit recommended TDC address the policy requirements for professional service delivered in house and should be claiming its administration costs for managing its land transport programme.	Reviewed, updated and endorsed procurement strategy	Identify what is being purchased, extent of competition in the market, capacity and capability of market and internal staff, purchase selection methods, collaboration opportunities	High	Jan-19	Transport Manager		Need to document how these costs are determined and allocated to work categories.	45	45
2	Maintenance contract	Procurement of new transport and roading contracts	New contract commenced October 2018	Contract has been lengthened to 6+3	Develop programme of tasks required and develop communications plan. Need to ensure maintenance costs are	High	Apr-20	Contract Manager		New contract to go out for tender in New Year 2024, with commencemen	30	80

Project	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Resources	Status Update / Notes	% complete	
											Last period	This period
					being entered in to RAMM by Contractor each month.					t date July 2024.		
3	Maintenance contract	Network strategies		Develop maintenance intervention strategies, include disposal strategies where appropriate.	Work with WRC on regional specification, intervention strategy, consider implementing a programme of accessway seal back on rural entranceways.	Medium		Contract Manager				
4	Maintenance contract	Network strategies		Need to monitor cycles of grading etc. on unsealed roads to see if expenditure is warranted or more renewal required	Need to provide assurance that unsealed road maintenance practice complies with the contract and the unsealed network meets agreed levels of service and is safety the travelling public.			Contract Manager		This was identified in the technical audit 2018 although the visit was in June and the roads were noted to be in poor condition however we had had heavy rainfall which had restricted maintenance work.		
5	Speed management plan	Strategy	Regional speed management plan being developed, currently recording all speed reduction requests. Bylaw review completed in 2018.	Develop speed management plan based on regional plan to manage requests, how we programme any engineering changes required, if any.	Recording speed reduction requests, need to develop policies around how to manage speed requests etc. Cost estimates for any engineering measures will need to be developed and added to the next AMP round.	Medium		Senior Engineering Officer	Asset Manager, Road safety coordinator	Currently being developed.		
6	Decision making framework	Decision making framework	Improve the link between asset management decision making and risks should be considered. Council should consider clearly linking performance	Framework aligning asset management decision making	Link to item 7 in "Communication"	High	Ongoing		Asset Manager			

Project	Title	Activity	Current Status	Future Status and Identified Improvements	Improvement approach	Priority	Timeframe	Responsibility	Resources	Status Update / Notes	% complete	
											Last period	This period
			measures, related to risks, to the multi-criteria analysis.									
7	Smart buyer self-assessment	Strategy	Undertaking and including a smart buyer self-assessment in the AMP would be useful.	Integrate similar improvements into the AMP and align "self-assessment" decision making	service delivery infographic	High			Asset Manager			
PEOPLE / CULTURE												
1	Regional collaboration	Regional collaboration is continued to be developed and new opportunities identified	Collaboration and development of combined AMP occurred in 2018 NLTP.	Continue to work together with shared improvement opportunities for AMP development. Identify further collaborative opportunities	Reinstating regular collaboration meetings. Involve both RCAs and NZTA.	High		Transport Manager		Need to work with neighbouring RCAs to development maintenance agreements for bridges etc.	55	
2	Capability plan	Development of a regional capability and success plan	No plan in place	Review individual RCA plans (if available) and identify any gaps.	Individual RCA capability matrix of core competencies required developed. Combine into an integrated regional plan. Gaps identified collectively. Action plan developed collectively.	Medium		Transport Manager	HR departments		60	

12.4 Improvements made since last AMP.

The following is a list of improvement plan tasks that have been completed or are in progress since the development of the 2021 Asset Management Plan.

- Council formally manages the development of the AMPs on a corporate basis to ensure a common and consistent approach and approved templates. The Long-term planning is now managed through a programme manager and team dedicated to the AMP and LTP processes.
- The latest valuation data from August 2023 has been incorporated into this AMP.
- AMP is consistent with LTP with regards to level of service.
- Continuation with the recommendations from the Waugh consultants peer review of the 3 water AMPs –with zero or one have been incorporated into this AMP, the other recommendations have been added to this improvement plan.
- Section 17A review completed for road maintenance contract.
- Business case approach used as seen in the programme business case section.
- Traffic counting strategy and programme developed by Beca and is undertaken on annual basis.
- Informal consutlation ahead of formal consutlation gauging the communities interest in the Long Term Plan.
- Undertook dTIMS modelling and incorporated some of the outcomes into the AMP, some further improvements in data are required for the next modelling run. Completed external validation of the dTIMs data on site and identified further treatment sections requiring renewal.

12.5 Opportunities to improve AMPs.

A comparison between the previous 2 external Waugh peer review illustrates the progress between the 2018 and 2022 AMP's.

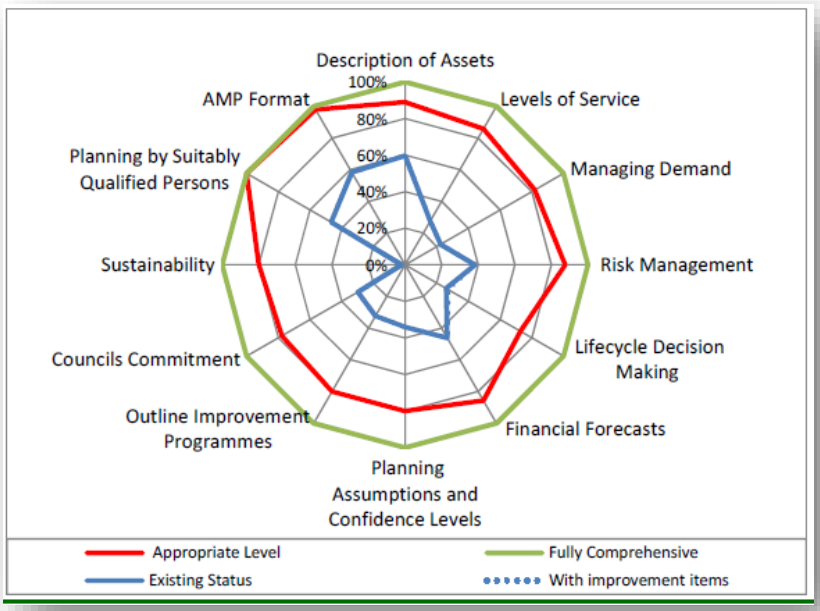


Figure 52 - Waugh review 2018

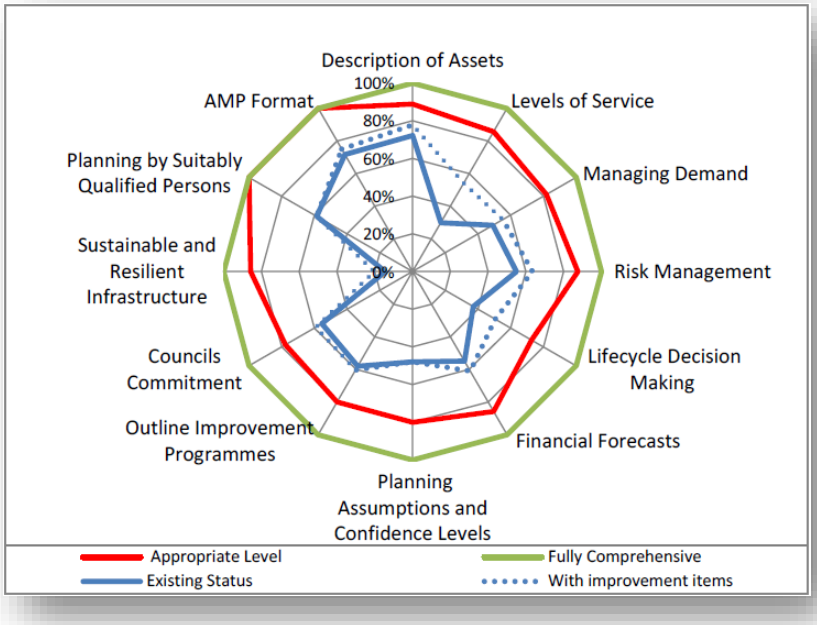


Figure 53 - Waugh review 2022

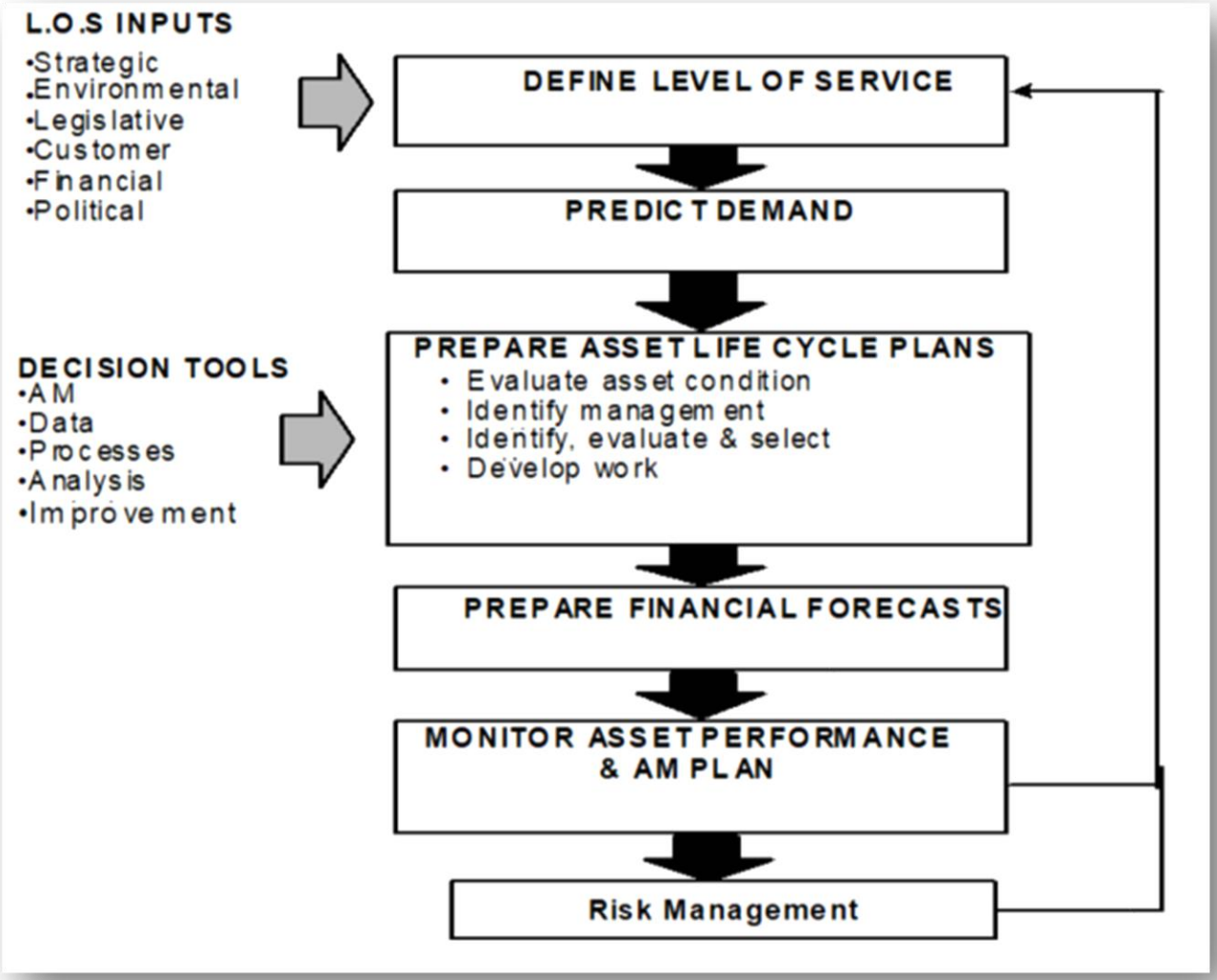
12.6 Monitoring & Review Procedures

The most important review procedure is the 3-yearly review of the AMP that takes into account asset performance during the previous 3 years and identifies future trends and input into Council's strategic planning process. The 3 yearly cycle of TDC's strategic planning is shown below.

TDC Three Yearly Planning Cycle

Year		2022	2023	2024	2025	2026	2027
Activity		Structure planning	Review of asset management plans	LTP amendment	Structure planning	Review of asset management plans	LTP amendment

The framework for the 3-yearly review of the AMP in terms of the breadth of considerations is illustrated in the following figure:



Appendix A – Road renewal budget summary tables

$2.5 million programme

Table 8 - $2.5 million programme – Cost by year and treatment

Period	CS 2nd Coat	CS RSEAL	Rehab - Local - Secondary Collector	AC Resurface	Rehab - Arterial - Primary Collector	TOTAL
2024-25	$105,750.00	$1,108,094.70	$0.00	$0.00	$1,285,987.50	$2,499,832.20
2025-26	$11,061.00	$684,991.00	$98,065.50	$81,692.00	$1,618,758.40	$2,494,567.90
2026-27	$2,700.00	$163,430.00	$0.00	$0.00	$2,330,475.00	$2,496,605.00
2027-28	$70,335.00	$176,067.00	$0.00	$222,235.00	$2,030,477.26	$2,499,114.26
2028-29	$0.00	$252,220.00	$0.00	$0.00	$2,230,880.40	$2,483,100.40
2029-30	$0.00	$29,425.00	$0.00	$333,190.00	$2,105,622.40	$2,468,237.40
2030-31	$0.00	$77,361.00	$0.00	$0.00	$2,398,900.00	$2,476,261.00
2031-32	$0.00	$92,800.00	$0.00	$0.00	$2,398,900.00	$2,491,700.00
2032-33	$0.00	$99,963.00	$0.00	$0.00	$2,398,900.00	$2,498,863.00
Total	$189,846.00	$2,684,351.70	$98,065.50	$637,117.00	$18,798,900.96	$22,408,281.16

Table 9 - $2.5 million programme – Length of road (m) by year and treatment

Period	CS 2nd Coat	CS RSEAL	Rehab - Local - Secondary Collector	AC Resurface	Rehab - Arterial - Primary Collector	TOTAL
2024-25	1,750	12,263	0	0	1,065	15,078
2025-26	385	6,813	141	246	1,126	8,711
2026-27	50	1,492	0	0	1,930	3,472
2027-28	1,042	3,654	0	247	1,735	6,678
2028-29	0	2,842	0	0	1,886	4,728
2029-30	0	313	0	233	1,754	2,300
2030-31	0	857	0	0	2,000	2,857
2031-32	0	1,470	0	0	2,000	3,470
2032-33	0	1,242	0	0	2,000	3,242
Total	3,227	30,946	141	726	15,496	50,536

$5.5 million programme

Table 10 - $5.5 million programme – Cost by year and treatment

Period	CS 2nd Coat	CS RSEAL	Rehab - Local - Secondary Collector	AC Resurface	Rehab - Arterial - Primary Collector	TOTAL
2024-25	$290,364.12	$1,871,848.90	$1,131,632.00	$0.00	$2,204,492.50	$5,498,337.52
2025-26	$84,096.00	$408,991.80	$260,652.00	$81,692.00	$4,662,012.60	$5,497,444.40
2026-27	$0.00	$146,379.00	$449,400.00	$0.00	$4,899,352.36	$5,495,131.36
2027-28	$5,310.00	$89,368.00	$0.00	$158,158.00	$5,245,315.60	$5,498,151.60
2028-29	$0.00	$275,931.00	$1,086,050.00	$64,077.00	$4,062,171.68	$5,488,229.68
2029-30	$0.00	$24,017.00	$0.00	$0.00	$5,452,490.40	$5,476,507.40
2030-31	$0.00	$63,706.20	$0.00	$0.00	$5,410,807.50	$5,474,513.70
2031-32	$0.00	$191,340.00	$0.00	$333,190.00	$4,974,127.20	$5,498,657.20
2032-33	$0.00	$1,387,816.00	$0.00	$68,224.00	$4,043,060.98	$5,499,100.98
Total	$379,770.12	$4,459,397.90	$2,927,734.00	$705,341.00	$40,953,830.82	$49,426,073.84

Table 11 - $5.5 million programme – Length of road (m) by year and treatment

Period	CS 2nd Coat	CS RSEAL	Rehab - Local - Secondary Collector	AC Resurface	Rehab - Arterial - Primary Collector	TOTAL
2024-25	5,547	19,770	1,468	0	1,880	28,665
2025-26	1,477	6,139	232	246	3,726	11,820
2026-27	0	1,572	600	0	4,042	6,214
2027-28	590	1,146	0	154	3,913	5,803
2028-29	0	3,191	1,450	93	3,270	8,004
2029-30	0	334	0	0	4,586	4,920
2030-31	0	789	0	0	4,620	5,409
2031-32	0	2,592	0	233	3,818	6,643
2032-33	0	15,459	0	82	3,346	18,887
Total	7,614	50,992	3,750	808	33,201	96,365

$8 million programme

Table 12 - $8 million programme – Cost by year and treatment

Period	CS 2nd Coat	CS RSEAL	Rehab - Local - Secondary Collector	AC Resurface	Rehab - Arterial - Primary Collector	TOTAL
2024-25	$78,291.00	$1,442,780.40	$2,927,734.00	$0.00	$3,549,937.30	$7,998,742.70
2025-26	$46,800.00	$970,098.20	$98,065.50	$213,200.00	$6,669,940.20	$7,998,103.90
2026-27	$49,474.80	$1,133,349.70	$1,007,940.00	$333,190.00	$5,471,932.76	$7,995,887.26
2027-28	$120,298.32	$1,305,967.60	$1,211,240.00	$338,000.00	$5,024,246.50	$7,999,752.42
2028-29	$5,310.00	$1,712,548.60	$1,215,413.00	$158,951.00	$4,906,475.00	$7,998,697.60
2029-30	$0.00	$1,391,708.80	$1,748,915.00	$0.00	$4,859,008.98	$7,999,632.78
2030-31	$0.00	$1,048,375.80	$664,084.80	$0.00	$6,252,930.88	$7,965,391.48
2031-32	$0.00	$739,987.00	$1,296,840.00	$184,860.00	$5,635,772.80	$7,857,459.80
2032-33	$0.00	$762,675.70	$4,473,460.28	$0.00	$511,819.00	$7,844,317.08
Total	$300,174.12	$10,507,491.80	$14,643,692.58	$1,228,201.00	$42,882,063.42	$71,657,985.02

Table 13 - $8 million programme – Length of road (m) by year and treatment

Period	CS 2nd Coat	CS RSEAL	Rehab - Local - Secondary Collector	AC Resurface	Rehab - Arterial - Primary Collector	TOTAL
2024-25	1,344	16,479	3,750	0	2,884	24,457
2025-26	1,000	13,872	141	300	5,448	20,761
2026-27	1,211	14,328	1,300	233	4,507	21,579
2027-28	2,242	17,457	1,560	630	3,861	25,750
2028-29	590	23,123	1,451	275	4,189	29,628
2029-30	0	16,755	2,335	0	3,932	23,022
2030-31	0	13,009	862	0	5,029	18,900
2031-32	0	11,155	1,720	237	4,307	17,419
2032-33	0	7,489	5,840	0	295	16,097
Total	6,387	133667	18,959	1,675	34,452	197,613