

Central Hawkes Bay District Council

2018 Land Transport Activity Management Plan

Bid Draft 15 Dec 2017



Asset Management Team

Sponsor for the Central Hawkes Bay District Council

Shawn McKinley

Land Transport Manager

Contributors

Glen Syred

GHD Ltd

Stuart Cartwright

GHD Ltd

Michael Kemsley

GHD Ltd

Aaron Campion

GHD Ltd

Chris Shepherd

GHD Ltd

Scott McIntyre

GHD Ltd

Maria Chau

GHD Ltd

Hernan Lozada

GHD Ltd

Approved for Issue:

Signed _____
Shawn McKinley

Date: _____

Reviewed for Issue:

Signed  _____
Glen Syred – Senior Infrastructure Strategy Consultant

Date: 15-12-2017

Document and Version Control

This is a draft version as at 15 Dec 2017



TABLE OF CONTENTS

Table of Contents

Section	Page Number Series
1 Executive Summary	100
2. Introduction	200
3 Levels of Service	300
4. Future Demand	400
5. Risk Management	500
6. Life Cycle Management	600
7. Financial Summary	700
8. Asset Management Practice	800
9. Plan Improvement and Monitoring	900

Contents

1	Executive Summary.....	100
1.1	Purpose of the Plan	100
1.2	Overview of the Land Transport Network.....	100
1.2.1	Central Hawkes Bay Geographic Overview.....	100
1.2.2	Assets Which Enable This Activity	102
1.3	Overview of the Land Transport Activity	103
1.3.1	Central Hawkes Bay District Council –	103
1.3.2	Objectives of the Land Transport Activity	103
1.4	The Need for Investment and Business Case for Intervention	104
1.4.1	The Business Case for Intervention	104
1.4.2	The Strategic Case	104
1.4.3	Programme Business Case.....	108
1.4.4	Potential Consequences	114
1.4.5	Programme Improvement Plan	114
1.4.6	Smart Buyer Procurement.....	115
1.5	Levels of Service	115
1.5.1	Current Levels of Service and Performance Measures under ONRC.....	115
1.5.2	Future Levels of Service and ONRC	116
1.5.3	Wellbeing Statements, Community Outcomes and Levels of Service	117
1.6	Future Demand.....	117
1.6.1	Projected Growth or Decline in Demand on Services.....	117
1.6.2	Demand Management Plan.....	119
1.7	Risk Management.....	120
1.8	Lifecycle Management.....	122
1.8.1	Maintenance Intervention Strategy (2011)	123
1.8.2	Asset Condition and Performance.....	123
1.8.3	Operations and Maintenance Plan	124
1.8.4	Renewals Plan	125
1.8.5	Development (Capital Improvement) Works Plan.....	126

1.8.6	Asset Disposal Plan	126
1.9	Financial Summary	126
1.9.1	Expenditure Forecasts	127
1.9.2	Funding Strategy and Forecasts	127
1.9.3	Asset Valuation	128
1.10	Asset Management Systems	128
1.10.1	RAMM – Roading Asset Register	128
1.10.2	Optimised Decision Making	128
1.11	Plan Improvement and Monitoring	129
1.11.1	Gap Analysis between Current and Best Practice	129
1.11.2	LTAMP Review and Monitoring	131
1.12	Key Assumptions	131

1 Executive Summary

1.1 Purpose of the Plan

The District is committed to spending only what it needs to; to make better investment decisions based on robust evidence to sustain the transport network in the long term; by targeting the right treatments, to the right places, at the right times and for the right costs.

The purpose of the Land Transport Activity Management Plan (LTAMP) is to set out the financial and technical aspects of providing and managing the land transport assets. The LTAMP explains the process of managing assets at a reasonable cost to achieve agreed levels of service. The LTAMP also outlines the asset risks and how these can be managed, mitigated or removed.

The LTAMP sets out levels of service and performance requirements that are based on legislative and strategic requirements, the needs of residents and economic affordability. Actual condition and performance of the assets is presented, and current and future asset requirements are identified to ensure the provision of land transport assets that are fit for purpose and meet the requirements of the people of the District both now and long into the future.

The LTAMP is for a period of 30 years from 2018 to 2048, with updates and modifications to meet emerging trends or situations.

This LTAMP is considered to meet the new recommendations of the New Zealand Transport Agency (NZTA)/ Road Efficiency Group (REG) Business Case Approach (BCA) as far as best appropriate practice for the Central Hawkes Bay District Council.

As part of the network management planning process, local authorities are expected to apply the principles of the business case approach (BCA) to justify investment decisions, with the outcomes of realising efficiency savings and increasing value for money by better targeting investment. BCA is a process that improves investment decision-making by clarifying why we are doing work, defining our strategic problems and benefits, ensuring there is robust evidence behind our strategic response, and building a robust case for investment.

The District's business case approach for each of the asset groups is outlined in the lifecycle management plan sections of the LTAMP.

The LTAMP describes the programme business case approach as well as the strategies, work programmes and long-term financial forecasts for Council's Land Transport portfolio.

1.2 Overview of the Land Transport Network

1.2.1 Central Hawkes Bay Geographic Overview

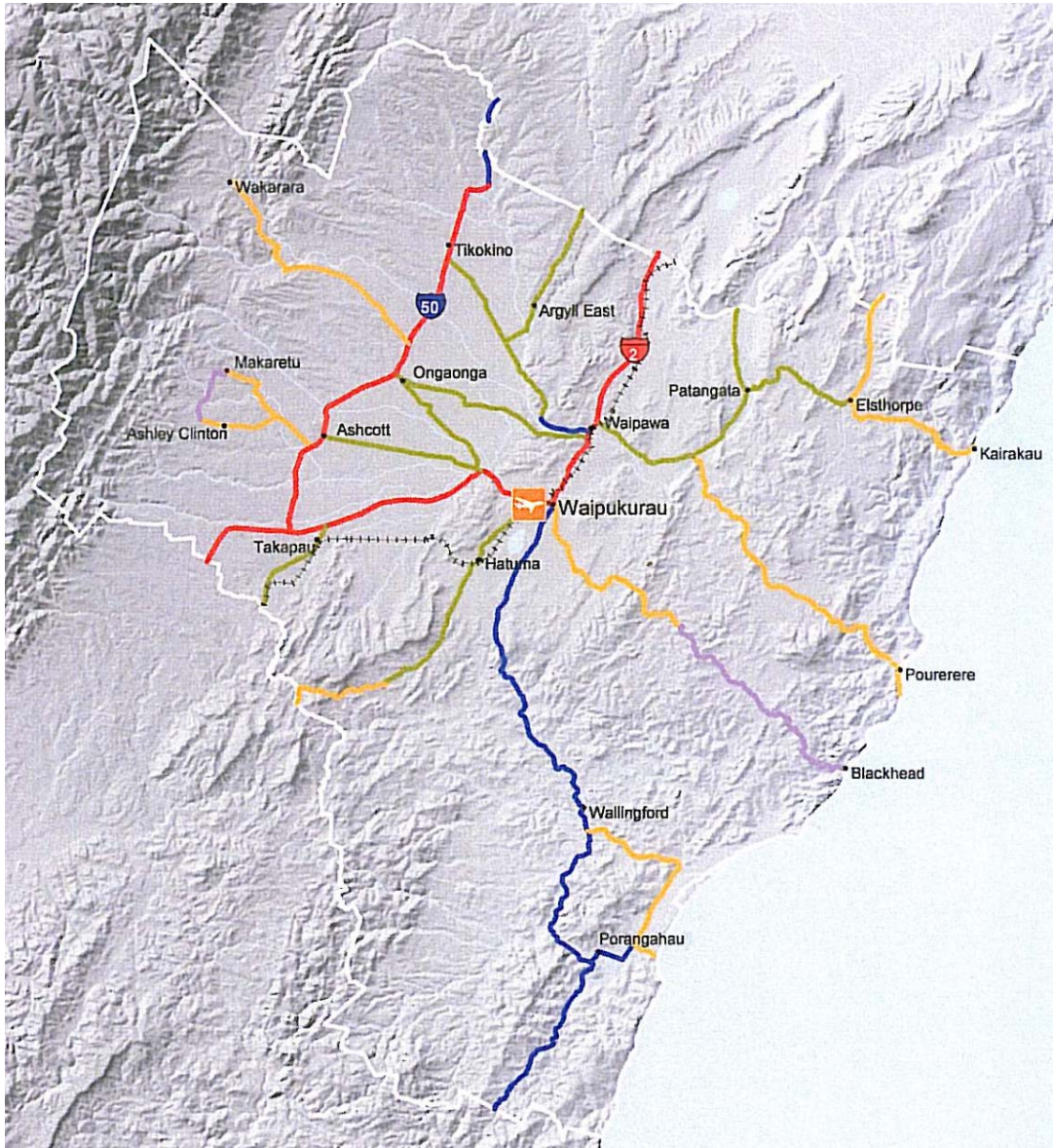
The Central Hawke's Bay District is located in the southern part of the Hawke's Bay Region and adjoins neighbouring Territorial Local Authorities (TLAs) Hastings District and Taranaki District.

The Central Hawkes Bay District encompasses 3,332 km² in the central North Island with a usual resident population of 12,717 (Statistics NZ, Census 2013). The District's relatively small and dispersed population base ranks about 50th in size out of the 67 districts in New Zealand, having about 0.3% of New Zealand's population.

A map of Central Hawkes Bay is shown shaded below.



The main roads within Central Hawkes Bay area show in the map below.



1.2.2 Assets Which Enable This Activity

In order to enable the land transport activity, Council owns and manages:

- A vehicular network, comprised of 1,264 km of sealed and unsealed roads and 263 bridges and large culverts.
- A pedestrian network, comprised of 69 km of footpaths.
- Enabling infrastructure, comprised of 1,764 km surface water channels (mainly shallow stormwater channels and kerb and channels), associated drainage assets, 307 retaining walls and 3 stock underpasses.
- Safety infrastructure comprised of 884 streetlights, 979 km of road marking, 5,395 road signs, 7,583 m of site rails, and 7,551 m of guard rails.

The total replacement value of the land transport infrastructure is approximately \$809 million.

The inventory of the existing transport network, which is maintained by the District, is held within the Road Assessment and Maintenance Management (RAMM) database. This is an inventory which provides a detailed description of those components that form the District's Land Transport Infrastructure.

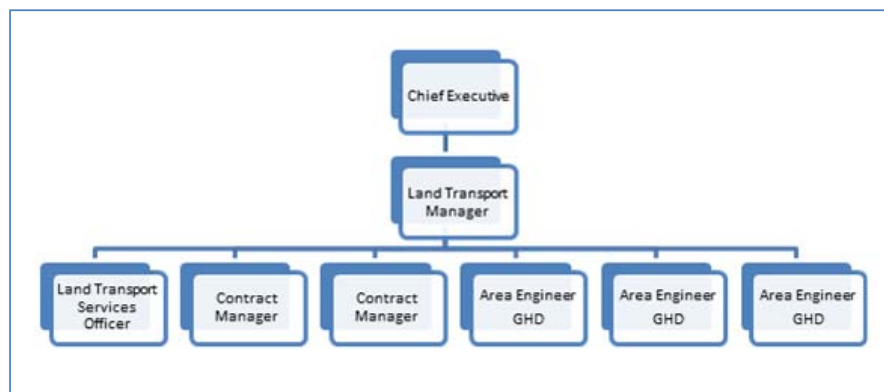
1.3 Overview of the Land Transport Activity

1.3.1 Central Hawkes Bay District Council –

Council is the local territorial authority and road controlling authority for the District. Council's role is to provide a road and pedestrian network that allows for the safe, reliable, efficient and effective movement of vehicles and people. Council's leadership and governance follows the role and principles of the local government as per the Local Government Act (LGA) 2002 and subsequent amendments namely:

- To enable democratic local decision-making and action by, and on behalf of communities
- 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.

The management and administration of Council's Land Transport assets is undertaken by a small team of Council staff shown below.



1.3.2 Objectives of the Land Transport Activity

Community Outcomes are goals that the community believes are important for its present and future economic, social, cultural and environmental well-being. The Wellbeing Statements and Community Outcomes identified in the Long Term Plan (LTP 2015-25), to which the land transport activity contributes are included in the table below. The Long Term Plan is reviewed every three years and the next plan (LTP 2018-2028) comes into effect on 1st July 2018, after formal consultation undertaken by Council in late 2017 and early 2018.

Levels of Service (LoS) for the land transport activity are linked to the Community Outcomes to ensure that priorities and actions are focussed towards achieving the overarching community goals.

Wellbeing Statements, Community Outcomes and Levels of Service

Wellbeing Statements (LTP 2012-2022)		Economic A place with a thriving economy	Social and Cultural A healthy, safe place to live
Community Outcomes (LTP 2015-2025)		<i>“Central Hawke’s Bay District has an efficient and affordable roading, waste and water infrastructure”</i>	<i>“Risks to public health are identified and appropriately managed”</i>
Levels of Service (LTP 2015-2025)	Road Safety		✓
	Road Condition	✓	✓
	Road maintenance	✓	✓
	Footpaths		✓
	Response to service requests	✓	✓

1.4 The Need for Investment and Business Case for Intervention

1.4.1 The Business Case for Intervention

With regard to Central Hawkes Bay District’s land transport infrastructure, the “Why we have to invest” is captured in the Strategic Case; and the “What we have to invest” is captured in the Programme Business Case sections of the Executive Summary document of The District’s Land Transport AMP.

These cases are explained in more detail as they are unpacked in the main body of the AMP under the Introduction, Lifecycle Management Plans for asset groups, and the Financial Management sections.

The Central Hawkes Bay Land Transport AMP meets the investment assessment criteria by showing:

- The Strategic Case – *“Why we have to invest”*. That is, our investment strategy aligns to and addresses government and regional priorities, as well as the particular local problems of soft soils, hilly terrain, high rain fall, ageing bridges, increasing forestry haulage impacting the condition and safety of our roads.
Refer Introduction Sections 2.6 and 2.7.
- The Programme Business Case - *“What we have to invest”*. That is, in road pavements, including bridges, drainage; and in road safety.
Refer Introduction Section 2.8.
- Also, Delivering the Programme - *“How we have to invest”*.
Refer Introduction Section 2.9.

The following are summaries of these sections.

1.4.2 The Strategic Case

Strategically, we have to invest in the road network.

Our investment strategy aligns to and addresses government and regional priorities in the Government Policy Statement (GPS), NZTA’s Investment Assessment Framework (IAF), NZTA’s Long Term Strategic View (LTSV 2015-2025) and The Regional Land Transport Plan (RTLTP 2015-2025) which includes the following:



EXECUTIVE SUMMARY

- value for money,
- a consideration of supporting regional economy
- a priority for safety.
- support tourism

Specifically, our investment strategy aligns to and addresses the local problems and benefits discussed below.

Central Hawke's Bay's economy has an agricultural base, mainly sheep and beef farming, vegetable and grain crops, pipfruit, with an increase in dairy farming, all of which are dependent on land transport.

Apart from the routine challenges and problems of maintaining for our customers a safe and working road network in difficult conditions of soft soils, hilly terrain and high rain fall; we are facing particular issues and the problems.

A particular challenge facing the District is providing access to 320,000 hectares of mostly productive farm land that supports several communities, various beaches and 13,000 people as well as several connecting roads to Tararua District in the south and Hastings District in the north.

One of the roads to the south is the old State Highway 52 (Porangahau Road and Wimbledon Road) which over the next 15 years (minimum) will be subject to 200,000 tonnes per year of log haul to the Port of Napier. These heavy traffic loadings and consequent impacts have been increasing over the past few years and have resulted in increased damage and poorer pavement conditions.

Of the roads connecting to Hastings District Council two roads are most significant. Kahuranaki Road serves as an emergency access route between the CHB beach communities and Havelock North / Hastings and points further north, while Middle Road serves as a detour route for State Highway 2 in emergency events or loss of the road.

The routine problems relating to maintaining road access throughout the District arise as the road network deteriorates over time as follows:

- The sealed network requires resealing as the seal wears out causing loss of traction increasing the likelihood of accidents and further pavement deterioration;
- Metal loss from unsealed roads creates unsafe situations for road users and exposes the road base to more rapid deterioration;
- Drains and drainage appliances lose their effectiveness over time due to vegetation growth, silt, scour etc. thus putting the network at risk from high rainfall events increasing the risk of interruption of transport services and potentially increasing cost to the businesses in the area by lowering productivity;
- Lighting, line marking and signs deteriorate over time increasing the accident risk to road users if they are absent

Workshops were held with key stakeholders to identify and consider the District's key issues and problems. This was done using NZTA's recommended 'investment logic mapping' framework. The following four main particular problem statements are derived:

- Failure of ageing structures
- Falling trees (There are 140,000 roadside trees)
- Log hauling from forestry
- Critical assets and critical routes

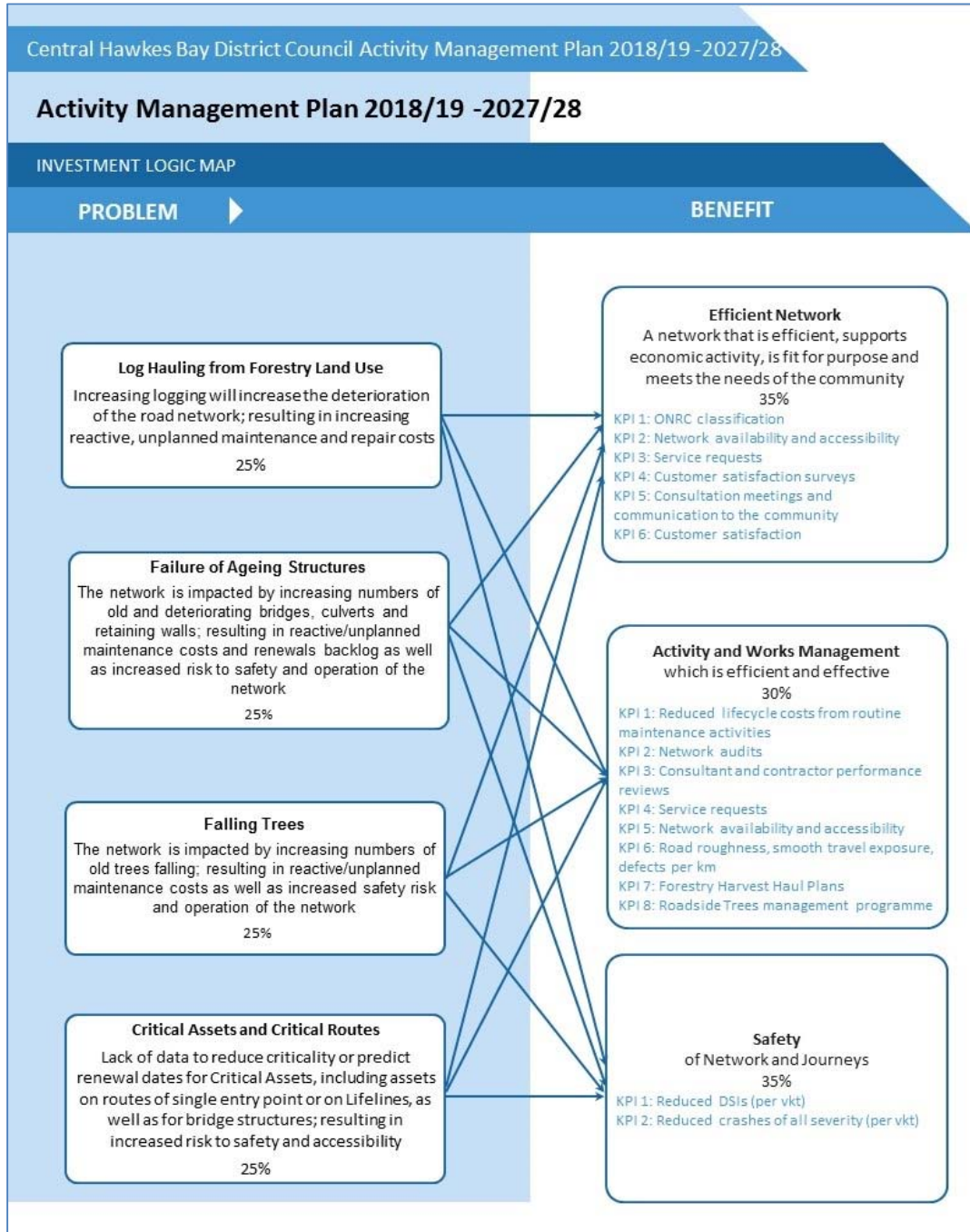
EXECUTIVE SUMMARY

Problem Statement	Evidence for the Problem
<p>1. Failure of Ageing Structures: The network is impacted by increasing numbers of old and deteriorating bridges, culverts and retaining walls; resulting in reactive/unplanned maintenance costs and renewals backlog as well as increased risk to safety and operation of the network.</p>	<p>Condition assessment show a deterioration and decreasing trend on asset condition.</p> <p>The Annual Depreciation of Bridges, Large Culverts and Guard Rails is \$1.2 million, however, the average annual renewals budget for these assets is only approximately \$700,000. This indicates a potential under-investment in these assets of \$500,000 per year.</p>
<p>2. Falling Trees: The network is impacted by increasing numbers of old trees falling; resulting in reactive/unplanned maintenance costs as well as increased safety risk and operation of the network.</p>	<p>A total of 140,000 roadside trees in the network 37,000 are in poor or very poor condition. Increased reactive maintenance and emergency response costs are associated with these fallen trees due to storm events. Tree Removal expenditure has averaged \$404,000 over the past 3 years. Refer to Section 2 Figure 6 showing locations and number of dangerous trees.</p>
<p>3. Log Hauling from Forestry Land Use: The increase in logging will increase the deterioration of the road network; resulting in increasing reactive, unplanned maintenance and repair costs.</p>	<p>There are 15,793 hectares of forestry planting in the District according to the National Exotic Forestry Description (NEFD 2016). Approximately 70% of forest trees in the district is over 16 years of age and is due for a harvesting in the next 10 years. Forestry harvesting causes trees to be hauled through Central Hawke's Bay's transportation system.</p> <p>NZTA, Forestry and Tourism agencies show increased road use as indicated by increased volume of traffic on state highways, logging trucks routes and increased tourist numbers.</p> <p>Recent trends in pavement condition measurements on forest haulage routes.</p> <p>The major change is the log hauling from Ernslaw 1 forests in the Tararua District which will be using two major roads within Central Hawke's Bay (Wimbledon and Porangahau Roads) which will place added pressure on the District's ability to maintain the services appropriate to the road classification and use.</p>
<p>4. Critical Assets and Critical Routes: Lack of data to reduce criticality or predict renewal dates for critical assets, including assets on routes of single entry point or on Lifelines, as well as for bridge structures; resulting in increased risk to safety and accessibility.</p>	<p>Inability to confidently identify all critical assets, including on routes of single entry point or on Lifelines.</p>

Figure 6: Dangerous Tree Locations



The problem statements, the benefits of solving the problems, and how these benefits can be measured are shown in more detail by the investment logic map below.



1.4.3 Programme Business Case

In order to address the strategic issues and problems stated, our programme must address the key themes of road pavements, bridges and road safety.

Road pavements need re-surfacing, base rehabilitation, bridges to support them, and drainage to keep the water out. Road safety requires robust bridges, signage, streetlighting, and an environment that maximizes driver visibility and pedestrian safety. Our investment strategy for road safety is cognizant of local issues raised by NZTA's road safety action planning and crash analysis systems.

In a constrained budget environment, ONRC road categorisation has helped us to optimize available funds by prioritising and re-focussing investment to where in the network it is needed the most.

2015-18 Actual Achieved Average

Our 2015-18 actual achieved average programme of \$10.8M invests:

- \$4.8M in Operations and Maintenance (O&M) of roads, drainage and safety related works
- \$5.8M in Renewals of roads, drainage and safety related works
- \$0.3M in Capital improvement works

However, the evidence in our Strategic Case and Programme Business Case demonstrates that although most of the investment needs can be met by re-allocating existing budgets, there is also need for more funds to meet these particular issues and problems.

The evidence shows that even with the current investment levels, there is an increasing damage, worsening condition and higher repair costs to roads especially on haulage routes; and what is worse is that forest harvesting and heavy traffic counts are projected to increase further over the next 10 years. The previous budget allocations and activities will not fully cater to these new demands.

We need to re-focus/re-allocate and increase our investment if we are to have sustained roading network over the long term.

Programme Alignment to Problems

The District believes that the problems require the following programme responses:

Problem	Programme Response
Programme Optimisation in Difficult Conditions	Status quo, re-allocate as appropriate within existing budgets.
Failure of Ageing Structures	Increase AM and NM activities to improve data, analysis (dTIMS) and studies for predicting failures and renewals of ageing bridges. Increase Structures Renewals budget for ageing structures.
Falling Trees	Increase O&M budget for roads, drainage and safety related works such as fallen trees. Also some of the Minor Improvement budget for proactive identification and removal of hazardous / unstable trees. Work with property owners to manage trees on critical routes in the District.
Log Hauling from Forestry Land Use	Re-allocate existing pavement heavy maintenance and renewals budgets to focus on routes of known and expected log haulage.
Understanding Critical Assets and Critical Routes	Increase AM and NM activities to improve data, analysis (dTIMS) and studies for predicting failures and renewals of critical assets and routes; including on routes of single entry point and on Lifelines routes. Check ONRC categories and importance of these routes.

The above programme responses have been quantified and developed into a proposed programme of works going forward for 2018/19 to 2020/21 as shown below.

Proposed 2019-21 LTP Programme

We re-focussed and increased the 2015-18 actual achieved programme of works to a new proposed 2019-21 programme to align and address the problems facing the District.

We recommend a necessary re-allocation and increase to our core annual programme by \$1.2M (11%) to \$12M, made up of:

- \$4.8M Operations and Maintenance of roads, drainage and safety related works such as fallen trees (remained the same)
- \$6.2M Renewals of roads, bridges, drainage and safety related works (an decrease of \$0.4M)
- \$1.0M in Capital improvement work (an increase of \$0.6M)

The breakdown details and alignment to the problem statements are as follows (showing annual 3-year average programme budgets):

Expenditure Type	2015-18 Actual Achieved (\$M)	2019-21 LTP Proposed (\$M)	Difference Proposed (\$M)	Programme Alignment to Problems and Benefits
Capital New/Improvement	0.3	1.0	0.7	285% Increase
Road Improvements	0.0	0.5	0.5	Seal Widening due to increased Heavy Commercial Vehicle use. Increased Contract Rates Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Resilience Improvements	0.0	0.1	0.1	To mitigate risk of ageing tree falls in storm events Safety Technical Output 10 – Roadside Obstructions Resilience Customer Outcome 1 – Unplanned Closures with a Detour Provided Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Low Cost Low Risk (Minor Improvements)	0.3	0.3	0.0	For log hauling road damage Safety Technical Output 7 – Hazardous Faults Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Bridges, Guardrails & Structures	0.0	0.1	0.1	Bridge approaches and guardrails Network bridges on unsealed carriageways have once a year bituminous sealing for their approach Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
O&M	4.8	4.8	0.0	0%
Pavement	1.9	2.0	0.1	Heavy maintenance on log haul roads

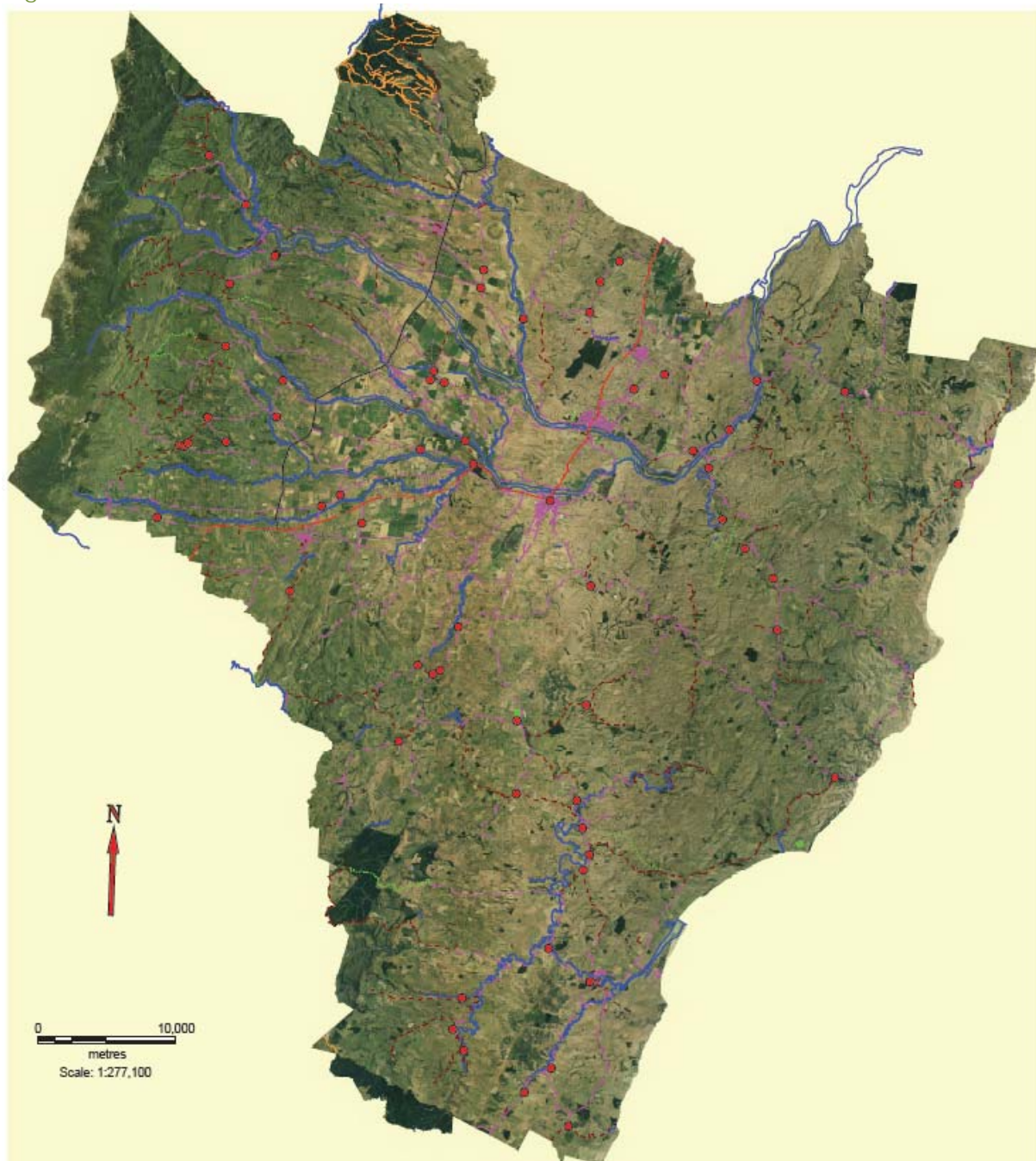
EXECUTIVE SUMMARY

Expenditure Type	2015-18 Actual Achieved (\$M)	2019-21 LTP Proposed (\$M)	Difference Proposed (\$M)	Programme Alignment to Problems and Benefits
				Safety Technical Outputs 7 – Hazardous Faults Cost Efficiency EM10 – Routine Pavement maintenance Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Network & Asset Management	1.0	0.7	-0.3	To improve data & analysis on critical assets and routes. To implement AM improvements. Refer to Section 9, Section 9.10.2
Drainage	0.6	0.4	-0.2	Programme Optimisation Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Vegetation and Streetscapes	0.8	1.0	0.2	Programme Optimisation, Increased Contract Rates Cost Efficiency EM10 – Routine Pavement maintenance Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Traffic Facilities	0.4	0.5	0.1	Programme Optimisation Increased market rates and contract scope Cost Efficiency EM10 – Routine Pavement maintenance Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Bridges, Guardrails & Structures	0.1	0.2	0.1	Programme Optimisation Increased market rates and contract scope Cost Efficiency EM10 – Routine Pavement maintenance Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Renewal	5.8	6.2	0.4	8% Increase
Pavement	3.7	3.9	0.2	Programme Optimisation , Prioritising heavy hauling routes. Accessibility Customer Outcome 1 – Proportion of Network not Available to Heavy Vehicles Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Drainage	1.1	1.2	0.1	Programme Optimisation

EXECUTIVE SUMMARY

Expenditure Type	2015-18 Actual Achieved (\$M)	2019-21 LTP Proposed (\$M)	Difference Proposed (\$M)	Programme Alignment to Problems and Benefits
				Increase drainage outlet control to maximize drainage capacity facilities to minimise flood and scour conditions. Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Bridges, Guardrails & Structures	0.7	0.9	0.2	For ageing structures Safety Customer Outcome 2 – Collective Risk Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Traffic Facilities	0.2	0.2	-0.1	Programme Optimisation Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Grand Total (\$M)	10.8	12.0	1.2	11% Overall increase

Figure 7: Low Cost Low Risk CHB Sites



The 2015-18 actual achieved programme total was 10.8 million annual average, compared to the original LTP budget of 11.5 million.

The proposed ongoing programme of work after 2021 is shown in Section 1.9 of this Executive Summary and in more detail in the Financial Summary section of the LTAMP.

Our programme also aligns with NZTA's Investment Assessment Framework (IAF), the Government Policy Statement (GPS), NZTA's Long Term Strategic View (LTSV 2015-2025) and The Regional Land Transport Plan (RTLTP 2015-2025) because it shows

- **value for money** by targeting the right work in the right places at the right time to achieve least long-term costs,
- **a consideration of supporting regional economy** by catering for heavy haulage and commercial traffic, and tourism
- **a priority for safety** by addressing tree hazards, pavement damage by logging trucks and other road and bridge safety improvements.

NZTA's Long Term Strategic View (LTSV 2015-2025) identifies long term pressures and priority, issues and opportunities. Its ultimate goal is to develop a shared view of the transportation system that allows any sector to work more effectively with others. According to LTSV Central Hawke's Bay should focus on:

- 1.) Freight efficiency, especially port access and connections to freight distribution hub in Palmerston North.
- 2.) Support tourism.

The Regional Land Transport Plan (RTLTP 2015-2025) is prepared by the Regional Transport Committee. It describes Central Hawke's Bay's strategic objectives for the transport system over the next 10 years. Central Hawke's Bay has worked with NZTA to create this document based on 2009 and 2012 extensive transport studies. Two overarching objectives emphasized in the RTLTP are:

- 1.) A safe, resilient and efficient transport system that supports the development of our economy and contributes to social wellbeing in our community.
- 2.) A reduction in the risk of death or serious injuries on Hawke's Bay roads.

This LTAMP demonstrates the case for change or intervention – that is, the clear rationale and evidence for proposed smart, best-value investments and work programmes to address the transport infrastructure problems facing the District. The case for change includes the benefits of addressing the problems and the consequences of not.

1.4.4 Potential Consequences

Potential consequences of not providing maintenance and renewal activities include the following:

- Raised likelihood of accidents on the network due to safety issues not being addressed ("reduced levels of safety");
- Reduced efficiency of the network thus raising costs of transport for goods produced;
- Increased risks of having isolated areas of population due to road access not being available;
- Not providing appropriate levels of service to road classification and use;
- Deterioration of the assets, requiring a higher cost of remediation.

1.4.5 Programme Improvement Plan

The District has identified that the greater use of technology such as the advance deterioration modelling from the dTIMS software may result in more accurate and complete data analysis upon

which to make better informed decisions within the One Network Road Classification (ONRC) framework. Therefore the District has started to improve its data and implement and improved analysis through dTIMS in order to more effectively and efficiently manage its pavement assets.

Should the Ruataniwha Dam Water Storage Scheme proceed, a re-assessment of the impact on the network, potential traffic growth in the region will be required within the next 5 years as more of the project outcomes are known.

1.4.6 Smart Buyer Procurement

Council employs procurement, contracting and network management practices that comply with NZTA Procurement Manual requirements. Council employs best appropriate practice procurement, contracting, network management practices that comply with NZTA Procurement Manual requirements. These practices consistently achieve value for money for the District. However, the District is revising its procurement strategy to focus on and implement the goal of 'supply chain leadership' practices, including outcome-based approach. This will result in smarter contracting and will be more than just smart contractor selection, and will further improve value for money. This is a developing area and initiative by REG National Procurement, which the District intends to embrace.

1.5 Levels of Service

1.5.1 Current Levels of Service and Performance Measures under ONRC

NZTA and Local Government NZ's Road Efficiency Group (REG) has developed the One Network Road Classification (ONRC) regime, which provides nationally consistent road classifications in terms of consistent services levels for roads across NZ.

This new ONRC framework is intended to support the Business Case Approach (BCA) to justify investment decisions, with the outcomes of realizing efficiency savings and increasing value for money by better targeting investment. In practice, this will be achieved by targeting investment to the right treatments, in the right places, at the right times and for the right costs.

The District has implemented the ONRC system. This has resulted in not only the establishment in the District of a new, nationally consistent road classification hierarchy, but also, as part of an ongoing process, the review of existing LoS and the development of associated customer focussed LoS, performance measures and targets.

A summary of the levels of service, performance measures, actual performance and targets is included in Table 1. The Secretary for Local Government has developed mandatory non-financial performance measures for local authorities to use when reporting to its communities (Local Government Act 2002 Amendment No 2). The District's current performance measures have been aligned with these Department of Internal Affairs (DIA) measures.

Table 1: Levels of Service, Performance Measures, Actuals and Targets

Level of Service	Performance Measure		Actual 2015/16	Actual 2016/17	Actual 2017/18	Target 2018/28
Road Safety	The change from the previous financial year in the number of fatalities	Change in no. fatalities from previous year	TBC	TBC	TBC	<0

EXECUTIVE SUMMARY

(Roads that are increasingly safer)	and serious injury crashes on the local road network where road factors (not weather) were a contributing factor, expressed as a number.	Change in no. serious injury crashes from previous year	TBC	TBC	TBC	
Road Condition	The average quality of ride on a sealed local road network, measured by smooth travel exposure (STE).		TBC	TBC	TBC	To show results within the requirements of the One Road Network Classification system
Road maintenance	The percentage of the sealed local road network that is resurfaced annually.		TBC	TBC	TBC	≥7%
Footpaths	The percentage of footpaths within the District that fall within the service standards for the condition of footpaths as stated in Footpath Life Cycle Management Plan section.	% footpaths in excellent condition	TBC	TBC	TBC	≥20%
		% footpaths in poor condition	TBC	TBC	TBC	≤10%
Response to service requests	The percentage of customer service requests relating to roads and footpaths to which the District responds within the time frame specified in the long term plan.		TBC	TBC	TBC	≥85%

1.5.2 Future Levels of Service and ONRC

The District is implementing the One Network Road Classification (ONRC) system. This requires not only the establishment of a new, nationally consistent road classification hierarchy, but also the development of associated customer focussed LoS and performance measure targets. The table below summarises the ONRC associated LoS outcomes for the District.

Table 2: ONRC Levels of Service Outcomes

Efficiency	Value for Money and whole of life costs will be optimised in the delivery of affordable customer services by delivering optimised programmes that are affordable and at a cost so that service productivity is improving
Safety	In line with Safer Journeys provide services to reduce the number and severity of crashes on the District road network
Resilience	To provide for the availability and restoration of roads when there is a weather or emergency event (unplanned) and whether there is an alternative route available and road user information provided
Amenity	Measures the level of travel comfort experienced by the road user including roughness
Travel Time Reliability	Delivering consistent travel times that road users can expect
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

A breakdown of the various ONRC performance measures (technical output measures and cost efficiency measures) and how they relate to the various road classifications within the CHB District are provided in the LoS Section. The transition plan shows the key steps and timing for developing the future District LoS.

1.5.3 Wellbeing Statements, Community Outcomes and Levels of Service

The Local Government Act 2002 sets out the three Wellbeings – Social, Economic and Cultural. The Long Term Plan sets out the Community Outcomes, these are goals that the community believes are important for its present and future economic, social, cultural and environmental well-being. These outcomes were consulted on with the community during the development of the LTP 2015-25.

1.6 Future Demand

1.6.1 Projected Growth or Decline in Demand on Services

Analysis of the projected growth or decline in the demand on services has been undertaken to determine how the land transport network is likely to be affected by key demand pressures. The key demand pressures/issues and the District's responses are explained in Table 3 below.

In 2015 Central Hawke's Bay District commissioned a Long Term Growth 'Environment' and Outlook Report (2015). Scenario 1 of this report represents a continuation of the historical and economic growth track of the district since 2001 (based on the medium population projection developed by Statistics New Zealand). This scenario is used to inform the LTAMP. The second scenario represents the full implementation over time of the Ruataniwha Water Storage Project. Any points of significant difference or key risks that may occur should scenario 2 eventuate have been specifically addressed within the Section 5 Risk Management. However, recent developments indicate that this project may be unlikely to proceed.

Table 3. Demand Pressures/Issues and Responses

Key Pressure / Issue	Trend	Land Transport Response
Low growth and ageing population	<ul style="list-style-type: none"> Population is expected to increase slightly over the next 16 years peaking at a high of 13,500 then declining to projected population of 13,000 by 2040. All age groups will have declining numbers, with the exception of those 65 years and older, which are predicted to have substantial growth of 61%. 	<ul style="list-style-type: none"> Increased focus on the provision of additional infrastructure suitable for other modes of transportation such as cycling, walking, motorised wheelchairs and scooters in urban areas of the district.
Economic conditions and transport affordability	<ul style="list-style-type: none"> Household average weekly income has decreased from 86% to 80% of the national average. Proposed Ruataniwha Water Storage Scheme (RWSS) which has the potential to irrigate 40,000 hectares of the Ruataniwha Plains and make available 93 million cubic meters of water each year. However, recent developments indicate that this project may be unlikely to proceed. 	<ul style="list-style-type: none"> Impact over time on rateability. Limited capacity to support capital improvements. Vesting of infrastructure associated with residential growth is considered low. In the development phase of the RWSS project, the resource consent allows for any of the existing network affected by the construction to be returned to its existing condition. This has impact of removing the affected roads from the CHB programmes in the short term.
Limited ability to plan for timber / forestry activities	<ul style="list-style-type: none"> Anticipated intensive harvest period starting in 2014/15 and continuing over the next 15 years. harvesting will use a large part of the rural road network at various times putting additional pressure on the roads usage As the timber harvests come on line there is potential for congestion and decreased safety at a major intersection in the Waipukurau township. 	<ul style="list-style-type: none"> Forward visibility of logging activity currently estimated on potential timings and area of available forest area by age class. Close monitoring and communication with the industry will be required as well as potentially amending plans for HPMV or 50 Max initiatives, and restrict the timing of log hauls on certain roads to appropriate weather and road conditions to protect the infrastructure where necessary. The district will have to apply both engineering solutions and an education campaign to manage the impacts.
Ability to support High Productivity Motor Vehicle (HPMV) initiatives with an ageing	<ul style="list-style-type: none"> To increase productivity there has been national focus for the use of High Productivity Motor Vehicles (HPMV) and increasing the allowances for heavier loads to 	<ul style="list-style-type: none"> Limit HPMV to roads with new or no bridges

Key Pressure / Issue	Trend	Land Transport Response
bridge and culvert asset portfolio	use the land transport system called the 50 Max initiative.	
One Network Road Classification (ONRC)	<ul style="list-style-type: none"> Any identified changes in customer levels of service are currently being evaluated. 	<ul style="list-style-type: none"> A programme of identified changes and a transition programme will be consulted on with the community and affected stakeholders.

Currently no formal public transport system is in place within the District but under the 2015- 2025 Draft Regional Plan, the HBRC is investigating a transport service in Central Hawke's Bay in response to public requests. This is likely to be demand driven response by way of a community van service or similar, rather than a scheduled bus service. The Total Mobility Scheme is a nationwide scheme that provides discounted transport for people with disabilities which prevent them from using public transport. Total Mobility trips continue to trend upwards and, as the population is ageing, this trend is likely to continue.

The District's Walking and Cycling Strategy¹ identifies actions to develop and maintain the pedestrian and cycle route network in the region. The existing road network with its limited constructed widths offers very few opportunities to construct dedicated cycleways, so the district has opted to take a "share the road" approach to enable cycling within Waipawa and Waipukurau. The District is investing in footpaths and crossings that will cater to the walking and mobility challenged within the district.

1.6.2 Demand Management Plan

The demand management plan included in this LTAMP currently consists predominantly of traffic demand management; however there is an increasing focus on transport and travel demand management, particularly with Council's development and adoption of the Walking and Cycling Strategy.

Asset Based Demand Management

This encompasses traffic demand management and for this network it is managed through road hierarchy. The adoption of a roading hierarchy, which identifies a tiered roading system based on road function and planned levels of service, enables the effective management of traffic.

In response to the ONRC introduced in 2014, new levels of service will be set against the new road hierarchy classification and in some cases this means the standard of road will increase or decrease. At this stage it is not possible to accurately present the asset demands that will eventuate as a result of the recently approved ONRC classification. Council is currently evaluating the networks performance in this regard as part of the transition plan.

Non-Asset Based Demand Management

Non-asset based solutions for managing demand are available as alternatives to asset based solutions and generally fall into the transport and travel demand management categories. A number of non-asset based solutions for the District have been identified, including:

¹ Active Central Hawke's Bay – Central Hawke's Bay District Walking and Cycling Strategy, September 2006

- Traffic by-laws to manage heavy commercial vehicles on sub-standard roads
- Installation of speed humps and thresholds
- Implementing targeted speed restrictions
- Education and communication programmes targeted to deliver critical messages
- Subdivision by-laws e.g. restricting development from existing roads that are of sub-standard width and safety
- Operative District Plan which will take into account all possible growth scenarios and set guidelines for development
- Alternative transport modes such as promoting the use of public transport systems, cycling and walking.
- Strategic alliance with neighbouring Road Controlling Authorities.

Capital Works Programmes related to Demand Management

In the 10-year horizon of this LTAMP there are no major forms of capital improvement to the network. There are several categories of Capital Improvements identified that are related to either improving the safety of the network or improving inadequate infrastructure due to change in demand.

These works are generally related to the following assets and activities:

- Strengthening of bridges and other structures (where justified) as a result of applications for HPMV operation within network corridors
- Low Cost Low Risk Works
- Drainage improvements
- Traffic services such as signs, safety improvements or demand driven
- Walking and cycling facilities
- Seal extensions (where economically justified)

1.7 Risk Management

The District recognises that risk management is an integral part of good management discipline, performance and accountability. The risk management procedures currently followed by the District were adopted in 2007 and are based on the guidelines contained within AS/NZS 4360: 2004, Risk Management.

The update and development of a formal Risk Management Framework is recognised by the District as a key improvement task (Section 9 - Improvement Plan). This will also enable alignment with the updated Australian and New Zealand Standard AS/NZS ISO 31000:2009 – Risk management – Principles and guidelines.

The risk management process for management of the District's Land Transport Activity includes the following key items.

Table 4: Risk Management Process Summary

Risk Management Process Item		Description
Types of Activities		Four key activity areas are identified for analysis: asset management risks, business risks, customer service risks and operational risks.
Risk Evaluation Criteria	Risk Criteria	A likelihood scale and consequence scale have been developed and adopted by the District for the rating of risks.
	Risk Rating Matrix	A risk matrix has been produced summarising the outcomes of various likelihood x consequence combinations.
	Risk Rating Categories	The risk rating categories describe the relative level of risk and the proposed action to respond to the risk.
Risk Assessment	Risk Identification	Risks are identified and entered into the risk register.
	Risk Analysis	Likelihood, consequences as well as overall risk rating (initial risk) are determined. Residual risk is determined taking into account existing
Risk Treatment	Risk Treatment	Treatment plans are developed for all risks rated High or Very High.
	Risk Transfer	Ensuring that risk treatment activities are the responsibility of and carried out by the party who is best able to manage them.

The very high and high risks that have been identified are summarised below, including the existing controls and additional controls proposed to manage these risks.

Table 5: Summary of high and very high risks and controls

Risk	Existing Control	Initial Risk	Residual Risk	Additional Control
General labour shortage, maintaining skills and abilities, maintaining local knowledge.	<ul style="list-style-type: none"> Monitor labour market and work to maintain or enhance the working environment at CHBDC. 	Very high	tbc	NA
Insufficient funding to achieve roading goals	<ul style="list-style-type: none"> Monitor Levels of Service and options 	High	tbc	NA
Maintaining skills and level of service in suppliers	<ul style="list-style-type: none"> Contracts with NZ wide companies to ensure resources can be managed effectively 	High	tbc	NA
Changes to levels of service funding criteria by NZTA	<ul style="list-style-type: none"> Keep informed of changes Become involved in network working group 	High	tbc	NA
Government Funding not adequate	<ul style="list-style-type: none"> Keep informed of changes Become involved in network working group 	High	tbc	NA
Project costs exceeding budget	<ul style="list-style-type: none"> Budget monitoring and regular reporting 	High	tbc	NA

Risk	Existing Control	Initial Risk	Residual Risk	Additional Control
	<ul style="list-style-type: none"> Careful contract (project) planning 			
Managing Cash flow	<ul style="list-style-type: none"> Budget monitoring and regular reporting 	High	tbc	NA
Road closure due to Climatic event – storm /flooding	<ul style="list-style-type: none"> Biennial review of agreed detours 	High	tbc	NA
Road closure due to Climatic event – storm /high winds	<ul style="list-style-type: none"> Identify key routes, roads and dangerous trees. 	High	tbc	Work with owners to manage trees on critical routes in district Biennial review of agreed detours
Road closure due to major accidents	<ul style="list-style-type: none"> Work with NZTA on accident hotspots Design of renewals taking into account modern safe road design 	High	tbc	NA
Not replacing depreciating assets	<ul style="list-style-type: none"> Monitor impact on road roughness and condition 	High	tbc	NA
Private features – being replaced by council but not owned	<ul style="list-style-type: none"> Review all replacements to ensure Council is owner before undertaking work. 	High	tbc	NA
Dangerous Trees on adjoining land to roads	<ul style="list-style-type: none"> Identify key routes and priority trees and landowners 	tbc	tbc	NA
Impact of Ruataniwha Dam construction	<ul style="list-style-type: none"> Resource Consent requirements for road maintenance Communication with Dam operators on likely road usage 	tbc	tbc	NA
Changing vehicle needs	<ul style="list-style-type: none"> State Highway 2 is the key road in the network to be affected. Manage Input onto Regional Land Transport Strategy and RTLP 	tbc	tbc	Monitor changing requirements off SH2

1.8 Lifecycle Management

Lifecycle management included the collection and analysis of asset data, condition and performance and the development of programmes, strategies and expenditure forecasts to ensure the Districts goals are achieved. LCMPs are provided for each of the eight land transport asset groups:

1. Pavements
2. Pavement drainage

3. Bridges and guardrails
4. Retaining structures
5. Carriageway lighting
6. Traffic facilities
7. Vegetation and streetscapes
8. Footpaths, pedestrian accessways and cycleways

Lifecycle management categories include the following:

Operations and Maintenance: Operations and maintenance is required for the day-to-day operation of the network whilst maintaining the current levels of service.

Renewal: Includes replacement and rehabilitation of assets to restore them to their original level of service (i.e. capacity or condition). Renewal strategies are designed to provide for the progressive replacement of individual assets (or components) that have reached the end of their useful life.

Development Works: Capital works involving the creation of new assets, or works, which upgrade or improve an existing asset beyond its current capacity or performance in response to changes in usage or customer expectations. This may be due to growth or changes in the required LoS.

Disposal: Disposal is the retirement or sale of assets whether surplus or superseded by new or improved systems.

1.8.1 Maintenance Intervention Strategy (2011)

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

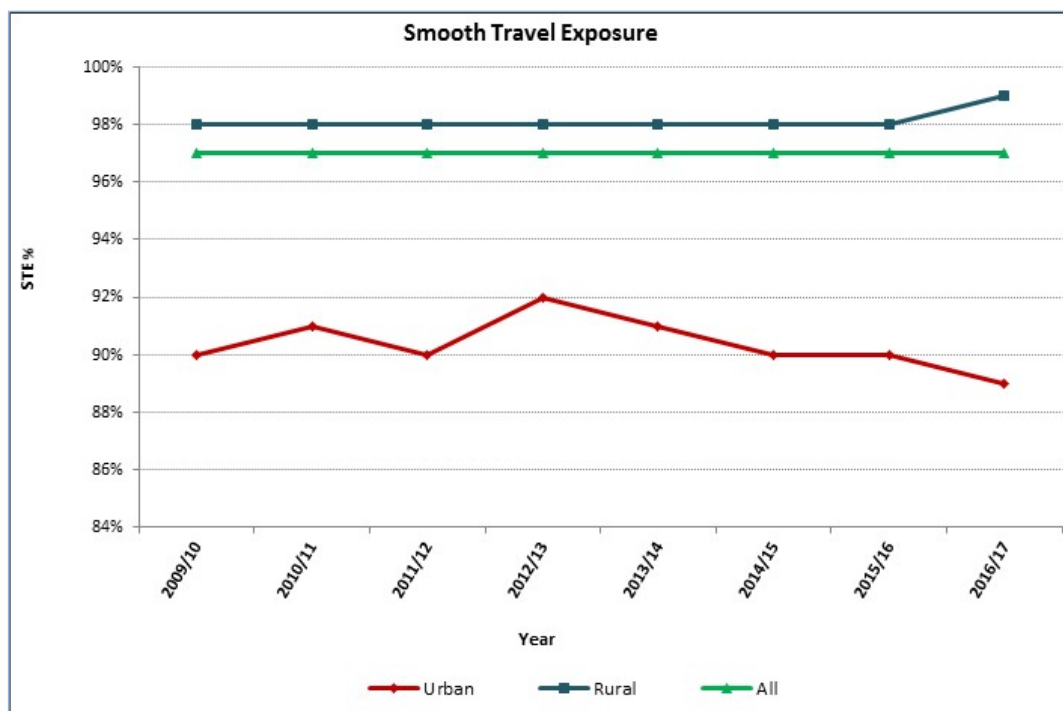
The RMP relies upon the Maintenance Intervention Strategy and Intervention Levels Adopted (refer Risk Management section). These decision processes drive the quantum of routine maintenance completed on the network and ensure an economic approach to routine maintenance expenditure.

1.8.2 Asset Condition and Performance

The NZTA has introduced a KPI for Smooth Travel Exposure (STE) which is based on condition rating and roughness survey outputs.

STE is defined as the proportion of vehicle kilometres travelled each year on roads with condition above the targeted conditions for those roads. An increase in STE means that fewer vehicles are travelling on roads above the target roughness. For the purpose of the NZTA reviews, the target roughness is generally taken as 150 NAASRA. A roughness greater than 150 NAASRA usually indicates poor road condition.

Figure 1: Smooth Travel Exposure (STE)



The results for the District show that the STE for 'All Roads' is remaining stable over time.

1.8.3 Operations and Maintenance Plan

The operations and maintenance objectives and programmes identified in the LCMPs for the key asset groups are as follows:

- Sealed Pavements
 - Objective: To maintain the network through continued pavement maintenance programming and approval based on the Maintenance Intervention Strategy, to ensure the efficient and economic allocation of maintenance funds.
 - Programme: The RMP relies upon the Maintenance Intervention Strategy. Decision processes for identifying service level failures and the right treatments.
- Unsealed Pavements
 - Objective: Undertake a practice of running/wearing course application based on a rate of loss of 10mm per year to protect against loss of basecourse material leading to asset consumption, and; undertake a practise of performance grading determined by need based on past experience, environmental condition, moisture and weather patterns.
 - Programme: The frequency of maintenance grading is on an as-required basis. Metalling (wearing course) strategies in conjunction with the unsealed rebuild programme reduced the need for reactive grading maintenance. The average length from 2019-21 of Unsealed road metalling is 30 km.

- Drainage
 - Objective: Where drainage is inadequate, undertake a proactive regime of drainage maintenance, water tabling, flanking, high shoulder removal and monitor the pavement performance.
 - Programme: A regime to undertake a 7-year return life cycle on water tabling, outlet controls to maintain positive drainage so that culvert capacity is not compromised, flanking and surface channel cleaning is set. To achieve this, the annual requirement for water tabling and flanking on a needs basis.

1.8.4 Renewals Plan

The renewal objectives and programmes identified in the LCMPs for the key asset groups are as follows:

- Sealed Road Resurfacing
 - Objective: To maintain a waterproof pavement through regular renewal of the top surface based on need and condition and to ensure that the expected life of the surface is realised.
 - Programme: The District has reduced its annual resealing length over the years to a current road resealing target of approximately 70 km per annum at a cost of \$1.7M. The planned resealing programme is considered sufficient to limit the risk of resurfacing sites becoming badly deteriorated to a point where rehabilitation is required at substantially increased costs.
- Pavement Rehabilitation
 - Objective: To undertake pavement maintenance renewal work on a whole of life cycle cost basis determined by condition and economic need.
 - Programme: The District has a confident and robust approach for developing pavement rehabilitation. On average, the District plans to rehabilitate approximately 1.4 km of road pavements annually at a cost of about \$1.8 M. This approach is currently being reviewed with the dTIMS initiative. The level of faults are monitored and compared to the renewal programme to ensure that the residual life of the pavement at a network level is not being consumed. The Forward Work Programme needs to be justified in terms of NZTA and Council funding policy, including having a positive Net Present Value (NPV) over a period of 25 years.
- Unsealed Road Renewal
 - Objectives: Through regular investigation of the pavement depths on the unsealed network, develop a programme of unsealed metal rebuilds on a priority basis to protect against asset consumption, and; to undertake a practice of running/wearing course application based on a rate of loss of 10 mm per year to protect against loss of base course material leading to asset consumption.
 - Programme – A prediction of 42 km of unsealed road will be rebuilt each year. This target may change based on funding constraints.
 - With increased logging activities impacting some of the unsealed network roads. These will be assessed as required for unsealed pavement rehabilitation, and may require utilisation of other renewal budgets.

1.8.5 Development (Capital Improvement) Works Plan

This development (capital improvements or acquisitions) identified in the LCMPs for the key asset groups are as follows:

- Road Improvements
 - Road pavements
 - Street widening
 - Repair damaged roads
 - Traffic services
 - Retaining walls
- Resilience Improvements
 - Hazardous tree removal due to wind
- Minor Improvements
 - Hazardous tree removal due to wind
 - Replanting of trees
- Replacement of Bridges, Guardrails and Structures
 - Repair the bridge approach
 - Fix guardrails

1.8.6 Asset Disposal Plan

The District's asset disposal procedures will comply with the requirements of the Local Government Act. Any revenue arising from the disposal of road assets will be re-invested in the road network.

Under this plan there is no requirement for asset disposal for pavements.

1.9 Financial Summary

Expenditure on land transport assets can be categorised into the following three main areas:

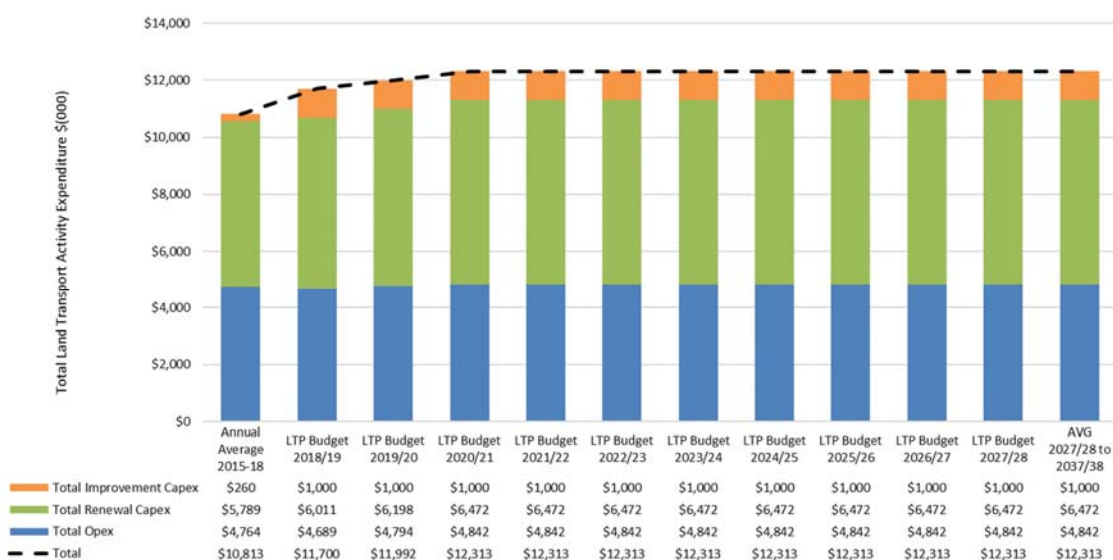
- Operations and maintenance expenditure (Opex)
- Renewals capital expenditure (Renewal Capex)
- Development capital expenditure (Improvement Capex)

The values reported are only for subsidised budgets, it does not include unsubsidised budgets.

1.9.1 Expenditure Forecasts

Figure 2 sets out the 2015-18 actual annual average, the LTP 10 year expenditure forecast and the 10 year average forecasted expenditure until 2037 for all expenditure types for the Land Transport activity.

Figure 2: Land Transport Activity Overall Expenditure per Expenditure Type



Operations and Maintenance Expenditure (Opex)

Overall operations and maintenance expenditure is forecast to remain relatively static over the 20 year forecast period.

Renewals Capital Expenditure (Renewal Capex)

The forecast renewals expenditure shows a 5% increase in pavement renewals and a 25% increase in structures renewals to compensate for ageing structures. The expenditure varies based on inspection results, requirements and the Council programme to ensure that contracts are of sufficient size to attract good competition.

Development Capital Expenditure (Improvement Capex)

Items identified as Improvement Capex in Figure 2 include road improvements, resilience improvements, minor improvements and replacement of bridges and structures. Road improvements will be used for road pavements, traffic services, and retaining walls. Resilience improvements will mitigate the risk of ageing tree falls during storm events. Minor improvements will be used to repair heavy road damage caused by log hauling. Lastly, the approach to bridges on unsealed pavements needs improvements in order to maintain an efficient network.

All capital improvement projects identified are related to meeting LOS requirements.

1.9.2 Funding Strategy and Forecasts

The District's funding policy in the past has been to utilise a combination of NZTA subsidy and land transport rates for maintenance and development of the roading network. Where appropriate, and



EXECUTIVE SUMMARY

agreed by the District, loans may be raised for the development of the roading infrastructure. It is envisaged that this policy will continue in the future.

The management and maintenance of the roading network is subsidised by financial assistance received from NZTA. Different funding criteria apply to different road categories. The District receives subsidy rates of 60% for Operations, Capital Renewals and Capital Improvements.

Development Contributions

Council seeks to adopt a revised policy by June 2018. No development contributions are allowed for in the 10 year funding forecasts as under the new requirements for Development Contributions relating to growth, CHB cannot justify taking contributions. Most contributions are only going towards footpaths.

1.9.3 Asset Valuation

Council undertakes a full valuation of land transport assets every 3 years and a short form valuation annual in between. The current value of depreciation is approximately 13% less than what is proposed to be invested in the renewals of assets. A full valuation was undertaken in 2017.

1.10 Asset Management Systems

1.10.1 RAMM – Roothing Asset Register

The roading network physical data for all of the District's roading assets is contained within the RAMM (Roading Assessment and Maintenance Management) database. This information is continually updated as roads are constructed, sealed, resealed or rehabilitated, structures built and new traffic signs installed. RAMM also stores condition information (visual inspection observations, roughness survey) of the sealed network and footpaths.

The RAMM system also includes a suite of tools to help manage the roading asset, including RAMM Mapping, RAMM Street Light Inventory Management (SLIM), and RAMM Asset Valuation.

RAMM maintenance cost information is used to evaluate historic trends in maintenance expenditure on the network. These costs can be analysed down to the treatment length level to ascertain if the cost of maintenance per kilometre is excessive.

RAMM is a comprehensive system allowing for full data capture for the District's roading assets. However, outputs from the system will only ever be of the same quality as the information inputted into the system. It is important that this is taken into account when analysis is completed using RAMM data.

1.10.2 Optimised Decision Making

The District and its consultants use a range of tools and techniques to ensure that the decisions on future road asset maintenance requirements are optimal both in terms of the intervention timing and the lowest whole of life solution. This LTAMP outlines details and applications of these tools which include the following:

- Treatment Selection Algorithm (TSA)
- Pavement Performance Model (dTMS)
- CAS (Crash Analysis Studies)
- Traffic Counts

- Benefit Cost Ratio (BCR) – justification for capital works projects
- Net Present Value (NPV)
- Multi-Criteria Analysis (MCA) - to rank options that are not easily quantified in terms of dollar values.

Optimised Decision Making applications are as follows:

- Routine Maintenance - Maintenance cost information in RAMM enables the development of more accurate maintenance cost prediction models that can be used in both BCR and NPV analysis of various pavement maintenance, rehabilitation and capital works projects.
- Resurfacing - Ensuring that the lifecycle of each reseal is maximised without risking the integrity of lifecycle of the underlying pavement through checking the performance and condition of the existing surface against default lives and the expected design life within the context of the reseal length. This information along with the recent trends in routine maintenance costs within the treatment length will then enable the economics of proceeding with another reseal or undertaking an alternative treatment, for example an Area Wide Pavement Treatment (AWPT), to be evaluated. The average annual quantities from the FWP are compared with those predicted from the pavement deterioration model and the reasons for any significant variance examined and understood.
- Area Wide Pavement Treatments (AWPT's) - The condition and maintenance cost information stored within RAMM is used as the basis for the selection and timing of the FWP AWPT's. The justification these treatments will be primarily driven by agency cost savings and analysed through the comparison between the Net Present value of the continuing "Do Minimum" maintenance and that for the AWPT option over a 25 year period.
- Seal Extensions and Seal Widening - Justification and prioritisation of these capital works items is required through a BCR analysis. In addition the funding of the future maintenance of the increased sealed surface must be allowed for in the FWP. This analysis will again need to utilise the pavement condition information and associated routine maintenance costs data held in RAMM.
- Traffic Management Decisions - The traffic count data recorded in RAMM has a direct application to Regional land transport studies and strategies, Network hierarchy, Temporary Traffic Management Plans, assigning and management of traffic detours in the event of road closure and prioritisation of resources in the event of large scale road closures.

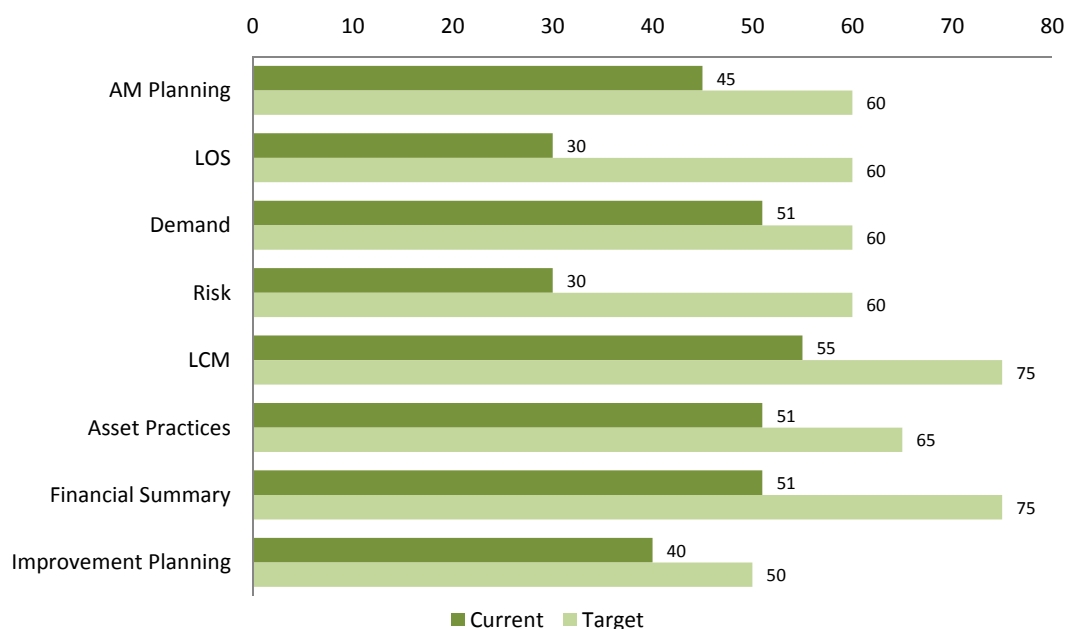
1.11 Plan Improvement and Monitoring

1.11.1 Gap Analysis between Current and Best Practice

This LTAMP is assessed as reaching an “**intermediate**” level of maturity. This review of the LTAMP has incorporated further updates and improvements however there are still several items that need to be pursued to demonstrate “Best Practice” across all activities.

The summary results of the current practice assessment is illustrated below in Figure 3 in 2014. These results require ongoing validation and review.

Figure 3: Current Practice Assessment Results



A brief summary of the weaknesses in this current LTAMP and the gap between these and best practice are included in Table 6.

Table 6: Areas of Weakness in LTAMP and Gap Analysis between Current and Best Practice

Key Element	Current Practice	Best Practice
Providing Defined Levels of Service and Performance Monitoring	<ul style="list-style-type: none"> Consultation has been undertaken through the LTP process (refer to Council Website) through which the community has been made aware of the LOS provided and associated costs. The current LOS are documented as a combination of the Asset Register, Contract processes which describe some elements of the quality of service provided, Customer request for service and historical survey which can be interpreted to indicate some elements of reliability and responsiveness of the service provided. Currently performance is measured as per contractual requirements and changes in indicators such as road roughness and customer 	<p>Requires.</p> <ul style="list-style-type: none"> Refinement of LoS and performance measures in line with the ONRC Transition Plan. Additional engagement from the customers (community) and other stakeholders is required in order to explore alternative LOS options and their willingness to pay for higher levels of service Utilisation of a LOS model defining quality, quantity, location, and timeframe. This would continue to be based on the IIMM but would better define the transport service in terms of Accessibility, Health and Safety, Quality, Reliability and Responsiveness, Sustainability, Functionality.

Key Element	Current Practice	Best Practice
	request levels. This only gives a partial indication of the performance of the Transportation Activity.	
Understanding and meeting the impact of growth through demand management and infrastructure investment	An assessment of demand on the network has been completed utilising Census population data and RAMM traffic count information. This LTAMP does not take into account any future land use changes.	<ul style="list-style-type: none"> Complete further research to assess future demand on the network, in particular the Ruataniwha Dam impacts. However, recent developments indicate that this project may be unlikely to proceed.
Understanding and applying a risk framework	A assessment of risks associated with the land transport assets has been undertaken but the framework is based on a 2009 process, Risks have been reviewed and updated from the 2010 plan.	<ul style="list-style-type: none"> Review the risk framework and look at its application across the wider council. Undertake a further risk identification process and identify mitigation measures.

The review and ongoing improvement of the plan requires resource and budget in order to complete the selected improvement tasks. The Improvement Plan in Section 9 outlines in detail the items for improvement, relative urgency, resource, priority, budget and the authority sought to give approval to complete each item.

1.11.2 LTAMP Review and Monitoring

This LTAMP is to be reviewed on a 3-yearly basis, with the next full review taking place in 2020/21 financial year. During the three year period leading up to this review, the items in the Improvement Programme should be addressed within the timeframes provided. These improvements can then be incorporated into the next review of the LTAMP.

This LTAMP is also audited externally with the review including process, data integrity and Levels of Service. It is expected that this LTAMP will be audited again by the NZTA prior to the next review in 2020/21.

The LTAMP is prepared by the Land Transport Manager through the use of consultants. Those feeding into the plan will include the planning department, the finance committee and the other asset managers.

1.12 Key Assumptions

Significant assumptions and uncertainties in the preparation of the Land Transport Activity Management Plan are:

- The knowledge of the practitioners directly providing this activity, both on a day-to-day basis and historically, has been relied upon. These practitioners include the District's Rooding Department staff and Corporate Services Department staff, District's transport network consultants, NZTA, and staff of the various physical works contractors.
- There will be an ongoing requirement for the provision of this activity.



EXECUTIVE SUMMARY

- The demand for this activity will remain however there is some uncertainty about how the service will change due to changing Government requirements.
- Funding will be available to provide this activity.
- The dollar values shown in this Plan are un-inflated figures with base year 2017/18 unless otherwise stated.
- Some renewal costs are rough order of cost estimates that will need to be further researched and refined.



INTRODUCTION

Contents

2	Introduction.....	200
2.1	Purpose of this Plan.....	200
2.2	Principal Objectives of the Land Transport Activity	200
2.3	The Central Hawke's Bay District	202
2.4	Overview of the Land Transport Network.....	202
2.4.1	Central Hawkes Bay Geographic Overview.....	202
2.4.2	Assets Which Enable This Activity	204
2.4.3	Organisational Structure for Transport Activity	207
2.5	Overview of Asset Management Planning	208
2.5.1	Asset Management Objective	208
2.5.2	Plan Timeframe.....	208
2.5.3	Asset Management Plan Level of Maturity	208
2.5.4	Relationship with Other Plans and Documents	209
2.5.5	Structure of this Plan.....	211
2.6	The Need for Investment	212
2.6.1	The Business Case for Intervention	212
2.6.2	Business Case Introduction.....	212
2.6.3	One Network Road Classification (ONRC)	214
2.6.4	Point of Entry	214
2.7	Strategic Case	215
2.7.1	Strategic Context and Assessment	215
2.7.2	Stakeholders and Affected Organizations/Parties	217
2.7.3	Problem Statements and Evidence	218
2.7.4	Benefits of Investment.....	222
2.7.5	Measurement of Benefits	223
2.7.6	Trends and Projections	223
2.7.7	Constraints and Assumptions.....	224
2.7.8	Programme Quality and Risk Management.....	224
2.7.9	Potential Consequences	225



INTRODUCTION

2.8	Programme Business Case (Developing the Programme).....	225
2.8.1	Programme Business Case Introduction	225
2.8.2	Programme Alignment to Problems.....	226
2.8.3	Alternatives and Options	226
2.8.4	Analyses of Options	227
2.8.5	Recommended Programme of Works	228
2.8.6	Programme Risk	233
2.8.7	Programme Financial Case.....	233
2.9	Delivering the Programme	233
2.9.1	Programme Governance, Monitoring Reporting	233
2.9.2	Smart Buyer Procurement.....	234
2.9.3	Programme Improvement Plan	235



INTRODUCTION

2 Introduction

2.1 Purpose of this Plan

This is the sixth review and update of the Land Transport Activity Management Plan (LTAMP), prepared for the road assets owned and operated by the Central Hawke's Bay District Council (CHBDC) on behalf of its community and ratepayers. This plan has been produced and reviewed as required by legislation set out in Local Government Act (LGA) 2002. Under the Act, Council has to deliver revised Plans to its community on a three yearly cycle.

The purpose of the Land Transport Activity Management Plan (LTAMP) is to set out the financial and technical aspects of providing and managing the land transport assets. The LTAMP explains the process of managing assets at a reasonable cost to achieve agreed levels of service. The LTAMP also outlines the asset risks and how these can be managed, mitigated or removed.

The LTAMP sets out levels of service and performance requirements that are based on legislative and strategic requirements, the needs of residents and economic affordability. Actual condition and performance of the assets is presented, and current and future asset requirements are identified to ensure the provision of land transport assets that are fit for purpose and meet the requirements of the people of the district both now and long into the future.

The LTAMP is for a period of 30 years from 2018 to 2048 with updates and modifications to meet emerging trend or situations.

2.2 Principal Objectives of the Land Transport Activity

The strategic outcomes of the business case are the community's aspirations for the District's future. Council consulted on these Outcomes with the community during the development of the 2012-22 LTP, which streamlined the Outcomes Council was trying to achieve to ensure it focused on areas to reflect on the community's views of what it was seeking from Council.

Community Outcomes are goals that the community believes are important for its present and future economic, social, cultural and environmental well-being.

The Local Government Act 2002 sets out the four Wellbeings – Social, Economic, Environmental and Cultural. Community outcomes reference these Wellbeings.

The Wellbeing Statements and Community Outcomes identified in the Long Term Plan (LTP 2015-25), to which the land transport activity contributes are included in the table below. The Long Term Plan is reviewed every three years and the next plan (LTP 2018-2028) comes into effect on 1st July 2018, after formal consultation undertaken by Council in late 2017 and early 2018.

Table 1: Wellbeing Statements and Community Outcomes Relevant to the Land Transport Activity

Wellbeing	Community Outcome
<i>"Economic – A place with a thriving economy"</i>	<i>"Central Hawke's Bay District has an efficient and affordable roading infrastructure"</i>
<i>"Social and cultural – A healthy, safe place to live"</i>	<i>"Risks to public health are identified and appropriately managed"</i>

Community outcomes identify the community priorities and direction that the council is wanting to deliver. In order to deliver these outcomes, it is important that the land transport activity levels of service and customer and technical performance measures are linked to these outcomes. Levels of Service (LoS) for the land transport activity are linked to the Community Outcomes to ensure that priorities and actions are focussed towards achieving the overarching community goals.

The levels of service (LoS) for the land transport activity are summarised below:

- Road safety: Roads that are increasingly safer;
- Road condition: The average quality of ride on a sealed local road network, measured by smooth travel exposure;
- Road maintenance: The percentage of the sealed local road network that is resurfaced;
- Footpaths: The percentage of footpaths within a territorial authority district that fall within the level of service (LoS) or service standard for the condition of footpaths that is set out in the territorial authority's relevant document (such as its annual plan, activity management plan, asset management plan, annual works program or long term plan).
- Response to service requests: The percentage of customer service requests relating to roads and footpaths to which the territorial authority responds within the time frame specified in the long term plan.

The alignment of Council's wellbeing statements, community outcomes and land transport levels of service is shown as follows:

Wellbeing Statements, Community Outcomes and Levels of Service

Wellbeing Statements (LTP 2012-2022)		<u>Economic</u> "A place with a thriving economy"	<u>Social and Cultural</u> "A healthy, safe place to live"
Community Outcomes (LTP 2015-2025)		"Central Hawke's Bay District has an efficient and affordable roading, waste and water infrastructure"	"Risks to public health are identified and appropriately managed"
Levels of Service (LTP 2015-2025)	Road Safety: Roads that are increasingly safer		✓
	Road Condition: The average quality of ride on a sealed local road network, measured by smooth travel exposure	✓	✓
	Road Maintenance: % of the sealed local road network that is resurfaced	✓	✓
	Footpaths		✓
	Response to service requests	✓	✓



INTRODUCTION

The Council is in the process of implementing the One Network Road Classification (ONRC) system. This requires not only the establishment of a new, nationally consistent road classification hierarchy, but also the review of existing LoS and where necessary the development of associated customer focussed levels of service and performance measure targets.

The land transport activity goals and performance requirements are provided in more detail in the Levels of Service section of this AMP.

2.3 The Central Hawke's Bay District

There are two main towns in Central Hawke's Bay - Waipukurau and Waipawa - with a number of smaller townships including Otane, Takapau, Tikokino, Porangahau and Onga, as well as several beach townships including Kairakau, Pourerere, Blackhead, Te Paerahi.

Central Hawke's Bay's economy has an agricultural base, mainly sheep and beef farming, vegetable and grain crops, pipfruit, with an increase in dairy farming.

The core problem facing the District is providing access to 320,000 hectares of mostly productive farm land that supports several communities, various beaches and 13,000 people as well as several connecting roads to Tararua District in the south and Hastings District in the north. One of the roads to the south is the old State Highway 52 (Porangahau Road and Wimbledon Road) which over the next 15 years (minimum) will be subject to 200,000 tonnes per year of log haul to the Port of Napier. Of the roads connecting to Hastings District Council the two most significant are Kahuranaki Road and Middle Road. Kahuranaki Road serves as an emergency access route between the CHB beach communities and Havelock North / Hastings and points further north. Middle Road serves as a detour route for State Highway 2 in emergency events or loss of the road. The district is split by both State Highway 2 and 50 which run north – south and provide access for numerous local roads to the SH network and the rest of the country.

2.4 Overview of the Land Transport Network

2.4.1 Central Hawkes Bay Geographic Overview

The Central Hawke's Bay District is located in the southern part of the Hawke's Bay Region and adjoins neighbouring Territorial Local Authorities (TLAs) Hastings District and Tararua District.

The Central Hawkes Bay District encompasses 3,332 km² in the central North Island with a usual resident population of 12,717 (Statistics NZ, Census 2013). The District's relatively small and dispersed population base ranks about 50th in size out of the 67 districts in New Zealand, having about 0.3% of New Zealand's population.

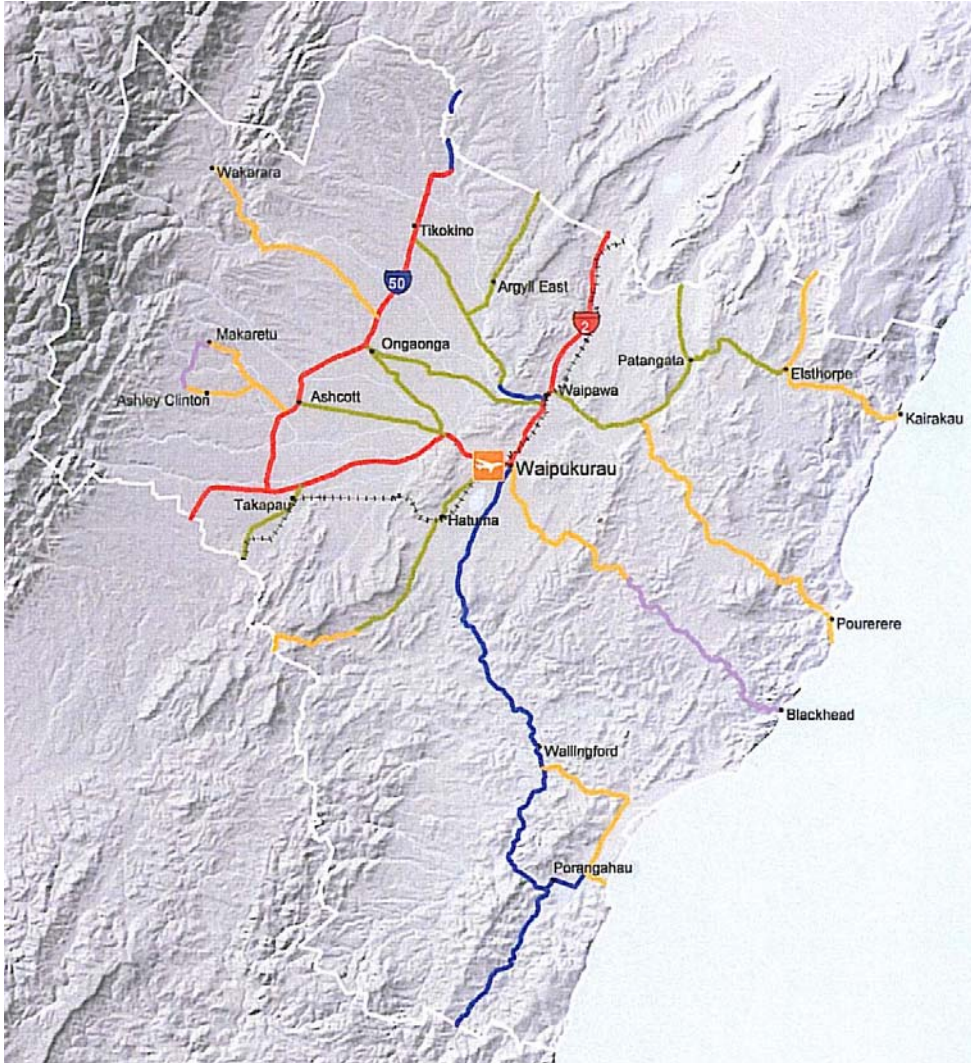


INTRODUCTION

A map of Central Hawkes Bay is shown shaded below.



The roads within Central Hawke's Bay are shown in the map below.



The map includes the NZTA Road Importance (Vulnerability) Ranking based on a combination of their district or inter-district strategic importance; ranging from:

- Red = 5, High
- Blue = 4
- Green = 3
- Orange = 2
- Purple = 1, Low

2.4.2 Assets Which Enable This Activity

In order to enable the land transport activity, Council owns and manages:

- A vehicular network, comprised of 1,264 km of sealed and unsealed roads and 263 bridges and large culverts.
- A pedestrian network, comprised of 69 km of footpaths.
- Enabling infrastructure, comprised of 1,764 km surface water channels (mainly shallow stormwater channels and kerb and channels), associated drainage assets, 307 retaining walls and 3 stock underpasses.
- Safety infrastructure comprised of 884 streetlights, 979 km of road marking, 5,395 road signs, 7,583 m of site rails and 7,551 m of guard rails.

The inventory of the existing transport network, which is maintained by CHB DC, is held within the Road Assessment and Maintenance Management (RAMM) database. This is an inventory which provides a detailed description of those components that form CHBDC's Land Transport Infrastructure.

Table 2 shows the pavement and corridor assets maintained by CHBDC and their optimised replacement costs (ORC).

Table 2: Road Network Assets Inventory Summary

Asset Group	Asset Type	Quantity ¹	Units	ORC ² (\$M)
Pavements	Pavements	1,264	km	\$593.0
Pavement Drainage	Drainage Assets	9,374	No	\$49.0
	Surface Water Channels	1,764	km	\$24.0
Bridges & Guard Rails	Bridges & Large Culverts	263	No	\$111.0
	Guard Rails	7,551	m	\$1.3
Retaining Structures	Retaining Walls	307	No	\$11.0
	Stock Underpass	3	No	\$0.3
Carriageway Lighting	Lighting Poles	281	No	\$1.0
	Lighting Brackets	761	No	\$0.2
	Lighting Lights	884	No	\$0.3
Traffic Facilities	Marking - Linear	979	km	\$0.2
	Marking - Symbols	1,754	No	\$0.3
	Signs	5,395	No	\$1.0
	Railings	7,583	m	\$0.8
	Footpaths	68.9	km	\$16.0

1 – December 2017 RAMM

2 – CHBDC 2016/17 Valuation

Asset Group	Asset Type	Quantity ¹	Units	ORC ² (\$M)
Footpath, Pedestrian Accessways and Cycleways	Vehicle Crossings	2,265	No	\$4.8
	Cycleways	N/A	N/A	N/A
TOTAL		N/A	N/A	\$813.7

Table 2 shows the road lengths summarised in terms of the new One Network Road Classification (ONRC) hierarchy.

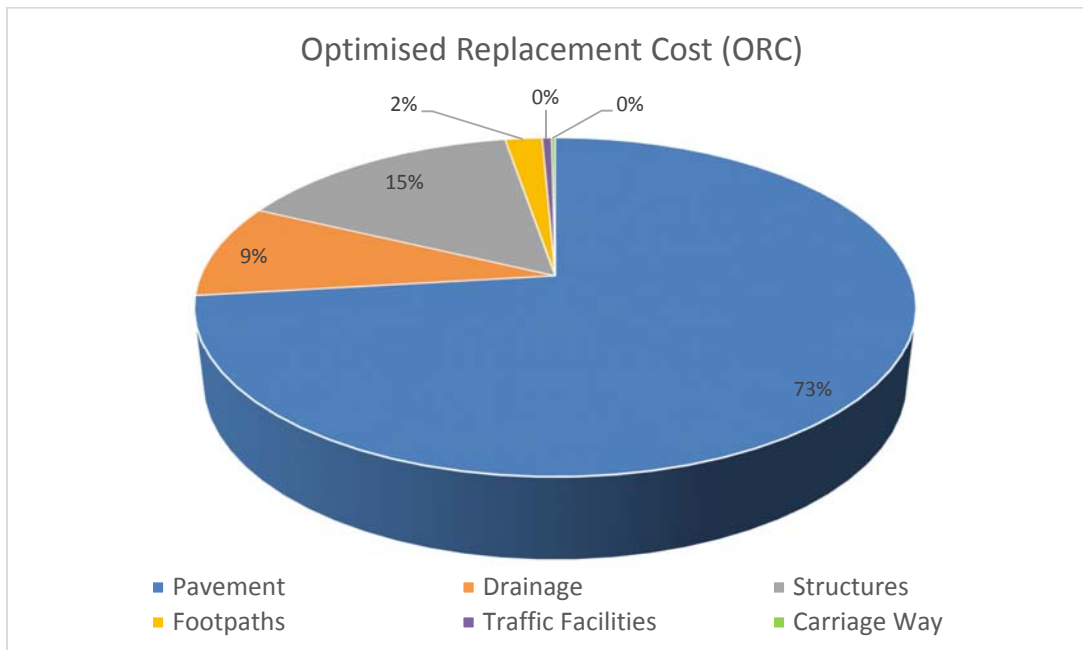
Table 3: Road Lengths by ONRC Hierarchy

One Road Network Hierarchy	Length (km)	Proportion (%)
Arterial	0.57	<1%
Primary Collector	0.75	<1%
Secondary Collector	268.00	21%
Access	551.00	44%
Access (Low Volume)	444.00	35%
Total	1,264.00	N/A

The most detailed record of the transport asset inventory is held in the RAMM asset management system.

Figure 1: ORC by Asset Group

The value of the land transport assets based on optimised replacement cost (ORC) by asset group as at June 2017 is shown in the figure below.



Further information on the asset groups and quantities is provided in the LCMP section of this LTAMP.

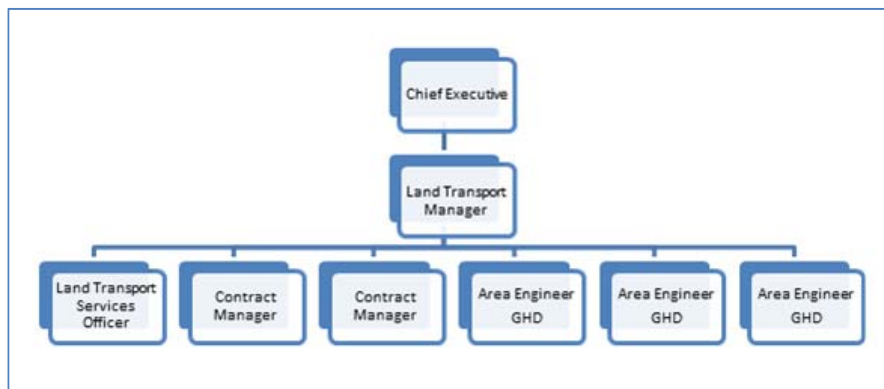
2.4.3 Organisational Structure for Transport Activity

Council is the local territorial authority and road controlling authority for the District. Council's role is to provide a road and pedestrian network that allows for the safe, reliable, efficient and effective movement of vehicles and people. Council's leadership and governance follows the role and principles of the local government as per the Local Government Act (LGA) 2002 and subsequent amendments namely:

- To enable democratic local decision-making and action by, and on behalf of communities
- 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.

Council maintains ownership and responsibility for managing the Land Transport Activity and the associated infrastructure. Consultants are used to provide specific expertise and assistance as required. Council's management structure for the Land Transport group is shown below.

Figure 2: Organisational Structure (2017)



2.5 Overview of Asset Management Planning

2.5.1 Asset Management Objective

The key objective of asset management is to provide a desired level of service (LoS) in the most cost effective manner while demonstrating responsible stewardship for present and future customers. The LTAMP provides a disciplined and logical process for asset management planning, asset maintenance and renewal.

2.5.2 Plan Timeframe

This LTAMP covers a 30 year timeframe from 1 July 2018 to 30 June 2048.

The LTAMP is reviewed in three year cycles with the next full review taking place in the 2020/21 financial year. During the interim three year period, Council will address the items set out in the Improvement Programme (Section 9 of this plan).

This is the 6th review and update of the asset management plan for the road assets during which time it has been refined and continues to be improved to better meet the district and other government requirements. Previous changes to the plan have been minor however, this change, due to the implementation of the ONRC may have major impacts on the ability of the district to continue to maintain its current levels of service and ensure the road assets meet the requirements of the residents of the district as well as the ability to practice asset management as we have in the past.

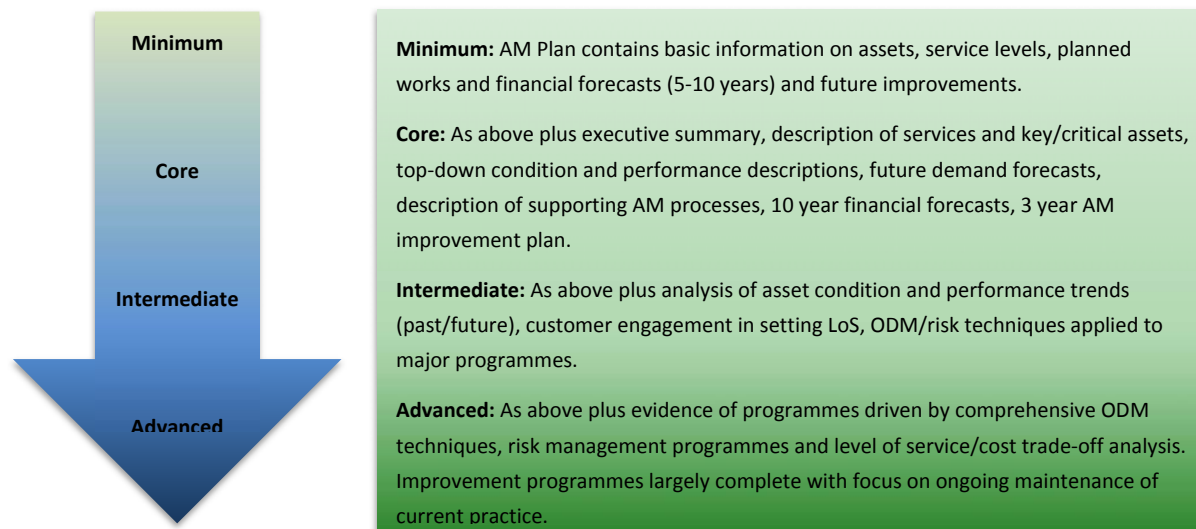
This plan change has been prepared by the Land Transport Manager at a time when the full impacts of the ONRC are unknown and as such may be required to be amended frequently as more information becomes available.

2.5.3 Asset Management Plan Level of Maturity

This management plan is considered to be at an Intermediate level in terms of the Asset Management Plan Maturity Index (IIMM 2015). This has been identified from an assessment of each section of the plan, which is outlined in Section 9.

The IIMM AMP maturity index is demonstrated below.

Figure 3: Asset Management Plan Maturity Index (IIMM 2015)

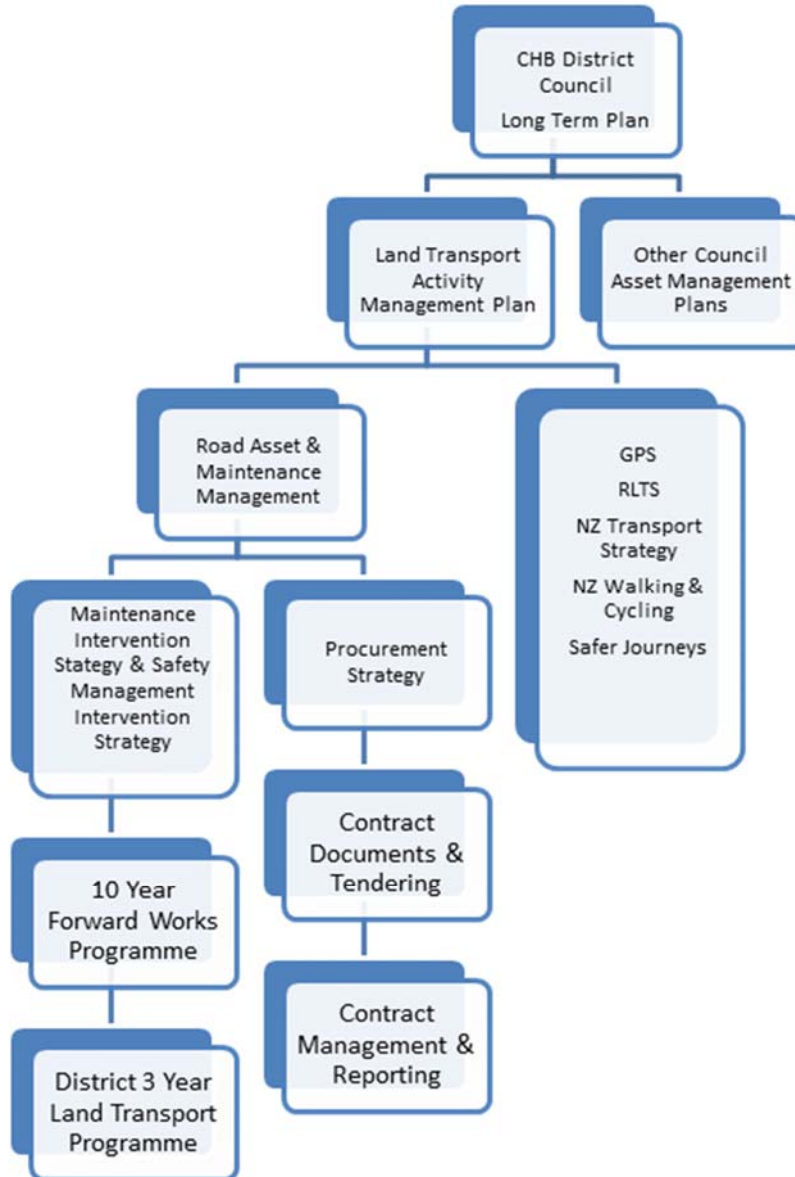


Section 9 of this plan provides guidelines to ensure the plan is regularly reviewed to incorporate improvements where economical.

2.5.4 Relationship with Other Plans and Documents

AMPs are a key component of the strategic planning and management of Council, with links to the LTP, National and Regional Land Transport Strategies, Council planning documents, and to legislation and other regulatory instruments. Key linkages between the LTAMP, the LTP and other key documents is demonstrated below.

Figure 4: Relationship between LTAMP and other Plans and Documents



The following key documents have an impact on this LTAMP:

- Draft Government Policy Statement 2018 (Draft GPS 2018) released every 3 years
- Regional Land Transport Plan (RTLP 2015-2025)
- Regional Public Transport Plan
- NZ Walking & Cycling Plan
- NZ Transport Strategy
- NZTA's Investment Assessment Framework (IAF)

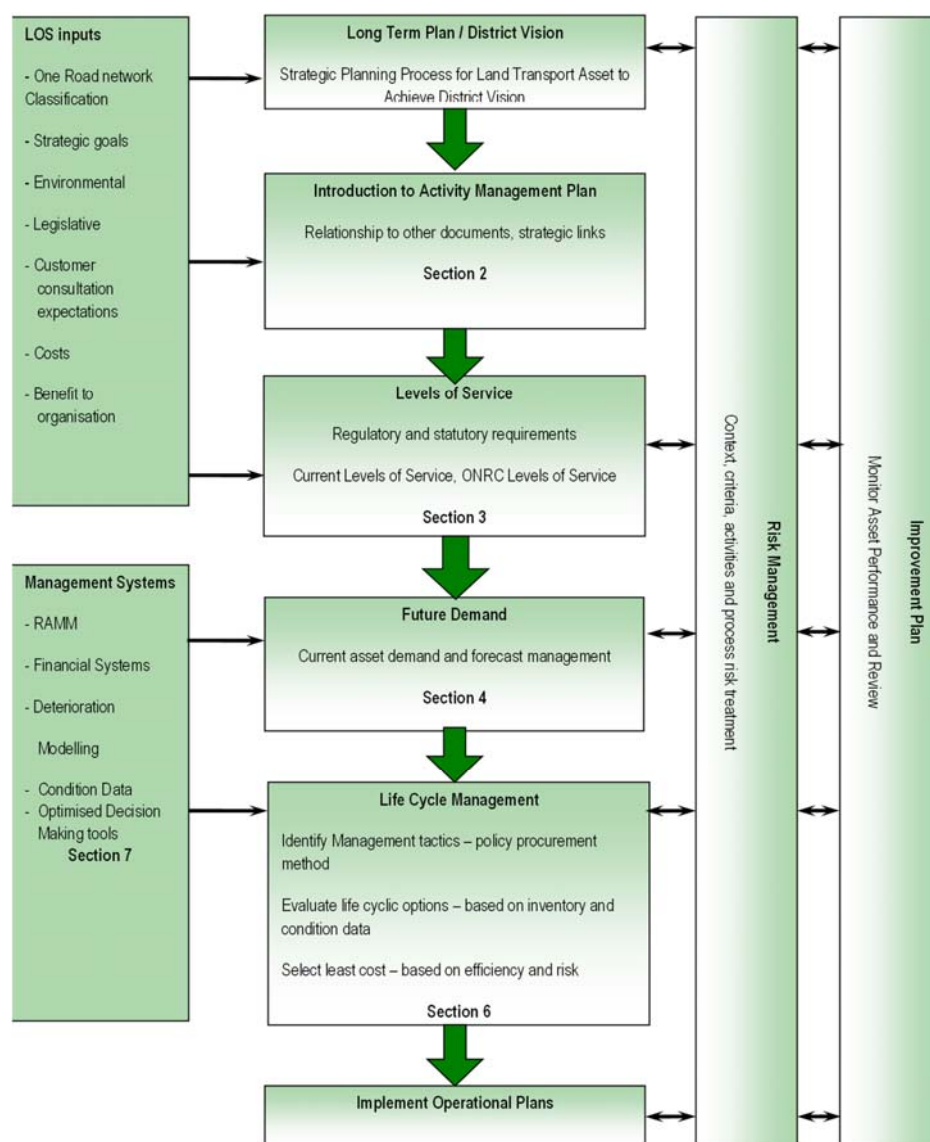
- NZTA's Long Term Strategic View (LTSV 2015-2025)

A full summary of the key legislation, national and regional policies, strategies and plans, national standards and guidelines, district bylaws, policies, strategies and plans is provided in the Levels of Service section of this document.

2.5.5 Structure of this Plan

The LTAMP framework is demonstrated below, including key information represented in the LTAMP and linkages between document sections.

Figure 5: LTAMP Framework





INTRODUCTION

2.6 The Need for Investment

2.6.1 The Business Case for Intervention

This Activity Management Plan demonstrates the case for change or intervention – that is, the clear rationale and evidence for proposed smart, best-value investments and work programmes to address the transport infrastructure problems facing the District. The case for intervention includes the benefits of addressing the problems and the consequences of not.

Central Hawke's Bay's economy has an agricultural base, mainly sheep and beef farming, vegetable and grain crops, pipfruit, with an increase in dairy farming.

The core problem facing the District is providing access to 320,000 hectares of mostly productive farm land that supports several communities, various beaches and 13,000 people as well as several connecting roads to Taranaki District in the south and Hastings District in the north.

One of the roads to the south is the old State Highway 52 (Porangahau Road and Wimbledon Road) which over the next 15 years (minimum) will be subject to 200,000 tonnes per year of log haul to the Port of Napier. These heavy traffic loadings and consequent impacts have been increasing over the past few years and have resulted in increased damage and poorer pavement conditions.

Of the roads connecting to Hastings District Council two roads are most significant. Kahuranaki Road serves as an emergency access route between the CHB beach communities and Havelock North / Hastings and points further north, while Middle Road serves as a detour route for State Highway 2 in emergency events or loss of the road.

Taking into account the challenges faced by the transport network, Council has identified the following maintenance and renewals programmes which will be undertaken in the next ten years:

- Pavement management strategy
- Bridges and structures
- Minor improvements to improve visibility
- Drainage to keep water off the roads
- Traffic facilities for safety and to guide road users
- Footpaths

The total cost of operational and capital works programmes is projected to be approximately \$12 million annually. In the past, Council has received significant investment subsidy from the National Land Transport Fund which has enabled the community to receive basic transport infrastructure services. However, past funding levels will not be enough to address the current and future demands of the stated programmes.

2.6.2 Business Case Introduction

The Business Case Approach (BCA) is a process that improves investment decision-making by clarifying why we are doing work, defining our strategic problems and benefits, ensuring there is robust evidence behind our strategic response, and building a robust case for investment.

BCA demonstrates the degree to which the proposed programme of works is the right solution to invest in. BCA seeks at the earliest stage of the process, to clearly define the problems and contextual state of the district, with engagement of key partners and stakeholders where necessary. This early engagement is to get consensus on and understanding of the cause, scale of consequences and scale of benefits of



INTRODUCTION

addressing the problems. This approach will help filter whether a problem is worth investing more time and resource.

The business case also seeks to make sure during the lifecycle of a programme or project that the 'reasons' for doing it are still sound, and that it has a clear link back to organisational priorities and issues.

Underpinning this approach is good quality evidence to support the investment proposed in the LTAMP.

The above principles underpin the Business Case Approach.

The District follows a robust business case approach in the way it develops and justifies its programmes of work and Long Term Plan; which is made up of the following steps:

1. What outcomes does the activity deliver and why is it important to the Community?
2. Outline what services are currently delivered, and how they are delivered.
3. Clearly articulate the problems on the network and the benefits of addressing them or the consequences of ignoring them.
4. Assess the portfolios current state and level of service, as well as the desired state and level of service provided to customers.
5. Compare the portfolios current state against the desired state, and identify any deficiencies. So this entails assessing steps 2, 3 and 4.
6. Develop options to achieve the desired outcomes (this will be an iterative process). Note that options are to be coordinated across portfolios at this time.
7. Including asset, economic, financial, commercial, and management elements.
8. Recommend preferred option and present this for LTP and Regional Land Transport Programme (RLTP) consideration.
9. The story is to be explained to Elected Members and the community such that they may make informed choices. BCA Activity Management Plan is finalised and fed into LTP and RLTP.

This LTAMP demonstrates how Council will achieve its goals and associated strategic targets to support directly the achievement of CHB District's community outcomes through effective sustainable management of land transport infrastructure. Council is not anticipating any major capital improvement works in the next ten years. This plan contains maintenance, renewals, and minor improvements only. Therefore, the indicative and detailed business cases are not necessary and this plan presents the Strategic Case as a sub-heading within the Programme Business Case.

NZTA requirements for BCA also include its Investment Assessment Framework (IAF), which is used to give effect to the Government Policy Statement (GPS) by prioritizing proposals from Approved Organisations (AO) for the 2018-21 National Land Transport Programme (NLTP).

The latest IAF gives greater importance in prioritizing and allocating funding to Approved Organisations whose proposals demonstrate BCA and are in terms of value-for-money, 'Results Alignment' to GPS priorities and Cost-Benefit appraisals. IAF is discussed in more detail in the Programme Business Case.

The LT AMP meets the investment assessment criteria by showing:

- The Strategic Case – *"Why we have to invest"*. That is, our investment strategy aligns to and addresses government and regional priorities, as well as the particular local problems of soft soils,

hilly terrain, high rain fall, ageing bridges, increasing forestry haulage impacting the condition and safety of our roads.

Refer Introduction Sections 2.6 and 2.7.

- The Programme Business Case - *"What we have to invest"*. That is, in road pavements, including bridges, drainage; and in road safety.
Refer Introduction Section 2.8.
- Also, Delivering the Programme - *"How we have to invest"*.
Refer Introduction Section 2.9.

2.6.3 One Network Road Classification (ONRC)

The NZ Transport Agency (NZTA) and Local Government NZ have formed a joint Road Efficiency Group (REG) to develop the One Network Road Classification (ONRC) regime. This affects what NZTA will fund in terms of consistent services levels for roads across NZ.

NZTA expects the Road Controlling Authorities (RCA) to implement the new road classifications and associated LoS in RAMM, AMPs and contracts. These are being changed to align to and implement the ONRC. Transition plans were required by all RCAs to state how and when RCAs will implement ONRC.

The ONRC framework is intended to support the Business Case Approach (BCA) by road controlling authorities (RCA) to justify investment decisions, with the outcomes of realizing efficiency savings and increasing value for money by better targeting investment. In practice, this is being achieved by targeting investment to the right treatments, in the right places, at the right times and for the right costs. It also requires having the flexibility and mechanisms to optimize and re-direct investments to fit a constrained and changing financial environment. The District's business case approach for each of the asset groups is outlined in the lifecycle management plan sections.

The District has implementing the ONRC system. This has resulted in not only the establishment in the District of a new, nationally consistent road classification hierarchy, but also, as part of an ongoing process, the review of existing LoS and the development of associated customer focussed LoS, performance measures and targets.

Impacts and risks of ONRC to the District may arise as public become more aware of potential level of service changes affecting the current road users depending on the ONRC road category.

2.6.4 Point of Entry

Council has completed a Point of Entry review of its current 2015 Land Transport Activity Management Plan (LTAMP) and has compared it to the NZTA/REG Business Case Approach (BCA) Guidelines and associated advisory notes. This review considered the information in the LTAMP and compared it to the principles and requirements of BCA.

The review showed that most of the BCA recommendations are already embedded in the current practices, processes and 2015 LTAMP.

Additional content has been added to the LTAMP to meet the full requirements of BCA.



2.7 Strategic Case

The Strategic Case states *"Why we have to invest"*.

2.7.1 Strategic Context and Assessment

The Central Hawke's Bay District Council maintains 1265 km of road with 265 bridges and a multitude of other structures. The road network is used to connect communities, provide access to large productive areas of land which contributes significantly to the Hawke's Bay Regional economy as well as the economy of NZ. The road network services 13,000 people with two main population centres (Waipawa & Waipukurau) along with eight smaller communities ranging from the Ruahine mountains in the west to the Pacific Ocean in the east. There are numerous connectors both north and south to neighbouring districts as well as two State Highways which connect to manufacturing and processing in Hastings and to the Port of Napier.

This plan contains maintenance, renewals, and minor improvements only. Therefore, the indicative and detailed business cases are not necessary and this plan presents the Strategic Case as a sub-heading within the Programme Business case.

The Point of Entry Gap Assessment revealed the need for development and documentation of investment logic mapping and benefits analysis to give robust evidence of the current transport infrastructure issues and problems that face the CHB District.

Investment Logic Mapping is a process used to identify problems which need to be investigated and addressed, identify the benefits of investment to address the problems and identify how we measure the effectiveness of the investment. This process is

A Strategic Assessment was completed for CHB District using a series of workshops and sessions to develop and document its investment logic mapping to define problem statements and analyse benefits. The results are incorporated into this Activity Management Plan.

Strategic Assessment included:

- Defining the Problem and Benefits that would result from solving the problems.
- Key Performance Measures that will be used to judge how an investment has contributed to the benefits of solving or realizing an opportunity identified in the strategic case.
- Status of Existing Evidence Base as a means of assessing the robustness of the problems and benefits from current information and stakeholder knowledge.

2.7.1.1 Organisation Overview

CHB District Council's organisational structure for transport activity is contained in Section 2.4.3.

2.7.1.2 Strategic Objectives and Outcomes

The Strategic Case aligns to Council's wellbeing statements, community outcomes and land transport levels of service as contained in Section 2.2. In particular, the investment strategy in the LTAMP aligns to the service requirements for "roads that are increasingly safer" and for the "quality of ride on a sealed local road network".



INTRODUCTION

2.7.1.3 Alignment to Existing Strategies / Organization Goals – Relationship with Other Planning Documents

The LTAMP is a key component of the strategic planning and management of Council with strong links to other overarching strategies and policies, external agency strategies and policies, and to legislation and other regulatory instruments.

Strategically, we have to invest in the road network.

Our investment strategy aligns to and addresses government and regional priorities in the Government Policy Statement (GPS), NZTA's Investment Assessment Framework (IAF), Regional Land Transport Plan (RTLTP) and NZTA's Long Term Strategic View (LTSV) for:

- value for money,
- a consideration of supporting regional economy, and
- a priority for safety.

There is a strong relationship between the Land Transport Activity Management Plan (LTAMP) and the National and Regional Land Transport Strategies, and with other Council planning documents. AMPs are tactical plans which provide the link between community outcomes and work programmes.

The key planning documents linked with the LTAMP are shown below.

Document	Frequency
National Context	
One Network Road Classification Guidelines 2014	To be implemented from 2014/15 onwards
Connecting New Zealand (2011)	Ten Yearly
Government Policy Statement on Land Transport Funding (Draft 2018)	Three Yearly
Safer Journeys	Three Yearly Action Plan
National Infrastructure Plan	Three yearly work programmes
The Governments Business Growth Agenda Document	Three Yearly
National Land Transport Programme	Every Three years
Investment Assessment Framework	Guidance document
Regional Context	
Hawkes Bay Regional Land Transport Strategy 2010-2040	Six Yearly
Regional Land Transport Programme for Hawkes Bay region	Every Three years
Hawkes Bay Regional Council Plan	Ten Yearly
Local Context	
Long-Term Plan (LTP)	The LTP is updated every three years and is due for review in 2018.

Document	Frequency
Annual Plan	Must be produced in the intervening years between LTPs
District Plan	Ten Yearly
Land Transport Asset Management Plan	3 yearly – updated every year
Safety Management System (SMS)	5 years
Road Safety Action Plan (RSAP)	Annual

Council ensures that all stakeholders have an opportunity to influence the LoS decisions by:

- Producing an easily readable summary of the Asset Management Plans.
- Making this AMP available on Council's website.
- Engaging with key stakeholders about any proposal for new development.
- Undertaking periodic focus group consultation as part of the LTP development.
- Giving the public opportunity to provide submissions on strategic targets through Council's LTP process.
- Consulting with affected persons on specific projects (as required by the RMA).
- Carrying out periodic LoS surveys and three yearly resident surveys to monitor customer satisfaction.
- Monitoring and analyzing requests for service from customers recorded within Council's customer service request system.

2.7.2 Stakeholders and Affected Organizations/Parties

The LGA 2002 requires Council to consult with affected and interested parties in making decisions. As a leader in the community, Council acts on behalf of the diverse “communities of interest” within the District, and works with residents and ratepayers so that they can confidently participate in local decision-making.

The following table lists the main stakeholders affected by this business case:

Customers	External Stakeholders	Internal Stakeholders
<ul style="list-style-type: none"> Citizens and ratepayers, tenants, local businesses, visitors to the District, local community groups and local iwi. Road users including: <ul style="list-style-type: none"> Motorists – private and commercial cars, vans, trucks and motorcycles Cyclists Pedestrians. 	<ul style="list-style-type: none"> Local Government NZ New Zealand Transport Agency Department of Conservation New Zealand Police Office of the Auditor General Ministry of Civil Defence and Emergency Management Ministry for the Environment Hawke's Bay Regional Council Hawke's Bay Regional Transportation Committee 	<ul style="list-style-type: none"> Councillors Chief Executive and the Management Team Asset Management Staff Financial Support staff Information Technology staff

Customers	External Stakeholders	Internal Stakeholders
<ul style="list-style-type: none"> Disabled users, including wheelchair and mobility scooter users Recreational users, including runners and skaters 	<ul style="list-style-type: none"> Automobile groups New Zealand Historic Places Trust Iwi Environmental groups Service utility providers Consultants and contractors Community Groups KiwiRail 	

2.7.3 Problem Statements and Evidence

Council's investment strategy aligns to and addresses key local problems and benefits.

Various issues and risk have been identified by Council, including:

- General labour shortage, maintaining skills and abilities, maintaining local knowledge.
- Insufficient funding to achieve roading goals
- Maintaining skills and level of service in suppliers
- Changes to funding criteria by NZTA
- Government funding not adequate
- Project costs exceeding budget
- Managing cash flow
- Road closure and lack of access to some areas due to climatic event – storm/ flooding/ high winds
- Road closure and lack of access to some areas due to major accidents
- Not replacing depreciating assets
- Ensuring ratepayers share is available
- Dangerous trees on road reserve creating safety and cost issues
- Changing vehicle needs - 50MAX/ HPMV

However, several main, key problem areas have been identified for investment focus.

Apart from the routine challenges and problems of maintaining for our customers a safe and working road network in difficult conditions of soft soils, hilly terrain and high rain fall; we are facing particular issues and the problems.

Routine problems arise as the road network deteriorates over time as follows:

- The sealed network requires resealing as the seal wears out causing loss of traction increasing the likelihood of accidents and further pavement deterioration;
- Metal loss from unsealed roads creates unsafe situations for road users and exposes the road base to more rapid deterioration;
- Drains and drainage appliances lose their effectiveness over time due to vegetation growth, silt, scour etc. thus putting the network at risk from high rainfall events increasing the risk of interruption of transport services and potentially increasing cost to the businesses in the area by lowering productivity;

- Lighting, line marking and signs deteriorate over time increasing the accident risk to road users if they are absent

The following four main particular problem statements are derived from workshops with key stakeholders, using NZTA's recommended 'investment logic mapping' framework, where the District's key issues and problems were identified and considered. The evidence for the problems is also shown below.

Problem Statement	Evidence for the Problem
1. Failure of Ageing Structures: The network is impacted by increasing numbers of old and deteriorating bridges, culverts and retaining walls; resulting in reactive/unplanned maintenance costs and renewals backlog as well as increased risk to safety and operation of the network.	<p>Condition assessment show a deterioration and decreasing trend on asset condition.</p> <p>The Annual Depreciation of Bridges, Large Culverts and Guard Rails is \$1.2 million, however, the average annual renewals budget for these assets is only approximately \$700,000. This indicates a potential under-investment in these assets of \$500,000 per year.</p>
2. Falling Trees: The network is negatively impacted by increasing numbers of old decayed trees falling; resulting in reactive/unplanned maintenance costs as well as increased safety risk to the public.	<p>A total of 160,000 roadside trees in the network 37,000 are in poor or very poor condition. Increased reactive maintenance and emergency response costs are associated with these fallen trees due to storm events. Tree Removal expenditure has averaged \$404,000 over the past 3 years. Refer to figure 6 below showing locations and number of dangerous trees.</p>
3. Log Hauling from Forestry Land Use: The increase in logging will increase the deterioration of the road network; resulting in increasing reactive, unplanned maintenance and repair costs.	<p>There are 15,793 hectares of forestry planting in the District according to the National Exotic Forestry Description (NEFD 2016). Approximately 70% of forest trees in the district is over 16 years of age and is due for a harvesting in the next 10 years. Forestry harvesting causes trees to be hauled through Central Hawke's Bay's transportation system.</p> <p>NZTA, Forestry and Tourism agencies show increased road use as indicated by increased volume of traffic on state highways, logging trucks routes and increased tourist numbers.</p> <p>Recent trends in pavement condition measurements on forest haulage routes.</p> <p>The major change is the log hauling from Ernslaw 1 forests in the Tairāroa District which will be using two major roads within Central Hawke's Bay (Wimbledon and Porangahau Roads) which will place added pressure on the District's ability to maintain the services appropriate to the road classification and use.</p>
4. Critical Assets and Critical Routes: Lack of data to reduce criticality or predict renewal dates for critical assets, including assets on routes of single entry point or on Lifelines, as well as for bridge structures; resulting in increased risk to safety and accessibility.	<p>Inability to confidently identify all critical assets, including on routes of single entry point or on Lifelines.</p>

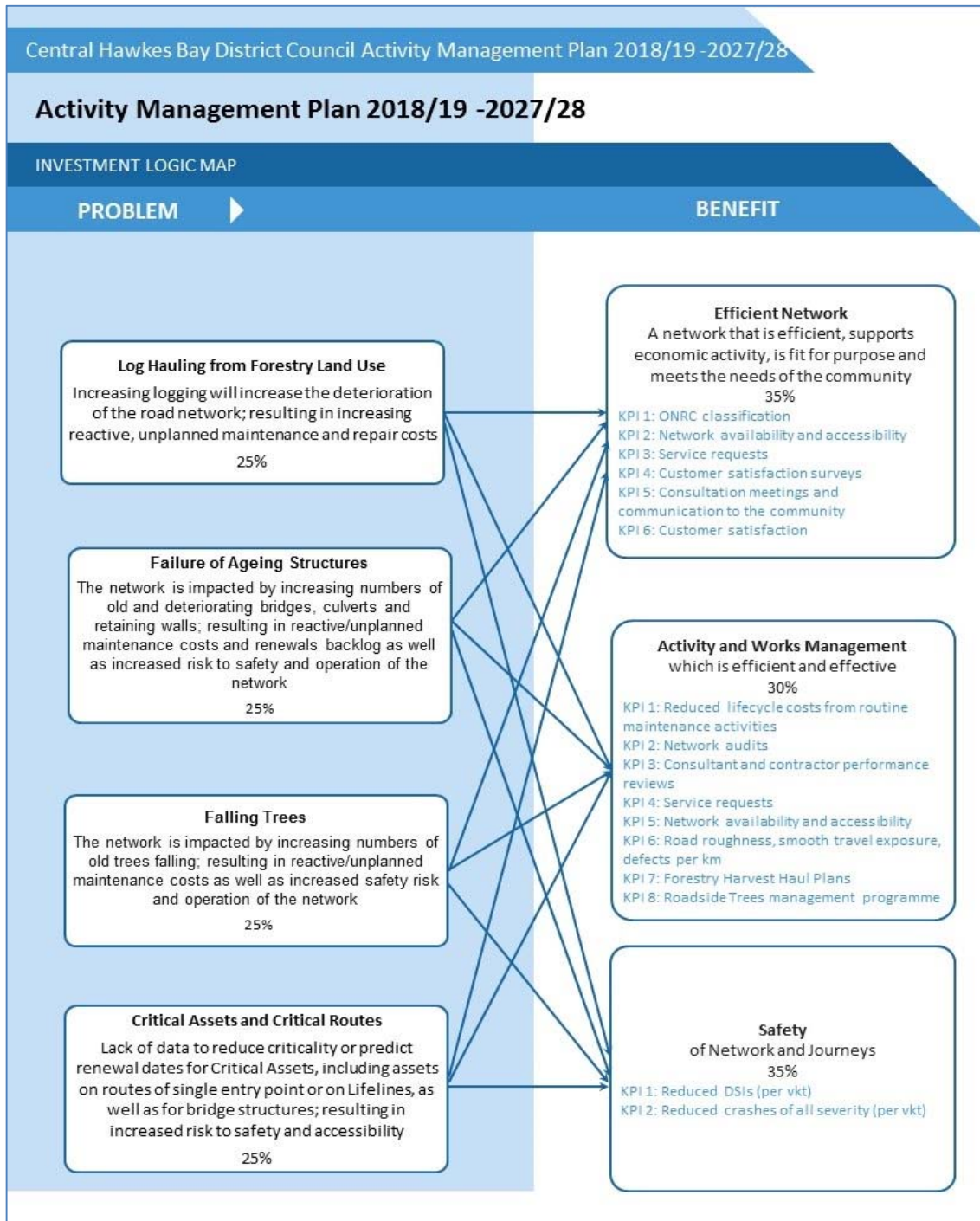


INTRODUCTION

Figure 6: Dangerous Tree Locations



The following Investment Logic Map shows summaries of the particular problems and their importance, the benefits of investing in solutions to these problems, and how the benefits can be measured.



The potential benefits of addressing the problems as well as the key performance indicators by which they are measured are explained in more detail in the following sections.

2.7.4 Benefits of Investment

The benefits of investment into land transport activities that address the problems associated with maintaining levels of service include financial, economic, environmental, and social benefits.

The benefits of providing maintenance and renewal funding is imperative to ensuring that the local economy is strong and that functional access to production centres is maintained for the most efficient travel; reduction in accidents by ensuring the road surfaces are fit for purpose; ensuring the road is resilient and less susceptible to costly repairs by providing appropriate drainage and drainage facilities; ensuring appropriate lighting, road marking and signs are in place to guide motorists safely from origin to destination; and enabling the road user to have a safe and reliable network to access the rest of New Zealand.

Asset Group	Benefits of Investment to this Activity
Pavements	<p>Enable communities to travel safely, easily and efficiently through the district while maintaining good access to properties, businesses and other areas of interest.</p> <p>Pavement rehabilitation, sealed road resurfacing and unsealed road metalling account for more than two thirds of the CHBDC's renewal budget and approximately 74% of the total land transport asset value, therefore investment in pavements protects and sustains the community's capital wealth base.</p>
Pavement Drainage	<p>Primarily prevents water infiltration and consequent rapid deterioration of road pavements.</p> <p>Also provides a level of protection to road infrastructure and property from flooding ensuring the integrity, availability and servability of the Land Transport network.</p>
Bridges and Large Culverts	Bridges and large culverts provide continuous, safe, all-weather roading over rivers, streams and uneven terrain.
Retaining Structures	Protect and support the road pavements
Carriageway Lighting	<p>Illuminates the carriageways improving the visibility of the carriageway and identifies hazards at night and supports the facilitation of safe movement. It is particularly needed in areas with a likelihood of conflict between vehicles, pedestrians or cyclists.</p> <p>Service request calls for streetlighting is in a declining trend.</p>
Traffic Facilities	<p>Assist road users to use the road in a safe way.</p> <p>CHBDC undertakes regular inspections of these assets to ensure that they are fit for purpose.</p>
Vegetation and Streetscapes	<p>Well managed roadside vegetation maintains unobstructed driving visibility and assists with protection of the assets and the environment.</p> <p>CHBDC's road network has a high risk exposure from falling trees. This asset group has the second largest operations and maintenance expenditure. Service request calls for vegetation management have increased suddenly from 2013.</p>



INTRODUCTION

Footpaths, Pedestrian Accessways and Cycleways

Provide a safe, convenient and defined means for pedestrians and cyclists linking roadways and public space.

2.7.5 Measurement of Benefits

The measures (also known as key performance indicators KPIs) quantify the benefits of investment and are used to judge how an investment has contributed to the benefits of solving or realizing an opportunity identified in the strategic case.

Key performance measures identified include:

- Reduction in death/serious injuries (percentage per vehicle kilometre travelled)
- Customer satisfaction
- Road roughness, Smooth travel exposure, defects per km
- Network audits
- Network availability
- Service Requests
- Meetings (maintain or increase meeting frequency)
- Response times – are they appropriate
- Public expectation of response and quality
- Sight clearing/vegetation control
- Perceived safety
- Crash Report
- Economic Benefit of Forestry

2.7.6 Trends and Projections

The following table summarizes the effects of the identified growth and demand trends on the land transport activity. Refer to the District's Long Term Planning, Demographic and Economic Growth Directions Report (2017).

Growth/Demand Trend	Impact
Overall population and sub-divisional growth patterns	
<ul style="list-style-type: none"> Overall usually resident population is projected to increase by 0.25% 	<ul style="list-style-type: none"> This will slightly increase the rating base but due to the increasing requirements to invest in the network may present challenges to the district
Increasing visitor numbers	
<ul style="list-style-type: none"> Visitor numbers have increased and are projected to continue to increase with increased holiday home development in specific locations 	<ul style="list-style-type: none"> Little or no significant impact
Increasing heavy vehicle numbers and size	

Growth/Demand Trend	Impact
<ul style="list-style-type: none"> Harvesting of forests leading to significantly increased heavy vehicle traffic throughout the District, particularly from 2014 onwards as the majority of the plantations mature 	<ul style="list-style-type: none"> Accelerated pavement deterioration and shortened pavement lives on specific routes. Increased need to improve the geometrics and other manoeuvrability and safety aspects of pavements on specific routes to accommodate increased numbers of large vehicles. Potential for an increase in need to upgrade restricted bridge capacity or geometry to allow more of the network to be travelled by heavier vehicles
Increasing vehicle ownership	
<ul style="list-style-type: none"> Increased Vehicle Ownership 	<ul style="list-style-type: none"> Demand for public transport may increase to match the growth of the 65+ age group. As the largest growing age group will be 1 – 14 it will not immediately have a significant impact

2.7.7 Constraints and Assumptions

The following constraints and assumptions have been made:

- Traffic volumes and patterns on the identified critical routes are monitored.
- Council works closely with NZTA and Regional Council to ensure consistency is achieved in local, regional and national land transport strategies.
- Council liaises with KiwiRail in a local and regional context as required.
- Council works closely with industry groups to better understand anticipated demand increases. These groups include forestry groups, farmers, quarrying and mining companies.
- Council commissioned the Long Term Planning, Demographic and Economic Growth Directions Report (2017)
- Increasing expectations caused by growing populations in specific locations, and increased vehicular trips will be managed through ongoing community consultation as part of the service level reviews.
- Traffic counts indicate that in the last seven years traffic volumes have been declining.
- 0% growth is expected in NZTA's Economic Evaluation Manual for roads in the Region.
- Heavy vehicle movements, particularly on feeder roads from forestry areas to state highways, will increase vehicle movements in each direction throughout the District.
- Council will continue to apply sound pavement design with future loading forecasts to address increased deterioration rates caused by the shift to larger heavy vehicles.
- Increasing vehicle ownership and vehicular trips have negligible effect on the deterioration rate of the network.

2.7.8 Programme Quality and Risk Management

Risks associated with developing and delivering the programme of works are based on the overall risk assessment in Section 5 and include the following:

Risk Refce Number	Risk Category	Risk	Source "caused by"	Expected Consequences Impact "consequences"	Risk Mitigation Strategy
1.1	Business	General labour shortage, Maintaining skills and abilities, maintaining local knowledge.	Difficulting in attracting, remunerating and retaining key staff	<ul style="list-style-type: none"> Cost impact. impact on continuity of planning decision making 	Monitor labour market and work to maintain or enhance the working environment at CHBDC
2.6	Asset Management	Insufficient funding to achieve roading goals	Low population base, large network, potentially reducing NZTA funding	<ul style="list-style-type: none"> Increased Rates Reduction in amount of work able to be carried out Increased deferred renewals Lower quality assets 	Monitor Levels of Service and options
2.8	Business	Maintaining skills and level of service in suppliers	Difficulting in attracting, and retining contractor staff	<ul style="list-style-type: none"> Impact on ability to maintain network 	Contracts with NZ wide companies to ensure resources can be managed effectively
2.1	Business	Changes to levels of service funding criteria by NZTA	Changes to Govt policy through ONRC process	<ul style="list-style-type: none"> Increased Rates reduction in amount of work able to be carried out 	Become involved in regional network working group
2.11	Business	Government Funding not adequate	Changes to Govt policy through ONRC process	<ul style="list-style-type: none"> Increased deferred renewals Lower quality assets 	Keep informed of changes
2.15	Business	Project costs exceeding budget	Poor project estimation Increasing costs of goods and services over life of project	<ul style="list-style-type: none"> increased costs to Council 	Budget monitoring and regular reporting
2.17	Business	Managing Cash flow	Not spending when budgeted causing cash flow issues	<ul style="list-style-type: none"> increased costs 	Budget monitoring and regular reporting

2.7.9 Potential Consequences

Potential consequences of not providing maintenance and renewal activities include the following:

- Raised likelihood of accidents on the network due to safety issues not being addressed ("reduced levels of safety");
- Reduced efficiency of the network thus raising costs of transport for goods produced;
- Increased risks of having isolated areas of population due to road access not being available;
- Not providing appropriate levels of service to road classification and use;
- Deterioration of the assets, requiring a higher cost of remediation.

2.8 Programme Business Case (Developing the Programme)

2.8.1 Programme Business Case Introduction

The Programme Business Case states *"What we have to invest"*.

It provides the strategic response of the planned future state, identifies a programme of works or activities that deliver on the strategic case, with asset management information that identifies maintenance, operations, renewals and improvement/ new works programmes.

In order to address the strategic issues and problems stated, our programme must address the key themes of road pavements, bridges and road safety.

Road pavements need re-surfacing, base rehabilitation, bridges to support them, and drainage to keep the water out. Road safety requires robust bridges, signage, streetlighting, and an environment that maximizes driver visibility and pedestrian safety. Our investment strategy for road safety is cognizant of local issues raised by NZTA's road safety action planning and crash analysis systems.

In a constrained budget environment, ONRC road categorisation has helped us to optimize available funds by prioritising and re-focussing investment to where in the network it is needed the most.

2015-18 Actual Achieved Average

Our 2015-18 actual achieved average programme of \$10.8M invests:

- \$4.8M in Operations and Maintenance (O&M) of roads, drainage and safety related works
- \$5.8M in Renewals of roads, drainage and safety related works
- \$0.3M in Capital improvement works

However, the evidence in our Strategic Case and Programme Business Case demonstrates that although most of the investment needs can be met by re-allocating existing budgets, there is also need for more funds to meet these particular issues and problems.

The evidence shows that even with the current investment levels, there is an increasing damage, worsening condition and higher repair costs to roads especially on haulage routes; and what is worse is that forest harvesting and heavy traffic counts are projected to increase further over the next 10 years. The previous budget allocations and activities will not fully cater to these new demands.

We need to re-focus/re-allocate and increase our investment if we are to have sustained roading network over the long term.

2.8.2 Programme Alignment to Problems

The District believes that the problems require the following programme responses:

Problem	Programme Response
Programme Optimisation in difficult conditions	Status quo, re-allocate as appropriate within existing budgets
Failure of Ageing structures	Increase AM and NM activities to improve data, analysis (dTIMS) and studies for predicting failures and renewals of ageing bridges. Increase Structures Renewals budget for ageing structures.
Falling Trees	Increase O&M budget for roads, drainage and safety related works such as fallen trees. Also some of the Minor Improvement budget for proactive identification and removal of hazardous / unstable trees. Work with property owners to manage trees on critical routes in the District.
Log Hauling from Forestry land use	Re-allocate existing pavement heavy maintenance and renewals budgets to focus on routes of known and expected log haulage
Understanding Critical assets and Critical routes	Increase AM and NM activities to improve data, analysis (dTIMS) and studies for predicting failures and renewals of critical assets and routes; including on routes of single entry point and on Lifelines routes. Check ONRC categories and importance of these routes

The above programme responses have been quantified and developed into a proposed programme of works going forward for 2018/19 to 2020/21 as shown below.

2.8.3 Alternatives and Options

Alternatives and options to the programmes, including Do-Minimum options are considered as follows.

Programme of Work - OM&R	Alternatives (non-asset solution)	Options (renewal treatment types)
Pavement Base and Surfacing	<p>Close or cease public ownership of certain roads of very low or single property usage.</p> <p>Reduce the renewals and allow for increased reactive maintenance such as pothole and digout repairs.</p> <p>Dig up sealed roads and convert them back to unsealed roads</p>	<p>Sealed pavements bases - rip and chemical stabilization existing road base</p> <p>Sealed pavements bases - remove and replace existing road base.</p> <p>Sealed pavements surfacing – chipseal or asphaltic concrete mill and replace or overlay</p> <p>Option would be to reduce the recommended programme and allow for increased reactive maintenance such as pothole and digout repairs.</p> <p>However, this short-term 'Do-minimum' saving would result in higher long-term costs as repair costs to aging roads would increase sharply with time. It would also result in reduced service levels as road sections reach their end of useful life.</p>
Bridges and Structures	<p>Close, demolish or cease public ownership of certain bridges of very low or single property usage.</p>	<p>Replace bridge components</p> <p>Replace whole bridge</p>
Drainage	<p>Increase warning signage</p>	<p>Roadside drains routine maintenance</p> <p>Roadside drains re-shaping</p>
Traffic Services	<p>Increase warning signage</p>	<p>Reduced services, but will affect safety and convenient use of the network</p>
Minor improvements to improve driving visibility and road safety by drivers	<p>Increase warning signage</p>	<p>Vegetation clearing</p> <p>Bank cutting road re-alignment to improve visibility</p>
Footpaths Maintenance and Renewal	<p>Remove of or make as unformed footpaths of low usage.</p>	<p>Unformed, aggregate, asphaltic concrete or concrete footpaths</p>

2.8.4 Analyses of Options

Evidence-based, risk-based analysis supporting why the programme was selected included the following:

- Best value solutions to address the specific key problems and demands identified
- Comparison of network condition trends with past expenditure levels
- dTIMS deterioration modelling of road pavements to forecast pavement and re-surfacing needs
- Benefit cost ratio (BCR),
- Life cycle analyses including consideration of annual depreciation of asset
- Effectiveness of historical programmes and expenditures
- Alignment to the priorities of the ONRC road categories, Community Outcomes, IAF and GPS
- Considerations of the costs, benefits and risks of alternatives and options

2.8.5 Recommended Programme of Works

Council has identified the following programmes over the next 10 years to address the challenges faced by the transport network and deliver the District's Strategy and Investment Outcomes. The optimum mix of treatment is the preferred maintenance operations and renewals programme that; fits to the strategic case; connects to the District priorities and ONRC customer outcomes; maintains asset condition and service; and achieves least lifecycle costs.

The recommended programme has re-focussed and increased the 2015-18 actual achieved programme of works to a new proposed 2019-21 programme to align and address the problems facing the District.

This results in a necessary re-allocation and increase to our core annual programme by \$1.2M (11%) to \$12M, made up of:

- \$4.8M Operations and Maintenance of roads, drainage and safety related works such as fallen trees (remained the same)
- \$6.2M Renewals of roads, bridges, drainage and safety related works (an decrease of \$0.4M)
- \$1.0M in Capital improvement work (an increase of \$0.6M)

The breakdown details and alignment to the problem statements without the unsubsidised budgets are as follows (showing annual 3-year average programme budgets):

Expenditure Type	2015-18 Actual Achieved (\$)	2019-21 LTP Proposed (\$)	Difference Proposed (\$)	Programme Alignment to Problems and Benefits
Capital New/Improvement	\$259,508	\$1,000,000	\$740,492	285% Increase
Road Improvements	\$0	\$540,000	\$540,000	For road pavements, traffic services, guardrails and retaining walls. Seal Widening due to increased Heavy Commercial Vehicle use. Increased Contract Rates Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Resilience Improvements	\$0	\$110,000	\$0	To mitigate risk of ageing tree falls in storm events Safety Technical Output 10 – Roadside Obstructions Resilience Customer Outcome 1 – Unplanned Closures with a Detour Provided Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Minor Improvements	\$259,508	\$300,000	\$40,492	For log hauling road damage Safety Technical Output 7 – Hazardous Faults Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2

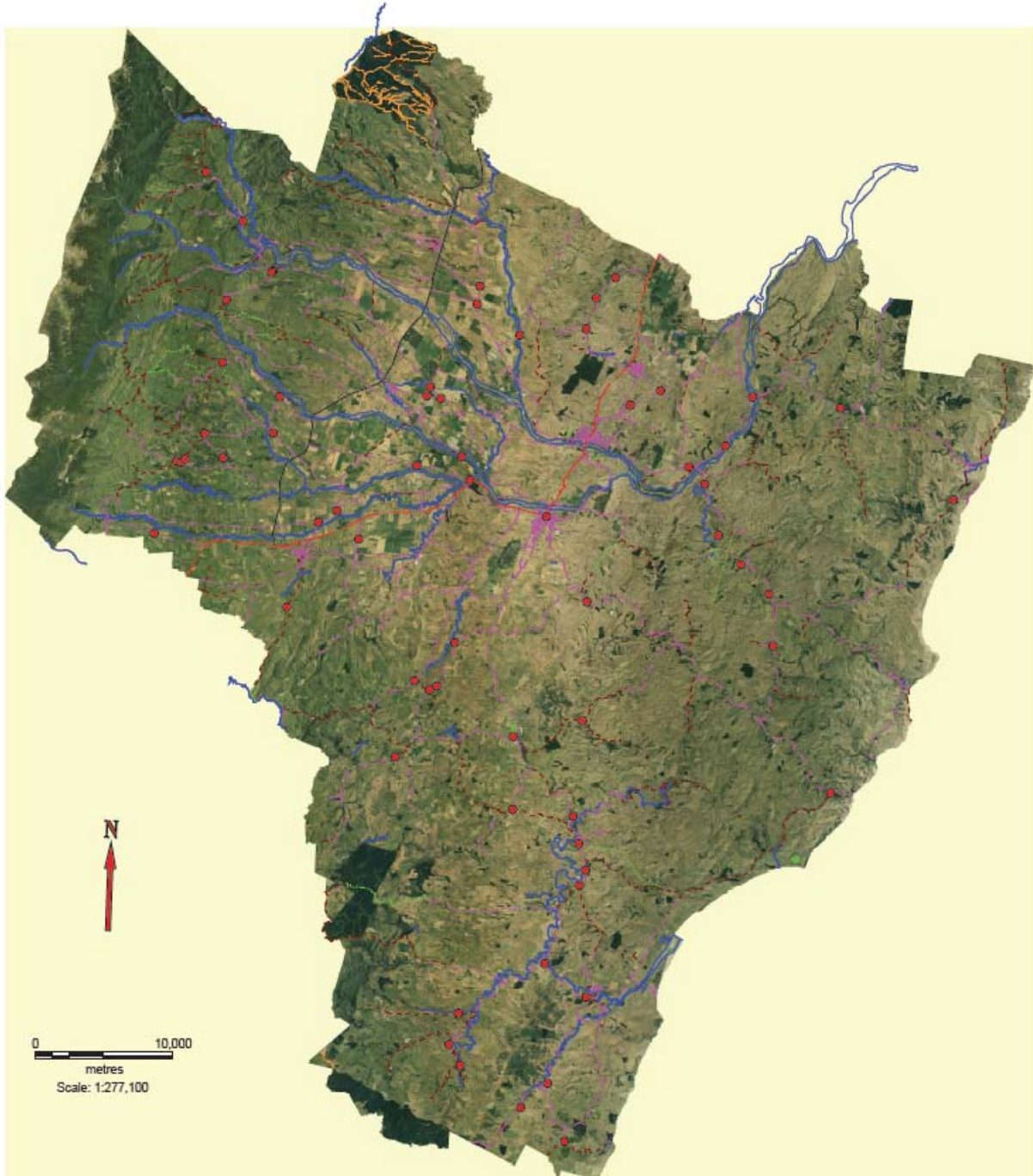
INTRODUCTION

Expenditure Type	2015-18 Actual Achieved (\$)	2019-21 LTP Proposed (\$)	Difference Proposed (\$)	Programme Alignment to Problems and Benefits
Bridges, Guardrails & Structures	\$0	\$50,000	50,000	Bridge approaches and guardrails Network bridges on unsealed carriageways have once a year bituminous sealing for their approach Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
O&M	\$4,763,948	\$4,774,825	\$10,878	0%
Pavement	\$1,934,253	\$2,006,118	\$71,865	Heavy maintenance on log haul roads Safety Technical Outputs 7 – Hazardous Faults Cost Efficiency EM10 – Routine Pavement maintenance Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Network & Asset Management	\$984,585	\$724,855	-\$259,730	To improve data & analysis on critical assets and routes. To implement AM improvements. Refer to Section 9, Section 9.10.2
Drainage	\$550,116	\$400,000	-\$150,116	Programme Optimisation Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Vegetation and Streetscapes	\$811,296	\$978,516	\$167,220	Programme Optimisation, Increased Contract Rates Cost Efficiency EM10 – Routine Pavement maintenance Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Traffic Facilities	\$370,689	\$498,000	\$127,311	Programme Optimisation Cost Efficiency EM10 – Routine Pavement maintenance Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Bridges, Guardrails & Structures	\$113,009	\$167,336	\$54,327	Programme Optimisation Cost Efficiency EM10 – Routine Pavement maintenance Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2

INTRODUCTION

Expenditure Type	2015-18 Actual Achieved (\$)	2019-21 LTP Proposed (\$)	Difference Proposed (\$)	Programme Alignment to Problems and Benefits
Renewal	\$5,789,485	\$6,227,003	\$437,518	8% Increase
Pavement	\$3,749,882	\$3,943,878	\$193,996	Programme Optimisation , Prioritising heavy hauling routes. Accessibility Customer Outcome 1 – Proportion of Network not Available to Heavy Vehicles Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Drainage	\$1,074,789	\$1,206,625	\$131,836	Programme Optimisation Increase drainage outlet control to maximize drainage capacity facilities to minimise flood and scour conditions. Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Bridges, Guardrails & Structures	\$722,663	\$900,000	\$177,337	For ageing structures Safety Customer Outcome 2 – Collective Risk Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Traffic Facilities	\$242,151	\$176,500	-\$65,651	Programme Optimisation Refer to Section 2.7.3, Section 2.7.4, Section 2.8.2
Grand Total (\$)	\$10,812,941	\$12,001,829	\$1,188,888	11% Overall increase

Figure 7: Low Cost Low Risk CHB Sites



The 2015-18 actual achieved programme total was 10.6 million annual average, compared to the original LTP budget of 11.5 million.



INTRODUCTION

The proposed ongoing programme of work after 2021 is shown in more detail in the Lifecycle Management and Financial Summary sections of the LTAMP.

Our programme also aligns with NZTA's Investment Assessment Framework (IAF), the Government Policy Statement (GPS), NZTA's Long Term Strategic View (LTSV 2015-2025) and The Regional Land Transport Plan (RTLTP 2015-2025) because it shows

- **value for money** by targeting the right work in the right places at the right time to achieve least long-term costs,
- **a consideration of supporting regional economy** by catering for heavy haulage and commercial traffic, and
- **a priority for safety** by addressing tree hazards, pavement damage by logging trucks and other road and bridge safety improvements.

NZTA's Long Term Strategic View (LTSV 2015-2025) identifies long term pressures and priority, issues and opportunities. Its ultimate goal is to develop a shared view of the transportation system that allows any sector to work more effectively with others. According to LTSV Central Hawke's Bay should focus on:

- 1.) Freight efficiency, especially port access and connections to freight distribution hub in Palmerston North.
- 2.) Support tourism.

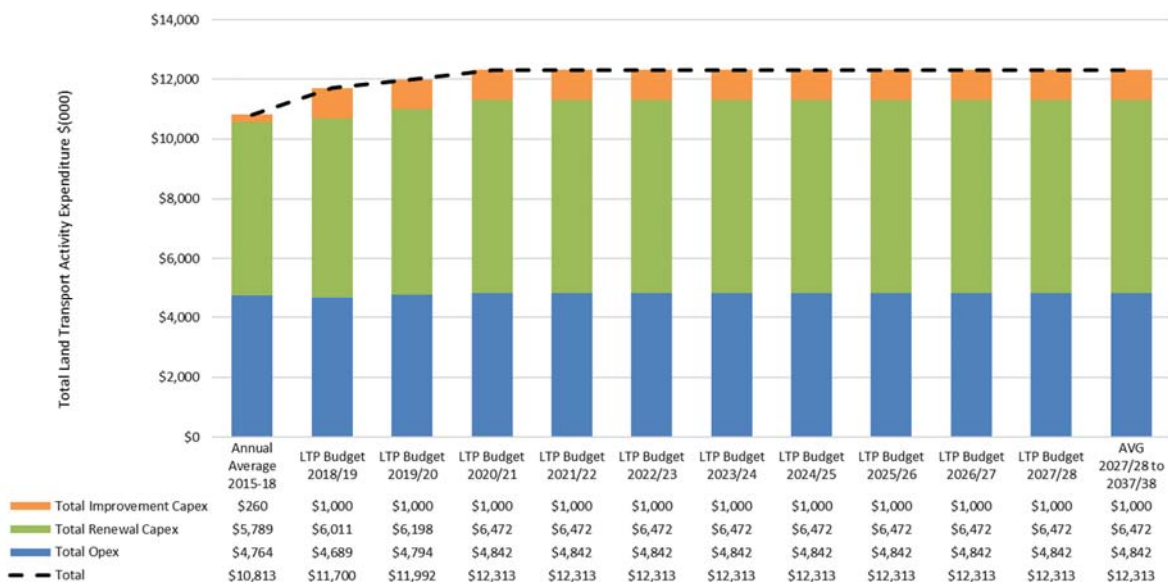
The Regional Land Transport Plan (RTLTP 2015-2025) is prepared by the Regional Transport Committee. It describes Central Hawke's Bay's strategic objectives for the transport system over the next 10 years. Central Hawke's Bay has worked with NZTA to create this document based on 2009 and 2012 extensive transport studies. Two overarching objectives emphasized in the RTLTP are:

- 1.) A safe, resilient and efficient transport system that supports the development of our economy and contributes to social wellbeing in our community.
- 2.) A reduction in the risk of death or serious injuries on Hawke's Bay roads.

This LTAMP demonstrates the case for change or intervention – that is, the clear rationale and evidence for proposed smart, best-value investments and work programmes to address the transport infrastructure problems facing the District. The case for change includes the benefits of addressing the problems and the consequences of not.

A summary of the full 10 years expenditure plan is shown below

Land Transport Expenditure - Summary by Expenditure Type



Full details of the programme quantities and expenditure types are contained in the Lifecycle management and Financial Summary sections.

2.8.6 Programme Risk

Risks associated with the programme include key risk areas such as: technical, operational, financial, stakeholder, environmental, social, safety, and economy. The key programme risks are identified in Section 2.7.8 and are based on the overall risk assessment in Section 5.

2.8.7 Programme Financial Case

The funding and affordability of the Recommended Programme is discussed in the Financial Summary section.

2.9 Delivering the Programme

Delivering the Programme states *“How we have to invest”*.

2.9.1 Programme Governance, Monitoring Reporting

CHBDC maintains ownership and responsibility for managing the land transport activity, the associated infrastructure and the delivery of the total programme of works. Council has engaged a dedicated team of Network Consultants to provide specific expertise, to provide strategic, tactical and operational inputs and resources, to manage physical works contracts and to assist in the programme development and delivery as required.

Physical works contracts are let for the various aspects of roading maintenance. The current contracts let are shown below:



INTRODUCTION

2017/18 Physical Works Contracts

Contract No.	Contract Name	Responsibilities	Contractor
C-407	Line Marking	Line Marking	Osbourne Contractors
C-467	Street Light Maintenance	Street Light Maintenance	Pope Electrical
C-479	Reseals	Reseals	Higgins
C-481	Vegetation Control	Vegetation control	Bay Spray Ltd
C-503	Structural Maintenance	Structural Maintenance	Higgins
C-504	Structural Bridge Maintenance	Structural Bridge Maintenance	Downers
C-505	Road Network Maintenance	Road Network Maintenance	Downers
C-507	AWPT's 2016-18	Rehabilitations & AWPT's for sealed Roads	Russell Roads

2018/19 Forecast of Physical Work

Contract No.	Contract Name	Responsibilities	Contractor
C-479	Reseals	Network Reseals	Higgins
C-481	Vegetation Control	Vegetation Control	Bay Spray Ltd
C-505	Road Network Maintenance	Road Network Maintenance	Downers
C-527	Line Marking	Line Marking	TBC
C-528	Street Lighting	Street Lighting	TBC
C-529	Peel St, Nicholls Rd AWPT	Peel St, Nicholls Rd AWPT	TBC

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

- Slip removal
- Flood damage repairs
- Low Cost Low Risk Works

2.9.2 Smart Buyer Procurement

Council employs best appropriate practice procurement, contracting, network management practices that comply with NZTA Procurement Manual requirements. These practices consistently achieve value for money for the District. However, the District is revising its procurement strategy to focus on and implement the goal of 'supply chain leadership' practices, including outcome-based approach. This will result in smarter contracting and will be more than just smart contractor selection, and will further improve value for money. This is a developing area and initiative by REG National Procurement, which the District intends to embrace.



INTRODUCTION

2.9.3 Programme Improvement Plan

The District has identified that the greater use of technology such as the advance deterioration modelling from the dTIMS software may result in more accurate and complete data analysis upon which to make better informed decisions within the One Network Road Classification (ONRC) framework. Therefore the District has started to improve its data and implement and improved analysis through dTIMS in order to more effectively and efficiently manage its pavement assets.

Should the Ruataniwha Dam Water Storage Scheme proceed with a re-assessment of the impact on the network, potential traffic growth in the region will be required within the next 5 years as more of the project outcomes are known. However, recent developments indicate that this project may be unlikely to proceed.



LEVELS OF SERVICE

3	Levels of Service	300
3.1	Introduction.....	300
3.2	Customer Research and Expectations.....	301
3.3	Legislative Requirements and National Strategies.....	303
3.4	Council's Strategic Goals and Objectives	309
3.5	Current Levels of Service	310
3.6	Future Levels of Service and ONRC.....	313
3.7	Service Level Improvement Related Capital Works Programmes.....	314

3 Levels of Service

3.1 Introduction

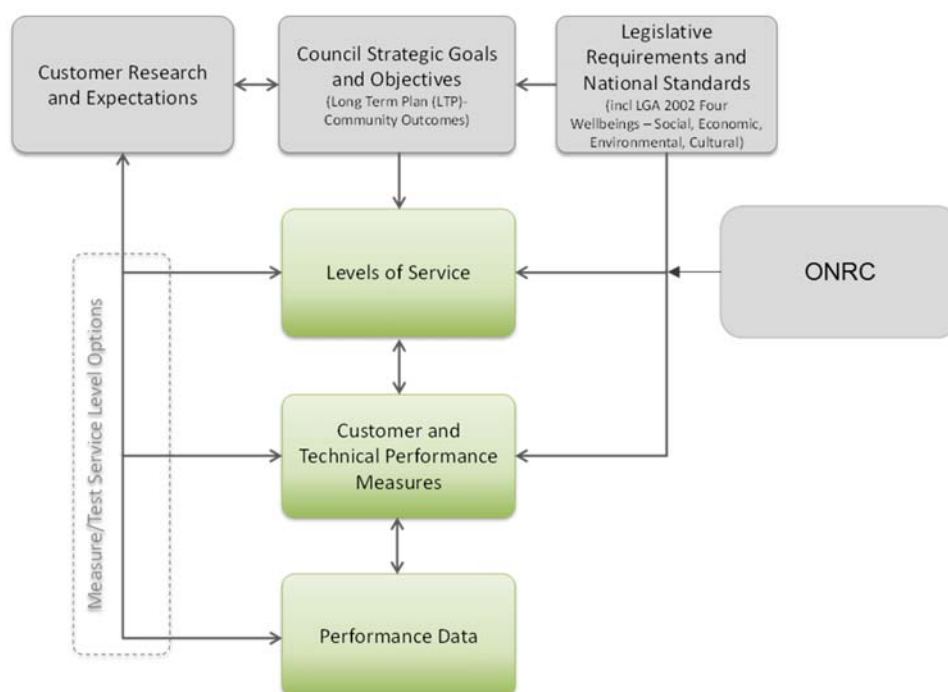
Levels of service (LoS) and performance measures represent Councils commitment to the community in return for the rates and charges they pay. Asset management planning enables the relationship between levels of service and the cost of the service (the price/quality relationship) to be determined. This relationship is then evaluated in consultation with the community to determine the levels of service they are prepared to pay for.

The LoS presented in this section provide a basis for determining whether assets need to be constructed, renewed or maintained; and are based on:

- Customer expectations
- Legislative requirements
- Council's strategic goals and objectives

Existing LoS are presented that are consistent with the Annual Plan 2017/ 2018. Future LoS will be developed that take into consideration the impact of the One Network Road Classification (ONRC) and while discussed in this LTAMP, this activity forms part of the Improvement Plan.

Figure 1: Development of Existing Levels of Service and Relationship with Other Plans



3.2 Customer Research and Expectations

Customer research provides an understanding of customer expectations of cost and quality which allows the LTAMP to more clearly reflect the levels of service desired by customers.

3.2.1 Key Customers and Stakeholders

Council recognises there is a wide range of customers and stakeholders with an interest in how land transport is managed, including the resident community, iwi and specific interest groups within the community and regional and central government agencies. The key customers and stakeholders are listed in Table 1 below.

Table 1: Key Customers and Stakeholders

Customers	External Stakeholders	Internal Stakeholders
<ul style="list-style-type: none"> • Citizens and ratepayers, tenants, local businesses, visitors to the District, local community groups and local iwi. • Road users including: <ul style="list-style-type: none"> ○ Motorists – private and commercial cars, vans, trucks and motorcycles ○ Cyclists ○ Pedestrians. • Disabled users, including wheelchair and mobility scooter users • Recreational users, including runners and skaters 	<ul style="list-style-type: none"> • Local Government NZ • New Zealand Transport Agency • Department of Conservation • New Zealand Police • Office of the Auditor General • Ministry of Civil Defence and Emergency Management • Ministry for the Environment • Hawke's Bay Regional Council • Hawke's Bay Regional Transportation Committee • Automobile groups • New Zealand Historic Places Trust • Iwi • Environmental groups • Service utility providers • Consultants and contractors • Community Groups 	<ul style="list-style-type: none"> • Councillors • Chief Executive and the Management Team • Asset Management Staff • Financial Support staff • Information Technology staff

3.2.2 Stakeholder Engagement

Local residents, other TLA's, the NZTA, and the travelling public (customers) have the opportunity to provide input into the levels of service through the following mechanisms:

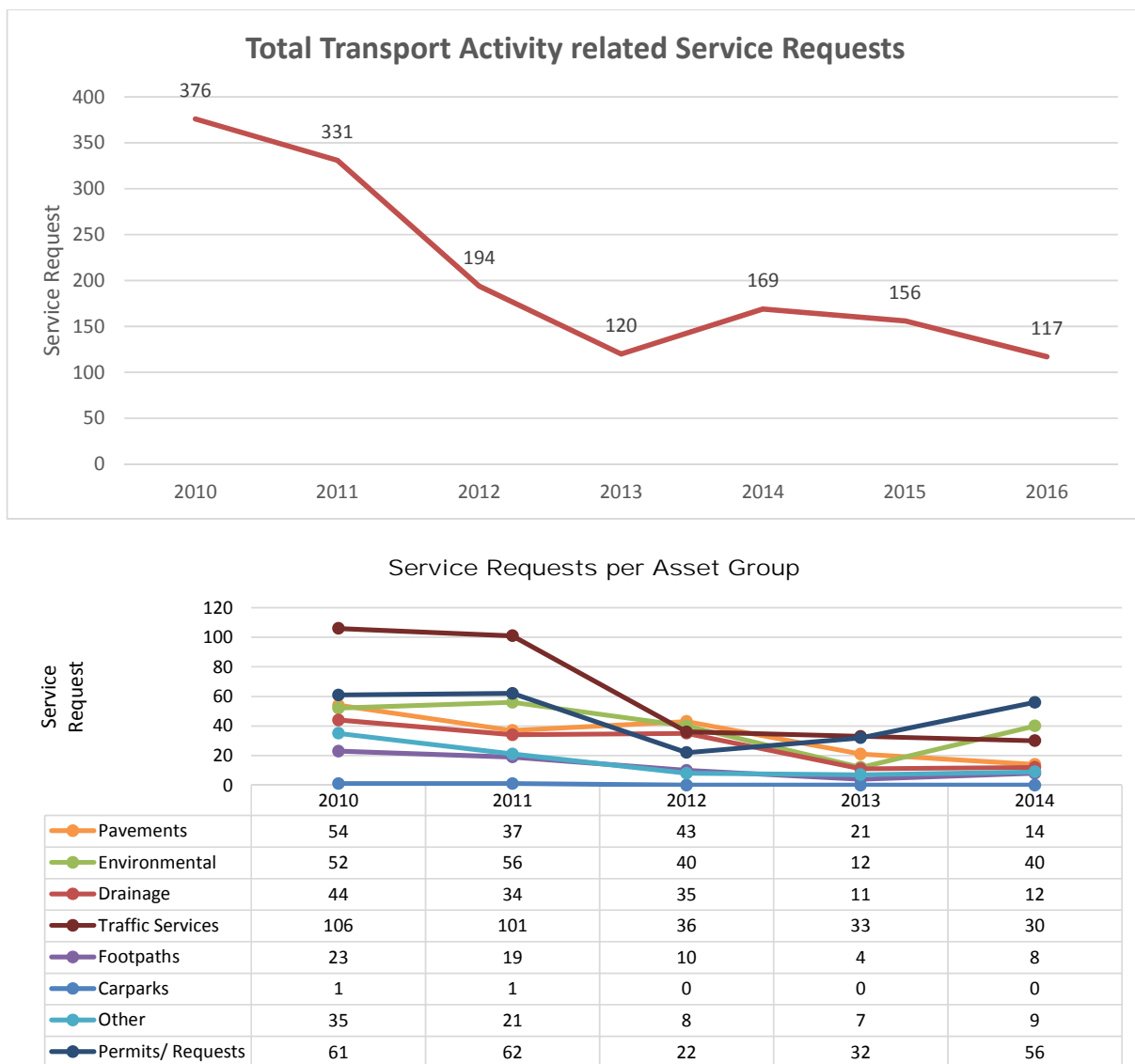
- The Council's Long Term Plan. The 10-30 year plan which goes out to public consultation and is updated every 3 years.
- The Annual Plan. The yearly plan which goes out to consultation.
- The Council's Request for Service database. The database whereby the public can report issues or request service for specific items or areas. This database is electronic and can be accessed by all

members of the general public. Each request is assigned a Land Transport Officer to follow the request and a response time for the request to be followed up.

- (d) Daily contact through phone or e-mail. All members of the public can contact the Land Transport Department of the Council, the Council reception, the Chief Executive and the elected representatives to report issues or request service. These are always followed up by the Land Transport department.

The graphs below illustrate the Request for Service (RFS) that Council received over the last seven years. It indicates a decline of RFCs over the years and the biggest area of concern is Traffic Services. Note that the Service Request per Asset Group graph below requires validation of data for 2015 and 2016.

Figure 2: Distribution of Request for Services



The change in the road classification system to embrace the One Road Network Classification will require extensive consultation with the public to ensure their understanding, respond to their needs and implement the new levels of service.

3.3 Legislative Requirements and National Strategies

The service levels for the current operation of the Land Transport Activity are defined by:

- (a) Key Legislation
- (b) National and Regional Policies, Strategies and Plans
- (c) National Standards and Guidelines
- (d) District Bylaws, Policies, Strategies and Plans

3.3.1 Key Legislation

The Central Hawke's Bay District Council Land Transport Activity is required to comply with the applicable sections of the following legislation:

Table 2: Key Legislation

Document	Description
Local Government Act 2002 (LGA)	<p>The purpose of the LGA is:</p> <ul style="list-style-type: none"> a. to enable democratic decision-making and action by, and on behalf of, communities; and b. to promote the social, economic, environmental, and cultural well-being of communities, in the present and in the future. <p>The LGA 2002 outlines the responsibilities of local government and the decision making process for activities undertaken on behalf of the community, primarily through the adoption of the LTP.</p> <p>The retained sections of the LGA 1974 provide for the formation, management, stopping, closing, and control of roads, limited access roads, and provision of public safety.</p>
Local Government Act 2002 Amendment Act 2010	<p>The LGA 2002 Amendment Act 2010:</p> <ul style="list-style-type: none"> a. Introduces a focus on core business and improved transparency, accountability and financial management b. Requires the establishment of rules specifying the performance measures for core services. c. Reduces some of the consultation requirements d. Merges community outcomes with the long-term planning process with a focus on the outcomes the council will achieve and how it proposes to achieve and pay for them. e. Requires additional financial reporting with Schedule 10 requiring Council to report in the LTP the capital expenditure budgets to: <ul style="list-style-type: none"> (i) Meet additional demand for an activity; and (ii) Improve the level of service; and (iii) Replace existing assets.

Document	Description
Local Government Act 2002 Amendment No. 3 (2014)	<p>The Local Government Act 2002 Amendment No 3 (2014) has redefined the Section on Significance. Section 76AA Significance and engagement policy, requires that the Significance and Engagement Policy sets out;</p> <ol style="list-style-type: none"> The local authority's general approach to determining the significance of proposals and decisions in relation to issues, assets, and other matters; and Any criteria, or procedures that are to be used by the local authority in assessing the extent to which issues, proposals, assets, decisions, or activities are significant or may have significant consequences; and How the local authority will respond to community preferences about engagement on decisions relating to specific issues, assets, or other matters, including the form of consultation that may be desirable; and How the local authority will engage with communities on other matters. <p>The Local Government Amendment (no 3) Act 2014 has increased the focus on Asset Management through setting out specific requirements including provisions for;</p> <ol style="list-style-type: none"> Requiring local authorities to undertake asset management planning Requiring local authorities to develop an infrastructure strategy for a minimum of 30 consecutive years for core infrastructure and include these in their long-term plans from 2015 Requiring local authorities to disclose risk management arrangements, such as insurance, for physical assets in their annual reports. <p>The purpose of the infrastructure strategy is to identify significant infrastructure issues for the local authority over a 30 year period, the principal options for managing those issues, and the implications of those options. This is to address the lack of public information about investment needed beyond the current 10 year long-term planning horizon.</p>
Land Transport Management (LTM) Act 2003 and Amendment 2008	<p>The purpose of the Land Transport Management Act is to:</p> <ol style="list-style-type: none"> Set out the requirements and process for the preparation of an annual District Land Transport Programme with recommendations for works to meet the land transport needs of the District Assist economic development, personal safety and security and to improve access and mobility Promote and protect public health needs and environmental sustainability Participate in the preparation of Regional Land Transport Strategies and plans Provide a framework for receiving funding from NZTA and allows for the establishment of future tolls roads under certain conditions.
Resource Management Act 1991 (RMA)	<ol style="list-style-type: none"> Sustain the potential of natural resources to meet the reasonable foreseeable needs of the future Comply with District & Regional plans Avoid, minimise or mitigate any adverse effect on the environment
Civil Defense Emergency Management (CDEM) Act 2002	<ol style="list-style-type: none"> Participate in and be responsive to the requirements of local and national CDEM Groups as required including training and practical exercises.

Document	Description
Health and Safety in Employment (HSE) Act 2015	<ul style="list-style-type: none"> a. To provide for a balanced framework to secure the health and safety of workers and workplaces. b. Workers and other persons should be given the highest level of protection against harm to their health safety, and welfare from hazards and risks arising from work or from specified types of plant as is reasonably practicable.
Land Transport (LT) Act 2017 (Reprint)	<ul style="list-style-type: none"> a. Controls aspects of road and traffic operations and includes traffic regulations, bylaws, and enforcement.
Local Government (Rating) (LR[R]A) Act 2002	<p>The three main purposes of the Act are to:</p> <ul style="list-style-type: none"> a. Provide local authorities with flexible powers to set, assess and collect rates b. Ensure that rates reflect decisions made in a transparent and consultative manner c. Provide for processes and information to ensure that ratepayers can identify and understand their liability for rates.
Transit New Zealand (TNZ) Amendment Acts 1995 and 1997	<ul style="list-style-type: none"> a. Primarily provides a legislative framework for Transit New Zealand, but also includes requirements for other road controlling authorities. Section 42H (6) requires district roading programmes to be in keeping with the national land transport strategy and any relevant regional land transport strategy. Section 42H (7) requires the programme to implement the regional land transport strategy.
Traffic Regulations (TR) Act 1976	<ul style="list-style-type: none"> a. Comply with various rules for pedestrian crossings, traffic islands, road markings etc.
Land Transport (Road User) Rules	<ul style="list-style-type: none"> a. The Land Transport Rule: Setting of Speed Limits 2003 and its amendments by: <ul style="list-style-type: none"> (i) Establishing Speed Limits by-laws (ii) Establish speed limits in accordance with the Rule b. The Land Transport Rule: Traffic Control Devices 2004 <ul style="list-style-type: none"> (i) Authorise and install traffic control devices in accordance with the Rule
Public Works (PW) Act 1981	<ul style="list-style-type: none"> a. Sets requirements for the acquisition of land for Land Transport purposes b. Sets requirements for stopping of roads and removal of trees from adjacent properties
Telecommunications Act, Electricity Act, Gas Act, Railway Safety and Corridor Management Act	<ul style="list-style-type: none"> a. Provide utility operators and others with powers to use road corridors.

3.3.2 National and Regional Policies, Strategies and Plans

Table 3: National and Regional Policies, Strategies and Plans

Document	Description
Government Policy Statement (GPS)	The Government Policy Statement on Land Transport Funding sets out the government's priorities for expenditure from the National Land Transport Fund. The GPS is the primary document for land transport decision makers. It is released every 3 years and provides a 10 year policy view. It is a guiding tool for the NZ Transport Agency to make funding decisions.

Document	Description
	The GPS 2015/16 – 2024/25 was released on 18 December 2014. The Draft Government Policy Statement 2018 is the most current.
Regional Land Transport Strategy (RLTS)	The RLTS is a combined document for the Hawke's Bay Region developed to ensure that all Land Transport providers are aligned in the overall goals for the benefit of the region. This plan will compliment other across the region and the principles will be the same.
Regional Land Transport Plan (RLTP)	The RLTP is the combined activity list for the Hawke's Bay Region and adds substance to the RLTS. The outputs of this asset management plan will provide the input to the RLTP to ensure a consistent approach to decision making across the Hawke's Bay Region.
Regional Public Transport Plan	Although not directly relatable to this plan and developments in the Regional Public Transport Plan may have unintended impacts on this plan and the District which will be evaluated as / if they arise.
National Infrastructure Plan	The National Infrastructure Plan (NIP) was released in July 2011. The NIP outlines the government's 20 year vision for New Zealand's infrastructure.
Utilities Access Code	New requirements for utilities works in the road reserve
Regional Walking & Cycling Plan	This is a Hawkes Bay Regional Council Initiative for walking and cycling. CHBDC has no current initiatives within this Plan.

3.3.3 National Standards and Guidelines

The primary documents that provide guidance for the service standards for the Land Transport Activity are as follows:

Table 4: National Standards and Guidelines

Document	Description
One Network Road Classification (ONRC)	Developed by NZTA to standardise the classification Levels of Service and funding of NZ roads
BCA IAF	A process that improves investment decision making by clarifying why we are doing work defining our strategic problems and benefits, ensuring there is robust evidence behind our strategic response and building a robust case for investment. The prioritization and allocation of funding for Approved Organizations must demonstrate BCA and are in terms of value-for-money, 'Results Alignment' to GPS priorities and Cost Benefit appraisals.
NZ Code of Practice for Working on the Road	Management requirements and protocols for Road Controlling Authorities and utility operators working in the road corridors.
NZ Code of Practice for Temporary Traffic Management	A recognised standard of maintenance and construction work on legal roads.

Document	Description
Standards Association of New Zealand	A range of standards covering required or recommended practice and which may impact directly on assets or management of contracts, e.g. the NZS4404 Code of Practice for Urban Subdivision provides a range of roading standards.
AS/NZS 4360: 2004, Risk Management	Risk management guidelines
Safer Journeys	Safer Journeys is an NZTA initiative with the intent to reduce the number of serious and fatal accidents throughout the country on a year by year basis. This provides guidance and reports to the District to assist in determining priorities for safety enhancements across the road network and assists in decision making for funding.

3.3.4 District Bylaws, Policies, Strategies and Plans

Central Hawke's Bay District Council has a number of bylaws, policy documents, strategies and plans that are specific to the District and support the Land Transport goals:

Table 5: District Bylaws, Policies, Strategies and Plans

Type	Document	Description
Council Bylaws	Introductory Bylaw 2008	Outlines serving of orders and notices, powers of delegation and entry, suspension and revocation of licences, removal of works executed contrary to the Bylaw dispensing powers, fees and charges, offences and breaches and penalties for breach of Bylaws.
	Public Places 2008	Controls a diverse range of activities to ensure that acceptable standards of convenience, safety, visual amenity and civic values are maintained for the wellbeing and enjoyment of citizens, visitors and businesses within the district. In particular this Part addresses damage to public facilities such as roads, grass verges, garden areas and reserves. It also addresses activities within public places and reserves which may have an adverse effect on other users of these facilities.
	Trading in Public Places 2008	The general purpose is: (a) to regulate the conduct of persons selling goods on streets, roads, footpaths and other public places; and (b) to regulate the conduct of persons using vehicles to sell goods and services to the general public.
	Livestock Movement & Animals in Public Places 2008	Establishes conditions governing the movement of stock on roads and roadside grazing within the District.
	Control of Advertising Signs 2008	Ensures that advertising signs are erected, maintained, and displayed in such a manner that they do not present a hazard or a danger to public safety.
	Stormwater 2013	This Bylaw is made under the authority of the Local Government Act 2002 for the management of stormwater and provision of stormwater networks.
	Traffic	Sets the requirements for parking and control of vehicular or other traffic on any road in a local authority's district other than State Highways controlled by Transit New Zealand.

LEVELS OF SERVICE

Type	Document	Description
Council Policies, Strategies, Plans and Programmes	Speed Limits 2007	Sets speed limits for District roads as set out in Schedules to the Bylaw.
	Liquor Control in Public Places 2008	To enhance safety and the public enjoyment of public places by providing for liquor control in specified public places, and for specified days, times and events.
	Long Term Plan	The LTP is a statutory requirement that the district completes to ensure that the district has a sustainable vision for not only the present but also for thirty years into the future.
	Forward Works Programme (FWP)	The 10 year FWP is based on historical records, recent work practices, along with visual inspections of the network and incorporates outcomes of analysis tools such as Treatment Selection Algorithm (TSA) and pavement performance modelling. The programme incorporates road sections requiring Area Wide Pavement Treatments, re-sealing, metalling of unsealed roads and drainage requirements.
	District Plan	The purpose of the District Plan is to assist the Council to carry out its functions in order to achieve the purpose of the Resource Management Act 1991.
	District Land Transport Programme (DLTP)	The summary of work required to maintain the road network is compiled as the 3 year DLTP. This programme is compiled and approved by council and forwarded to NZTA for their approval.
	Development Contributions Policy	Sets out the policy around how development contributions will be applied.
	Tendering Policy	Policy statements relating to purchasing of works and services within different pricing brackets, the tendering process and tender evaluation.
	Maintenance Intervention Strategy	This document includes strategies to be adopted when scheduling and approving maintenance work. The objective is to ensure pavement treatments are well planned and co-ordinated, providing a concise statement of intent in terms of delivering specified operational LoS and providing the management strategy for the 10 year FWP.
	District Walking and Cycling Strategy	Forms part of the Regional Cycling Strategy and details the shared road network within CHB
	Safety Management and Safety Intervention Strategy (SMS & SIS)	These documents provide strategies for managing safety requirements and issues across the network in line with Safer Journeys
	Procurement Strategy	This lays out the methods and strategy for procuring road maintenance and renewals suppliers to comply with NZTA requirements and the District's tendering policy.
	Land Transport Policy, adopted March 2014	CHBDC's policy statements relating to the Land Transport Activity.
	Level of Asset Management Plan Preparation, adopted February 2011	The level at which AMPs will be prepared by Activity. The level stated for the Land Transport Activity is 'Core – with extensions as necessary to meet the minimum New Zealand

Type	Document	Description
		Transport Agency requirements for asset management practice' (based on NAMS IIMM)
	Ad Hoc Road Signs Policy	CHBDC's policy statements relating to each specific area.
	Colour of Road Signs Policy	
	Dust Suppression Policy	
	Enclosure of Road Reserve Policy	
	Footpaths Policy	
	Formation, Subdivision & Maintenance of no Exit Roads Policy	
	Heritage Trail Signage Maintenance Policy	
	Roadside Grazing Policy	
	Roadside Planting Policy	
	Roadside Stabilisation & Tree Management Policy	
	Roadside Weed Control Policy	
	Road Reserve – Standards for Services Works Policy	
	Stock Underpass Policy	
	Use of Road Reserve for Permanent Commercial Display Policy	
	Vehicle Crossings Policy	

3.4 Council's Strategic Goals and Objectives

3.4.1 Strategic Context

The Local Government Act 2002 sets out the four Wellbeings – Social, Economic, Environmental and Cultural. The Long Term Plan sets out the Community Outcomes, these are goals that the community believes are important for its present and future economic, social, cultural and environmental well-being. These outcomes were consulted on with the community during the development of the LTP 2015-25.

The Wellbeing Statements and Community Outcomes identified in the Long Term Plan LTP 2015-25, to which the land transport activity contributes are included in the table below. The current levels of service have been developed to align with the Community Outcomes as well as to meet legal and regulatory requirements. The matrix below demonstrates the linkages between the Levels of Service and the Community Outcomes.

Table 6. Wellbeing Statements, Community Outcomes and Levels of Service

<u>Wellbeing Statements</u> (LTP 2015-2025)		<u>Economic</u> <i>A place with a thriving economy</i>	<u>Social and Cultural</u> <i>A healthy, safe place to live</i>
Community Outcomes (LTP 2015-2025)		Central Hawke's Bay District has an efficient and affordable roading, waste and water infrastructure	Risks to public health are identified and appropriately managed
Levels of Service (draft LTP 2015-2025)	Road Safety		✓
	Road Condition	✓	✓
	Road maintenance	✓	✓
	Footpaths		✓
	Response to service requests	✓	✓

3.5 Current Levels of Service

Service level performance measures fall into two categories:

Customer Performance Measures – these relate to how the customer receives the service in terms of tangibles (information sheets, etc), empathy (understanding, individual attention), responsiveness, assurance (knowledge, trust, confidence) and courtesy

Technical Performance Measures – these relate to the outputs the customer receives in terms of quality, quantity, availability, legislative requirements, maintainability, reliability/performance, capacity, environmental impacts, cost/affordability, comfort and safety.

Council outcomes identify the community priorities and direction that the council wants to deliver. In order to deliver these outcomes, it is important that the customer and technical performance measures; and operational and maintenance contracts are clearly linked to achieve this.

3.5.1 Current Levels of Service, Customer Performance Measures and Targets

The table below indicates the transport levels of service and performance measures included in the Annual Plan 2017 and the LTP 2015/25. The performance targets have been set by Council to meaningfully assess the achievement of levels of service.

3.5.2 Technical Levels of Service

Technical LoS continue to be developed and adopted as part of the ONRC LoS development process.



LEVELS OF SERVICE

Table 7 : Current Levels of Service, Customer Performance Measures and Targets

Level of Service	What will we deliver?	How will we measure our success?	Target 2018/2028	Performance Measure	Outcome
Road Safety Roads that are increasingly safer	Inspections, monitoring and improvements as required	By using the NZTA accident reporting system to produce an annual report	A reducing trend in the annual number of fatalities and serious injuries where road factors (not weather) were a contributing factor.	The change from the previous financial year in the number of fatalities and serious injury crashes on the local road network, expressed as a number.	Fatalities – 2016/17 TBC Fatalities year to date - 2017/18 10
					Serious injury crashes – 2016/17 5 Serious injury crashes year to date - 2016/17 83
Road Condition The average quality of ride on a sealed local road network, measured by smooth travel exposure	Road surface repairs and renewals	By annually determining the smooth travel exposure (STE)	To show results within the requirements of the One Road Network Classification system	The average quality of ride on a sealed local road network, measured by smooth travel exposure.	STE 2016/17 = 150
Road maintenance: The percentage of the sealed local road network that is resurfaced.	A programme of re-seals based on the requirements as noted in the field and the forward work programme	By dividing the number of km sealed by the number of km of sealed road	To re-seal at least 7% of the sealed road network annually	The percentage of the sealed local road network that is resurfaced.	Total kilometres of sealed road: 856km Kilometres of road network resurfaced during the month: 5.8km Kilometres of road network resurfaced year to date: TBC km Percentage of network resurfaced in 2017/18: 8%



LEVELS OF SERVICE

Level of Service	What will we deliver?	How will we measure our success?	Target 2018/2028	Performance Measure	Outcome
Footpaths: The percentage of footpaths within a territorial authority district that fall within the level of service or service standard for the condition of footpaths that is set out in the territorial authority's relevant document (such as its annual plan, activity management plan, asset management plan, annual works program or long term plan).	Inspections, monitoring and a programme of repairs and renewals	By reviewing the footpath inventory annually and assessing its condition	At least 20% of the footpaths in excellent condition and no more than 10% of the footpaths in poor condition measured annually.	The percentage of footpaths within CHBDC that fall within the service standards for the condition of footpaths as stated in Footpath Life Cycle Management Plan section.	Total kilometres of footpaths: TBCkm Length of footpaths with Excellent condition in 2017/18: 68 km Percentage of footpaths with Excellent condition in 2017/18: 74.7% Length of footpaths with Poor condition in 2017/18: TBC km Percentage of footpaths with Poor condition in 2017/18: 6.4%
Response to service requests: The percentage of customer service requests relating to roads and footpaths to which the territorial authority responds within the time frame specified in the long term plan.	Timely response to public enquiries	Monthly reporting from the Request for Services system	To respond to 85% of the service requests within the time frames year to date measured monthly	The percentage of customer service requests relating to roads and footpaths to which CHBDC responds within the time frame specified in the long term plan.	Number of service requests received during the month: TBC Percentage of service requests responded to within time frames during the month: TBC% Percentage of service requests responded to within time frames year to date: TBC%

Source: Draft LTP 2015



LEVELS OF SERVICE

3.5.3 Department of Internal Affairs (DIA) Performance Measures

The Secretary for Local Government has developed mandatory non-financial performance measures for local authorities to use when reporting to its communities. This has been mandated through the Local Government Act 2002 Amendment No 2. The aim was to help the public to contribute to discussions on future levels of service for their communities and to participate more easily in their local authority's decision-making processes. The CHBDC's current performance measures provided in Table 7 has been aligned with these DIA measures.

3.6 Future Levels of Service and ONRC

3.6.1 Future Levels of Service and ONRC

As stated in the Introduction Section (CHBD's Response to ONRC Requirements), the Council is in the process of implementing the ONRC system. This requires not only the establishment of a new, nationally consistent road classification hierarchy, but also the development of associated customer focussed levels of service and performance measure targets. The below table summarises the ONRC associated levels of service outcomes for CHBDC.

Table 8: ONRC Levels of Service Outcomes

Efficiency	Value for Money and whole of life costs will be optimised in the delivery of affordable customer services by delivering optimised programmes that are affordable and at a cost so that service productivity is improving
Safety	In line with Safer Journeys provide services to reduce the number and severity of crashes on the District road network
Resilience	To provide for the availability and restoration of roads when there is a weather or emergency event (unplanned) and whether there is an alternative route available and road user information provided
Amenity	Measures the level of travel comfort experienced by the road user including roughness
Travel Time Reliability	Delivering consistent travel times that road users can expect
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

A breakdown of the various performance measures (technical output measures and cost efficiency measures) and how they relate to the various road classifications within the CHB District are provided in the LCMP Section. Although there are more classifications in the ONRC than there are in CHB this asset management plan will only deal with those that are applicable. Should growth or usage increase



LEVELS OF SERVICE

the classification of a road to a level that is not currently covered by this AMP then the AMP will be updated accordingly.

3.6.2 Expected Changes to Current Service Levels

In 2018 Council will undertake a gap analysis whereby each level of service defined in the last version of the Asset Management Plan will be analysed against the proposed ONRC service levels to define the differences.

Under the changes to the Local Government Act 2002 (reprint 8th August 2014) each council is required to have a significance and engagement policy.

Central Hawke's Bay District Council's Significance & Engagement Policy identifies issues which must be consulted with the public. Depending on the level of service change due to ONRC public consultation may be required.

Once the GAP analysis has been completed then if required by the above noted policy consultation will take place which will enable feedback from the public and provide them with an opportunity to invest in higher levels of service than those proposed in the ONRC.

For those levels of service that the public do not want to invest in higher levels of service then a transition plan will be prepared outlining how the district will meet the new level of service. These transition plans will be attached to the Asset Management Plan until they are completed and the new levels of service are imbedded in the Asset Management Plan.

It is anticipated that the GAP analysis can commence at the beginning of the 18/19 fiscal year providing funding is approved in the 3 year funding request. Consultation with the public where required will be held once the impacts of the ONRC are better known in conjunction with consultation for the Annual Plan which will define those levels of service which require a "transition plan". Once defined the transition plans will be implemented with full implementation to take place prior to the next 3 year funding round with NZTA. Once the transition plans have been fully implemented the new levels of service will form part of the Asset Management Plan and will be referenced and implemented in the future maintenance and renewal contracts implemented in the District.

3.7 Service Level Improvement Related Capital Works Programmes

As the Land Transport asset is maintained on an "in perpetuity" basis no significant capital works such as new roads or new seals are planned within the scope of this plan. Council also takes every opportunity with rural subdivisions where the major benefactor is the developer to ensure that new roads created remain the property of the developer to maintain and renew.

The bridge inventory is ageing but its life span is being extended by frequent detailed inspections to identify work required and then using structure component renewals as a means to extend their life. The Council in the current long term plan has decided that this is an acceptable strategy which will be monitored closely to ensure it meets the needs of the structures. In future plans should rapid deterioration take place then the Council will be required to revise its strategy accordingly.



Table of Contents

4	Future Demand	400
4.1	Introduction.....	400
4.2	Current Demand and Issues	400
4.3	Factors Influencing Demand	401
4.4	Population Trends.....	401
4.5	Industrial Development Trends	407
4.6	Changes in Technology	411
4.7	Demand Management Plan	412
4.8	Capital Works Programmes related to Demand Management	413

4 Future Demand

4.1 Introduction

This section of the Asset Management Plan presents how the transportation network is likely to be affected by growth, changes in demand and various changes to the economy and population over the next 30 years.

The future performance and reliability of the transport network is essential to support on-going land based production, growth and efficient access to market. This in turn will support a sustainable future. Therefore it is essential that Council has a robust understanding of future growth and demands that will ultimately influence effective planning practices to ensure performance and reliability of the Assets.

In this section the current and critical uses of the network today are addressed, demonstrating how the district is growing, the expected impact on the network and our plans to manage these demands into the future.

4.2 Current Demand and Issues

A summary of key demand pressures and issues, together with Council's response is as follows:

Key Pressures/ Issues	Response
Programme Optimisation in Difficult Conditions	Status quo, re-allocate as appropriate within existing budgets
Failure of Ageing Structures	Increase AM and NAM activities to improve data analysis (dTIMS) and studies for predicting failures and renewals of ageing bridges. Increase Structures Renewals budget for ageing structures.
Falling Trees	Increase O&M budget for roads, drainage and safety related works such as fallen trees. Also some of the Minor Improvement budget for proactive identification and removal of hazardous / unstable trees. Work with property owners to manage trees on critical routes in the District.
Log Hauling from Forestry Land Use	Re-allocate existing pavement heavy maintenance and renewals budgets to focus on routes of known and expected log haulage
Understanding Critical Assets and Critical Routes	Increase AM and NAM activities to improve data, analysis (dTIMS) and studies for predicting failures and renewals of critical assets and routes; including on routes of single entry point and on Lifelines routes. Check ONRC categories and importance of these routes

4.3 Factors Influencing Demand

The factors influencing demand can be broken down into two categories. Non-asset based factors (or asset use) and asset based factors. Asset use is defined as how the asset or a section of it is being used. The combination of the asset itself and its use defines the needs to be considered to understand the full impact from the demand.

The following asset use factors influence demand on the roading network:

- Population trends (increase/decrease)
- Modes of transport (including vehicle ownership and alternative transport)
- Subdivision development
- Recreational development
- Industry development
- Primary production development (including Forestry, Dairy, Agricultural)
- Land development
- Cultural development

The following asset based factors influence how use demand impacts on the asset:

- Road geometry
- Road width
- Shoulder widths
- Road environment
- Sealed or unsealed
- Design capacity

These asset based factors can be considered as critical failure points if the use demand on a section of road increases to a point that exceeds the assets ability to sustain its use.

4.4 Population Trends

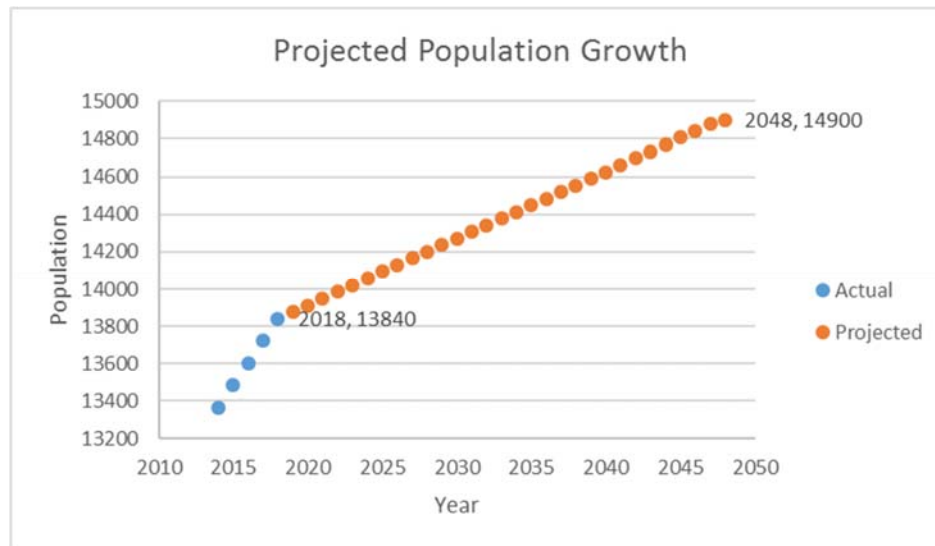
4.4.1 Population Growth

Central Hawke's Bay District Council commissioned a Long Term Planning, Demographic and Economic Growth Directions Report (2017). The long-term overall demographic and economic growth outlook for the District (2014), and the growth outlook and location of growth for the area's residential sector (2015) have been combined to create the Long Term Planning, Demographic and Economic Growth Directions Report (2017). This analysis provides updated information for both the Long Term Plan (2018-2028) and directions for longer-term planning for infrastructural development (2018-2048).

Between 2013 census and the 2017 report, there has been an overall population gain of 470 or 3.5% over a 4 year period. This gain includes an overall net migration into the area since 2015. The estimated resident population is based on the census usually resident population counts, updated for residents missed or counted more than once by the census (net census undercount); residents temporarily overseas on census night; and births, deaths, and migration between census night and the date of the estimate.

The projections detailed in Figure 1 use the estimated resident population of Central Hawke's Bay District as the base data. The medium population projection from Statistics New Zealand suggests the District's population is expected to increase over the next 30 years peaking at a high of 14,900.

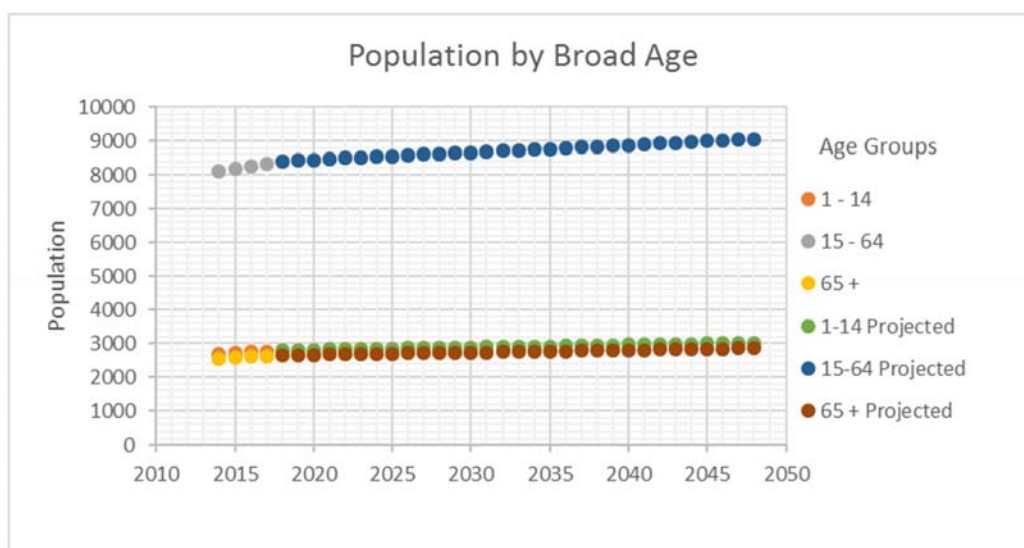
Figure 1 - Projected Population Growth for Central Hawke's Bay District¹



Projected Population Growth for Central Hawke's Bay District in Figure 2 below outlines the projected population by broad age group. This indicates that all age groups will have steady annual growth of 0.87%, which is predicted to have substantial growth of 7.66% by 2048. With the "1-14" age group being greater than the "65 +" age group, it can be confirmed that the CHB district has an ageing population trend which is not dissimilar to the regional ageing population trend.

¹ Statistics New Zealand (as at 28.08.2017)

Figure 2 – Population by Broad Age Group for Central Hawke's Bay District²



4.4.2 Projected Impact of population change on Services

Based on the Statistics NZ census data from 2013 for the population of the Central Hawke's Bay District, it is considered unlikely that there will be any growth-driven changes to the existing ONRC road classifications, given limited population growth and the ageing population.

Understanding population changes helps in identifying the need for services such as passenger transport services and Total Mobility services. There may be moderate changes in demographics (increasing numbers in the 65 years and over age bracket), but not enough to change the relative need for the road assets. It is expected that an increased focus on the provision of additional infrastructure suitable for other modes of transportation such as cycling, walking, motorised wheelchairs and scooters will be a growth area within the network, especially in urban areas. There may also be an increased requirement for public transport as the population ages. Public transport is primarily the responsibility of the Hawkes Bay Regional Council, providing CHB residents access to the larger towns in the regions such as Napier and Hastings.

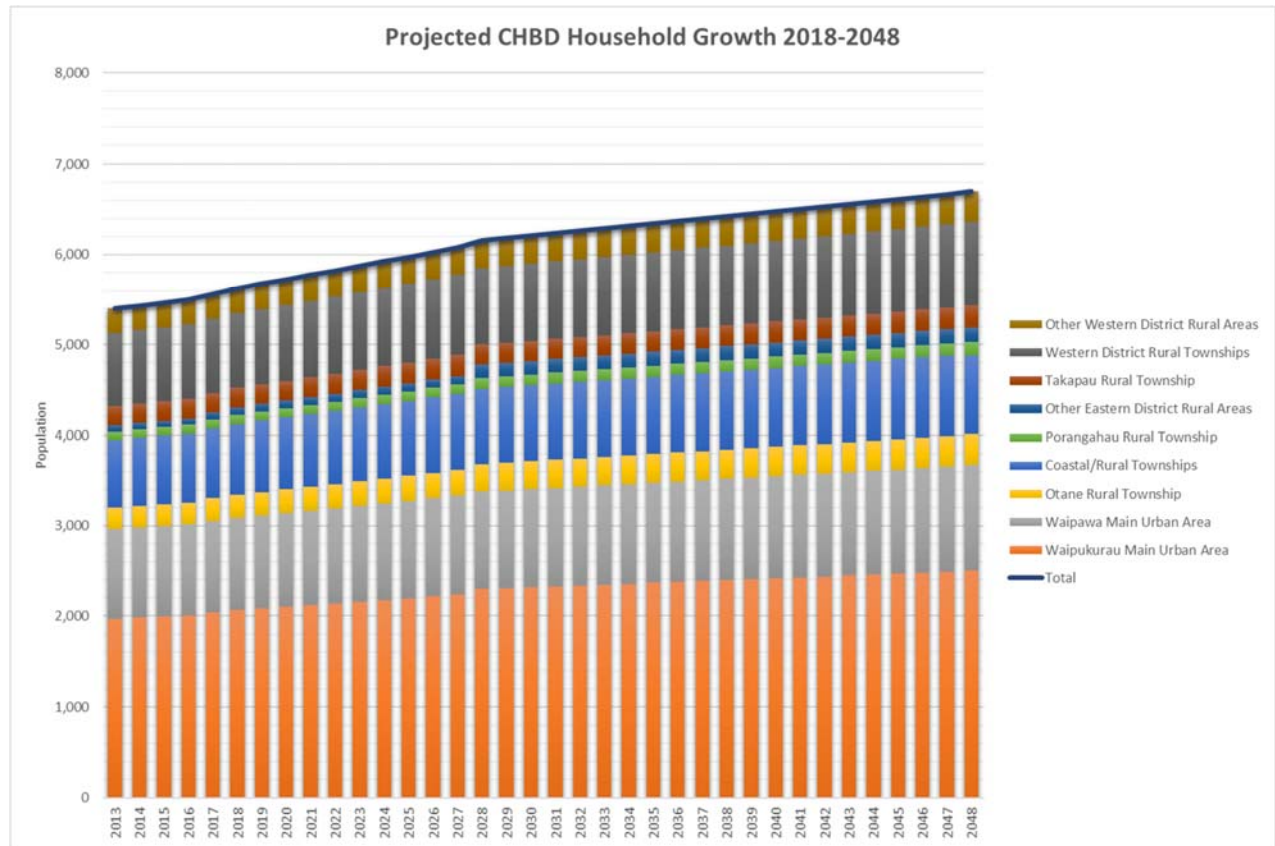
² Statistics New Zealand (as at 28.08.2017)

4.4.3 Household Growth Trends

Information from the 2017 Long Term Planning, Demographic and Economic Growth Directions Report, projects the number of households in the district to increase annually by 1.2% on average, 65 homes annually.

A historical perspective of the actual and projected level of residential development over the past 4 years (2013) to 2048 is shown in the figure below. Figures have been taken from Council building consent data.

Figure 3 – Projected Central Hawke's Bay District Household Growth 2018-2048



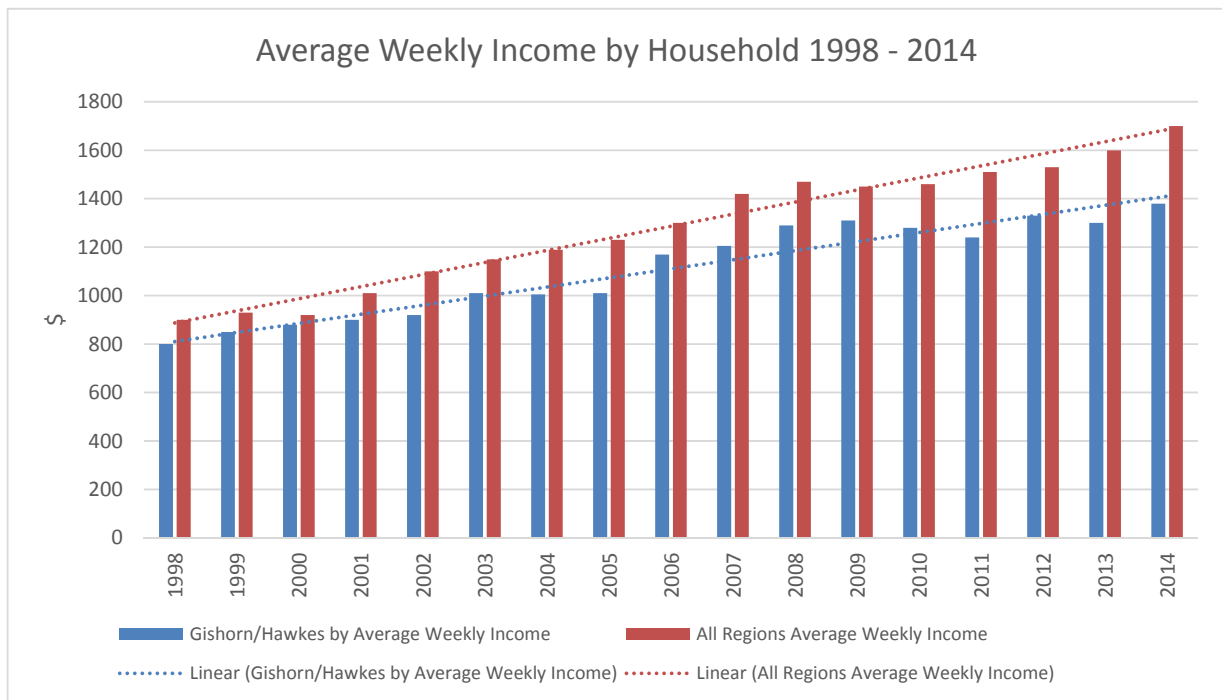
The trend in household weekly income from 2001 – 2014 is shown in Note that Figure 4 below requires validation of data for 2015 and 2016.

Figure 4 below. Note that Note that Figure 4 below requires validation of data for 2015 and 2016.

Figure 4 below requires validation of the data for 2015 and 2016.

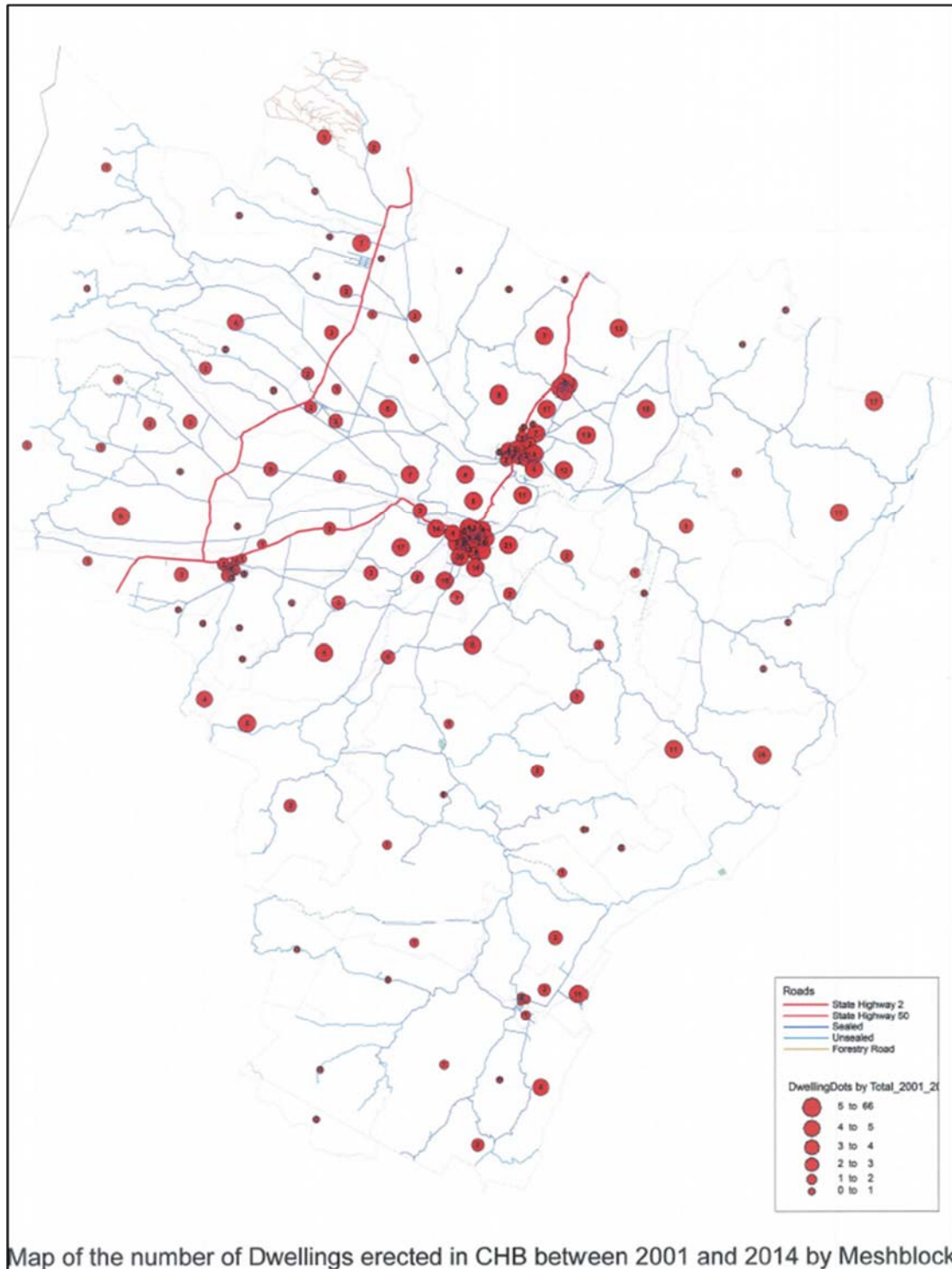
This trend is important from a demand and affordability perspective. While the regional income has increased, it continues to underperform in relation to the national average. The average has dropped from 86% in of the national average to 80% in 2013. Over time it is expected that this trend will be further impacted by the ageing population, influencing Council's rateability and overall affordability of the network. Note that Figure 4 below requires validation of data for 2015 and 2016.

Figure 4 - Trend of Household Average weekly income 1998-2014.



The majority of new dwellings are located in the main urban centres of Waipukurau and Waipawa. This is shown in Figure 5 which provides a density plot of construction activity over the period 2001-2014. Note that Figure 5 below requires validation of data for 2015 and 2016.

Figure 5 – Map of Dwellings Erected Between 2001 and 2014 by Mesh Block



In instances where growth is localised within new subdivisions, it is only in urban areas and usually supported by new road assets which are privately created and vested in Council after an agreed period of time. The ongoing management and maintenance then becomes the responsibility of Council.

4.4.4 Visitor Growth

The report indicates that there have been a number of positive demographic and economic trends in the district over the past four years, including significant gains in visitor activity and spending. The number of visitors staying in commercial visitor accommodation in the district has increased by 14.4% and the associated number of visitor-nights by 11.2%. At the same time, total visitor spending in the district has risen by almost 30%. The number of businesses in the manufacturing, visitor accommodation/food services, financial/insurance services, professional/scientific/technical services and arts/recreation services sectors has increased noticeably.

4.5 Industrial Development Trends

The industrial sector contributes approximately 20 % to total district GDP and 28% to total district employment.

4.5.1 Local Industry and Land Use Developments

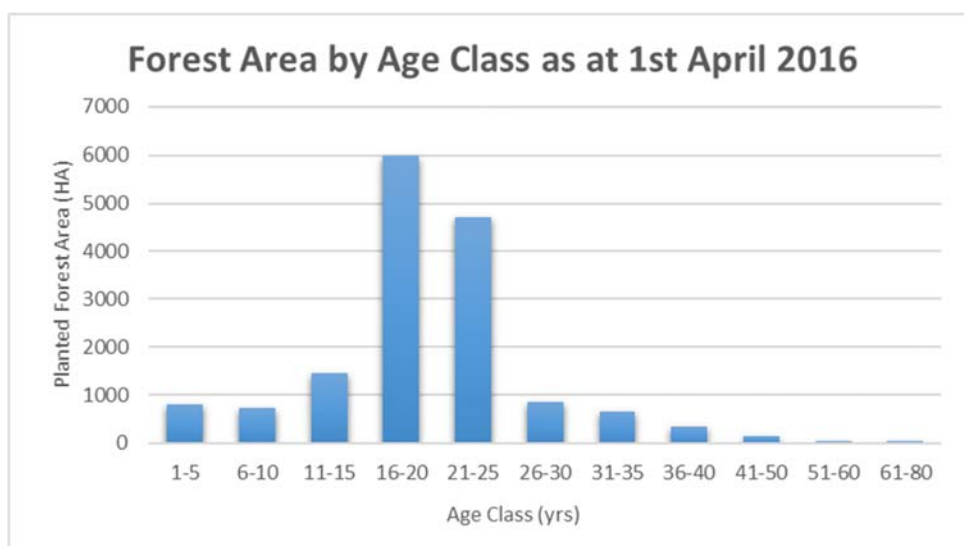
Over the period since year 2000, the annual amount of consented new commercial/industrial floorspace has varied considerably and in the range 345m² to 5,445m². The annual average for the period through to 2017 has been 2,140m². There has been a significant reduction in the amount of floorspace consented in the district since 2011; prior to this, the annual average consented was approximately 2,700m² and for the period since 2011 the figure is just 660m².

ESL forecasts additional commercial/industrial floorspace demand in the Central Hawke's Bay district in the range 10,000m²-30,000m² over the 2018-2028 period, with a midpoint level of 20,000m². These three results are based on assumed underlying annual average floorspace growth rates of 0.5%, 1% and 1.5%. The historical period has seen annual average growth in floorspace of just over 1%. Given the relatively low but nevertheless increasing level of additional floorspace consented by the Council over the past four years, much of the forecast additional floorspace growth is likely to occur fairly well into the next LTP period.

The RWSS project has been shelved and is not taken into account in the budgeting within this document. Should the project be reinitiated then the Activity Management plan and its associated budget will have to be reviewed as will the growth strategy to determine impact.

- Forestry planting in the region. To date, the Ministry for Primary Industries' National Exotic Forest Description (NEFD) 2016 survey shows that the 2015 calendar year estimate of total planting is 42,950 hectares, representing a 2 percent decrease from 2014. However there are previous planting periods (years 11 – 25 as shown in Figure 6) which will be coming on line shortly. There are 15,793 hectares of forestry planting in the District according to the National Exotic Forestry Description (NEFD 2016). Approximately 70% of forest trees in the district is over 16 years of age and is due for a harvesting in the next 10 years. Forestry harvesting causes trees to be hauled through Central Hawke's Bay's transportation system. Most of the potential increase in wood availability during this period is from small-scale forest growers who established forests during the 1990s. The forestry industry has expressed a preference for transportation via road as opposed to rail, due to the cost and time delays involved in double handling of logs when using rail.
- There is increasing cropping, seed production and expanded beef and sheep industries.

Figure 6 – Hectare of Land Planted in Forestry by Age Class ³



Approximately 1700 questionnaires were sent out for the 2016 NEFD survey. An area weighted response rate of 94 percent was achieved. This survey indicates that there will be an intensive harvest period starting in 2015/16 and continuing over the next 10 years. This is supported by the amount of hectares of planted land that is reaching the average harvest age of 20-30 years as indicated in Figure 6. The harvesting will use a large part of the rural road network at various times putting additional pressure on the roads usage.

With the exception of a few key roads the Transport Department believes that being forewarned about the timing and size of each of the hauls will allow for the maintenance and renewal activities to be scheduled to maximise the efficiency for the log haulers and minimise the damage to the road network. However the ability to plan effectively is limited as harvesting is estimated only on a potential timing at this stage. To counter this, CHB may have to amend plans for HPMV or 50 Max initiatives, and restrict the timing of log hauls on certain roads to appropriate weather and road conditions to protect the infrastructure.

As the timber harvests come on line there is potential for congestion and decreased safety at a major intersection in the Waipukurau township. The district will have to apply both engineering solutions and an education campaign to manage the impacts.

Harvests from within the Tararua District which is directly south of Central Hawke's Bay may also affect CHB roads as logs are transported to wood processing plants in the region. There will be a limited number of roads used enabling the District / NZTA to prepare for this increased use.

There is also increasing residential development at coastal locations – primarily for holiday homes and non-permanent use.

⁴ Table 9.9: Forest Area 1 By Age Class and Territorial Authority- Ministry For Primary Industries - National Exotic Forest Description

4.5.2 Modes of Transport

The district is predominantly rural and the population is highly dependent on motor vehicles. This is reflected in the 2013 census data which indicates that 92% of households in the CBH District have access to at least one car.⁴

Public transport is provided and managed by the Hawke's Bay Regional Council. The Draft Hawke's Bay Regional Passenger Transport Plan 2018-2028 provides guidance for the Hawke's Bay Regional Council (HBRC) for the provision of public passenger transport services by outlining the passenger transport needs of the region.

Currently no formal public transport system is in place within the District but under the 2018- 2028 Draft Regional Plan, the HBRC is investigating a transport service in Central Hawke's Bay in response to public requests. This is likely to be demand driven response by way of a community van service or similar, rather than a scheduled bus service.

Taxi services offering an individualised service, are often the only form of public passenger transport available in small towns. They play an important part in meeting the needs of those who may lack access to any alternative forms of transport. Commercial taxi services operate within Waipawa and Waipukurau.

The Total Mobility Scheme is a nationwide scheme that provides discounted transport for people with disabilities which prevent them from using public transport. Eligibility for the scheme is determined by the effect the impairment has on the individual's ability to undertake components of a journey on the public transport network. Total Mobility services for CHB residents are provided under contract to, and are subsidised by the HBRC. The use of the Total Mobility Scheme continues to increase. In 2013-14 there were approximately 3,261 registered users of the scheme in Hawke's Bay compared to 1,914 in 2008-09 and 2,640 in 2011-12. Total Mobility trips continue to trend upwards and as Hawke's Bay's population is ageing this trend is likely to continue.

The alternative to passenger road travel through the Central Hawke's Bay region is currently limited to walking/cycling. While there is a main rail line between Palmerston North, Gisborne and Napier, passing through Waipukurau and Waipawa, no passenger services are currently provided. The line is currently limited to freight only. There are no plans to reopen a passenger service on this line. Use of this line grew 40% between 2007 and 2012 but tonnage remains low as a percentage of all freight in the region (5%).

The Regional Council's Walking and Cycling Strategy⁵ identifies actions to develop and maintain the pedestrian and cycle route network in the region. The strategy focusses predominantly on the Hastings District and Napier City areas.

The desire to link Waipawa and Waipukurau safely via a cycleway will proceed this fiscal year with NZTA. This will require an extension of the partially constructed track at each end and in the middle in both directions. The development of this cycleway will provide opportunities for both recreational and commuter cycling in the 2 communities. The existing road network with its limited constructed widths offers very few opportunities to construct dedicated cycleways, so the district has opted to take a "share the road" approach to enable cycling within Waipawa and Waipukurau. The District is investing in footpaths and crossings that will cater to the walking and mobility challenged within the district.

⁴ Statistics obtained from Statistics New Zealand (as at 18. 2.2015)⁵ Active Central Hawke's Bay – Central Hawke's Bay District Walking and Cycling Strategy, September 2006

⁵ Active Central Hawke's Bay – Central Hawke's Bay District Walking and Cycling Strategy, September 2006

4.5.3 Traffic Volumes

Data is collected from regular traffic count surveys. Table 1 shows the latest traffic counts for the District's main Arterial routes, the District's Primary route and the District's Secondary Collector. These counts are all taken at the urban end of each road, but within the 100km/hr rural zone.

Table 1 – 2010 Traffic Counts for ONRC:

ONRC	Road	Count Location	2014		2015	
			AADT	%HCV	AADT	%HCV
Arterial	Bogle Brothers Espl	100m	-	-	7202	11
Arterial	Peel St	100m	4446	12	4924	14
Primary	Ruataniwha St (Waipukurau)	310m	4851	3	5215	4
Secondary Collector	Ashcott Rd	100m	-	-	910	7
Secondary Collector	Elsthorpe Rd	12000m	363	9	-	-
Secondary Collector	Ongaonga Rd	300m	-	-	714	7
Secondary Collector	Ongaonga Waipukurau Rd	200m	530	6	-	-
Secondary Collector	Oruawharo	3900m	533	7	-	-
Secondary Collector	Porangahau Rd	2500m	986	9	972	12
Secondary Collector	Pourerere Rd	200m	-	-	806	14
Secondary Collector	Racecourse Rd (Waipawa)	250m	464	4	612	5
Secondary Collector	Racecourse Rd (Waipukurau)	400-600m	2993	2	2729	2
Secondary Collector	Ruataniwha St (Waipawa)	200m	1076	9	-	-
Secondary Collector	Tavistock Rd	100-250m	2666	3	-	-
Secondary Collector	Tikokino Rd	750m	-	-	728	12

Traffic counts for the District's Arterial, Primary and Secondary Collectors are undertaken across the network.

4.5.4 Anticipated Changes in Customer Expectations

The Draft Government Policy Statement 2018(Draft GPS 2018) has three main priorities:

- A strong and continuing focus on economic growth and productivity
- Road Safety
- Value for Money.

The Draft GPS 2018 provides five land transport objectives. They are for a land transport system that:

- Addresses current and future demand
- Provides appropriate transport choices
- Is reliable and resilient
- Is a safe system, increasingly free of death and serious injury, and

- Appropriately mitigates the effects of land transport on the environment.

The Hawke's Bay Regional Council's Regional Land Transport Plan (RLTP) sets the strategic direction for transport within the region and must be consistent with the Draft GPS 2018.

Within the RLTP there are two core land transport priorities:

- A safe resilient and efficient transport system that supports the development of our economy and contributes to social wellbeing in our community
- A reduction in the risk of death or serious injuries on Hawkes Bay roads.

To increase productivity there has been national focus for the use of High Productivity Motor Vehicles (HPMV) and increasing the allowances for heavier loads to use the land transport system called the 50 Max initiative. As the District has an ageing bridge and culvert asset portfolio the impact of increasing the load on parts of the network may negatively impact on the District's ability to maintain the network.

It is a focus of the current Draft 2018 – 2028 Regional Land Transport Plan (RLTP) to improve State Highway 2 from Napier to the South boundary of the region which passes through Central Hawkes Bay District. This focuses on bridge and structural improvements to enable the use of HPMV and 50 max vehicles. Currently CHB does not form part of the 50Max programme and operators are required to contact Council directly to discuss any requests on a case-by-case basis. While no projects are currently identified on the CHB District network for improving access for HPMV or 50Max vehicles, it is expected that this aspect will need to be closely monitored in conjunction with the forecast Forestry activities and any key improvements captured in the Bridge Management Strategy for key routes identified. Where the impact of both HPMV and 50Max can be ascertained to be negligible then these initiatives can be implemented over time.

No other significant changes in customer expectations are anticipated which would likely affect demand on the network.

4.6 Changes in Technology

As a funding provider, NZTA requires more robust data in support of the annual funding requests. Consequently NZTA requirements combined with technology changes are impacting on the way Council does business in terms of current road data collection practice. Examples like High Speed Data (HSD) collection and the use of Falling Weight Deflectometer (FWD) are typical examples that Council may consider in future to support its data capture.

To date CHBDC have implemented a programme of road pavement condition rating to help inform the long term programme of works. There is a continuing strategy and programme in place to complete regular condition surveys on the network.

Additional technology changes such as the materials used in the maintenance and construction of roads are also continuously being assessed. Materials such as suitable aggregates are becoming scarcer and more expensive to apply to the road network. The district has embarked on an exploration plan of private properties to source appropriate materials to use for road constructions and maintenance. This involves consultation with local land owners to access and test various materials for their suitability for the network.

As sources are found long term agreements will be sought to ensure the sustainability of the network. Other materials such as stabilising agents are also being developed by various industries and where appropriate is also being trialed in the District.

Improvements and modifications in equipment are also adding to the efficiencies of the District and are being introduced by contractors in an effort to obtain better value for money.

4.7 Demand Management Plan

4.7.1 Demand Management

There are three core areas of demand management for the Land Transport activity. These are as follows:

- Transport demand management
- Traffic demand management
- Travel demand management.

Demand management is concerned with managing, and in some cases reducing, traffic growth rates, through network management, urban design or travel behaviour initiatives. It may include influencing travel demand through various measures including adjusting parking supply, road pricing measures and engineering measures.

Demand management involves offering greater transport choices and increasing awareness of alternative modes. By doing this it helps to increase access and mobility, enhance environmental sustainability and promote better public health.

The key to the Demand Management Plan for Central Hawke's Bay is that it is appropriate and cost-effective for an area the size of the District and with a population less than 13,000.

The demand management plan included in this AMP currently consists predominantly of traffic demand management; however there is an increasing focus on transport and travel demand management, particularly with Council's development and adoption of a Walking and Cycling Strategy⁶.

4.7.2 Asset Based Demand Management

The One Network Road Classification (ONRC) introduced by NZTA in 2014 has the impact of aligning road types throughout the country. CHB has redefined its road classification to align with the ONRC definitions. These hierarchies are established in RAMM and updated on a regular basis using traffic analysis and local experience. The Executive Document provides a colour coded map outlining the roads around the District.

Since ONRC was introduced in 2014, there was a transition phase where roads needed to be reviewed to ensure that the design standards are appropriate to effectively deliver on the customer levels of service for the new classification. The level of service is set against the new road hierarchy classification and in some cases this meant the standard of road increased or decreased.

4.7.3 Non-Asset Based Demand Management

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

- Traffic by-laws to manage heavy commercial vehicles on sub-standard roads.

⁶ Active Central Hawke's Bay – Central Hawke's Bay District Walking and Cycling Strategy, September 2006

- Installation of speed humps and thresholds.
- Implementing targeted speed restrictions.
- Education and communication programmes targeted to deliver critical messages.
- Subdivision by-laws e.g. restricting development from existing roads that are of sub-standard width and safety.
- Operative District Plan which will take into account all possible growth scenarios and set guidelines for development.
- Alternative transport modes such as promoting the use of public transport systems (where available), car-pooling or alternative transportation (including cycling and walking) are sustainable and environmentally friendly transportation modes as convenient pedestrian, bicycle, and public transport networks can reduce reliance on vehicle transport.
- Strategic alliance with neighbouring Road Controlling Authorities.

4.8 Capital Works Programmes related to Demand Management

There are several categories of Capital Improvements identified that are related to either improving the safety of the network or improving inadequate infrastructure due to change in demand. These works are generally related to the following assets and activities:

- Strengthening of bridges and other structures (where justified) as a result of applications for HPMV operation within network corridors
- Minor safety works
- Drainage improvements
- Traffic services such as signs, safety improvements or demand driven
- Walking and cycling facilities
- Seal extensions (where economically justified)

In the 10-year horizon of this plan there are no major forms of capital improvement to the network.

The issue of under width pavements could possibly be considered as a capital improvement item and would go some way to contributing to the economic and safety outcomes of the network, although Council's ability to fund such a programme of works is currently severely limited. The process of seal widening is catered for through the pavement renewal process where the widening of the seal is justified primarily on curves. There is currently no other demand on the asset to indicate any capital improvement needed.



RISK MANAGEMENT

5	Risk Management	500
5.1	Introduction.....	500
5.2	Risk Management Overview	500
5.3	Level of Risk Assessment.....	502
5.4	The Risk Management Framework and Context.....	503
5.5	Context	506
5.6	Risk Management Activities.....	507
5.7	Risk Criteria	508
5.8	Risk Analysis	514
5.9	Risk Treatment	518
5.10	Risk Transfer	518
5.11	Improvement Tasks	518

5 Risk Management

5.1 Introduction

The District recognises that risk management is an integral part of good management discipline, performance and accountability. The risk management procedures currently followed by the District were adopted in 2007 and are based on the guidelines contained within AS/NZS 4360: 2004, Risk Management.

The update and development of a formal Risk Management Framework is recognised by the District as a key improvement task (Section 9 - Improvement Plan).

Risk Management is the coordination of activities to direct and control an organisation with regard to risk (AS/NZS ISO 31000:2009). The following section outlines the Risk Management process that is currently implemented at CHBDC. This process establishes the basic parameters within which all identified risks must be managed with respect to the management of the Land Transport.

This section provides:

- An overview of CHBDC's Risk Management Governance
- A statement of the level, purpose and scope of this risk management process
- A description of the Risk Management framework and context
- A description of the risk assessment process
- A series of risk tables which present the key risks identified across various dimensions of the activity
- A prioritised risk action plan
- An assessment of the Service's Risk Management capability and prioritised actions for improving the capability.

The outcome of this process is to be used to:

- Emphasise the importance of managing inherent risks while continuing to provide land transport services
- Continually identify improvements required to land transport assets to avoid risk events, minimise their impact or to realise identified opportunities

5.2 Risk Management Overview

Council recognises that risk management is an integral part of good management discipline, performance and accountability. Risk management is a process used to identify the specific business risks, together with any possible risks associated with the ownership and management of Land Transport assets. This can be used to determine the direct and indirect costs associated with these risks, and form a priority-based action plan to address them.

Council does not have a Formal Risk Management Policy or strategy for the organisation. The current risk process and risk criteria tables for the management of the Road Transportation activities was adopted by Council in 2007. In general a transportation risk management framework is in place, and roles and responsibilities regarding risk in the transportation area are established. It is identified that the Risk Management Policy and Framework process is in need of review and this is itemised as an improvement task in this plan.

Since the adoption of the process and criteria a new Australian and New Zealand Standard was introduced in 2009 AS/NZS ISO 31000:2009 – Risk management – Principles and guidelines.

A Risk is defined in this standard as:

“Effect of Uncertainty on Objectives”

Where effect, objectives, risk and uncertainty are defined as:

- **Effect:** Deviation from the expected. While effects may be positive or negative, risk is defined here as a negative effect on objectives
- **Objectives:** A goal toward which effort is directed
- **Risks:** Often characterized by reference to potential events and consequences, and is often expressed in terms of a combination of the consequences of an event and the associated likelihood
- **Uncertainty:** The deficiency of information, understanding or knowledge of an event, its consequence, or likelihood.

It is important to recognise that asset management and network operations of the Land Transport assets are ongoing activities that are well understood. The likelihood of new emerging risks which have not already been well documented and for the most part mitigated, is low.

Many risks are managed with routine activities within the Land Transport team and the road maintenance contracts. Our risk management approach in the transportation activity also aligns with the guidelines contained within the International Infrastructure Management Manual (IIMM) and consists of identification, assessment and prioritisation of risks followed by coordinated and economical application of resources to minimise, monitor, and control the probability and/or impact of unfortunate events or to maximise the opportunities based on a coherent strategy.

The risk management process for management of the District’s Land Transport Activity includes the following key items.

Table 1: Risk Management Process Summary

Risk Management Process Item		Description
Types of Activities		
Risk Evaluation Criteria	Risk Criteria	A likelihood scale and consequence scale have been developed and adopted by the District for the rating of risks.
	Risk Rating Matrix	A risk matrix has been produced summarising the outcomes of various likelihood x consequence combinations.
	Risk Rating Categories	The risk rating categories describe the relative level of risk and the proposed action to respond to the risk.
Risk Assessment	Risk Identification	Risks are identified and entered into the risk register.
	Risk Analysis	Likelihood, consequences as well as overall risk rating (initial risk) are determined. Residual risk is determined taking into account existing

Risk Treatment	Risk Treatment	Treatment plans are developed for all risks rated High or Very High.
	Risk Transfer	Ensuring that risk treatment activities are the responsibility of and carried out by the party who is best able to manage them.

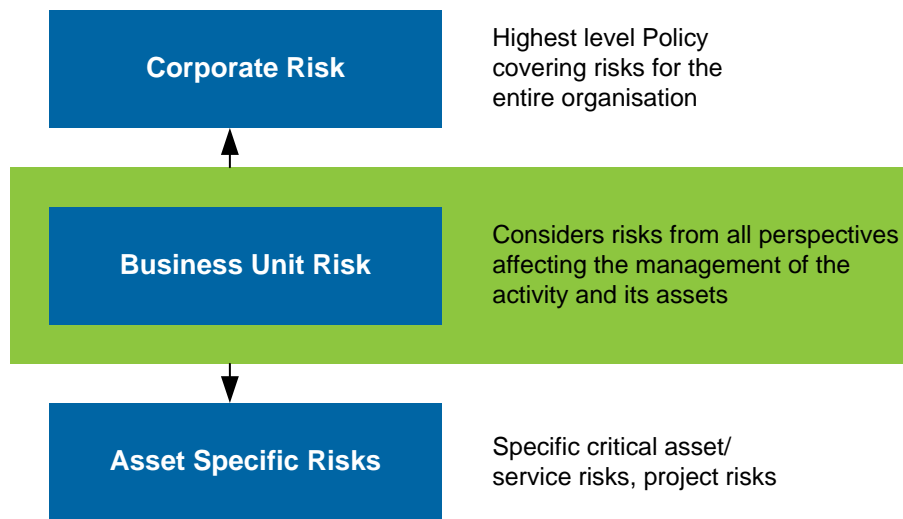
The very high and high risks that have been identified are summarised below, including the existing controls and additional controls proposed to manage these risks.

5.3 Level of Risk Assessment

The purpose of this risk plan is to identify the risks associated with the CHBDC Land Transport activity and assets. This requires approaching the risks from many perspectives including financial, operational, reputation and public health and safety.

These risks are pertinent to both a higher corporate level, and a detailed asset-specific level, but do not substitute for more specific risk analysis at those levels (see Figure 2).

Figure 1: Risk Hierarchy Levels



Corporate Risk

Risk assessments at the corporate level focus on risks affecting the organisation as an entity such as:

- Civil defence emergencies
- Business continuity risks
- Organisational health and safety risks
- Political and legal risks
- Financial and cash flow risk
- Risks relating to strategic direction options

Corporate risks are risks that affect the entire organisation and should be addressed by the organisation, independently of individual Business Unit risk assessment.

Business Unit Risk Management

Risk assessments at the Business Unit level focus on risks associated with the management of the business and the enabling infrastructure to provide services.

Risk assessment at this level is the principal focus of this AMP section.

Asset Risk Management

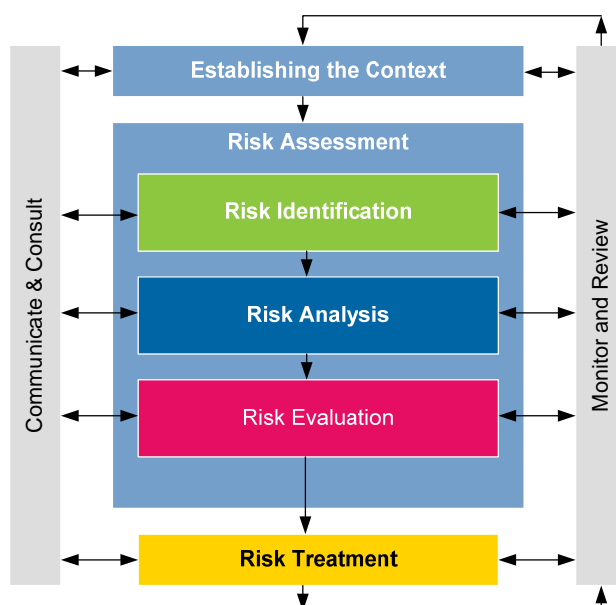
Asset risk management refers to the assessment of specific risks for assets such as a critical road, bridge or a critical routes or the risks identified for a specific project.

5.4 The Risk Management Framework and Context

The risk management framework is based on the current joint Australian New Zealand International Standard Risk Management – Principles and Guidelines (AS/NZS ISO 31000:2009).

Figure 2 presents the risk management process used to prepare this plan.

Figure 2: Risk Management Framework



The sections following expand upon the risk management framework identified in the flowchart above. The risk assessment process to be used by the Council is based on the Australian New Zealand Risk Management Standard 4360:2004, which aligns and complies with the more recent ISO 31000:2009 standard.

5.4.1 Risk Assessment Process

The following flowchart details the key elements of the Risk Assessment Process to be undertaken by Council.

The following outlines the Risk Management procedure to be implemented within the overall management of Council Road Transportation activity. This procedure establishes the basic parameters within which all identified risks must be managed and sets the scope for the rest of the risk management process.

The procedure is based on the Guidelines in S/NZS ISO 31000:2009 – Risk management – Principles and guidelines. The risk management process requires a reporting function that informs management personnel, who are likely to be outside the day-to-day activities of asset management, of the impact their existing decisions have on their risk exposure, along with the effective communication of emerging risks that may be exceptional. This reporting function should be composed of both a standardised format at a defined frequency in addition to an exceptional reporting mechanism that will occur at a higher frequency as the need arises. It is through this reporting mechanism that Council can be:

- Informed of current risk levels given the existing funding regime
- Appraised of emerging risks that may require immediate or exceptional attention and resources

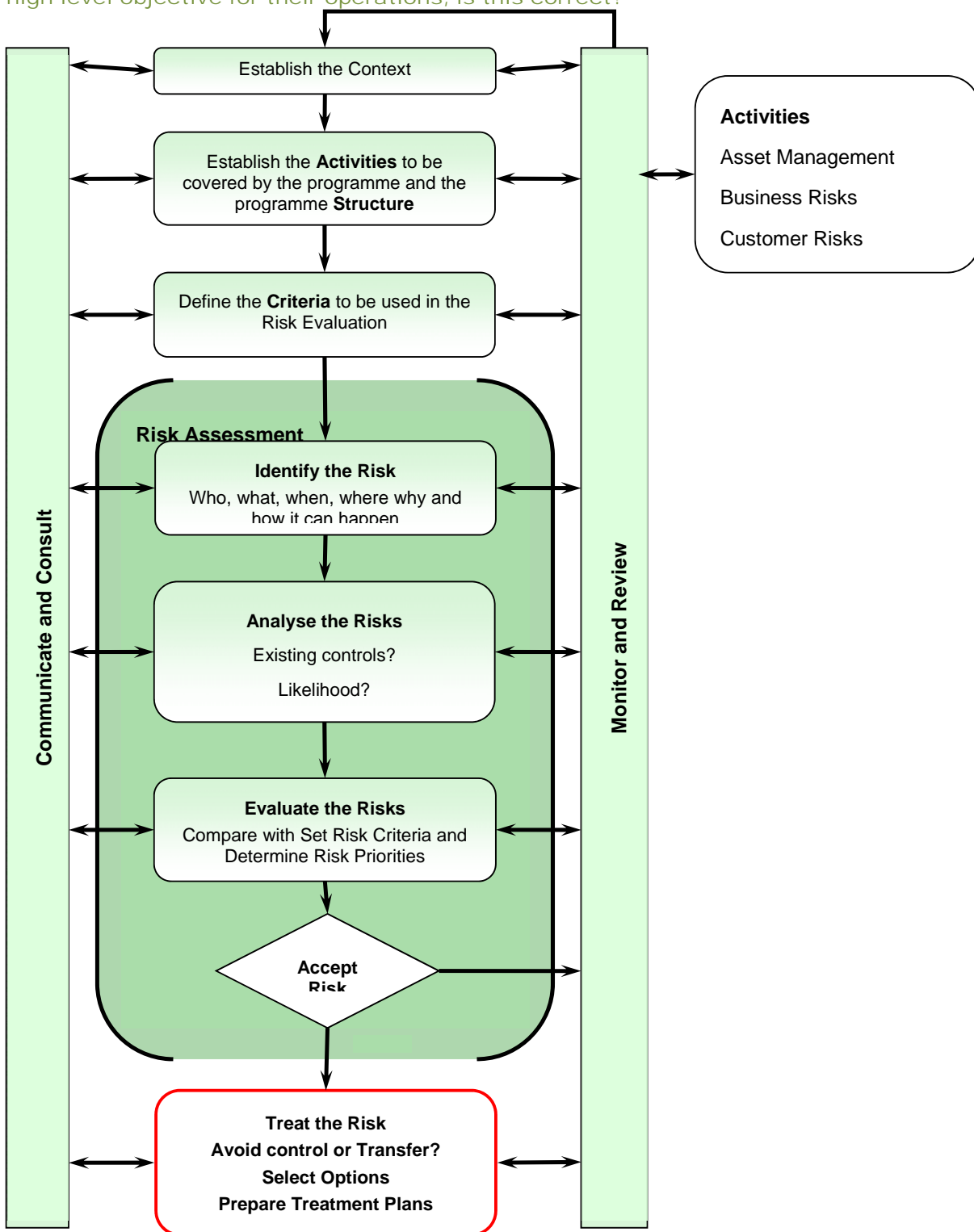
This information will assist Council personnel to assess where risk reduction efforts should be focussed based on their corporate accepted risk level. The reporting mechanism will also allow the asset management teams the opportunity to provide alternatives to decrease the current risk levels based on Council's priorities and assist with the development of preferred strategies which can be effectively implemented at the functional level.

Assessment of risks is initially based on a qualitative analysis. More sophisticated analysis or quantitative risk analysis may be carried out as part of the risk treatment plan for specific high risk events.

The overall risk management process is illustrated in Figure 3. Some of the concepts and criteria may be applied to other Council activities or assets but this risk management framework has been developed for planning and operation of the Council's road transportation corridor.

The following sections define the core elements of the CHBDC process.

Figure 3: Risk Management Process this is a filler statement – Has CHBDC created any high level objective for their operations, is this correct?



5.5 Context

The context for risk management is defined by a number of elements:

- The Objectives: The objectives to be achieved
- The Internal Context: A capability (i.e. system, process, activity, business unit) which endeavours to achieve those objectives
- The External Context: The environment in which that endeavour takes place
- The Risks: A range of threats and uncertainties which affect the achievement of the objectives. These may arise in the external context, or from the capability itself.

5.5.1 Objectives

The risk assessment is oriented by one or more objectives which provide the point of reference for identifying potential threats and uncertainties and evaluating risk.

The following objective statement aligns the identification and assessment of risk in the context of the CHBDC's Land Transport asset management activity with the mission statement of the Council.

“To provide an efficient, safe and affordable road network within the Central Hawke's Bay District while minimising safety risks to the asset users”

5.5.2 External (Strategic) Context

The external (strategic) context covers the following areas and is known as a PESTLE assessment. .

Dimension	Examples
Political/Strategic	Changes in government or government policy, amalgamation etc.
Economic	Economic trends, market movements, industry changes etc.
Societal / Cultural	Social or cultural issues, changes in demographics, public opinion
Technological	Emerging technologies and practices, innovations
Legal / Regulatory	New or changed regulations, contractual or compliance requirements
Environmental	Changes in natural environment (e.g. climate change)

5.5.3 Internal (Organisational) Context

The internal (organisational) context is approached through the identified activities of managing the Land Transport assets, as the activity identifies the risk associated with staffing, the elected representatives and work areas, location and IT systems.

5.5.4 Risk Management Context

The Risk Management context refers to the risk-related activities undertaken within the Land Transport Activity.

5.6 Risk Management Activities

The remainder of this Section sets out the risk management context in terms of Risk Management Activities, Likelihood Scale, and Consequence Scale. A Risk Assessment matrix and Risk Register are introduced, as are the required analysis and format for a Risk Treatment Plan.

Table 2 sets the areas of activity associated with the land transport activity four key activities areas have been identified. These are Asset Management, Business, Customer Services, and Operational.

Under each heading are the internal processes that are associated with these activities. These processes have associated with them a number of risks. By setting the activity and their associated processes the development of the risk register and all associated risks can be considered and analysed.

Table 2: Risk Management Activities

Road Transportation Risk Management Activities				
	Asset Management	Business	Customer Services	Operational
Processes	Forward Planning	Funding Provision	Public Request Management	Routine Maintenance - Sealed
	District Roding Programme	Governance	Managing Response Times	Planned Maintenance - Sealed
	Information & Systems Management	Legislation Compliance	Customer Expectation - Raise/Reduce	Routine Maintenance - Unsealed
	Standards and Guidelines	Policy Development	Level of Service changes	Planned Maintenance - Unsealed
	Demand Change	Service Provision Purchasing	Customer not understanding service levels	Routine Corridor and Safety Maintenance
	Data Storage	Employment	Customer Consultation	Capital/Renewal Physical Works (QA, Management, Timeliness)
	Information Systems	Financial Reporting /Management		Routine Inspections - (Contractor/Consultant/ Asset Owner)
	Consultant	Political – Elected Representative		Contract Administration
	Contractor	Council Staff		Footpath Maintenance
	Safety Management			Drainage Maintenance

Road Transportation Risk Management Activities				
	Asset Management	Business	Customer Services	Operational
	Network Resilience			Communication and Project Management
	Social and Environmental			

The outcome of the process, illustrated in Figure 1, is the development and on-going maintenance of a Road Transportation Risk Register. This register will contain a prioritised list of all of the identified risk within each of the above four Risk Management Activity areas.

5.7 Risk Criteria

Risk rating is a function of consequence and probability of an adverse event. Risk management procedures set out in AS/NZSISO 31000:2009 AS/NZS 4360:2004 provide a general frame work for different organisations and activities.

5.7.1 Likelihood (L) Scale

The likelihood of occurrence and severity of consequences should be based on as much real data as possible; for example local knowledge or recorded events such as maintenance records, weather events etc. Some analysis may be required for verification. The Likelihood Scale applicable for road transport activities are based on frequency or return period, rather than an absolute probability. These are set out in Table 5.3 below.

Frequency and probability of occurrence in 10 years are indicative only. Values are rounded off where appropriate to avoid giving a greater impression of accuracy than is justified by the qualitative analysis that is undertaken. The prime objective of this process is to determine a set of applicable likelihood criteria which are also reasonable within the context of land transport activities. The likelihood scales identify how likely, or often, a particular event is expected to occur, these are shown in the table below.

Table 3: Likelihood Scale

Likelihood Scale (L)				
Level	Descriptor	Description	Indicative Frequency	Probability of at least one occurrence in 10 years
A	Probable	The threat is expected to occur frequently	> 1 year	>99.9%
B	Common	The threat will occur commonly	1 to 5 years	90% to 99.9%
C	Possible	The threat occurs occasionally	5 to 10 years	65% to 90%
D	Unlikely	The threat could occur infrequently	10 to 50 years	20% to 65%
E	Rare	The threat may occur in exceptional circumstances	>50 years	<20%

5.7.2 Consequence (C) Scale

The scale of consequence is focused around a quantitative approach summarised under an agreed matrix of the following Transport Activity risk types:

There are a number of risk types to consider when identifying risks.

The LTAMP risk register includes a column to assign the risk type as described below.

- **Health and Safety / People:** Risks that can cause harm to people whether employees or members of the public.
- **Environment:** Risks that result in permanent or temporary damage to the environment.
- **Image/Reputation:** Risks that result in incidents or situations which damage the reputation of the Council
- **Financial / Annual Cost:** Risks related to the financial management of CHBDC and its' ability to fund services now, and into the future.
- **Legislative:** (Councils Obligations) A risk event that results in CHBDC either unknowingly or knowingly breaching statutes and regulations, or being exposed to liability.
- **Network Condition** Risks that result in loss or damage to infrastructure, plant or equipment requiring unbudgeted repair or replacement costs or which result in other unbudgeted expenditure
- **Network availability/serviceability** Risks that affect the efficient operation of the service or facility and its' ability to function effectively.
- **Information:** Risks relating to permanent or temporary loss of access to the data needed to carry out effective and efficient service to the public.
- **Service:** Risks related to the meeting of levels of service to the community. Where an event may impact upon more than one outcome area, then the one scored as having the highest level should be used for the risk rating calculation.



RISK MANAGEMENT

Table 4: Consequence Scale

Level	Risk Type/ Descriptor	Consequence Scale (C)						
		Health and Safety	Image / Reputation	Environment	Annual Cost ¹	Obligations ²	Network Condition ³	Serviceability
I	Severe	Multiple fatalities	International media cover	Permanent widespread ecological damage	>\$10M	Central government takeover	Net reduction to asset value > \$10 million	Prolonged (> 1 Month) disruption to major facility or large area
II	Major	At least one fatality	Sustained national media cover	Heavy ecological damage	\$1M to \$10M	Government or independent commission of Inquiry	Net reduction to asset value \$2 to \$10 million	Temporary (5 Days – 1 Month) disruption to large area or prolonged disruption to smaller area
III	Moderate	Serious injury	Regional media cover or short term national cover	Significant, but recoverable, ecological damage	\$100k to \$1M	Abatement Notice, RMA prosecution, Audit tags	Net reduction to asset value \$0.5 to \$2 million	Temporary disruption to small area and significant reduction in Levels of Service. Detour > 10 km
IV	Minor	Minor Injury	Local media cover	Limited, medium term, ecological damage	\$10k to \$100k	Minor claims, excessive rate payer complaints.	Net reduction to asset value \$100 to \$500 thousand	Moderate reduction in Levels of Service. Significant traffic delay or short detour in place for < 1 day.
V	Negligible	Slight Injury	Brief local media cover	Short term damage	< \$10k	Occasional rate payer complaints	Net reduction to asset value < \$100,000	Minor traffic delay (< 2 hours)

¹ The risk assessment for annual cost is the whole cost of negative events, without considering the potential subsidies from Central Government for reducing the risk or dealing with the potential consequences

² Obligation relates to those issues of sound governance and includes the ability of the Council to meet identified community levels of service

³ The Network condition is represented through the value of the network and reflects the asset management context of this risk management process as does the issue of serviceability

5.7.3 Risk Rating

After the likelihood and consequence factors have been determined, the level of risk is calculated by adding the Likelihood of Occurrence (Table 3) and Consequence Rating (Table 4) together.

Risk = the likelihood of an event occurring x the consequence of such an event.

Table 5 summarises the outcome of the various likelihood x consequence (L x C) combinations producing the Council's risk rating matrix.

The final outcome is a risk rating for an identified risk. Four risk categories have been used: Very High, High, Medium and Low. The risk rating enables definition between those risks that are significant and those that are of a lesser nature. Having established the comparative risk level applicable to individual risks, it is possible to rank those risks.

Table 5: Risk Rating Categories

Rating	Description
Very High	Intolerable. Urgent action required. Mitigation plan required for each risk
High	Take actions to reduce risk to as low as reasonable possible. Mitigation plan required for each risk.
Medium	Tolerable. Consider mitigation measures on case by case basis. Measures to reduce risk if justified.
Low	Programme Optimisation.

Table 6: Risk Rating Matrix

Likelihood (L)		Consequence (C)				
		I	II	III	IV	V
		Severe	Major	Moderate	Minor	Negligible
A	Probable	Very High	Very High	High	High	Medium
B	Common	Very High	High	High	Medium	Medium
C	Possible	High	High	Medium	Medium	Low
D	Unlikely	High	Medium	Medium	Low	Low
E	Rare	Medium	Medium	Low	Low	Low

Once the impact has been ranked according to the relative risk level it poses, it is then possible to target the treatment of the risk exposure, by beginning with the highest risks and identifying the potential mitigation measures. Actions required to mitigate the risk levels set out in Table 5.6 are as follows:

- Risks in the Very High category are considered intolerable and immediate action is required to reduce the likelihood or consequence to reduce the risk to a lower category. Risk treatment options may be required that are not justifiable on strictly economic grounds. Safety, legal and social

responsibility requirements may override financial considerations. As a minimum there must be a specific risk treatment plan for each entry in the “very high risk” category.

- High Risks are undesirable, but may be accepted if they cannot be reduced or avoided. All reasonable measures should be undertaken to reduce these risks to as low a level as possible, regardless of cost, inconvenience or other factors. As a minimum there must be a specific risk treatment plan for each entry in the “high risk” category.
- Items in the Medium Risk category should be evaluated on a case by case basis. Action to reduce these risks will be undertaken only when the potential benefits of the risk treatment outweigh the expected costs. Normal project evaluation criteria can be used to assess potential risk treatment measures for medium risks.
- No action required for Low Risks, other than monitoring to ensure they do not progress into higher risks.

5.7.4 Assumptions & Uncertainty

Various uncertainties are inherent in risk identification and analysis and some assumptions have to be made. These are documented in Table 7.

Table 7 - Significant Planning Assumptions & Uncertainties in the Transportation Activity

Ref. No	Assumptions and Uncertainties	Reasonableness of assumption, & likely impact if the assumption is not realised
R1	Funding made available in the LTP (both rating and subsidy) continues to be available at current levels.	Reasonable.
R2	A pool of suitably qualified personnel, consultants and contractors exist to provide roading services.	Reasonable – Consultants will ensure the continued supply of solutions. Council will reduce its programme of work if Contractors are unable to deliver.
R3	Professional services providers and contractors deliver to contractual terms and Code of Practice standards.	Reasonable.
R4	Service levels (outside of ONRC) do not radically change over the forecasted period. (Variation <1%.	Reasonable.
R5	Community expectations remain constant over time.	Reasonable.
R6	No abnormal events (weather no greater than a 1 in 5 year event, earthquake – no damage causing earthquake) occur in the forecasted period.	Reasonable.
R7	Utility services (power, telecommunications) remain available to current service levels.	Reasonable.
R8	Costs for utility services do not increase beyond forecasted inflationary factors.	Ratepayers will themselves determine if they can pay an increase in rates based upon their own safety issues/viewpoint.
R9	Council controlled flood protection schemes remain intact and operate as planned.	Reasonable.
R10	Regional Council flood plain protection schemes remain intact and operate as planned.	Reasonable.
R11	Roading renewal programme priorities drive the underground services renewal programme where possible.	Reasonable.
R12	Predicting the useful life of the asset and determining future performance based on known facts at the time.	Reasonable.
R15	There will be no unforeseen changes in demand on the network over the 10-year period outside the predicted growth strategy.	Reasonable – Forecast incorporates expected demand fluctuations.
R16	Data reliability regarding accurately predicting the condition performance assets and how these drive the Capital Programme.	Reasonable.
R17	Budget Setting 15/16 – 17/18 CPI adjustment.	Reasonable – No “step change” in costs forecast.
R18	Natural hazards. Areas of the roading corridor which are within erosion zones and the impact.	Reasonable – The Hawke's Bay Regional Council erosion management plan implementation.
R19	The Road Safety System which has been implemented does not drive additional expenditure excluding the unknown elements deriving from the ONRC...	Reasonable.

The Council also have a number of highly vulnerable, critical and valuable assets within the transportation activity that are identified for specific risk management. The bench mark applied for identifying an asset activity as critical are the thresholds set within Council's Significance and Engagement Policy.



RISK MANAGEMENT

While the Policy identifies the whole of the transport activity as being significant, given the total annual expenditure, for the purposes of the AMP, the Policy criteria is applied to individual assets and activities. These critical assets have not yet been defined by Council, undertaking this activity is recommended as an improvement task.

5.8 Risk Analysis

The next step in the risk management process is to develop a comprehensive list of risks and to evaluate each one against these criteria.

The top identified risks are:

- Failure of ageing and critical assets resulting in inaccessibility where there is no alternative access.
- Failure of ageing and critical assets affecting safety
- General labour shortage, Maintaining skills and abilities, maintaining local knowledge.
- Insufficient funding to achieve roading goals
- Maintaining skills and level of service in suppliers
- Changes to funding criteria by NZTA
- Government Funding not adequate
- Project costs exceeding budget
- Managing Cash flow
- Road closure due to Climatic event – storm /flooding
- Road closure due to Climatic event – storm /high winds
- Road closure due to major accidents
- Not replacing depreciating assets
- Private features – being replaced by council but not owned
- Dangerous Trees on adjoining land to roads
- Changing vehicle needs - 50MAX/ HPMV

Table 8: Top 10 Risk Register

Risk Reference Number	Priority		Risks with current controls																	
		Risk Category	Risk	Source "caused by"	Expected Consequences Impact "consequences"	Risk Type	Likelihood	Consequence	Risk Rating	Existing Controls	Control Assessment	Likelihood	Consequence	Risk Rating	Additional risk controls that affect LIKELIHOOD	Additional risk controls that affect CONSEQUENCE	Expected cost Person/area responsible for additional controls	Likelihood	Consequence	Risk Rating
1.1		Business	General labour shortage, Maintaining skills and abilities, maintaining local knowledge.	<ul style="list-style-type: none">Difficulting in attracting, remunerating and retaining key staff	<ul style="list-style-type: none">Cost impact.impact on conituity of planning descision making	Image / reputation People	B	I	Very high	<ul style="list-style-type: none">Monitor labour market and work to maintain or enhance the working environment at CHBDC					<ul style="list-style-type: none">					
2.6		Asset Management	Insufficient funding to achieve roading goals	<ul style="list-style-type: none">Low population base, large network, potentially reducing NZTA funding	<ul style="list-style-type: none">Increased Ratesreduction In amount of work able to be carried outIncreased deferred renewalsLower quality assets	Network Condition Network Serviceability	B	III	High	<ul style="list-style-type: none">Monitor Levels of Service and optionsIncreasing maintenance					<ul style="list-style-type: none">					
2.8		Business	Maintaining skills and level of service in suppliers	<ul style="list-style-type: none">Difficulting in attracting, and retining contractor staff	<ul style="list-style-type: none">Impact on ability to maintain network	Network Serviceability	B	III	High	<ul style="list-style-type: none">Contracts with NZ wide companies to ensure resources can be managed effectively					<ul style="list-style-type: none">					
2.10		Business	Changes to levels of service funding criteria by NZTA	<ul style="list-style-type: none">Changes to Govt policy through ONRC process	<ul style="list-style-type: none">Increased Ratesreduction In amount of work able to be carried out	Network Condition Network Serviceability	B	II	High	<ul style="list-style-type: none">Keep informed of changesBecome involved in regional network working group					<ul style="list-style-type: none">					
2.11		Business	Government Funding not adequate	Changes to Government policy through ONRC process	<ul style="list-style-type: none">Increased deferred renewalsLower quality assets	Network Condition Network Serviceability	B	II	High	<ul style="list-style-type: none">Keep informed of changesBecome involved in regional network working group										
2.15		Business	Project costs exceeding budget	<ul style="list-style-type: none">Poor project estimationIncreasing costs of goods and services over life of project	<ul style="list-style-type: none">increased costs to Council	Financial Image	B	II	High	<ul style="list-style-type: none">Budget monitoring and regular reportingCareful contract (project) planning					<ul style="list-style-type: none">					
2.17		Business	Managing Cash flow	<ul style="list-style-type: none">Not spending when budgeted causing cash flow issues	<ul style="list-style-type: none">increased costs	Financial	B	II	High	<ul style="list-style-type: none">Budget monitoring and regular reporting					<ul style="list-style-type: none">					

Risk Reference Number	Priority		Risks with current controls																	
		Risk Category	Risk	Source "caused by"	Expected Consequences Impact "consequences"	Risk Type	Likelihood	Consequence	Risk Rating	Existing Controls	Control Assessment	Likelihood	Consequence	Risk Rating	Additional risk controls that affect LIKELIHOOD	Additional risk controls that affect CONSEQUENCE	Expected cost Person/area responsible for additional controls	Likelihood	Consequence	Risk Rating
4.5		Operational	Road closure due to Climatic event – storm /flooding	<ul style="list-style-type: none">Climate changeClimatic events	<ul style="list-style-type: none">Delays in planned projectsCosts to emegency fundEnvironmental damageEconomic impactSocial Impact	Network Condition Network Serviceability Financial	B	III	High	<ul style="list-style-type: none">Biennial review of agreed detours					<ul style="list-style-type: none">Annual review of agreed detours					
4.6		Operational	Road closure due to Climatic event – storm /high winds	<ul style="list-style-type: none">Climate changeClimatic events	<ul style="list-style-type: none">Delays in planned projectsCosts to emegency fundEnvironmental damage – treespower lines down over roadEconomic impactSocial Impact	Network Condition Network Serviceability Financial	B	III	High	<ul style="list-style-type: none">Identify key routes, roads and dangerous trees.					<ul style="list-style-type: none">Work with owners to manage tree on critical routes in districtBiennial review of agreed detours		Land Transport	C	III	Medium
4.15		Operational	Road closure due to major accidents	<ul style="list-style-type: none">Poor road design / condition	<ul style="list-style-type: none">Economic impactLoss of life/major injury	Health and Safety Image	B	III	High	<ul style="list-style-type: none">Work with NZTA on accident hotspotsDesign of reseals taking into account modern safe road design				Medium	<ul style="list-style-type: none">implement ONRC processes to minimise potential for fatal or serious accident (we have no "High Risk" hotspots)					
4.16		Operational	Not replacing depreciating assets	<ul style="list-style-type: none">Funding	<ul style="list-style-type: none">reduction in asset valuereduction in condition of asset	Financial Image Network Condition	C	II	High	<ul style="list-style-type: none">Monitor impact on road roughness and condition										
4.19		Operational	Private features – being replaced by council but not owned	<ul style="list-style-type: none">Poor asset ownership records	<ul style="list-style-type: none">Increased costs	Financial Image	A	II	High	<ul style="list-style-type: none">Review all replacements to ensure Council is owner before undertaking work.					<ul style="list-style-type: none">					
		Operational	Dangerous Trees on adjoining land to roads	<ul style="list-style-type: none">Trees planted as windbreraks or shelter on adjacent land or road reserve	<ul style="list-style-type: none">Road closures due to fallen treesDamage to road surfaces through tree roots	Financial Network Serviceability			TBC	<ul style="list-style-type: none">Identify key routes and priority trees and landowners					<ul style="list-style-type: none">					
		Operational	Impact of Ruataniwha Dam construction	<ul style="list-style-type: none">Increased use of roads due to dam operations	<ul style="list-style-type: none">Uncertainty of impact on networks	Network Condition Network Serviceability			TBC	<ul style="list-style-type: none">Resource Consent requirements for road maintenanceCommunication with Dam operators on likely road usage					<ul style="list-style-type: none">					



RISK MANAGEMENT

Risk Reference Number	Priority		Risks with current controls																		
		Risk Category	Risk	Source "caused by"	Expected Consequences Impact "consequences"	Risk Type	Likelihood	Consequence	Risk Rating	Existing Controls	Control Assessment	Likelihood	Consequence	Risk Rating	Additional risk controls that affect LIKELIHOOD	Additional risk controls that affect CONSEQUENCE	Expected cost Person/area responsible for additional controls	Likelihood	Consequence	Risk Rating	
		Operational	Changing vehicle needs	<ul style="list-style-type: none">move to 50 Max and HPMV	<ul style="list-style-type: none">Impact on bridges and road use and loadsCost of upgrading bridges and key roads	Financial Network Condition Network Serviceability			TBC	<ul style="list-style-type: none">State Highway 2 is the key road in the network to be affected.Monitor permit applications to ensure only fit for purpose roads are usedManage Input onto Regional Land Transport Strategy and RTLP					<ul style="list-style-type: none">Monitor changing requirements of SH2						

An event leading to a negative outcome to Council's objectives is regarded as a **Threat**. However the process of risk analysis can also occasionally identify positive outcomes or **Opportunities**, and it is quite appropriate to use this register as a means of recording these in addition to the more common approach of only just considering the Threats.

The description should include additional information, such as: the source of the risk, what are the existing controls or influences on the risk, what **(specifically)** are the consequences, is it dependent on other risks or conditions.

5.9 Risk Treatment

A risk treatment plan should be created for all risks rated high or very high to document how the risk treatment options will be implemented.

Risk treatment options generally fall into the following categories:

- Avoid the risk by deciding not to start or continue with the activity that gives rise to the risk
- Reduce the likelihood of the negative outcomes
- Reduce the level or the consequences
- Sharing or transferring the risk with other organisations, e.g. Insurance
- Retaining but monitoring the risk, after all reasonable treatment measures have been considered.

Some risks may be rated high initially due to uncertainty in the likelihood or consequences and the risk treatment plan may consist of further investigations or assessments to better define the level of risk. Other risk treatment options may consist of financial controls (e.g. insurance), operational improvements, contingency planning or physical works to reduce the overall risk rating score.

5.9.1 Residual Risk

The Consequence and Likelihood values applied to derive Risk Rating on the register need to reflect the level of residual risk remaining after the Risk Treatment Plans have been developed and implemented and their effectiveness in mitigating or eliminating the initial level of risk has been assessed.

5.10 Risk Transfer

A fundamental concept in Risk Management is that the Risk Treatment activities should be the responsibility of, and carried out by, the party who is in the best position to manage them; which may be Council staff, the Network Management Consultant(s), the Maintenance Contractor(s) or other third parties. To assist with this understanding, Council will seek and evaluate as much information as possible on the spectrum of risk associated with all practical alternatives along with their associated costs.

Through this process of risk/cost trade off we will be able to then determine an appropriate balance of accepted risk and associated cost. In some situations the Council may feel that it is appropriate for them to carry a higher level of risk rather than bear a much higher level of expenditure that would otherwise be necessary to see the risk transferred to another party.

5.11 Improvement Tasks

The following have been identified as improvement tasks relating to risk management:

- Identify critical assets related to the land Transport activity.



RISK MANAGEMENT

- Regularly review and update the risk register.
- Undertake a comprehensive review of risk management at Council including updating the Risk policy, developing a risk framework across all activities.
- Undertake a comprehensive risk management identification exercise for Land Transport.

6	Lifecycle Management Plan	600
6.1	Life Cycle Management Plans Overview	600
6.1.1	Business Case Approach	600
6.1.2	Asset Groups	600
6.1.3	Lifecycle Management Work Categories	602
6.1.4	Key Issues and Strategies	604
6.1.5	Data Confidence and Reliability	606
6.1.6	Method of Service Delivery	607
6.1.7	Forward Work Programming	609
6.2	Pavements	610
6.2.1	Overview	610
6.2.2	Key Issues and Risks	610
6.2.3	Business Case	610
6.2.4	Physical Parameters	611
6.2.5	Asset Value	613
6.2.6	Asset Age	614
6.2.7	Asset Condition	615
6.2.8	Asset Performance:	623
6.2.9	Road Safety	626
6.2.10	Asset Capacity	628
6.2.11	Operations and Maintenance Plan	628
6.2.12	Renewal Plan	630
6.2.13	Forward Work Programme	631
6.2.14	Development Works Plan	634
6.2.15	Disposal Plan	635
6.2.16	Road Pavements Expenditure	635
6.3	Pavement Drainage	637
6.3.1	Overview	637
6.3.2	Key Issues and Risks	637
6.3.3	Business Case	637
6.3.4	Physical Parameters	639

6.3.5	Renewal Plan.....	641
6.3.6	Development Works Plan.....	643
6.3.7	Disposal Plan	644
6.3.8	Operation and Maintenance Plan.....	644
6.3.9	Drainage Expenditure	644
6.4	Bridges and Guardrails	646
6.4.1	Overview	646
6.4.2	Key Issues and Risks	646
6.4.3	Business Case	647
6.4.4	Physical Parameters	647
6.4.5	Operations and Maintenance Plan	651
6.4.6	Renewal Plan.....	651
6.4.7	Development Works Plan.....	652
6.4.8	Disposal Plan	652
6.4.9	Bridges and Guardrails Expenditure.....	652
6.5	Retaining Structures	654
6.5.1	Overview	654
6.5.2	Key Issues and Risks	654
6.5.3	Business Case	655
6.5.4	Physical Parameters	655
6.5.5	Operations and Maintenance Plan	657
6.5.6	Renewal Plan.....	658
6.5.7	Disposal Plan	659
6.5.8	Retaining Structures Expenditure.....	659
6.6	Carriageway Lighting	659
6.6.1	Overview	659
6.6.2	Key Issues and Risks	659
6.6.3	Business Case	660
6.6.4	Physical Parameters	660
6.6.5	Operations and Maintenance Plan	664
6.6.6	Renewal Plan.....	664
6.6.7	Development Works Plan.....	665

6.6.8	Disposal Plan	665
6.6.9	Carriageway Lighting Expenditure	665
6.7	Traffic Facilities	665
6.7.1	Overview	665
6.7.2	Key Issues and Risks	666
6.7.3	Business Case	666
6.7.4	Physical Parameters	667
6.7.5	Operations and Maintenance Plan	668
6.7.6	Renewal Plan	669
6.7.7	Development Works Plan	669
6.7.8	Disposal Plan	670
6.7.9	Traffic Facilities Expenditure	670
6.8	Vegetation and Streetscapes	673
6.8.1	Overview	673
6.8.2	Key Issues and Risks	673
6.8.3	Business Case	673
6.8.4	Physical Parameters	673
6.8.5	Operations and Maintenance Plan	674
6.8.6	Renewal Plan	675
6.8.7	Development Works Plan	676
6.8.8	Disposal Plan	676
6.8.9	Vegetation and Streetscapes Expenditure	676
6.9	Footpath, Pedestrian Accessways and Cycleways	679
6.9.1	Overview	679
6.9.2	Key Issues and Risks	679
6.9.3	Business Case	679
6.9.4	Physical Parameters	679
6.9.5	Operations and Maintenance Plan	681
6.9.6	Renewal Plan	681
6.9.7	Development Works Plan	682
6.9.8	Disposal Plan	683

6 Lifecycle Management Plan

6.1 Life Cycle Management Plans Overview

This section of the LTAMP outlines broad strategies and work programmes to keep the assets operating at the current levels of service while optimising lifecycle costs.

6.1.1 Business Case Approach

The Business Case Approach (BCA) is a process that improves investment decision-making by clarifying why we are doing work, defining our strategic problems and benefits, ensuring there is robust evidence behind our strategic response, and building a robust case for investment.

BCA demonstrates the degree to which the proposed programme of works is the right solution to invest in. BCA seeks at the earliest stage of the process, to clearly define the problems and contextual state of the district, with engagement of key partners and stakeholders where necessary. This early engagement is to get consensus on and understanding of the cause, scale of consequences and scale of benefits of addressing the problems. This approach will help filter whether a problem is worth investing more time and resource.

The business case also seeks to make sure during the lifecycle of a programme or project that the 'reasons' for doing it are still sound, and that it has a clear link back to organisational priorities and issues.

The Life Cycle Management Plans underpin this approach and provide good quality evidence to support the investment proposed in the AMP.

More details on the Business Case Approach is in the Executive Summary Section 1.4.1 and Introduction Section 2.6.1.

6.1.2 Asset Groups

The Land Transport assets are grouped as below:

- Pavements
- Pavement drainage
- Bridges and guardrails
- Retaining structures
- Carriageway lighting
- Traffic facilities
- Vegetation and streetscapes
- Footpaths, pedestrian access-ways and cycle-ways

Below provides the overall asset quantities and values summary, details are included in relevant life cycle management plan. It does not include an up to date values for footpaths, pedestrian access-ways and cycle-ways because the unsubsidised budget has not been included.

Table 1: Asset Quantities and Values Summary

Asset Group	Asset Type	Quantity ¹ (2017 Valuation)	Quantity ² (RAMM)	Units	ORC ³ (\$)	ODRC ⁴ (\$)	AD ⁵ (\$)
Pavements	Pavements	1,259	1,264	km	592,916,766	511,348,710	4,303,285
Pavement Drainage	Drainage Assets	9,134	9,374	No	48,855,091	24,209,571	677,949
	Surface Water Channels	1,764	1,764	km	23,993,662	14,705,440	399,865
Bridges & Railing	Bridges & Large Culverts	261	263	No	110,796,713	53,981,154	1,158,152
	Guard Rails	7,597	7,551	m	1,109,141	558,226	36,936
Retaining Structures	Retaining Walls	304	307	No	11,026,787	7,819,002	243,361
	Stock Underpass	3	3	No	337,801	287,009	2,815
Carriageway Lighting	Lighting Poles	277	281	No	1,047,194	341,302	41,888
	Lighting Brackets	902	761	No	218,411	51,485	7,793
	Lighting Lights	919	884	No	334,215	93,013	41,588
Traffic Facilities	Marking - Linear	991	979	km	203,968	33,427	33,427
	Marking - Symbols	1,648	1,754	No	184,706	59,201	57,897
	Signs	5,296	5,395	No	962,892	354,840	63,744
	Railings	7,512	7,583	m	581,208	346,901	19,366
Vegetation & Streetscapes	Berms	N/A	N/A		N/A	N/A	N/A
	Trees	N/A	N/A		N/A	N/A	N/A
Footpath, Pedestrian Accessways and Cycleways	Footpaths	69	69	km	11,242,135	4,757,579	195,211
	Vehicle Crossings	2,265	2,265	No	4,840,258	3,135,312	80,671
	Cycleways	N/A	N/A		N/A	N/A	N/A
	Totals				809,304,224	622,267,205	7,463,443

Notes: 1. This represents quantities as at 30 June 2017, and asset values are based on these quantities.

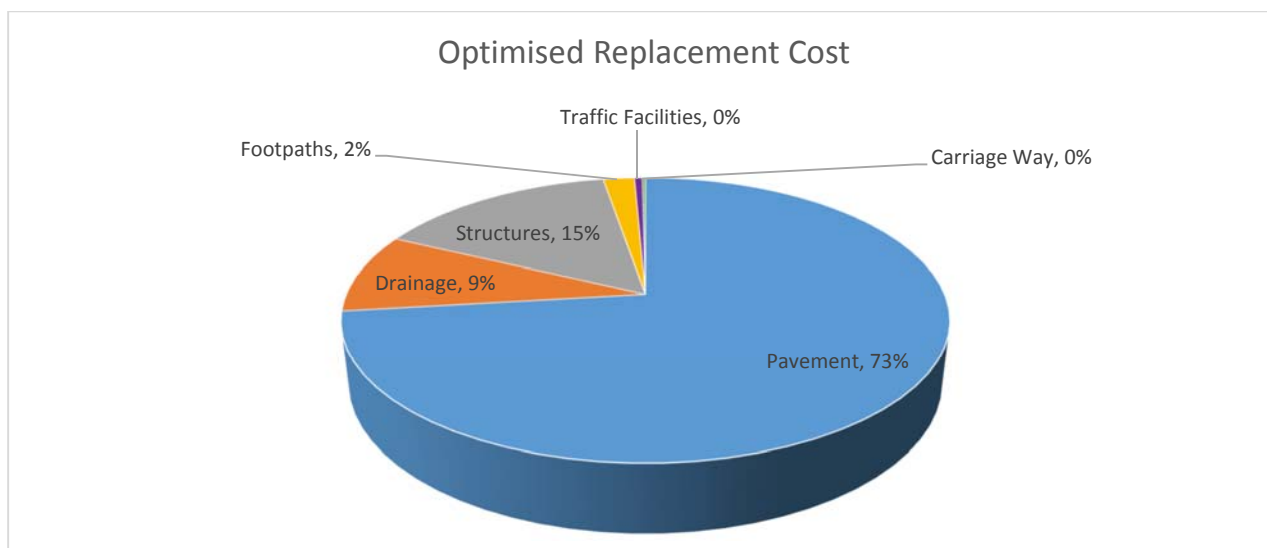
2. This represents asset quantities in RAMM data as at December 2017

3. ORC – Optimised Replacement Cost

4. ODRC – Optimised Depreciated Replacement Cost

5. AD - Annual Depreciation.

Figure 1: Optimised Replacement Cost by Asset Group



Public transport is provided and managed by the Hawke's Bay Regional Council and public transportation services are provided by commercial operators. As CHBDC does not own any public transport assets, these have not been included in the Life Cycle Management Plan.

Street furniture is managed and maintained through Council's Facility Management contract by the Utilities Division; therefore this has also not been included in the Life Cycle Management Plan.

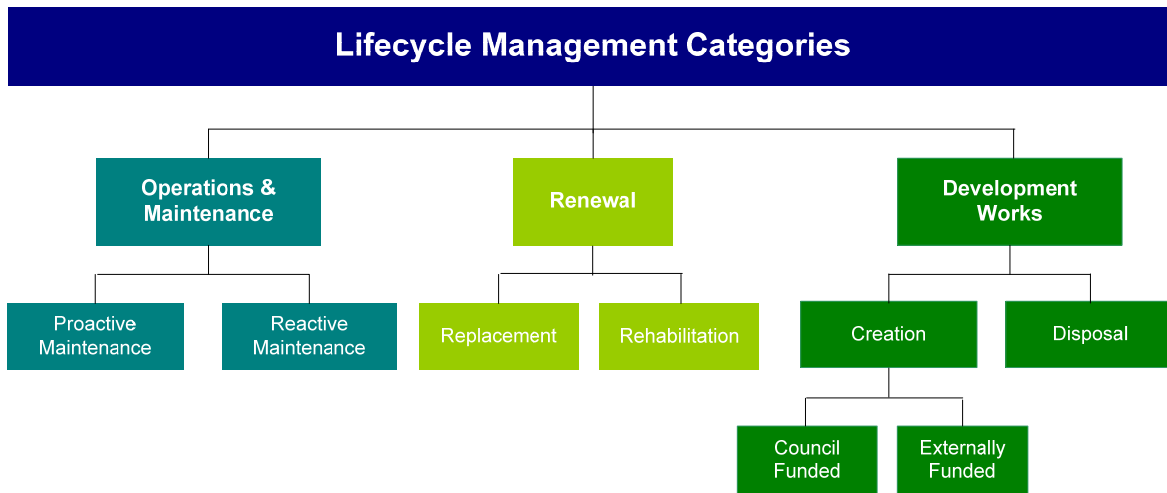
The Life Cycle Management Plan for each asset group includes:

- Overview
- Key Issues and Risks
- Business Case
- Physical Parameters - asset quantity, value, capacity/performance, condition and age
- Operations and Maintenance Plan
- Renewal Plan
- Development Plan
- Disposal Plan
- Asset Expenditure

6.1.3 Lifecycle Management Work Categories

The land transport lifecycle management works are categorised as shown below.

Figure 2: Land Transport Activity Lifecycle Management Work Categories



Operations and Maintenance

Operations and maintenance strategies cover the policies that will determine how the local transportation network will be operated and maintained on a day-to-day basis to consistently achieve the optimum use of the asset. Routine maintenance is the regular on-going day-to-day work that is necessary to keep assets operating, including instances where portions of the asset fail and need immediate repair to make the asset operational again. This work falls into two broad categories as follows:

- Proactive inspection and maintenance works planned to prevent asset failure.
- Reactive action to correct asset malfunctions and failures on an as required basis.

A key element of asset management planning is determining the most cost-effective blend of proactive and reactive maintenance.

Renewal Works

Renewal strategies are designed to provide for the progressive replacement of individual assets (or components) that have reached the end of their useful life. This is managed at a rate that maintains the standard and value of the network as a whole.

This programme must be implemented at adequate levels to maintain current levels of service and the overall quality of assets. Levels of expenditure on the cyclic asset replacement programme will vary from year to year, and will reflect:

- The age profile of the assets.
- The condition/performance profile of the assets.
- The ongoing maintenance demand.
- The differing economic/useful lives of individual assets comprising the overall system of assets.

Failure to implement an adequate cyclic renewal programme will be reflected in a decline in the overall standard of the network of assets. Where the actual programme falls below the cumulative budget target, the shortfall will be reflected in depreciation of the overall value of the network, resulting in a lower LoS and the need for more reactive maintenance.

Renewals are broken into two categories;

Replacement: Replacement as it implies involves renewing an asset by replacing it on a like with like basis. The deteriorated asset is removed and an equivalent asset replaced.

Rehabilitation: Rehabilitation is the process of upgrading major elements of the assets by modifying or rejuvenating them so as to render them able to deliver the original level of service.

Development Works

This includes creation of new assets (including those created through subdivision and other development) or works which upgrade or improve an existing asset beyond its existing capacity or performance in response to changes in usage or customer expectations. These works are Council initiated, community initiated or developer initiated. Asset development and asset renewal can occur simultaneously, however it is important to note that the purpose of asset renewal is to prevent a decline in the service potential of the assets. Asset development is concerned with the service improvements, measured by asset performance or asset extensions to provide for growth.

Table 2: Development Types

Development Type	Description
Growth	Any asset development (council funded) that is required as a result of growth.
Levels of Service	Any asset development that is required as a result of a change in service levels.
Legislative	Any asset developed out of legislative requirements
Vested	Any subdivision development that is required as a result of land development and vested in Council by the developers.

Disposal

Disposal is the retirement or sale of assets whether surplus or superseded by new or improved systems. Assets may become surplus to requirements for any of the following reasons:

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

6.1.4 Key Issues and Strategies

The key issues relating to the management of the transport activities are as follows:

Table 3: Key Issues related to Land Transport Activity

Key Issue	Description	Strategies to Address Key Issues
Safety	Safety and network Efficiency	<ul style="list-style-type: none"> The focus of capital projects is on improved network efficiency and safety improvements.
Community expectation	Increasing community expectations with regards to sealing roads at the urban periphery and providing better access for heavy vehicles.	<ul style="list-style-type: none"> Work with the community to prioritise spending such as from the minor improvement funds from NZTA and better targeted renewals
Increasing legislative requirements	Legislative requirements are increasing, particularly regarding transparency, and environmental and economic sustainability. Managing these increased requirements can incur additional cost.	<ul style="list-style-type: none"> Monitor legislative requirements.
Limited contractor interest	Despite work bundling, the infrastructure industry in New Zealand is stretched with a general shortage of experienced technical personnel, leading to limited contractor interest in provincial tenders and risk of uncompetitive prices.	<ul style="list-style-type: none"> Council's procurement strategy and not bundling of contracts.
Climate change effects	<p>The climate has changed and is expected to continue to change. There are longer periods of dry weather and more intense rainfall events leading to higher incidence of storm damage and increased effort to maintain road access. The District's steep topology and geology of soft papa makes it more vulnerable to increasing weather events.</p> <p>There are increasing requirements for sustainability across Council activities.</p>	<ul style="list-style-type: none"> Consider adding a climate change factor to the O&M forecast needs of the road network over the next 30 years (for example +0.5% factor per annum).
Changes in road usage	The very fragile network condition is susceptible to sudden changes in usage e.g. additional traffic demand and loadings from changes in government legislation (Heavy Commercial Vehicles).	<ul style="list-style-type: none"> Monitor network for changes in network condition
Pavement and surface deterioration	Deterioration of pavement and surfacing	<ul style="list-style-type: none"> The focus of the maintenance and renewals programme is on high volume roads to reduce the deterioration of pavement and surfacing
Footpath renewals	An aging and tree root affected footpath network requires the current substantial renewal investment to continue	<ul style="list-style-type: none"> Forward programming of planned maintenance and capital works. Implement a condition survey programme for footpaths. Formalise work procedures where tree roots conflict with footpaths. Property owners are responsible for the construction and maintenance of vehicle crossings to the Council standards (Vehicle Crossing Policy reviewed April 2015)
Impact of forestry industry	Impact of current and future forestry traffic on particularly the rural road pavements that have substandard pavement structure and geometry.	<ul style="list-style-type: none"> Undertake an investigation into the impact of forestry harvesting on rural roads.
Uneconomic roads	A number of sealed and unsealed rural roads service only one or two properties and have very low traffic volumes. However some of these roads do service profitable commercial primary industries which generate revenue for the District and the nation.	<ul style="list-style-type: none"> Consider social and economic sustainability by applying optimised decision making (ODM) to which parts of the network are uneconomic and should or should not be reduced. Network reduction can be achieved by: <ul style="list-style-type: none"> converting very low volume sealed rural roads to unsealed roads, to reduce the long-term

Key Issue	Description	Strategies to Address Key Issues
		<ul style="list-style-type: none"> cost of maintenance and renewals divesting very low volume unsealed rural cul-de-sac roads back to the adjacent landowners.
Aggradation and Degradation of issues of Culverts	Aggradation (river bed build-up) and degradation (river bed reduction) issues of culverts – maintenance concerns of gravel inflow and river bed build-up at outlets restricting flows.	Inspection to determine condition, causes, effects and possible solutions.
Aggradation and Degradation of issues of Bridges and Large Culverts	Aggradation (river bed build-up) and degradation (river bed reduction) issues of bridges and large culverts – maintenance concerns of gravel inflow and river bed build-up restricting flows.	Inspection to determine condition, causes, effects and possible solutions.
Retaining Structures	CHBDC's RAMM data base does not have a complete record exclusively for the retaining structure information.	CHBDC has been capturing new retaining structures into RAMM and where old structures are identified these will also be added to the asset register including condition information.

6.1.5 Data Confidence and Reliability

Confidence in asset data depends on both the accuracy and completeness of the data sets.

Table 4 and Table 5 below provide the framework (NAMS IIMM) used to determine the accuracy and completeness of asset data used in this AMP.

Table 4: Asset Data Accuracy Grade Framework

Confidence in Accuracy	Definition	Description
A – Highly Reliable	96-100% certain the correct asset data is captured in the Asset Management System	Data based on sound records, procedure, investigations and analysis, documented properly and recognised as the best method of assessment.
B - Reliable	76-95% certain the correct asset data is captured in the Asset Management System	Data based on sound records, procedures, investigations and analysis, documented properly but has minor shortcomings, for example the data is old, some documentation is missing, and reliance is placed on unconfirmed reports or some extrapolation.
C - Uncertain	51-75% certain the correct asset data is captured in the Asset Management System	Data based on sound records, procedures, investigations and analysis which is incomplete or unsupported, or extrapolated from a limited sample for which grade highly reliable or reliable data is available.
D – Very Uncertain	0-50% certain the correct asset data is captured in the Asset Management System	Data based on unconfirmed verbal reports and/or cursory inspection and analysis.

Table 5: Asset Data Completeness Rating Framework

Data Completeness	General Meaning
0 – 20%	The asset register contains minimal information about the assets with the majority of assets not listed at all
20 – 40%	About a third of the assets are listed, and/or about a third of the attribute information is listed
40 – 60%	About half of the assets are included in the asset register and/or of the assets included, only half the asset attribute data is included
60 – 80%	Most assets are included on the asset register with most of the relevant asset attributes
80 – 100%	The asset register contains a complete set of data for every known asset

Table 6 below indicates the confidence level of key asset information for each asset type. Note that Drainage, Bridges, Retaining Structures, Carriageway Lighting, Traffic Facilities, Vegetation and Streetscapes, Footpath, Vehicle Crossing and Cycleways are based on 2014 data. These results require ongoing validation and review.

Table 6: Asset Data Completeness and Accuracy

Asset Type	Data Completeness %	Confidence in Data Accuracy			Source
		Quantity	Age	Condition	
Pavement	86%	Uncertain	Reliable	Reliable	RAMM
Drainage	50%	Uncertain	Very Reliable	Uncertain	RAMM
Bridges	80%	Uncertain	Reliable	Reliable	RAMM
Retaining Structures	60%	Highly Reliable	Highly Reliable	Reliable	RAMM
Carriageway Lighting	90%	Highly Reliable	Highly Reliable	Reliable	RAMM
Traffic Facilities	60%	Uncertain	Uncertain	Uncertain	RAMM
Vegetation and Streetscapes	50%	Uncertain	Uncertain	Uncertain	RAMM
Footpath, Vehicle Crossings and Cycleways	80%	Reliable	Reliable	Reliable	RAMM

6.1.6 Method of Service Delivery

CHBDC maintains ownership and responsibility for managing the land transport activity and the associated infrastructure. Consultants are used to provide specific expertise and assistance as required.

Physical works contracts are let for the various aspects of roading maintenance. The current contracts let are included in



LIFECYCLE MANAGEMENT

Table 7.

Table 7: 2017/18 Physical Works Contracts

Contract No.	Contract Name	Responsibilities	Contractor
C-407	Line Marking	Line Marking	Osbourne Contractors
C-467	Street Light Maintenance	Street Light Maintenance	Pope Electrical
C-479	Reseals	Reseals	Higgins
C-481	Vegetation Control	Vegetation control	Bay Spray Ltd
C-503	Structural Maintenance	Structural Maintenance	Higgins
C-504	Structural Bridge Maintenance	Structural Bridge Maintenance	Downers
C-505	Road Network Maintenance	Road Network Maintenance	Downers
C-507	AWPT's 2016-18	Rehabilitations & AWPT's for sealed Roads	Russell Roads

Table 8: Forecast for Physical Work

Contract No.	Contract Name	Responsibilities	Contractor
C-479	Reseals	Network Reseals	Higgins
C-481	Vegetation Control	Vegetation Control	Bay Spray Ltd
C-505	Road Network Maintenance	Road Network Maintenance	Downers
C-527	Line Marking	Line Marking	TBC
C-528	Street Lighting	Street Lighting	TBC
C-529	Peel St, Nicholls Rd AWPT	Peel St, Nicholls Rd AWPT	TBC

Other Works

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

- Slip removal
- Flood damage repairs
- Minor Safety Works

6.1.7 Forward Work Programming

CHBDC develops and maintains a 10-year forward work programme to ensure effective and efficient service level delivery. This programme is mainly based on historical records, recent work practices, along with visual inspections of the network and incorporates outcomes of analysis tools such as the Treatment Selection Algorithm (TSA) and RIMS dTIMs (pavement performance modelling). The programme incorporates road sections requiring Area Wide Pavement Treatment (AWPT), resealing, metalling of unsealed roads and drainage requirements one year in advance of the reseat programme. The process details are included in the life cycle management plans for each asset group.

The current 10-year FWP for the network is included in the Financial Section.

6.2 Pavements

6.2.1 Overview

The purpose of road pavements is to provide a network that is suitable for the effective and efficient movement of vehicles and people. The pavement includes a suitable all weather surface that is appropriate for its intended function in terms of skid resistance and smoothness. It must have a structure that is strong enough to carry the anticipated traffic.

6.2.2 Key Issues and Risks

Table 8: Pavement Related Key Issues

Key Issue	Description	Strategies to Address Key Issues
Sealed road pavement condition	Sealed roads pavement condition data shows a deteriorating trend	Review and check if this trend is due to data collection survey methodology inconsistencies or actual physical pavement condition
Narrow unsealed roads	Unsealed roads are narrow and windy, with higher risk for car on car crashes	The Minor Capital Improvements programme and targeted maintenance.
Increase in heavy vehicles	Increasing number of heavy vehicles on roads due to increase in forestry extraction.	Minor Capital Improvements programme and continuous monitoring of asset condition

6.2.3 Business Case

CHBDC considers that it has a HIGH confidence level in its approach to pavement investment. This is demonstrated in the AMP which shows thorough processes and methods that CHBDC employs to justify investment decisions, including the development of its forward works programme (FWP) for pavement base renewals and resealing.

Investment in pavements is required because:

As the key asset of the land transport activity, pavements enable the public to travel safely, easily and efficiently through the district while maintaining good access to properties, businesses and other areas of interest. Pavements are critical infrastructure that enable growth of the economy and connectivity of diverse communities.

An analysis of the current investment includes:

- Pavements is the asset group with the largest expenditure. Pavement assets form 73% (\$593 M) of the total Land Transport Activity Optimised Replacement Cost and 58% (\$4.3 M) of the annual depreciation. The 2020/21 pavement maintenance, renewal and improvements budget is 53% (\$6.5 M) of the total Land Transport Activity Budget (\$12.3 M).
- Operations and Maintenance form 16% (\$2.01 M) of the 2020/21 pavement budget that includes Network, Asset Management and Overhead. CHBDC implements a maintenance strategy (Maintenance Intervention Strategy 2011), which ensures maintaining the pavement performance without consuming the asset leading to an unexpected increase in maintenance/renewal expenditure.
- Pavement Renewals form 65% (\$4.2 M) of the 2020/21 pavement budget that includes Network, Asset Management and Overhead. This includes about 1.4 km pavement rehabilitation at a cost of \$1.9 M and

about 70 km of sealed road resurfacing at a cost of \$1.9 M. About \$0.5 M is for metalling unsealed roads which is about 32% of the CHBDC's network.

- CHBDC's customer service requests information indicates that number of pavement related requests has been reduced over the years.

Processes and methods currently employed are described in the maintenance, renewals and capital works sections that follow and include:

- Comprehensive condition data analysis: The confidence level in pavement asset data including condition and performance data is reliable. This provides CHBDC with a good basis to support maintenance and renewal analysis and investment decisions.
- Focus and effort go into spending only what it needs to; to make better investment decisions to sustain the transport network in the long term; by targeting the right treatments, to the right places, at the right times and for the right costs.
- This is explained further in the maintenance and renewal strategies. The FWP's are jointly developed, challenged and validated by the key stakeholder groups; namely Council asset and network officers, together with their contractors and network consultants.
- RAMM TSA analysis to provide candidate sites
- Reconciliation is made with the previous FWP
- Known high or low priority sites are identified by CHBDC network managers, together with their contractors and network consultants
- Joint workshop and driveovers between CHBDC AM, their contractors and consultants to challenge and validate the candidate sites
- Assessment of backlog, which is currently considered as nil; that is, CHBDC is keeping up with pavement rehabilitation. With the increase in HCV's the District is experiencing a slight increase in the need for pavement rehabilitation.

Future enhancements to be considered to improve the business case include the following:

- Comparison of the renewal rate vs deterioration rate
- Top down check on historical trends for renewal quantities, costs, network LOS KPIs such as condition, performance and backlog.
- Top down check by comparison with annual depreciation rates.
- Top down check on the total asset type ratio of depreciated replacement cost with replacement cost (from the latest asset valuation). For example, in a stable, steady state network with no renewals backlog, one may expect to have a Depreciated Replacement Cost of half that of its Replacement Cost, and the annual renewals investment to match the Annual Depreciation. If these ratios are significantly different from these then there may be a story that needs explaining.

6.2.4 Physical Parameters

Roading Hierarchy

Table 9 below shows the CHBDC's proposed road hierarchy system to match with the One Network Road Classification. The implementation timeframes and steps are detailed in Section 2: Introduction.

Table 9: One Network Road Hierarchy

One Road Network Hierarchy	Description	Length - km	Typical Daily Traffic (AADT)	
			Rural	Urban
Arterial	These roads make a significant contribution to social and economic wellbeing, link regionally significant places or industries, and may be the only route available to some places within the region. In urban areas they may have significant passenger transport movements and numbers of cyclists and pedestrians using the road.	0.57	<3,000	<5,000
Primary Collector	These are locally important roads that provide a primary distributor/collector function, linking significant local economic areas or areas of population. They may be the only route available to some places within the region and in urban areas they may have moderate passenger transport movements and numbers of cyclists and pedestrians using the road.	0.75	<1,000	<3,000
Secondary Collector	These are roads that provide a secondary distributor/collector function, linking local areas of population and economic sites and may be the only route available to some places within this local area.	268.40	<200	<1,000
Access	Carry only local traffic, primary function is to provide access to private properties	550.99	<200	<1,000
Low Volume	Carry only local traffic, primary function is to provide access to private properties but have low traffic volumes.	443.69	<50	<200
Total		1,264.40		

Length of Network

The roading network physical data is contained within the RAMM database. This information is continually updated as roads are resealed or rehabilitated, and new roads are added to the network through subdivision development. CHBDC's sealed and unsealed roading network is summarised below.

Table 10: Roothing Network Distribution

	Rural	Urban	Total (km)
Sealed	794	68	862
Unsealed	401	2	403
Total	1,195	70	1,264

Pavement Components

Road pavements comprise three major asset components:

- **Formation:** The Formation layer is essentially the natural ground material that the carriageway structure is formed upon. Formation is considered to have an indefinite life and is therefore not depreciated over time.

- **Pavement Layers (Basecourse and Subbase):** The basecourse is the layer of material immediately beneath the surface layer and it provides load distribution and contributes to the sub-surface drainage. The subbase is the filler between basecourse and the road formation and the primary function of this layer is to provide structural support.
- **Road Surface (Sealed and Unsealed):** This layer can comprise a variety of materials. The type of pavement surface used generally depends on the traffic volume and mix of traffic using the road (noise, dust, safety and appearance may also be significant factors).

Road Surface Types: CHBDC's road network is largely Rural (about 95%) and has relatively low traffic volumes. The road network includes the following surface types:

Asphaltic Concrete: Mix of graded aggregate and asphaltic binder laid in a 25 mm – 40 mm layer. This is hard wearing and provides a quiet and smooth running surface. This surface type is limited to urban areas (i.e. high traffic volume roads around Waipukurau) and CHBDC has only less than a kilometre of Asphaltic Concrete roads.

Chipseal: Two layers of sprayed bitumen with stone chips spread on each bitumen layer as a running surface. The life cycle for chipseal surfacing varies dependent on the chip size used (small chip means less bitumen that can be sprayed as the waterproofing membrane) and by traffic volume. In a racked in seal, the binder is applied followed by a relatively light application of the big chip and then a smaller chip is applied that sits between the larger chips. CHBDC has a considerable amount of Racked in Seal surfaces (about 51 km). The construction time required for this surface type is less (approximately 8 hours) comparatively, hence reduces the traffic delays due to construction works. Having no bitumen exposed to tyres, this reduces the chip pick and flick and minimises the risk of bitumen tracking.

Unsealed (Metal Running Course): About one third of CHBDC roads are unsealed with a graded metal top surface. Unsealed roads are mostly low trafficked and with low loadings. The clay bound wearing courses provides a life span of about 5 – 7 years depending on the traffic volumes and loadings.

Other: CHBDC has a small percentage of roads with other surface types such as dry lock seal, slurry seal and void fill seal.

6.2.5 Asset Value

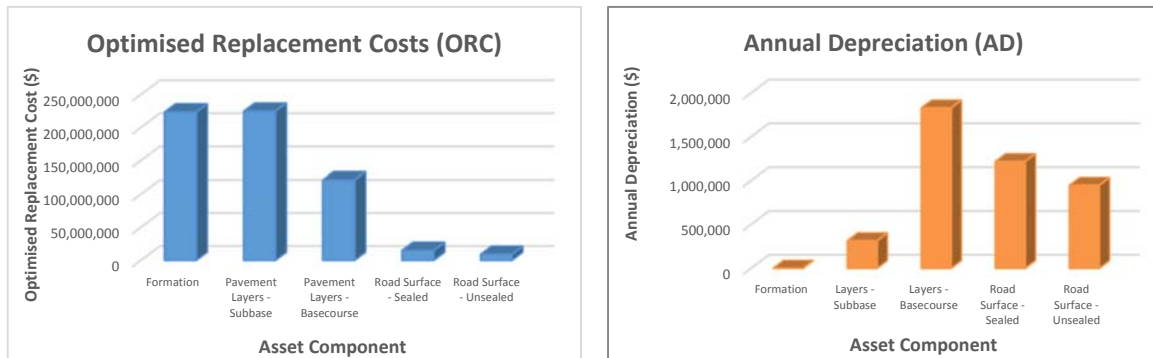
Table 11 and Figure 3 below indicate the values of these pavement components as at June 2017.

Table 11: Value of Pavement Asset Components

Asset Component	Quantity	Units	Optimised Replacement Cost (\$)	Optimised Depreciated Replacement Cost (\$)	Annual Depreciation
Formation	1,259	km	223,338,608	223,338,608	0
Pavement Layers - Subbase	1,259	km	224,526,579	214,598,752	313,299
Pavement Layers - Basecourse	1,259	km	121,173,074	64,748,826	1,827,754
Road Surface - Sealed	856	km	14,900,372	7,363,112	1,216,977
Road Surface - Unsealed	403	km	8,978,133	1,299,413	945,255

Asset Component	Quantity	Units	Optimised Replacement Cost (\$)	Optimised Depreciated Replacement Cost (\$)	Annual Depreciation
Totals			592,916,766	511,348,710	4,303,285

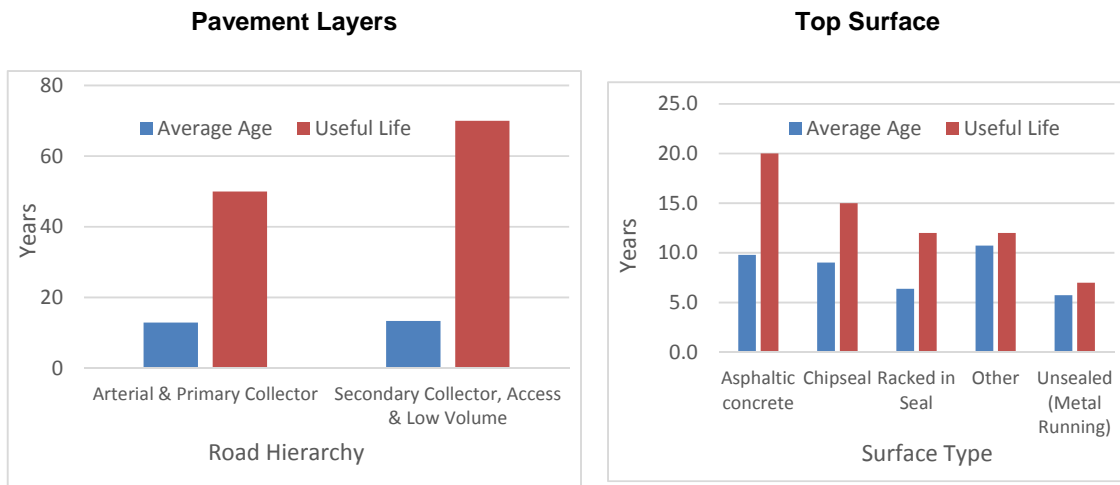
Figure 3: ORC and Annual Depreciation – Pavement Components



From the information provided above, it is shown that Formation accounts for 38% of the ORC. Formation is non-depreciable (have an indefinite useful life). The ORC of Road Surface (sealed and unsealed) accounts for about 5% of the ORC. However this contributes to 50% of Annual Depreciation. This is due to its shorter useful lives compared to road pavement layers.

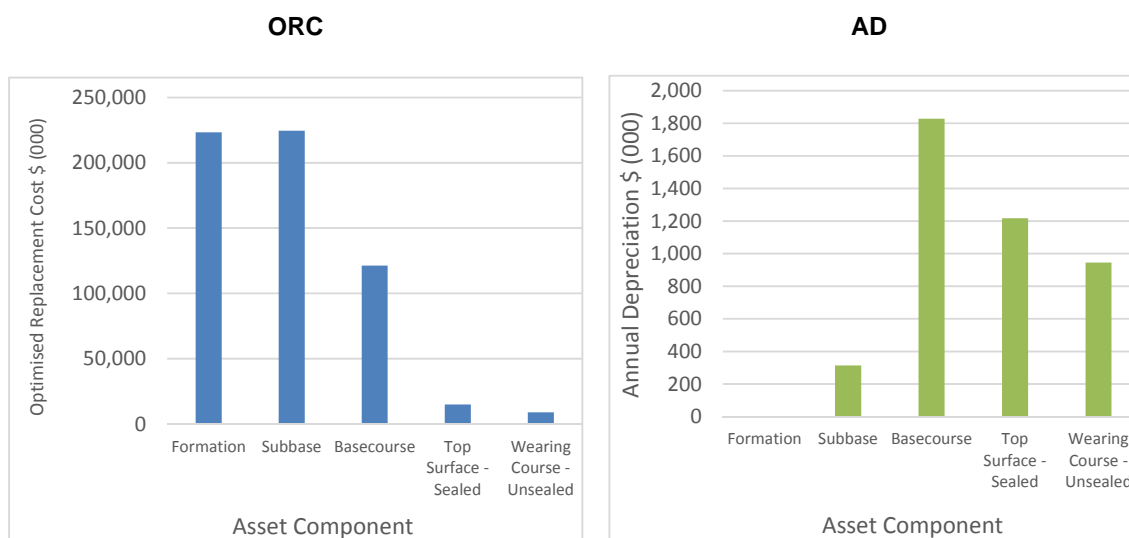
6.2.6 Asset Age

Figure 4: Average Age & Useful Life – Pavement Components



The above graphs indicate that pavement layers have not passed one fourth of their expected useful lives while pavement surfaces are very closer to their end of lives. Availability of asset age may have an impact on these comparisons. Most of the data is for layers recently added. Surface date is available for all the surfaces recorded in RAMM.

Figure 5: ORC & AD – Pavement Components



6.2.7 Asset Condition

Pavement condition is measured via the RAMM Rating Survey and Roughness Survey. Physical faults are continuously recorded over a representative portion of the carriageway. Capturing condition at any one time is complex because of the constant wear, and for comparative purposes it is more meaningful to chart the trends from year to year.

Condition Rating

The sealed road network previously has been “Visually Condition Rated” annually on the following basis:

- 10% of High volume roads (ADT > 500) annually
- Low volume roads (ADT < 500) one third of the entire length each year

A full network survey was completed to include all low volume roads in 2008, 2010, 2013, 2015 and 2017. With the introduction of the ONRC classification providing a nationally consistent road classification hierarchy all historic and current data has been aligned to the new classification.

For the purpose of accessing Asset Condition of the network the high volume roads were selected under the following classifications:-

- Arterial
- Primary Collector; and
- Secondary Collector

Condition rating involves visually inspecting 10% of the high volume road network at regular intervals, with the rating process identifying types of pavement and surface faults as listed below. Figure 5 shows the historical trends by fault type. Condition of the underlying road base, road surface and road edge is shown by the following fault types:

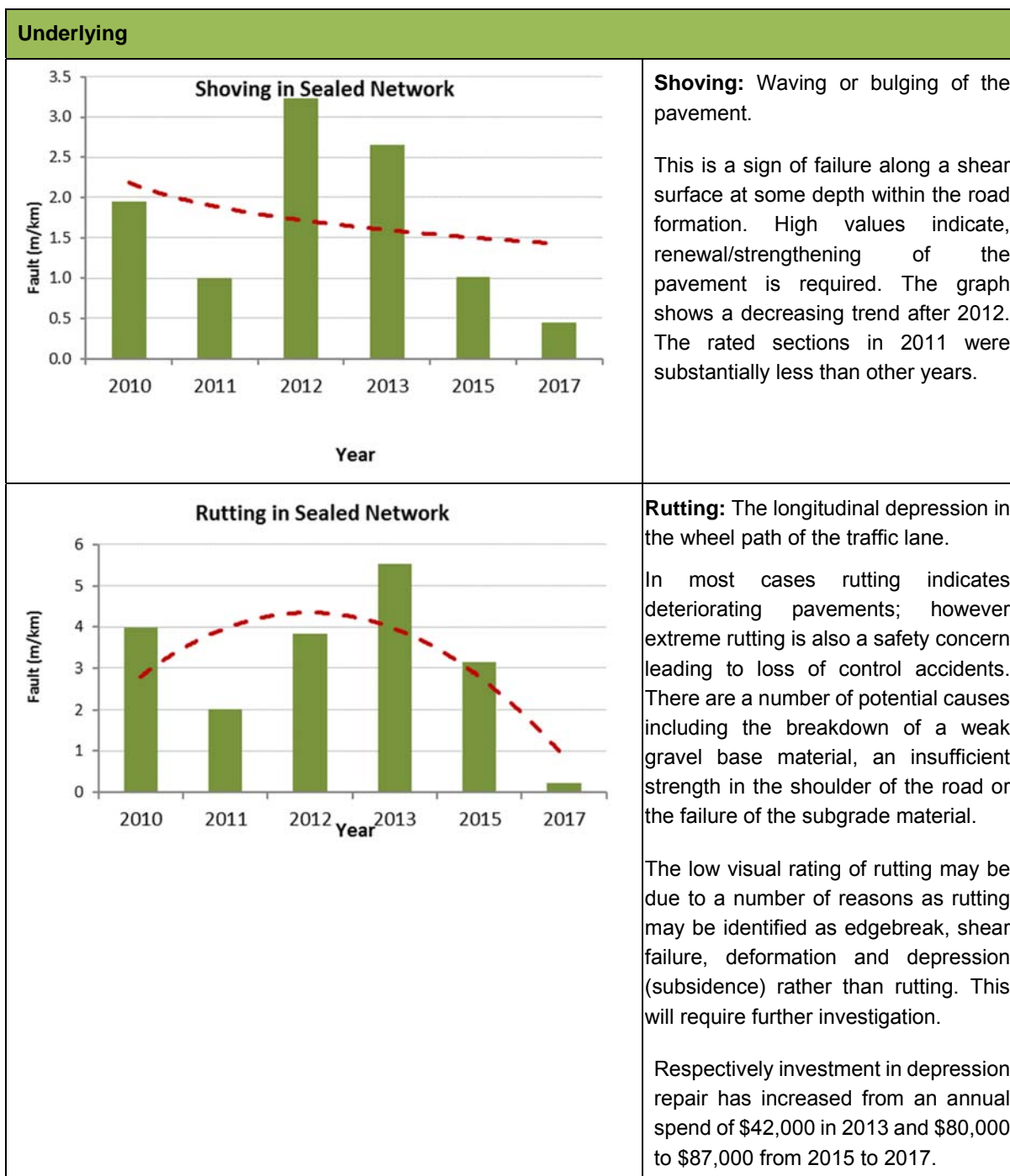
- Underlying
 - Shoving (shear failure)
 - Rutting >30 mm

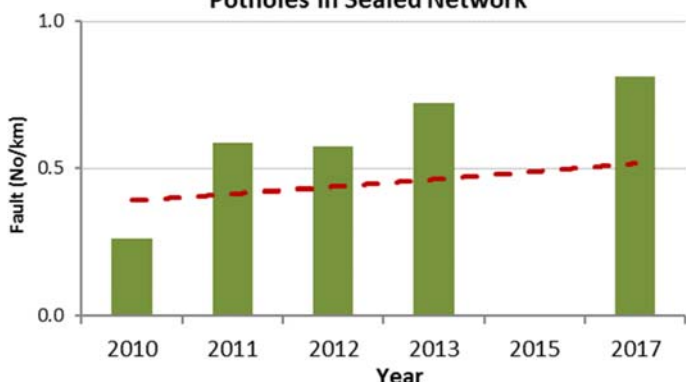
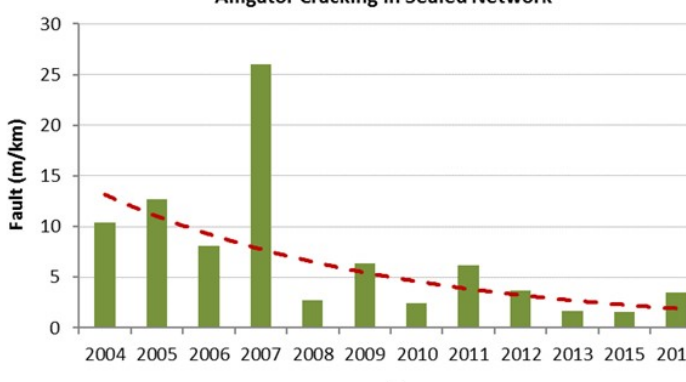


LIFECYCLE MANAGEMENT

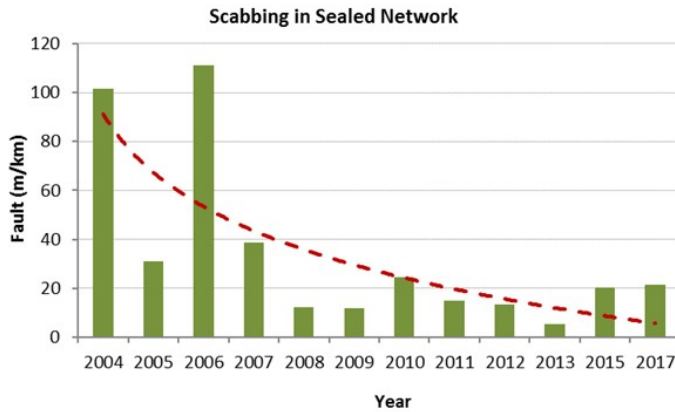
- Potholes/pothole patches
 - Alligator cracking
- Surface
 - Scabbing
 - Flushing
- Edge
 - Edge break/Edge break patches

Figure 6: Pavement & Surface Faults



<p>Potholes in Sealed Network</p>  <table border="1"> <thead> <tr> <th>Year</th> <th>Fault (No/km)</th> </tr> </thead> <tbody> <tr> <td>2010</td> <td>0.25</td> </tr> <tr> <td>2011</td> <td>0.55</td> </tr> <tr> <td>2012</td> <td>0.55</td> </tr> <tr> <td>2013</td> <td>0.7</td> </tr> <tr> <td>2015</td> <td>0.45</td> </tr> <tr> <td>2017</td> <td>0.8</td> </tr> </tbody> </table>	Year	Fault (No/km)	2010	0.25	2011	0.55	2012	0.55	2013	0.7	2015	0.45	2017	0.8	<p>Pothole: A hole in the pavement, resulting from loss of pavement material caused by the action of traffic and in some cases insufficient camber.</p> <p>This is one of the indicators of a resealing requirement. The graph shows a slight increase trend of number of potholes through to 2017. Potholes have increased despite increased investment in repair work from \$500 in 2011 to \$5,000 in 2017. The increase in potholes and subsequent expenditure is largely related to logging haulage. It is recommended that the funding level be reviewed.</p>												
Year	Fault (No/km)																										
2010	0.25																										
2011	0.55																										
2012	0.55																										
2013	0.7																										
2015	0.45																										
2017	0.8																										
<p>Alligator Cracking in Sealed Network</p>  <table border="1"> <thead> <tr> <th>Year</th> <th>Fault (m/km)</th> </tr> </thead> <tbody> <tr> <td>2004</td> <td>10</td> </tr> <tr> <td>2005</td> <td>12</td> </tr> <tr> <td>2006</td> <td>8</td> </tr> <tr> <td>2007</td> <td>26</td> </tr> <tr> <td>2008</td> <td>2</td> </tr> <tr> <td>2009</td> <td>6</td> </tr> <tr> <td>2010</td> <td>2</td> </tr> <tr> <td>2011</td> <td>6</td> </tr> <tr> <td>2012</td> <td>3</td> </tr> <tr> <td>2013</td> <td>1</td> </tr> <tr> <td>2015</td> <td>1</td> </tr> <tr> <td>2017</td> <td>3</td> </tr> </tbody> </table>	Year	Fault (m/km)	2004	10	2005	12	2006	8	2007	26	2008	2	2009	6	2010	2	2011	6	2012	3	2013	1	2015	1	2017	3	<p>Cracking: The appearance in the road surface of small, regular, or irregular shaped continuous cracked areas. Cracking includes alligator (or chicken wire) cracking, block cracking, reflective cracking, longitudinal and transverse cracking, shrinkage cracking and slippage cracking. Cracking occurs when pavements are subjected to repeated loadings causing flexing and ultimately cracking. The increase in Alligator cracking from 2015 most probably reflects the growth in heavy vehicle and traffic loading.</p> <p>Investment in cracking repair has been reduced from \$14,000 annually in 2014 to \$5,000 for the last two years. This funding level needs to be reviewed in light of the increase rate of cracking observed in 2017.</p>
Year	Fault (m/km)																										
2004	10																										
2005	12																										
2006	8																										
2007	26																										
2008	2																										
2009	6																										
2010	2																										
2011	6																										
2012	3																										
2013	1																										
2015	1																										
2017	3																										

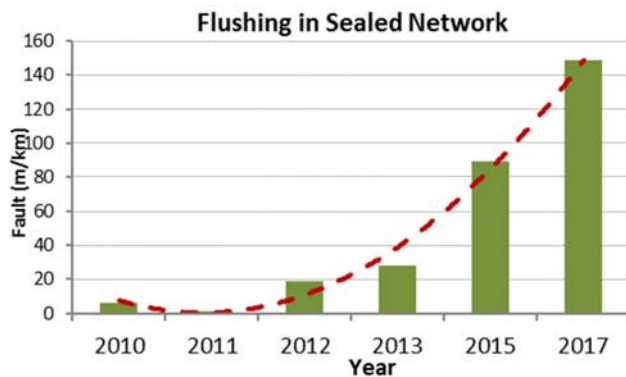
Surface



Scabbing: The progressive loss of chip from a chipseal, often in patches.

Can be exacerbated by cold weather and the action of increased traffic. Mostly scabbing will occur through poor construction technique, methodology or programming. This can be due to poor compaction, low binder application, rain within the first few days of the sealing.

Other factors such as traffic travelling too fast over the new seal, dirty or poor graded chip or aging of the seal. The graph indicates an increasing trend of scabbing after 2013, which can be attributed to the increase in heavy vehicle and traffic loading combined with the age of some of the seals.

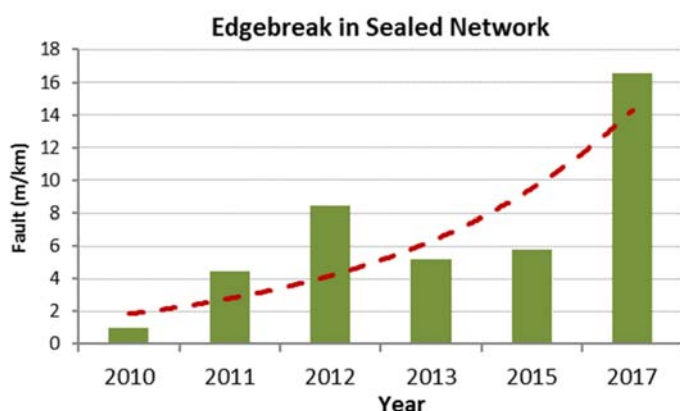


Flushing: A pavement surface defect in which the binder is near or above the uppermost surface of aggregate particles.

Flushing can occur due to excess binder used during sealing, hot weather causing the binder to melt or surface chips getting pushed down by traffic into a softened basecourse.

Flushing will occur through poor construction technique and methodology and programming. This can be due high binder application, insufficient compaction of the basecourse layer and rain within the first few days of the sealing. The graph indicates an increasing trend of Flushing after 2013, which can be attributed to the increase in heavy vehicle and traffic loading.

Edge



Edgebreak: Fretting or breaking of the edge of a bituminous surface.

The edgebreaks are a sign of inadequate pavement width. High values indicate, seal widening is required. There is an increased amount since 2013. Two aspect may have influenced this;

- In the last few years the Council has started considerable chemical control of its edge of seal environments which reduced the effect of the binding effect of vegetation, thus reducing edge strength.
- Wheel damage to seal edges caused by increase in over-width heavy vehicles.

Edgebreak is worsening since 2013 despite increased investment in repair work from \$14,000 to \$79,000 over the last 3 financial years. The increase in edgebreaks and subsequent expenditure is largely related to logging haulage. It is recommended that the funding level be reviewed.

Roughness

All sealed roads are measured for roughness on the same frequency as the condition rating. All of this data is entered into the RAMM database. Road roughness as defined in terms of NAASRA (National Association of Australian State Roading Authority) roughness counts that can be used as a comparable indicator of road condition and performance. These counts are measured by either a laser profilometer or standard response meter (CHBDC historically had used this method).

Figure 6 below shows the average roughness per road category and year surveyed as well as the lane length surveyed each year.

Prior to 2008 predominantly only full surveys were undertaken. Full surveys were carried out in 2008, 2010 and 2017. The year's in-between had part surveys carried out, however all High Traffic volume roads were surveyed each year.

Some variability in those years that were part surveyed is apparent and Figure 7 gives a more realistic view especially when comparing trend results that are showing in the visual condition graphs.

Figure 8 and Figure 9 below shows the cumulative roughness distribution by road category for 2017 survey.

It is worth noting that the Arterial and Primary Collector ONRC classified roads have not met their respective ONRC target of returning 95% of their length with less than 100 NAASRA counts.

The roads for both these classifications are part of the State Highway and CBD By- Pass routes through the Waipukurau township and therefore subjected to extremely high traffic volume and traffic loading requirements. Currently the 1.3 km total length of these roads are being analysed for 'fast tracking' within Land Transport FWP.

Figure 9 indicates the percentage of road network above 90 NAASRA. Excluding Arterial and Primary Collector classifications 90% of the network is below 130 NAASRA average and 95% of the network is below 150 NAASRA average.

Figure 7: Historic Road Roughness

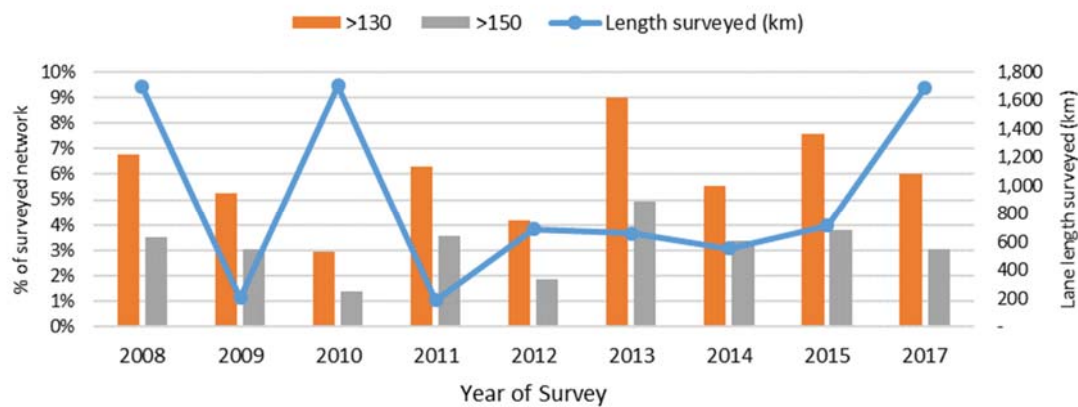
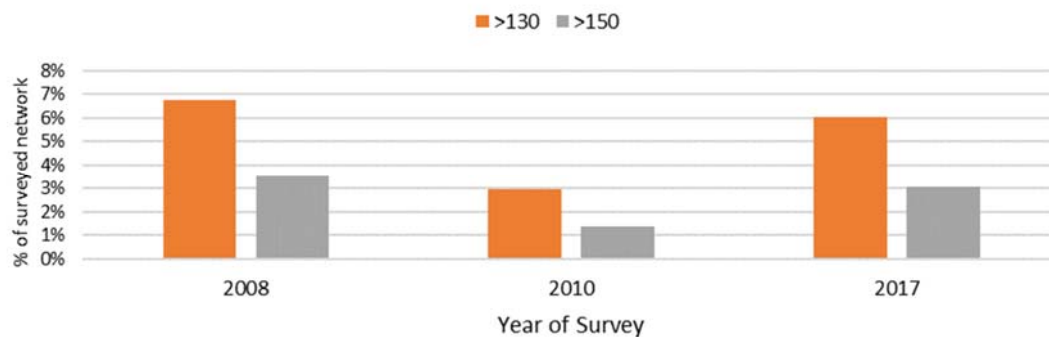


Figure 8: Historic Road Roughness



Cumulative Roughness Distribution 2017 Survey

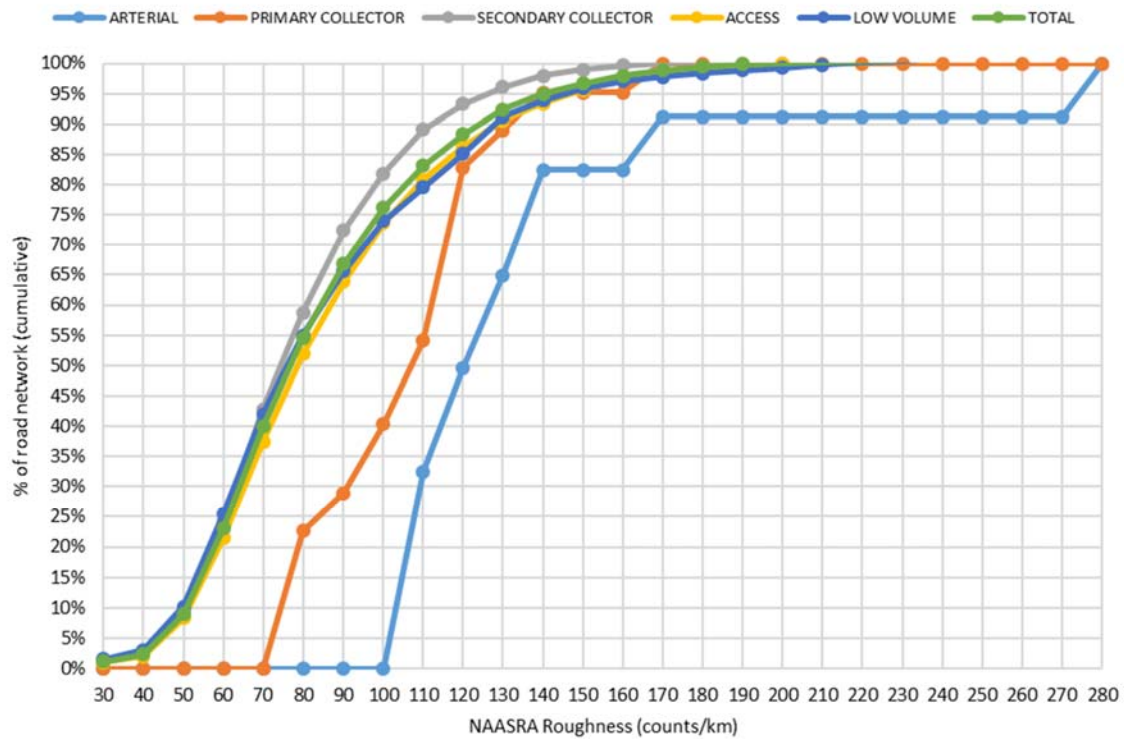
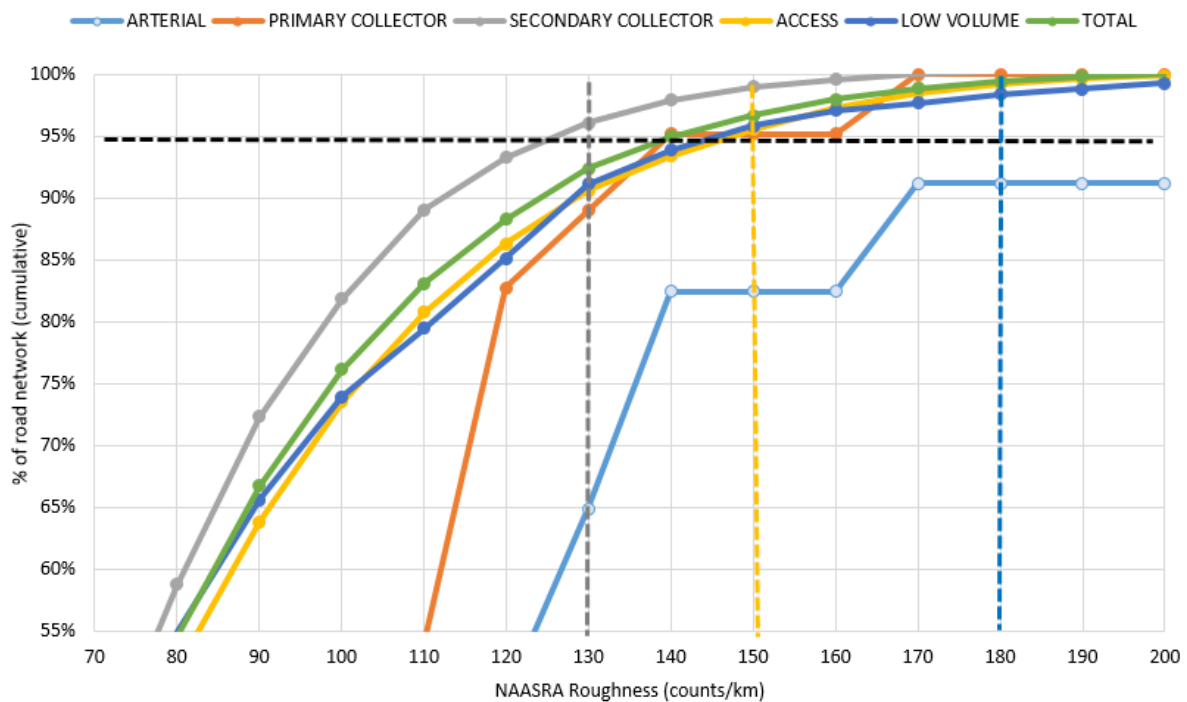


Figure 9: Cumulative Roughness Distribution 2017 Survey (Roughness > 90NAASRA)





LIFECYCLE MANAGEMENT

Figure 9 shows ONRC target on Secondary Collector Rural was reached with 95% of the network with Roughness less than 130.

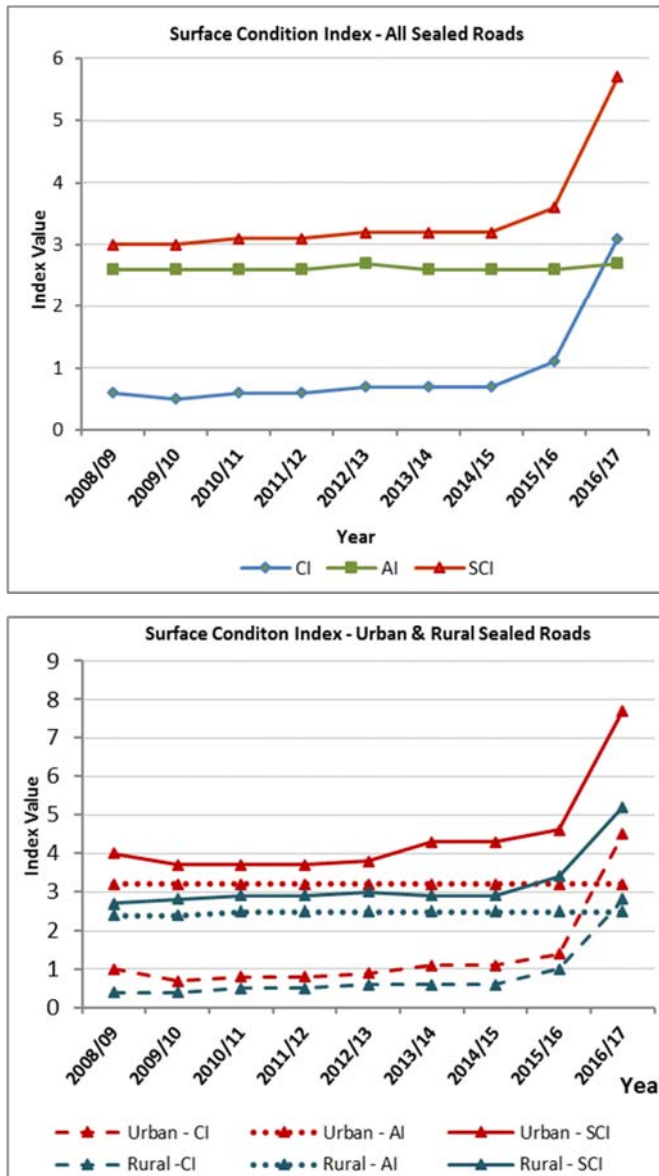
Figure 9 also shows ONRC target for Access (Urban and Rural) was reached with 95% of network with Roughness less than 150.

In addition, Figure 9 shows ONRC target for Low Volume Rural was reached with 95% of network with Roughness less than 180.

6.2.8 Asset Performance:

NZTA has introduced KPI's called Surface Condition Index (SCI), Pavement Integrity Index (PII) and Smooth Travel Exposure (STE) which are based on visual condition rating and roughness survey outputs.

Figure 10: Surface Condition Index (SCI)



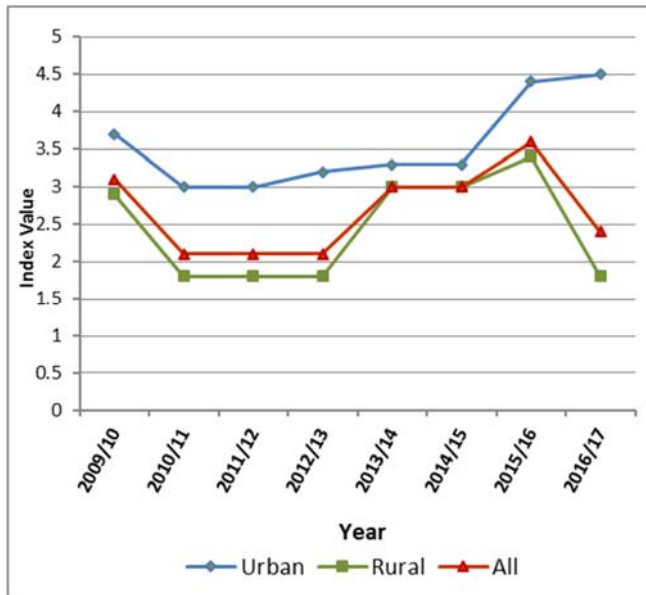
SCI is a composite index that describes the network surface condition and allows easy comparison of historical and future surface conditions. This has two key components:

The Condition Index (CI) is a 'weighted sum' of the surface faults in sealed road surfaces. It combines alligator cracking, scabbing, potholes, pothole patches, flushing and is based on RAMM condition rating data.

The Age Factor Index (AI) of the surface is based on surfacing remaining life held in RAMM.

The SCI is used to trigger resurfacing or reseal treatments. The graphs indicate a significant drop in CI from 2008/09 onwards and a steep climb from 2015/15 through 2016/17. According to SCI values, Rural road network is in a better condition than Urban roads. The steep increase between 2015/16 and 2016/17 is due to increase in Flushing and the change in traffic profile with the log harvesting as shown in the visual condition rating graphs. CHBDC's will need to target the network where log harvesting is compromising SCI targets to flatten out trendlines.

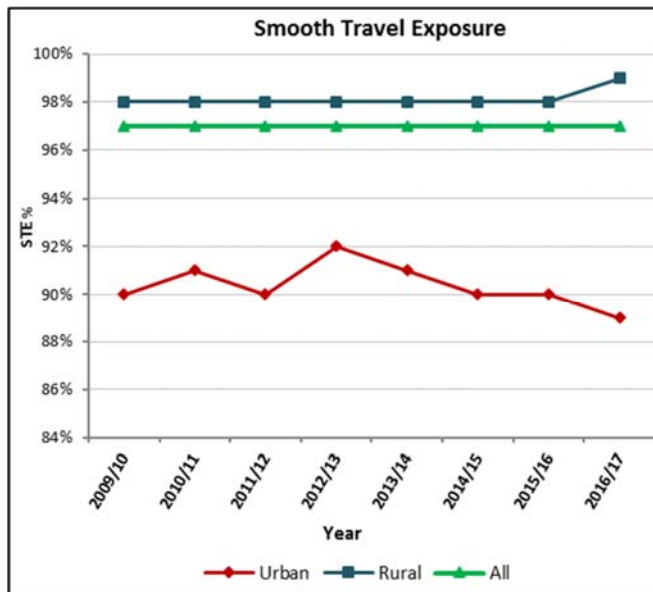
Figure 11: Pavement Integrity Index (PII)



PII is a combined index of pavement faults in sealed road surfaces. It is a “weighted sum” of the pavement defects divided by the total lane length. It combines surface faults from SCI with rutting and shoving.

CHBDC’s target is to maintain PII within a range of 1 – 2. The graphs in Condition Ratings section indicate a decreasing trend for Shoving and Rutting after 2006. However, the reduction from 2015/16 is not easy to analyse as an increasing trendline would be expected when considering the SCI, roughness and condition rating trends. Further investigation is required to check the veracity of the data by desktop and field validation to understand whether the pavement rehabilitation needs are being met.

Figure 12: Smooth Travel Exposure (STE)



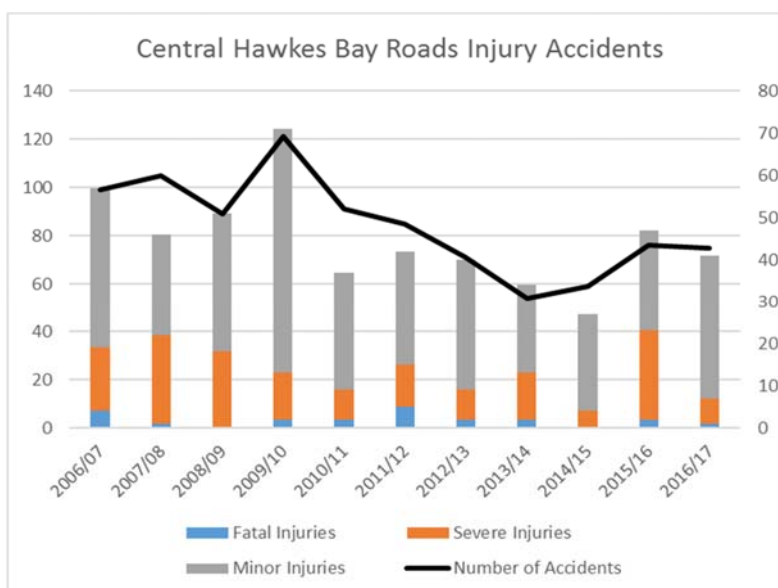
STE is defined as the proportion of vehicle kilometres travelled each year on roads with condition above the targeted conditions for those roads. An increase in STE means that fewer vehicles are travelling on roads above the target roughness (as shown on CHBDC rural roads in 2016/17). For the purpose of the NZTA reviews, the target roughness is generally taken as 150 NAASRA. A roughness greater than 150 NAASRA usually indicates poor road condition.

6.2.9 Road Safety

Road safety is a key levels of service measure for CHBDC. The Council intends to maintain a reducing trend in the annual number of fatalities and serious injuries where road factors were a contributing factor (refer section 3: Levels of Service).

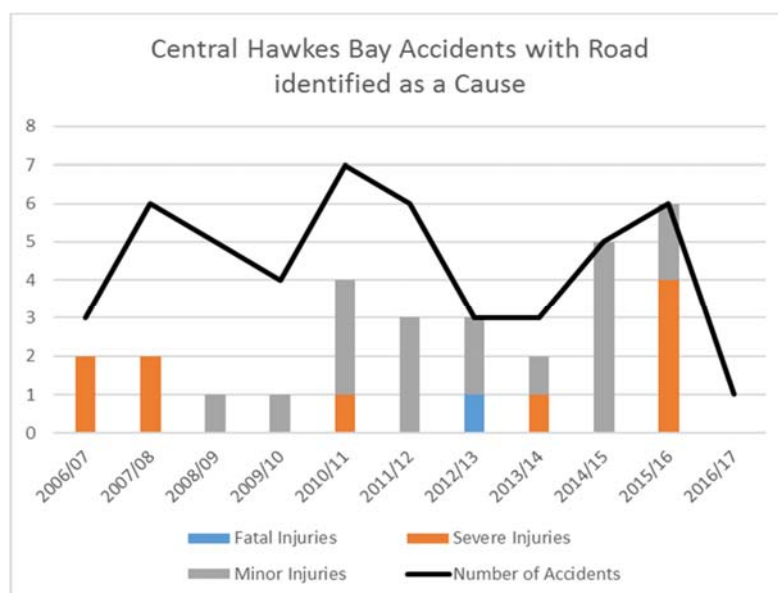
The figures below set out the number of minor, severe and fatal injuries on CHBDC roads since 2006. Figure 12 indicates the accidents due to any reason (i.e. human errors, vehicle faults, road defects, etc.) while Figure 13 indicates the accidents where the road is listed as one of the causes.

Figure 13: Total accidents and injuries in CHBDC area since 2006/07



Source: NZTA Crash Analysis System – CAS (highways assumed as NZTA responsibility and excluded)

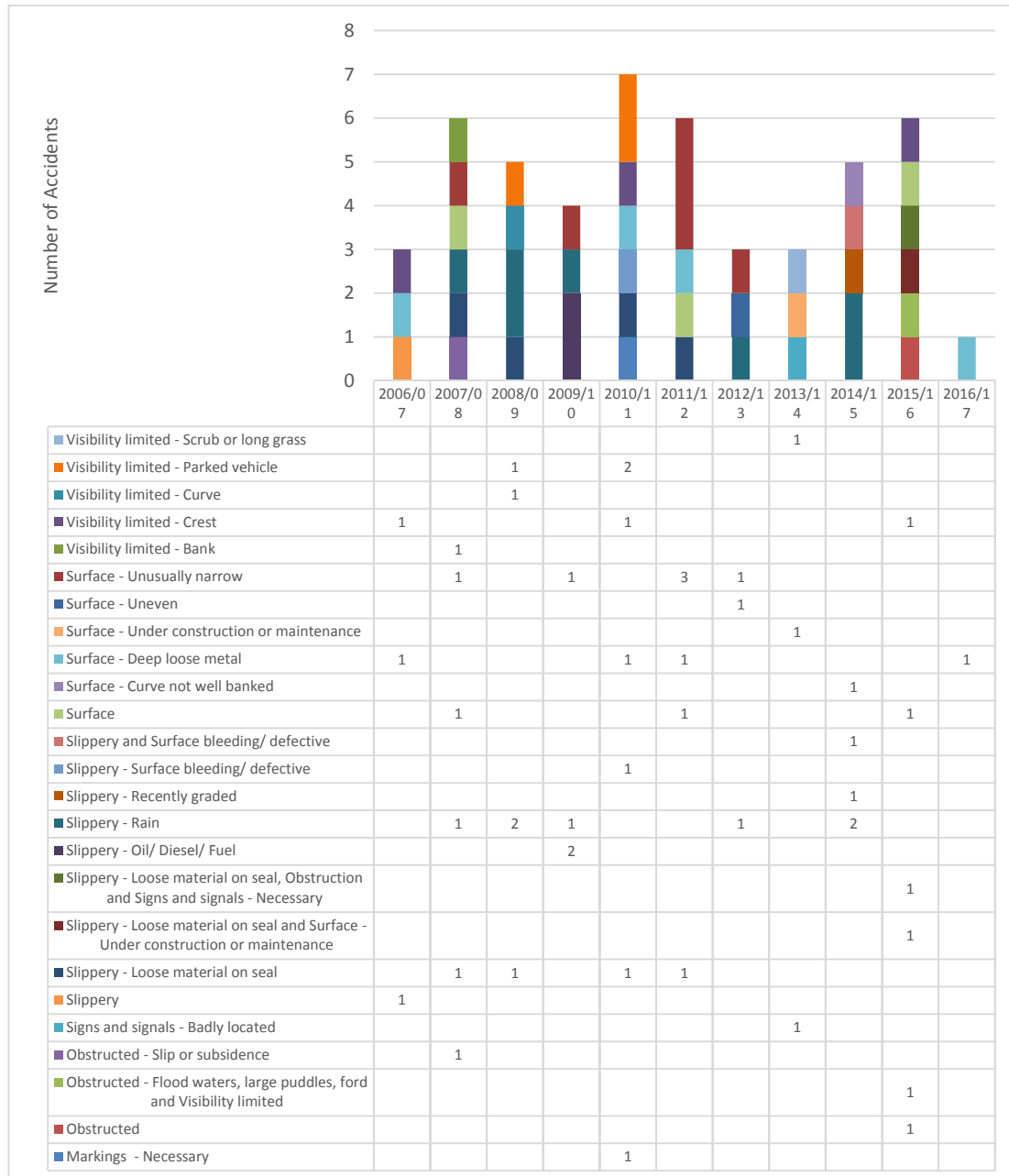
Figure 14: Accidents and injuries in CHBDC where the road is listed as one of the causes



Source: NZTA Crash Analysis System – CAS (highways assumed as NZTA responsibility and excluded)

Figure 14 below provides a breakdown of the cause for accidents where the road is listed as one of the causes of the accident. Over the data period “Visibility Limited” (which includes scrub or long grass, parked vehicle, curve, crest and bank) caused the most accidents (24). This is followed by “Slippery” (19 accidents) and “Surface” (16 accidents). Overall accidents caused by road related issues have been reduced since 2006.

Figure 15: Road Related Accidents – Contributory Causes



Source: NZTA Crash Analysis System (CAS) - highways assumed as NZTA responsibility and excluded)

6.2.10 Asset Capacity

Asset capacity is linked to two factors:

- Traffic volume
- Loading
- Pavement depth and Wearing Course (for unsealed roads)

Traffic volume relates to the space being consumed whereas loading relates to the amount of wear on the carriageway.

The ability of the carriageway to carry design capacity is related to width, which impacts on safety. Analysis of the RAMM database indicates a considerable length of the roading network is under width compared to the design standard adopted to date. Therefore, Council may choose to review its design standards and levels of service delivery in terms of road width design, Annual Daily Traffic (ADT) classification and the available funding levels.

Typically where the unsealed pavements are lowly trafficked (< 100 ADT) and loadings are low (< 4% heavy vehicles) the application of the wearing course works well. Where volumes are high and loadings start to exceed 4% heavy vehicles the unsealed pavements require higher levels of maintenance.

The clay bound wearing courses are providing between 5-7 years of life dependent on the volumes and loadings.

6.2.11 Operations and Maintenance Plan

The overall Life Cycle Management Plan Objective for pavement maintenance is:

Sealed Pavements:

To maintain the network through continued pavement maintenance programming and approval based on the Maintenance Intervention Strategy, to ensure the efficient and economic allocation of maintenance funds.

Unsealed Pavements:

Undertake a practice of running/wearing course application based on a rate of loss of 10mm per year to protect against loss of basecourse material leading to asset consumption.

Undertake a practice of performance grading determined by need based on past experience, environmental condition, moisture and weather patterns.

CHBDC is committed to achieve these objectives by providing scheduling and approving pavement maintenance work to:

- ensure that pavement treatments (i.e. repair of failed pavement) are well planned and co-ordinated with regard to type of work, timing and location so as to optimise the use of available funds and hence the performance of the pavements
- Reflecting good pavement management practice, against which actual achievement can be measured and controlled

- Provide guidance on treating and understanding the mechanism of failure and treating the cause rather than the symptom. The right treatment selected reflects the standards to match the road classification / whole of life requirements.
- To maintain the integrity of the pavement and surfacing as the appropriate treatment is applied, rather than the easiest and most commercial advantageous treatment which in most cases does not treat the cause but only the symptom.

CHBDC's Maintenance Intervention Strategy 2011, sets out the guidelines for all pavement maintenance activities including justifying preventive versus reactive maintenance, determining the right treatment and timing to suit with the seasonal changes.

Sealed Pavement Maintenance

The Routine Maintenance Plan (RMP) is based on information and knowledge at the time of preparation. The volumes of work determined are calculated from knowledge in the roading industry and the input of local knowledge and experience.

As more knowledge is gained and recorded, the trends in amount of work required will become apparent, and combined with an assessment of the levels of service being provided, more accurate projections of work requirements can be defined.

The RMP relies upon the Maintenance Intervention Strategy which contains decision processes for identifying service level failures and the right treatments. These decision processes drive the quantum of routine maintenance completed on the network and ensure an economic approach to routine maintenance expenditure.

In compiling the original Pavement Management Strategies it was identified that increased output levels in some roading maintenance areas were needed to bring the cycle of maintenance up to a sustainable level.

Previous investment by Council has seen the pavement reconstruction backlog reduced through increases in sealed road rebuilding, water tabling, flanking and unsealed pavement rebuilds. This investment, particularly in reseals, has seen a reduction in the amount of rehabilitation now required to sustain the network.

CHBDC's intended level of annual pavement renewal is 6-8 km (according to Forward Work Programme). The current level of investment is considered adequate to maintain the current condition of the roading assets and so long as this is sustainable then the risk of any future accumulation of deferred maintenance is considered to be low.

The key objective is to achieve network condition in line with the levels of service established in Section 3. This will be achieved by appropriate maintenance levels and timely pavement renewal and resurfacing.

Storms and Other Events

The level of maintenance described in this Maintenance Plan is adequate for normal climatic events in Central Hawke's Bay. Large storm events typically five yearly, cause damage to the roading network through flooding, slipping and subsidence. Summer shrinkage of clay subgrades in the Easter areas of the network has led to pavement deformation. It is possible that major earthquakes could damage roads and bridges. The remedial works required after such events will be assessed at the time, and the funding for repairs will be met from adverse events funds and catastrophic events funds held by Council, combined with subsidy money from NZTA.

Unsealed Pavement Maintenance

Grading of unsealed roads is very much an art rather than a science. The application of deterioration modelling to such a changing environment is difficult and would be uneconomical at this stage of development.

The frequency of maintenance grading had historically been targeted at is 3,200 km per annum, but with the implemented metalling (wearing course) strategies in conjunction with the unsealed rebuild programme reduced the need for reactive grading maintenance to a length of 2,500 km. The length graded in 2016/2017 was 2,198 km and the scheduled length for 2017/2018 is 2,040 km.

6.2.12 Renewal Plan

Pavement renewal activities include:

- Sealed road surfacing: maintain a waterproof and skid-resistant road surface
- Pavement reconstruction: repair the faults in a failing road by excavating the old one reconstructing it back to new condition.
- Pavement rehabilitation: repair the faults in a failing road by building a new road over the top of the old one, using the old one as a base.
- Unsealed road metalling includes the application of running and base course metal to strengthen unsealed roads.

Sealed Road Resurfacing

The Lifecycle Management Plan objective for Sealed Road Resurfacing is:

To maintain a waterproof pavement through regular renewal of the top surface based on need and condition and to ensure that the expected life of the surface is realised

CHBDC has been continuously improving its forward work programme for resurfacing. As a result CHBDC has reduced its annual resealing length over the years. Currently annual road resurfacing target is about 70 km at an average cost of \$1.9 M.

The current resealing programme is considered sufficient to limit the risk of resurfacing sites becoming badly deteriorated to a point where rehabilitation is required at substantially increased costs.

Surfacing Renewal Decision Process

The renewal decision process is outlined below. Timing is dependent on the severity of one or all of these factors.

(a) Identify failure modes, including the following:

- Cracking
- Shallow shear – due to unstable surfacing layers. These are generally areas that have 3 or more seal layers.
- Flushing – current service levels are defined as continuous “SLICK” patch of 10 m in corners or on approach to intersections and 15 m on straights.

(b) Review condition indicators

- Age – dependent of surface type and loading. Grade 5 chip seal irrespective of hierarchy will have a life no greater than 6 years.
- Pavement loading – traffic volumes and movement types (e.g. urban intersections experience a large amount of turning movement)
- Underlying surface layers – number of underlying surface layers and condition of underlying surfaces prior to sealing
- Council may consider a collection of high speed texture data.

(c) Assess economic indicators – increasing maintenance costs, shortening surface lives.

(d) Waterproofing aids in protecting portions of the sealed network where aggregate pavement layers have a high silt / Optimum Moisture Content (OMC) ratio from gravels sourced from local quarry sources verses those of alluvial river gravels. There is a greater chance of pavement failure where OMC ratios are exceeded in silt based aggregates verses alluvial aggregates.

6.2.13 Forward Work Programme

The confident level of CHBDC's FWP for sealed road resurfacing is "High". The table below summarises the inputs and outputs of the programme.

Forward Work Programme Process – Resealing of Sealed Roads

Inputs	Outputs
<ul style="list-style-type: none"> • 2017 GHD dTIMS modelling output: This has a limited value and accuracy level is around 75%. • Treatment Selection Algorithm (TSA): This is a built in algorithm in RAMM which provides treatment information for two years • Carry over from previous year FWP: Previous year FWP recorded in RAMM NOMAD programme is exported to develop the FWP. • Priority 1, 2, 3 maintenance inspections: Resealing requirements identify during maintenance inspections are fed into the pavement rehabilitation programme. • Historical maintenance costs from RAMM • Roughness survey information (NAASRA values): Road roughness is detailed in Section 6.2.4. • Condition survey information: Rutting, shoving, potholes and cracking (these are detailed in Section 6.2.4. • Road usage: Traffic counts, loading data, logging roads (expected road usage) • Road hierarchy • Validation (timing of work) with utility projects • Local knowledge • Site validation: FWP developed based on above information is site validated. This helps to 	<ul style="list-style-type: none"> • Pre reseal repairing and drainage requirements • 10-year resurfacing programme

Inputs	Outputs
incorporate local knowledge and integrate the pavement rehabilitation programme with planned utility projects.	

Pavement Rehabilitation

The Lifecycle Management Plan objective for **Pavement Renewal** is:

To undertake pavement maintenance renewal work on a whole of life cycle cost basis determined by condition and economic need

CHBDC has a confident and robust approach for developing pavement rehabilitation 10-year FWP. In the recent past, on average CHBDC rehabilitates about 1.4 km of road pavements annually at a cost of approximately \$1.9 M. This approach is currently being reviewed with the dTIMS initiative.

Levels of fault will be monitored and compared to the renewal programme to ensure that the residual life of the pavement at network level is not being consumed. Forward Work Programme need to be justified in terms of NZTA and Council funding policy, including having a positive Net Present Value (NPV) over a period of 25 years. The table below summarises the inputs and outputs of FWP.

Forward Work Programme Process – Pavement Rehabilitation

Inputs	Outputs
<ul style="list-style-type: none"> 2010 Opus dTIMS modelling output: This has a limited value and accuracy level is around 50%. Carry over from previous year FWP: Previous year FWP recorded in RAMM NOMAD programme is exported to develop the FWP. Priority 1, 2, 3 maintenance inspections: Pavement rehabilitation requirements identify during maintenance inspections are fed into the pavement rehabilitation programme. Roughness survey information (NAASRA values): Road roughness is detailed in Section 6.2.4. Condition survey information: Rutting, shoving, potholes and cracking (these are detailed in Section 6.2.4). Pavement strength information or at the least pavement layer knowledge at the time of digout repairs, culvert installations and pothole investigations. Road usage: Traffic counts, loading data, logging roads (expected road usage) Road hierarchy Site validation: FWP developed based on above information is site validated. This helps to incorporate local knowledge and integrate the pavement rehabilitation programme with planned utility projects. 	<ul style="list-style-type: none"> Tree removal identification Project Feasibility Report NPV

Pavement Rehabilitation Renewal Decision Process

The renewal decision process is outlined below and relies on number of engineering inputs inclusive of the long term pavement performance modelling.

(a) Identify failure modes, including the following:

- Potholing
- Cracking – pumping fines and loss of shape

- Shoving in top pavement layers
- Rutting – this is not a big driver but there is some isolated deep rutting on the network, generally on Arterial and Distributor roads, so this is associated with higher traffic loadings
- Road under width
- Subsidence areas (weak subgrade or slope instability)

(b) Review condition indicators – roughness

(c) Assess economic indicators – maintenance costs

(d) Dependent on treatment type, justification for treatment is based on benefits from travel time savings, roughness reduction and accident savings. These are considered at the time of treatment justification.

(e) Meeting the requirements for NZTA to secure approval and funding.

In all cases, the requested expenditure needs to be approved by Council. This is an iterative process and Council are informed each year of the programme status, the amount of funding required and the impacts of not funding to the requested amount on the levels of service.

Renewal Plan for Unsealed Roads

The overall Lifecycle Management Plan objective for Unsealed Pavement Renewal is:

Through regular investigation of the pavement depths on the unsealed network, develop a programme of unsealed metal rebuilds on a priority basis to protect against asset consumption.

To undertake a practice of running/wearing course application based on a rate of loss of 10 mm per year to protect against loss of basecourse material leading to asset consumption.

Unsealed Road Metalling

Maintenance metalling is the replacing of lost wearing course (WC) / base course (BC) through the life of the unsealed pavement and is not to be confused with the application of running course used for the protection of the WC/BC pavement layer. Wearing course is a clay bound, aggregate material mixed to a specific grading envelope. It is placed and compacted in a minimum 50 mm layer and acts the same as a seal coat acts on sealed roads, protecting and waterproofing the BC. Unsealed road metalling sometimes uses aggregates from local quarries that have high clay bound materials that are sensitive to moisture that can turn slushy in wet conditions. In these instances, it is recommended that a low grade sealing chip be used to address this issue.

The national “Rule of Thumb” for WC loss equates to 10 mm of depth per year. Based on this average a 5-7 year return cycle is anticipated, where a minimum 50 mm layer will be placed on each return.

Previously the FWP had included 60 km of WC application per year. This was based on applying 95 mm depth for roads with an average width of 7 m. Therefore, the target length per year is 30 km of road metalling and an increased return life cycle of 8 years. The 30 km equates to approximately 20,000 m³ volume of wearing course per annum.

It is imperative that the current unsealed road metalling regime is continued to protect the unsealed asset from further deterioration.

Unsealed Pavement Rehabilitation

For unsealed pavements, rehabilitation takes the form of road rebuilds. Recently 8-10 km of unsealed road has been rebuilt each year. This target may change based on funding constraints.

Traction seals will be carried out where they meet the criteria of being the least cost maintenance option (having positive Net Present Value over 25 years). These sections are typically in mountainous terrain with regular movement of stock trucks in and out of farms. These sections typically require high maintenance costs to maintain access. The network has successfully used recycled asphaltic concrete millings to stabilise unsealed pavements on gradient inclines as a substitute to recognised traction seals.

Unsealed Pavement Renewal Decision Process

(a) Identify failure modes, including the following:

- Flat road profile
- Exposed sub-grade
- Heavily loaded

(b) Review condition indicators

- Potholes
- Rutting
- Corrugation

(c) Assess economic indicators – Increasing maintenance costs, continued wearing course application short lives

6.2.14 Development Works Plan

Capital works are those works that create a new asset that did not previously exist or work which will upgrade or improve an existing asset beyond its present capacity. They may result from growth, social or environmental needs. Assets may be acquired at no direct cost to the organisation (i.e. sub divisional development).

It is anticipated that in the near future new roads generated from subdivisions will be added to the network.

Where the work can be justified through project evaluation, seal widths will be increased to meet the requirements of ONRC. The large majority of the network is under width based on current standards.

Seal Extensions

The overall Lifecycle Management Plan objective for seal extension is:

Seal unsealed road sections if only absolutely required

In order to justify these seal extensions, maintenance costs and accident history are used to determine a Benefit Cost Ratio (BCR) to provide justification for each project to proceed.

The majority of the roads included in the FWP are low volume and do not have specific traffic counts applicable. On a case by case basis, as these projects are to be justified, special counts will be completed to confirm estimated traffic flows.

Currently there are no identified seal extensions in the CHBDC's 10-year work programme.

The Council has a "Dust Suppression Policy" where on application the adjacent land owner can fund 200 m section of sealing outside their property. The Council also acknowledges NZTA's new seal extension criteria where if locations meet these conditions then Council will fund its cost share.

6.2.15 Disposal Plan

Disposal is any activities associated with disposal of a decommissioned asset, including sale, demolition or relocation. For example, redundant road reserve following realignments is usually transferred to adjoining landowners. Under this plan there is no requirement for Asset Disposal for the sealed network.

6.2.16 Road Pavements Expenditure

The figures below sets out the 2015-18 three year annual average, the LTP 10 year expenditure forecast and the 10 year average forecasted expenditure until 2037 for operations and maintenance, renewal, and improvements expenditure for pavements. Refer to section 7.5 for the key assumptions these figures are based on.

Figure 18: Pavement Total Expenditure

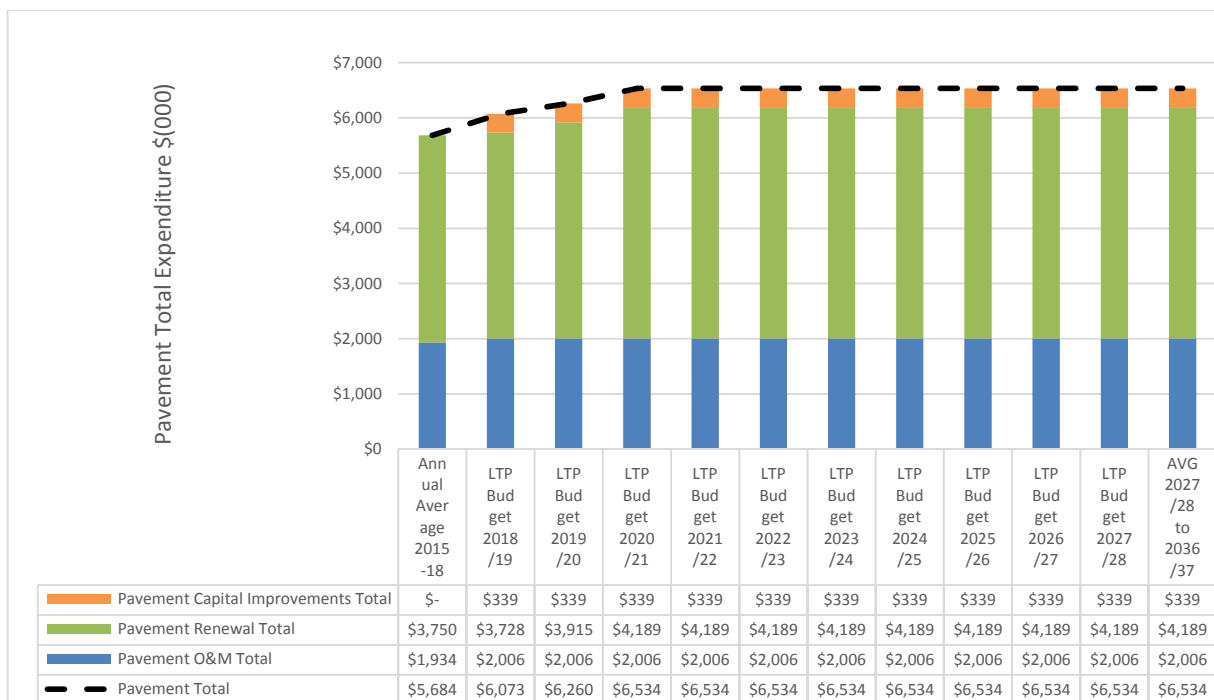


Figure 19: Pavement Operations and Maintenance Expenditure

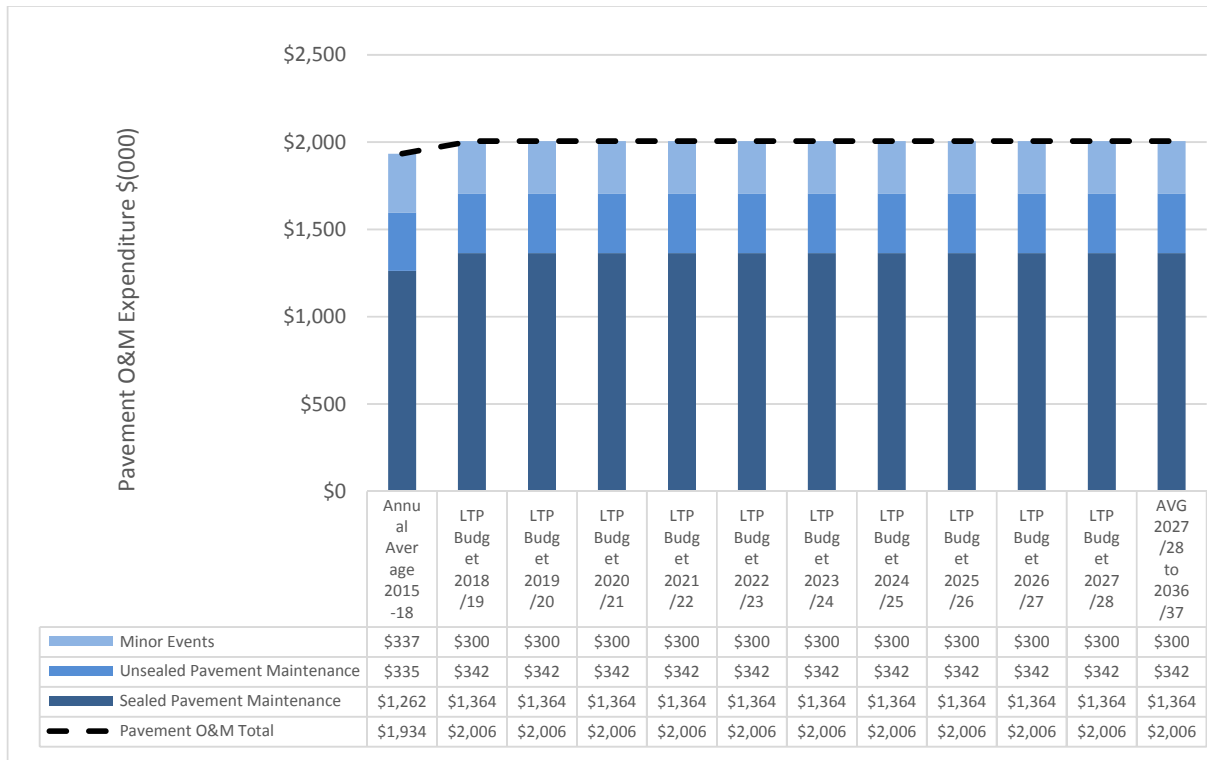


Figure 20: Pavement Capital Renewal Expenditure

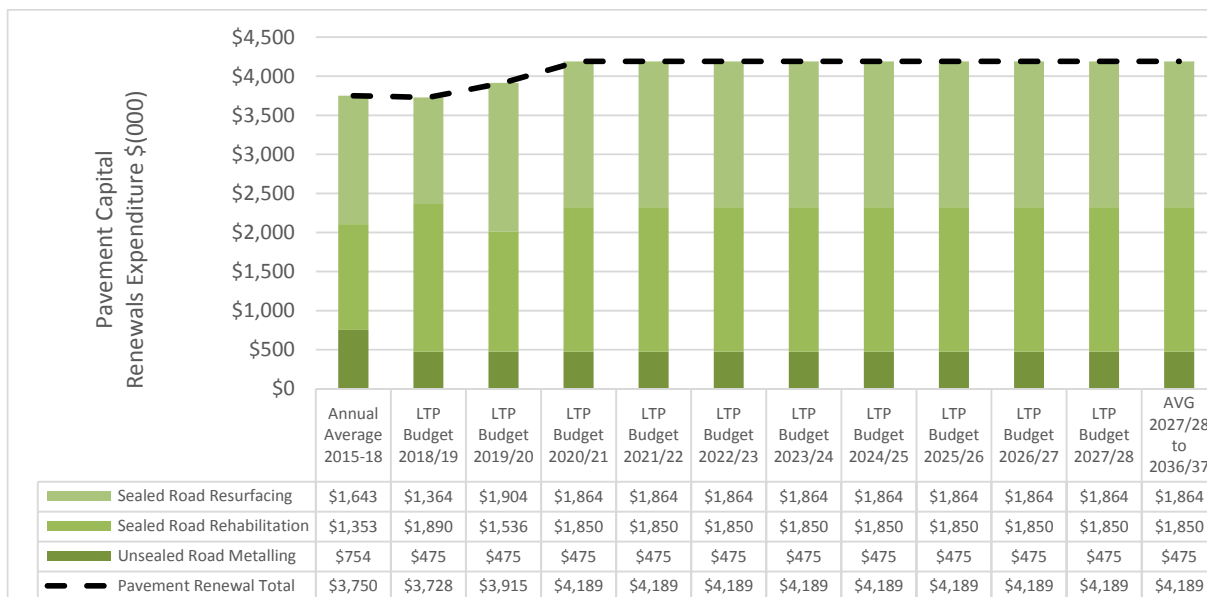
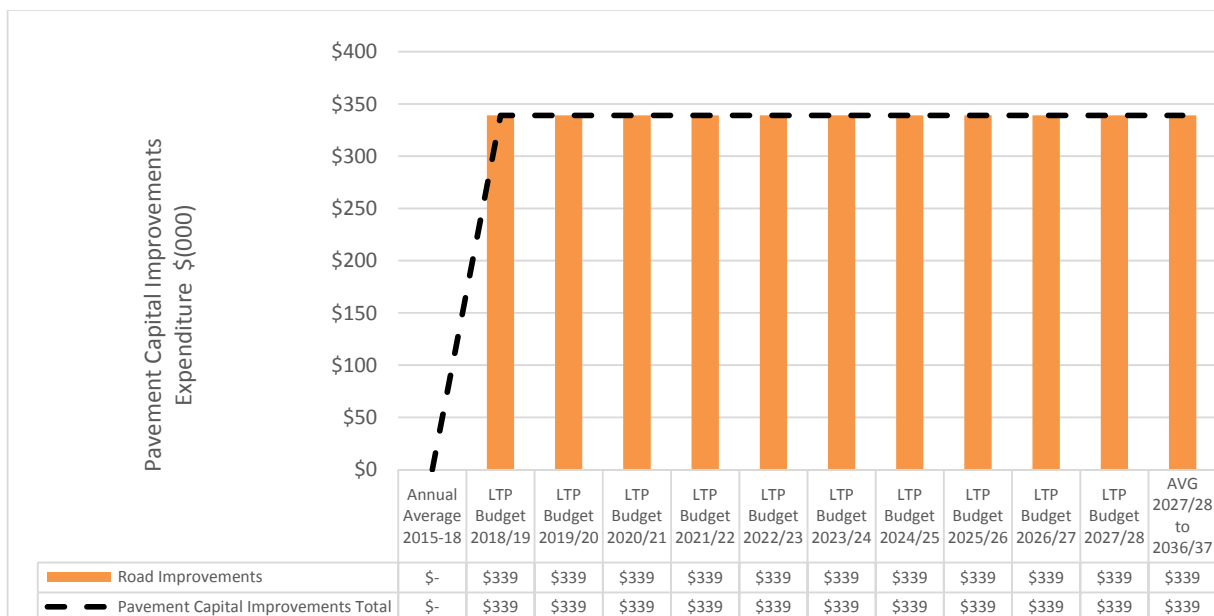


Figure 21: Pavement Capital Improvements Expenditure



6.3 Pavement Drainage

6.3.1 Overview

Drainage assets managed under the Land Transport Activity includes culverts (less than 3.4 m², note larger culverts are included in LCMP for Bridges & Guardrails), manholes, sumps, flushing eyes, kerbs and channels, and surface water channels.

Drainage assets provides an integral to the integrity of the pavement network and to provide a level of protection to property from flooding.

6.3.2 Key Issues and Risks

Some of the key life cycle management issues that affect drainage facilities are:

Key Issue	Strategies to Address Key Issues
Undersize Culverts	Increased capacity during renewals
Deep drains adjacent to road edge.	Repositioned in conjunction with pavement renewals.
Aggradation (river bed build-up) and degradation (river bed reduction) issues of culverts – maintenance concerns of gravel inflow and river bed build-up at outlets restricting flows.	Inspection to determine condition, causes, effects and possible solutions.

6.3.3 Business Case

CHBDC considers that the confidence level of its approach to pavement drainage investment is “Moderate”. CHBDC has identified areas for improvement, which are included in the Improvement Plan section.

Investment in drainage asset is required because:

- Drainage assets provide an essential service to the integrity of the pavement network and to provide a level of protection to road infrastructure and property from flooding.
- Good drainage is one of the key aspects to ensuring the integrity and serviceability of the Districts pavement assets. Adequate drainage infrastructure is essential for reducing the networks vulnerability to flood damage.
- The reduction in drainage related service requests, reflects the implementation of drainage renewal programme.

An analysis of the current investment includes:

Drainage assets form 9% (\$72.8 M) of the total Land Transport Activity Optimised Replacement Cost and 14% (\$1.1 M) of the annual depreciation.

The 2018/19 total drainage budget (maintenance, renewal and improvements) is 14% (\$1.6 M) of the total Land Transport Activity Budget (\$11.7 M). Drainage is the Land Transport Activity asset group with the fourth largest operational and maintenance expenditure.

Over the next 10 years, an annual average budget of \$0.4 M and \$1.3 M is assigned for Operations and Maintenance; and Renewals of drainage assets respectively.

Processes and methods currently employed are described in the maintenance, renewals and capital works sections that follow and include:

- Focus and effort go into spending only what it needs to; to make better investment decisions to sustain the transport network in the long term; by targeting the right treatments, to the right places, at the right times and for the right costs.
- This is explained further in the maintenance and renewal strategies. Drainage forward work programme is aligned with resealing and pavement rehabilitation programmes to optimise the costs.
- 7-year return life cycle on water tabling. Flanking and surface channel cleaning is in place to protect pavements from ground water; reflecting CHBDC's proactive approach.
- An asset condition survey programme for critical assets has been implemented.
- Implementation of an inspection programme for culverts of diameter 900-2000 mm within the professional services contract. Determine structural integrity as previous maintenance reviews only addressed functionality of water flowing in and of water flowing out. Issues of stream aggradation (river bed build-up) and degradation (river bed reduction) should be identified for capacity, outlet control and scour undermining of these assets. The repair work may entail works outside of the road reserve to maintain drainage functionality.

Future enhancements to be considered to improve asset management and the business case include the following:

- Comparison of the renewal rate and depreciation rate to assess the effectiveness of the district wide capital renewal plan.
- An audit of the RAMM database has been completed and missing assets and data are being sourced and entered into the database.

6.3.4 Physical Parameters

Value & Quantities

The Drainage physical data is contained within the RAMM database. This information is continually updated as drainage structures are replaced, upgraded or removed. Drainage asset data is summarised in Table 12. Asset values are as at June 2017.

Table 12: Drainage Asset Summary

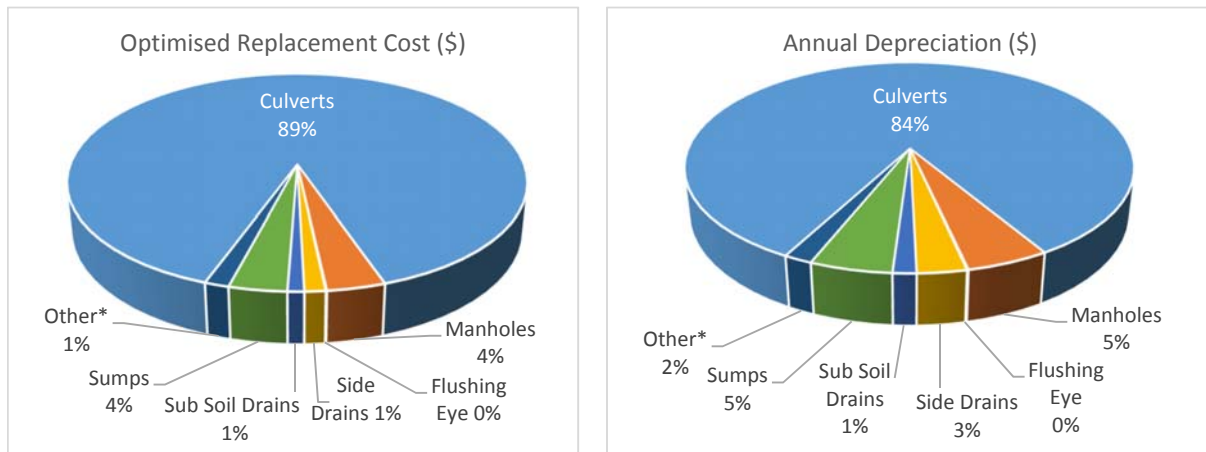
Asset Group	Asset Type	Quantity (2017 Valuation)	Quantity (from asset registers)	Units	Optimised Replacement Cost (\$)	Optimised Depreciated Replacement Cost (\$)	Annual Depreciation (\$)
Culverts & Other Drainage Assets	Culverts	7,768	7,771	No	43,572,187	21,518,718	567,432
	Manholes	364	364	No	1,724,165	743,053	34,319
	Flushing Eye	44	44	No	29,380	22,387	583.33
	Side Drains	14	14	No	614,666	169,570	20,232
	Sub Soil Drains	89	89	No	484,448	362,694	9,660
	Sumps	786	786	No	1,708,836	696,200	33,947
	Other*	69	69	No	721,410	696,950	11,776
	Sub-total - Culverts & Other Drainage Assets				48,855,091	24,209,571	677,949

Asset Group	Asset Type	Quantity (2017 Valuation)	Quantity (from asset registers)	Units	Optimised Replacement Cost (\$)	Optimised Depreciated Replacement Cost (\$)	Annual Depreciation (\$)
Channels	Dish Channel	6,426	6,426	m	545,045	400,017	9,084
	Kerb & Channel	76,696	76,696	m	5,900,132	2,914,886	98,306
	Slot Channel	622	622	m	142,681	90,364	2,378
Channels	SWC (Deep & Shallow)	1,665,304	1,665,304	m	16,221,060	10,549,835	270,351
	Surface Water Channel - Other Types	14,639	1,184,743	m	1,184,743	750,337	19,746
	Sub-total - Culverts & Other Drainage Assets				23,993,661	14,705,440	399,865
Total Pavement Drainage					48,855,091	72,848,753	38,915,010

*Other – Catchpits, Drop Chambers, Intake Structures, Flume Down Batter and Buttress Drains

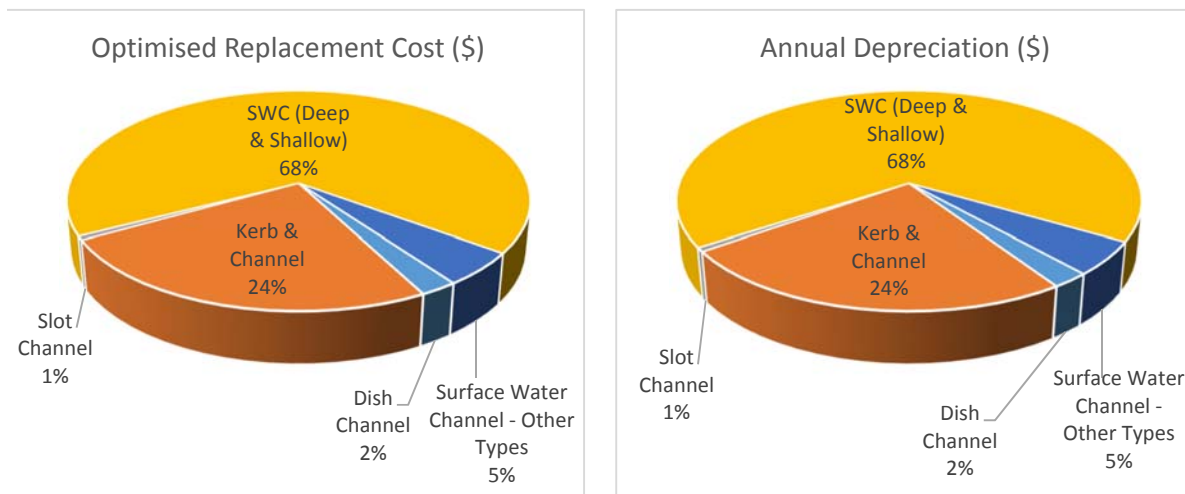
Values of Culverts and Other Drainage Assets below indicates that culverts account for 89% of the ORC and 84% of AD of total drainage assets values.

Figure 22: Values of Culverts and Other Drainage Assets



Values of Surface Water Channels indicates ORC and AD of surface water channels. Deep and shallow earth surface water channels account for 68% of total ORC and 68% of total AD.

Figure 23: Values of Surface Water Channels



Asset Condition

RAMM condition rating has not been carried out across the entire drainage asset as a single condition rating survey. The roading contractor continually inspects and identifies necessary works as a function of the maintenance contract.

Asset Capacity/Performance

Drainage asset capacity is linked to several factors:

- Volume capacity of drainage structures for the catchments
- Condition of the Asset
- Changing usage of adjacent land contributing to road drainage.
- Long term climatic conditions.

The capacity of the drainage structure to cope with the catchments is generally adequately designed and constructed. As the condition of the asset deteriorates other factors start to determine the assets capacity for managing the flow from the catchments. This can be compounded by change in adjacent land use e.g. where a heavily vegetated block is turned into pastoral land. This is not common in the rural network and urban or peri-urban drainage development is protected through the consent process.

Apart from the general deterioration, component failures that impact asset's performance are aggradation and degradation of river and stream systems. Aggradation and degradation are long-term river bed elevation changes due to natural or human-induced causes which affect the reach of the river. Aggradation involves the deposition of material eroded from the channel or watershed upstream of the drainage asset; whereas, degradation involves the lowering or scouring of the river bed due to a deficit in sediment supply from upstream. Aggradation can lead to a reduction in capacity of the drainage asset. Degradation scours on the other hand can lead to undermining of the foundation of the assets.

Figure 23 below shows that customer service requests related to drainage has been reduced since 2012, which can be considered as an indication of improved performance of drainage assets. Drainage related service requests for 2015 and 2016 still require validation.

Figure 24: Drainage Related Service Requests



6.3.5 Renewal Plan

Drainage Renewals

The overall Lifecycle Management Plan objective for **Drainage Renewals** is:

To ensure inadequate Drainage Structures are replaced through process of pavement rehabilitation.

Replacing of old of pipes of inadequate capacity is completed as part of the pavement rehabilitation programme. This proves to be the most economic and effective method of maintaining and renewing the drainage asset.

As part of this strategy treatment consists of replacing under capacity cross pavement culverts with a minimum size of 375 mm diameter. In addition, the vehicle crossing policy requires a minimum of 300 mm diameter for property access culverts over water tables is installed by the property owner. Further drainage structures are being added where protection of the network is required in discharging of water. This work is being carried out to ensure an acceptable level of service is being achieved.

Apart from this strategy, where culverts/sumps/kerb and channel are found to be inadequate or failing, these are replaced with the same of slightly larger asset depending upon the capacity requirement.

Kerb and channel is included in general road maintenance inspections to identify the need for repairs. Kerb and channel renewals are typically included in urban pavement renewal projects if required.

Table 13: Drainage Renewal Annual Operational Service Level Targets

Activity Description	Annual OSL Target Quantities
Major Drainage replacement	As identified through inspections
Drainage Renewal in Pavement renewal Lengths	Pavement Renewal Lengths

Drainage Renewal Decision Process

(a) Identify failure modes, including the following:

- Under capacity
- Unstable ground conditions
- Failure of culvert joints due to joint leaking and subsequent erosion of bedding material, leading to lose of pipe waterproofness, and water flow through the bedding material

(b) Review condition indicators

- Failing structures
- Road subsidence
- Pavement failures

(c) Assess economic indicators – Increasing maintenance costs

Drainage Forward Work Programme

The confident level of CHBDC's forward work programme for pavement drainage assets is "Moderate". The approach is mostly reactive and basic. RAMM inventory data adequacy and confidence level is unknown. Condition data is not available for drainage assets. However, CHBDC has sufficient local knowledge of these assets to develop a forward work programme with adequate confidence level. The table below summarises the inputs and outputs of the programme.

Table 14: Forward Work Programme Process – Pavement Drainage

Inputs	Outputs
<ul style="list-style-type: none"> • 2010 Opus dTIMS modelling output: This has a limited value and accuracy level is around 50%. • Resealing forward work programme: Assess with this to ensure include drainage requirements prior to resealing works. • Associate with pavement rehabilitation programme • Under capacity culverts: Replace pavement culverts with minimum size of 375 mm diameter and 	<ul style="list-style-type: none"> • 10-year Pavement Drainage renewal works programme • Validating resealing programme

Inputs	Outputs
<p>property access culverts over water tables with minimum of 300 mm diameter.</p> <ul style="list-style-type: none"> • Priority 1, 2, 3 maintenance inspections: Drainage requirements identify during maintenance inspections after catchpit cleaning. • Re-profiling programme • RAMM inventory data: Age, Condition. • Large diameter road culvert structural inspection by network consultant 	

6.3.6 Development Works Plan

Capital works are those works that create a new asset that did not previously exist or works, which upgrade or improve an existing asset beyond its present capacity. They may result from growth, social or environmental needs. Assets may be acquired at no direct cost to the organisation (i.e. sub divisional development).

Currently in major drainage there exists two distinct categories of creation, these are:

- Major Drainage > 600 mm
- New Culverts or Upgrading of culverts to larger size < 600 mm, and addition of Kerb and Channel.

The Creation / Acquisition / Augmentation Plan is as follows:

(a) Selection Criteria

- Cross pavement culverts increase to a minimum of 375 mm or larger as design requires.
- Design of unstable section of the network that require additional construction of drainage structures to protect integrity

(b) Standards and specifications – adopt those standards and specifications currently used in the construction industry.

(c) Forecast of acquisition needs, costs and timing – Forecast future needs for acquisition and/or purchase of infrastructural assets based on demand forecasts – Future need for acquisition of the new drainage asset is covered through the Forward Work Programme. This is in relation to increased drainage capacity within the Pavement Rehabilitation sections where the design identifies increased drainage requirement.

(d) Funding Strategy – Roading rate under Bulk Maintenance Allocation for drainage, NZTA subsidy under Bulk Maintenance Allocation and Major Drainage where works fall into this category.

(e) Renewal of large diameter road culverts due to condition rating, and or undertake internal lining to improve internal pipe waterproofness.

6.3.7 Disposal Plan

Disposal of drainage assets is by way of replacement. The forecasted disposal is that of replacement in the FWP for rehabilitation where inadequate drainage asset exists and will be replaced by structures of adequate capacity.

6.3.8 Operation and Maintenance Plan

Routine Drainage Maintenance

The Lifecycle Management Plan objective for **Routine Drainage Maintenance** is:

Where drainage is inadequate, undertake a proactive regime of drainage maintenance, water tabling, flanking, high shoulder removal and monitor the pavement performance.

Drainage control forms a critical component of the roading asset. Drainage has impacts in three ways, namely safety, integrity and cost to the roading asset. In order to maintain a sound pavement the surface water and ground water cannot be allowed to enter the pavement base course. Inadequate drainage often manifests itself in the form of pavement failure.

To avoid this, a regime to undertake a 7-year return life cycle on water tabling, flanking and surface channel cleaning is set. To achieve this, the annual requirement for water tabling and flanking is a minimum of 230 km. This 7-year cycle should be evaluated and monitored to ensure it is correct and producing the expected results.

Water tabling and flanking work will be undertaken with priority given to lengths one year in advance of all reseals. Recent outputs reflect budget constraints and therefore judicious treatment of sites where selected areas within a treatment length were maintained in order to avoid expenditure on areas of lesser need.

6.3.9 Drainage Expenditure

The figures below sets out the 2015-18 annual average, 2018-21 annual average, the LTP 10 year expenditure forecast and the 10 year average forecasted expenditure until 2037 for operations and maintenance, and renewal expenditure for pavement drainage. Refer to section 7.5 for the key assumptions these figures are based on. Average annual budget of \$0.4 M and \$1.2 M are allocated for drainage operations and maintenance; and renewal works respectively. There is no new drainage development works planned over the next 10 years.

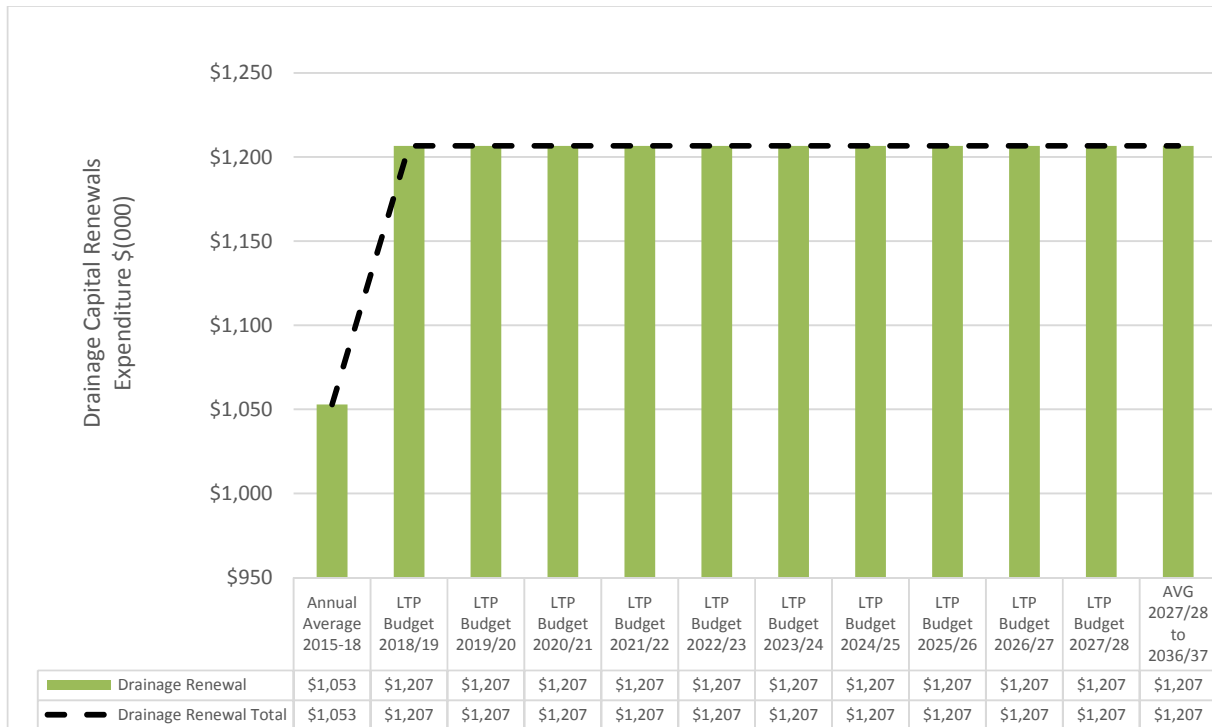
Figure 25: Drainage Total Expenditure



Figure 26: Drainage Operations and Maintenance Expenditure



Figure 27: Drainage Capital Renewals Expenditure



6.4 Bridges and Guardrails

6.4.1 Overview

The purpose of road bridges and major culverts is to provide continuous all-weather roading over rivers, streams and uneven terrain.

6.4.2 Key Issues and Risks

Some of the key life cycle management issues that affect structures are:

Key Issue	Strategies to Address Key Issues
Aging bridge stock	Aging bridge stock is going to require a renewal programme to address weight restrictions. Recent works have focussed on structural component replacement.
HPMV and 50 Max	As discussed in Risk Management Section as 50 Max trucks become more common place, there will be pressure to increase the capacity of the bridges on the network to be able to take these loads. CHBDC will identify all the 50 Max restricted bridges and will develop a strategy to consider freight volumes and prioritise improvements.
Resilience	All bridges falls within an inspection regime and some bridges have had seismic assessments. Faults are identified and prioritised as the budget allows. After major earthquakes and flood events the bridges are inspected and renewed as required. Impact of climate changes and sever weather events required to be incorporated in bridge design stage and funding should be allocated accordingly.
Aggradation (river bed build-up) and degradation (river bed reduction) issues of bridges and large culverts – maintenance	Inspection to determine condition, causes, effects and possible solutions.

concerns of gravel inflow and river bed build-up restricting flows.

6.4.3 Business Case

CHBDC considers that the confidence level of its approach to investment in bridges and large culverts is “High”.

Investment in bridges and large culverts is required because:

- Bridges and large culverts provide continuous, safe, all-weather roading over rivers, streams and uneven terrain.

An analysis of the current investment includes:

- Bridges, Large Culverts and Guard Rails are the asset group with the second largest expenditure. This asset group forms 13.9% (\$112 M) of the total Land Transport Activity Optimised Replacement Cost and 16.1% (\$1.2 M) of the annual depreciation. The structures maintenance, renewal and improvements budget over next 10 years is 9.5% (\$1.1 M) of the total Land Transport Activity Budget (\$12.3 M).
- The confidence grade in structure asset data including condition and performance data is highly reliable, with bridges inspected as per the NZTA bridge inspection policy.
- 82% (\$0.9 M) of the structures budget over the next 10 years is for renewals. CHBDC has planned this mostly for component replacements.

Processes and methods currently employed include:

- Focus and effort go into spending only what it needs to; to make better investment decisions to sustain the transport network in the long term; by targeting the right treatments, to the right places, at the right times and for the right costs.
- The life cycle maintenance and renewal strategies clearly detail Council strategies
- CHBDC has a confident and robust approach for developing Forward Work Programme for bridges and large culverts.

Future enhancements to be considered to improve asset management and the business case include the following:

- Develop a strategy to consider freight volumes and prioritise improvements on all 50 Max restricted bridges.
- Review current level of General and Detailed bridge inspections.
- Issues of stream aggradation (river bed build-up) and degradation (river bed reduction) should be identified for capacity and scour undermining of bridges and large culverts. The repair work may entail works outside of the road reserve to maintain drainage functionality.

6.4.4 Physical Parameters

Asset Value & Quantities

The estimated cost of replacing the assets in this asset group is \$112M, which is 14% of the overall Land Transport assets. In practice parts of the bridges are replaced on an as needed basis as part of the maintenance cost. This contributes to their perpetuity existence.

The bridge component is made up of:

- Bridge Structural
- Large Culverts where the square area of entry is $>3.4 \text{ m}^2$

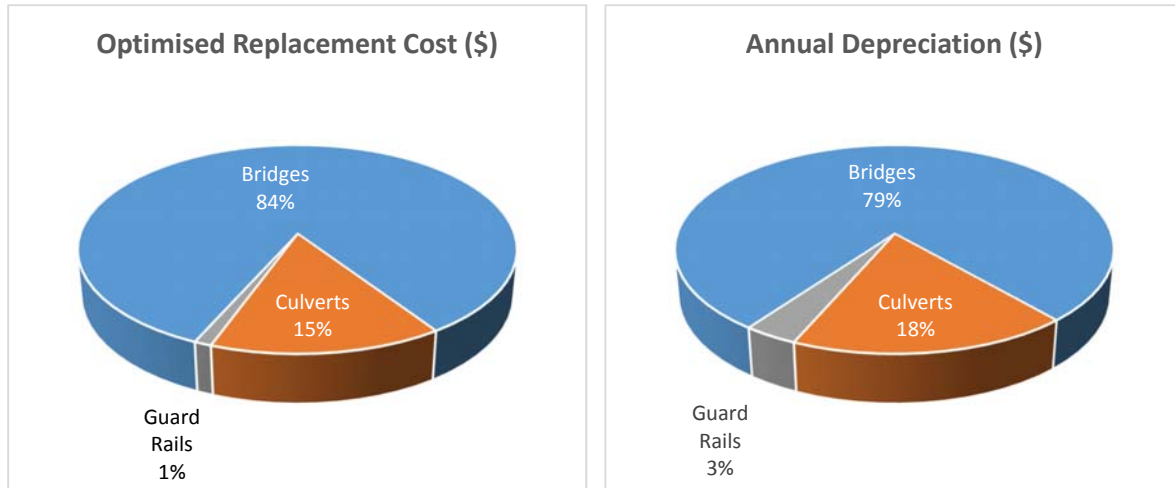
Also identified as part of the bridges component are guardrails. Table 15 sets out the type and quantity of bridges, large culverts and guardrails on the network.

Table 15: Summary of Bridge and Guardrail Assets

Asset Group	Asset Type	Quantity	Units	Optimised Replacement Cost (\$)	Optimised Depreciated Replacement Cost (\$)	Annual Depreciation (\$)
Bridges	Prestressed Bridge	82	No	28,183,680	16,398,036	281,834
	Reinforced Concrete Bridge	85	No	65,277,738	29,310,193	652,772
	Timber Bridge Deck	5	No	631,276	205,533	7,891
	Total Bridges	172	No	94,092,694	45,913,762	942,497
Culverts	Area 3.4 – 5 m ²	57	No	7,446,794	3,492,643	97,358
	Area 5-6 m ²	6	No	1,244,055	624,909	15,813
	Area 6-8 m ²	14	No	3,831,652	1,976,619	49,247
	Area 8-9 m ²	2	No	464,172	220,482	5,802
	Area 9-12 m ²	8	No	2,783,762	1,301,923	36,148
	Area 12-20 m ²	2	No	933,585	450,817	11,287
	Area 20-28 m ²	89	No	16,704,020	8,067,392	215,655
	Area $>37 \text{ m}^2$	5,722	m	967,417	444,512	32,247
	Total Culverts	1,875	m	284,400	117,966	9,475
Guard Rails	Bridge Rails	7,597	m	1,251,817	562,477	41,722
	Other Guard Rails	82	No	28,183,680	16,398,036	281,834
	Total Guard Rails	85	No	65,277,738	29,310,193	652,772
Total Bridges, Large Culverts and Guard Rails				112,048,530	54,543,631	1,199,874

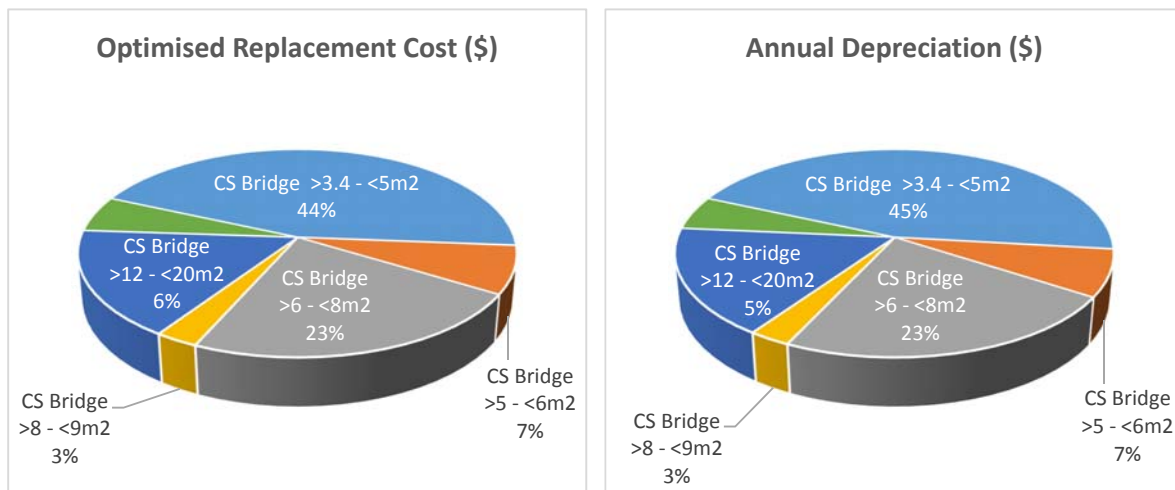
Figure 28 below indicates the ORC and AD of bridges. Bridges account for 84% and 79% of ORC and AD of this asset group, respectively.

Figure 28: Values of Bridges



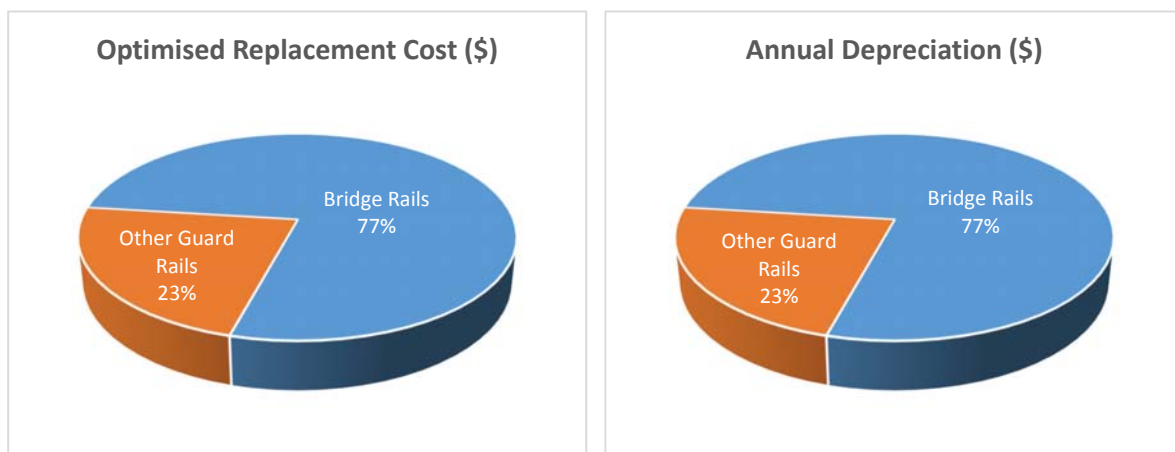
Values of Large Culverts below indicates the ORC and AD of large culverts. Large culverts account for 15% and 18% of ORC and AD of this asset group, respectively.

Figure 29: Values of Large Culverts



Values of Guard Rails below indicates the ORC and AD of guard rails. Guard rails account for 1% and 3% of ORC and AD of this asset group, respectively.

Figure 30: Values of Guard Rails



Asset Age and Condition

The condition of the Bridge Asset is rated each year in the form of bridge rating and inspection. The rating methodology is completed using NZTA Bridge Rating manual. In general the overall appearance of a bridge is rated and the specific components are rated to identify repair and timing. From the rating inspections, a programme of maintenance is developed and put into a Routine Bridge Maintenance contract each year.

The bridges and large culverts were generally in a good condition and due to the nature of ongoing inspections and the quality of repairs and designed solutions the overall standard of bridges is improving each inspection cycle. However, this said many of the bridges in the District are beginning to show their age and super-structural problems are beginning to show such as cracking, spalling, concrete deterioration and corrosion.

Asset Capacity/Performance

Bridging asset capacity is linked to several factors:

- Traffic volume
- Loading
- Condition

Currently the bridge asset is performing to its intended capacity. There are a number of bridges that have been scheduled for replacement in the next 12 years however they continue to perform to standard. These are outlined in the Renewal Plan.

Apart from the general deterioration, component failures that impact asset's performance are aggradation and degradation of river and stream systems. Aggradation and degradation are long-term river bed elevation changes due to natural or human-induced causes which affect the reach of the river on which the bridge is located. Aggradation involves the deposition of material eroded from the channel or watershed upstream of the bridge; whereas, degradation involves the lowering or scouring of the river bed due to a deficit in sediment supply from upstream. Aggradation can lead to a reduction in capacity under the bridge and is susceptible to contraction scours. Degradation scours can occur around bridge abutments and piers compromising the integrity of the foundation of the bridge.

6.4.5 Operations and Maintenance Plan

Structures Maintenance

The Lifecycle Management Plan objective for **Structures Maintenance** is:

Maintain an inspection regime to identify any superficial maintenance and structural maintenance requirements on the bridge stock.

Inspections of Bridges, in accordance with Council's bridge maintenance policy, and retaining structures have continued. On bridges typical defects include lost or loose nuts on holding down bolts, concrete cracking, expansion joint defects, rusted holding down bolts and handrails, rotting timber decks and railings and piers cluttered with debris. Maintenance contracts are let to remedy the higher priority defects encountered.

6.4.6 Renewal Plan

Structures Component Replacement

The overall Lifecycle Management Plan objective for **Structures Component Replacement** is:

Maintain an inspection regime to identify any superficial maintenance and structural maintenance requirements on the bridge stock.

Provision of bridge approach sealing on unsealed roads to protect bridge abutments and increase safety on approach.

As outlined above bridge inspections have continued in accordance with Council's bridge maintenance policy. Work is allowed for as inspections identify it.

Guardrail replacement and new guardrail construction is allowed for under this WC. Generally work includes replacing sections of guardrail with posts in poor condition requiring renewal, replacement of damaged sections of guardrail and installation of end terminals in order to meet current standards.

Bridge Renewals

The overall Lifecycle Management Plan objective for **Bridge Renewals** is:

To identify those bridges where deck renewal is required to sustain current loadings.

There has been a concentrated effort since the late 1950's in both the then Waipukurau and Waipawa District areas to carry out an active timber bridge replacement programme. As a result of this effort very few bridges remain with timber substructures or superstructures. Those that do are on very minor no exit roads and are well maintained.

Three bridges in the district have been identified as potentially developing symptoms (condition) that require closer and more detailed inspections and potential remedial works. Two of the bridges are massive structures and at the present beyond the financial capacity of the District to replace. Alternatives and evaluations are being pursued in order to establish actual risk, projected life, traffic impacts etc. This work

will provide the district with viable economic courses of action as each bridge nears the end of its life and a more accurate timeframe for renewal, if required.

The three bridges are:

Table 16: Bridge Study Programme

Road	Bridge Name
Burnside Road	Burnside Bridge
Beach Road	Makaramu Bridge
Elsthorpe Road	Patangata Bridge

6.4.7 Development Works Plan

Capital works are those works that create a new asset. There is no capital requirement identified in this Plan.

The Creation / Acquisition / Augmentation Plan is as follows:

(a) Selection Criteria

- Increased capacity requires asset creation
- To be justified based on the current funding rules as set in NZTA project funding Manual

(b) Standards and specifications – adopt those standards and specifications currently used in the construction industry.

(c) Forecast of acquisition needs, costs and timing – No future need for creation or acquisition is identified in this LTAMP.

(d) Funding Strategy – Total cost of acquisition proposals, Costs apportionment i.e. NZTA, Developers, and TLA etc.

6.4.8 Disposal Plan

There are no identified disposals to consider.

6.4.9 Bridges and Guardrails Expenditure

The figures below sets out the 2015-18 annual average, 2018-21 annual average, the LTP 10-year expenditure forecast and the 10-year average forecasted expenditure until 2037 for operations and maintenance, renewal and improvement expenditure for bridges (including large culverts), guardrails and retaining structures.

Note: Asset information and management strategies for retaining structures are contained in the Retaining Structures Lifecycle Management Plan. However, expenditure for retaining structures is included in this LCMP because there is no separate breakdown available.

Refer to Section 7.5 for the key assumptions these figures are based on.

Figure 31: Structures Total Expenditure

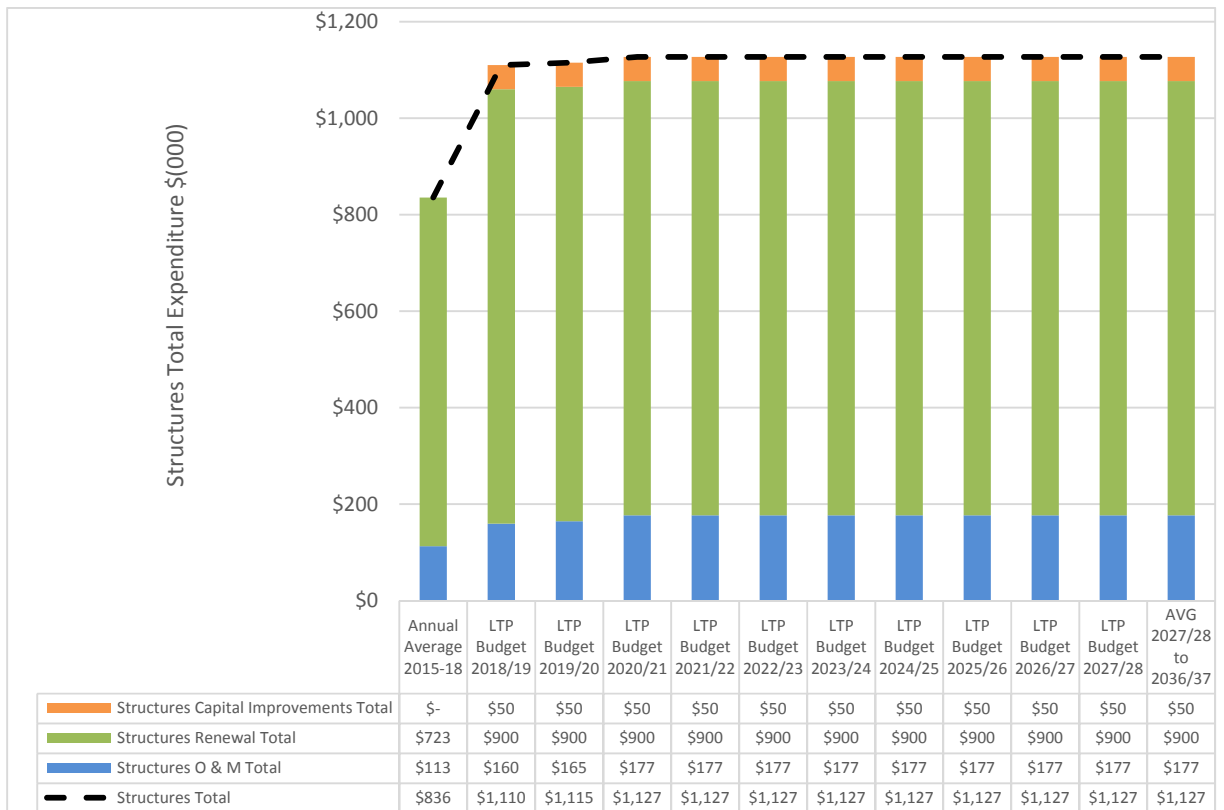


Figure 32: Structures Operations and Maintenance Expenditure

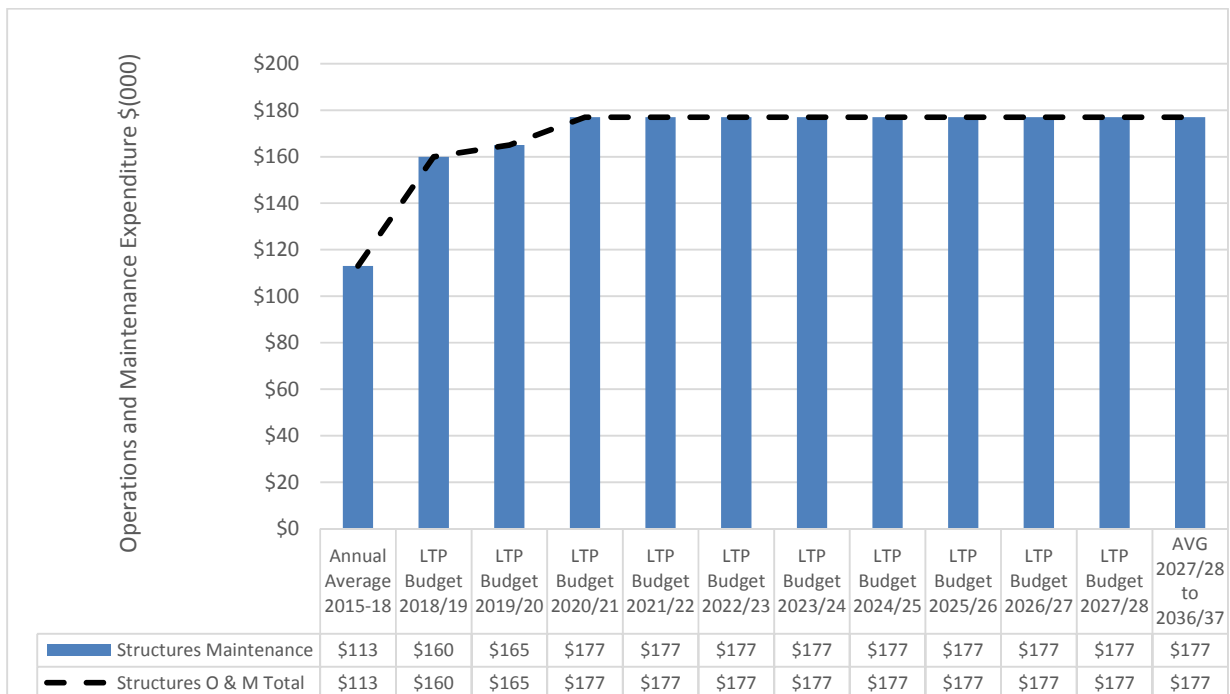


Figure 33: Structures Capital Renewals Expenditure

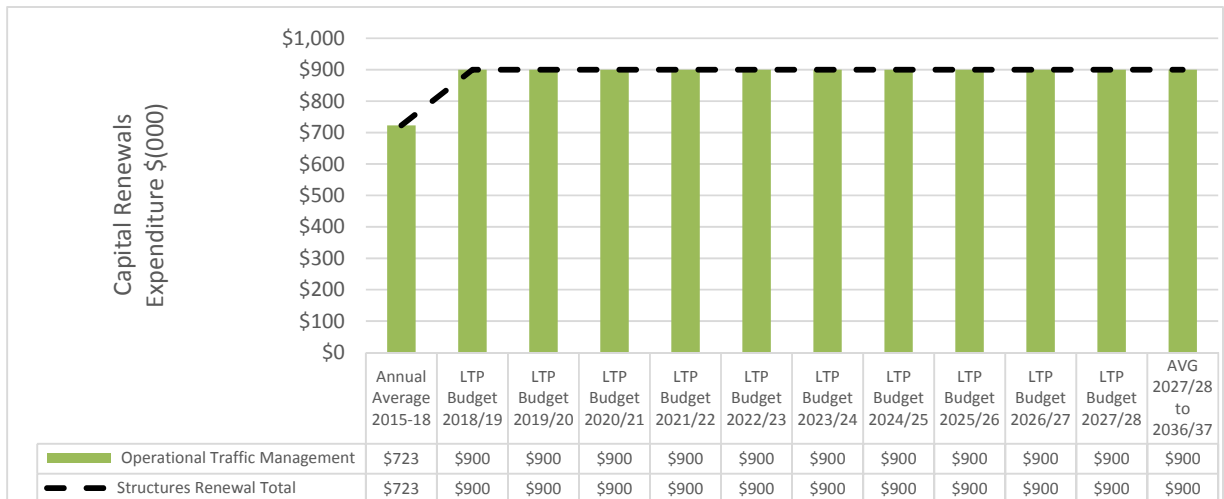
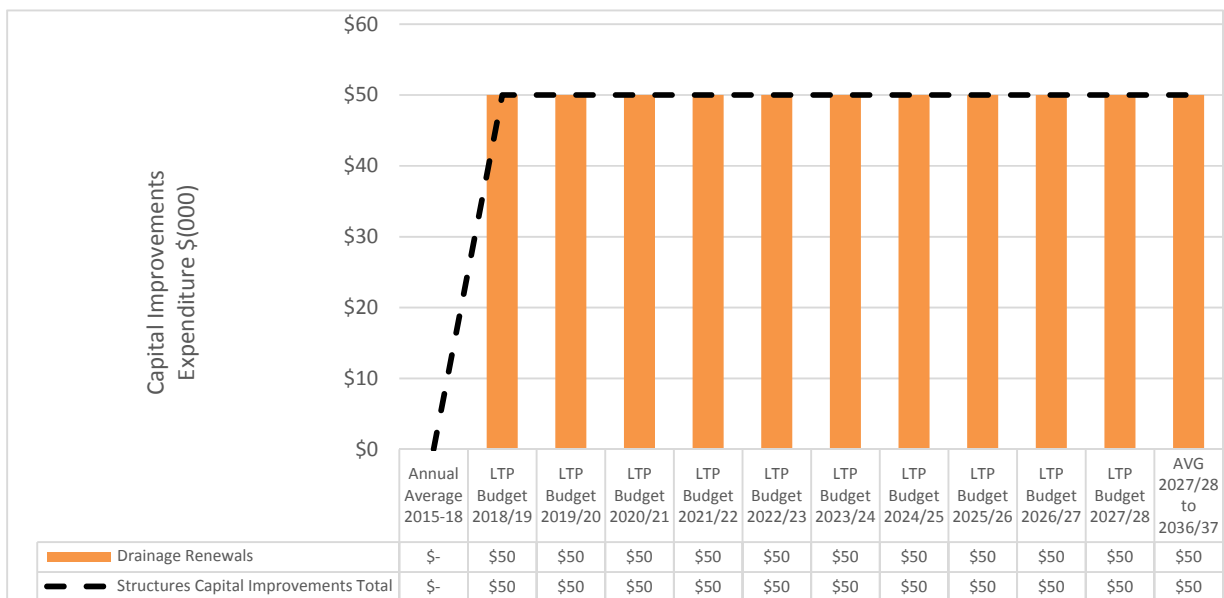


Figure 34: Structures Capital Improvement Expenditure



6.5 Retaining Structures

6.5.1 Overview

Retaining structures provide protection and support for road pavements. Most retaining walls are not actively maintained and not all retaining wall structures have yet been identified in RAMM. For example, a lot of the 'in ground' retaining walls are noted in the network but are not in RAMM. Many of these retaining walls are viewed as having failed with these walls being rotated from their original orientation.

6.5.2 Key Issues and Risks

Some of the key life cycle management issues that affect retaining structures are:

Key Issue	Strategies to Address Key Issues
Material deterioration affecting road stability	Inspection of retaining structures as part of a planned programme
CHBDC's RAMM data base does not have a complete record exclusively for the retaining structure information.	CHBDC has been capturing new retaining structures into RAMM and where old structures are identified these will also be added to the asset register including condition information.

6.5.3 Business Case

CHBDC considers that the confidence level of its approach to Retaining Structures investment is “Low”. CHBDC has identified areas for improvement for managing these assets.

Investment in retaining structures is required:

- To protect and support the road pavements.

An analysis of the current investment includes:

- Retaining Structures assets form 1.4% (\$11.4 M) of the total Land Transport Activity Optimised Replacement Cost and 3.3% (\$0.2 M) of the annual depreciation.
- Retaining structures are included in the Structures group. Budgets for Retaining Structures are incorporated in the Bridges Lifecycle Management Plan. The annual budget (maintenance, renewal and improvements) for Structures over the next 10 years is 9.2% (\$1.1 M) of the total Land Transport Activity budget.

Processes and methods currently employed include:

- As part of Pavement Rehabilitation Design, old existing structures are confirmed against RAMM as part of the overall Road Design as required.
- Focus and effort go into spending only what it needs to; to make better investment decisions to sustain the transport network in the long term; by targeting the right treatments, to the right places, at the right times and for the right costs
- The life cycle maintenance and renewal strategies clearly detail in Council strategies.

Future enhancements to be considered to improve asset management and the business case include the following:

- Assess inspection observations, identify instability areas and develop a long term work programme for maintaining and renewing Retaining Structures.

6.5.4 Physical Parameters

Asset Values & Quantities

The retaining structures are a critical component of the network as they provide stability of unstable pavements in the network, predominantly in the Aramoana Ward. The retaining structure component is made up of a combination of rail irons and timber walls, gabion rock walls and earth gravity walls.

Also identified as part of the retaining structure components are stock underpass structures. These are held on the inventory as Council have a responsibility for the inspection and maintenance of the walls but not the initial construction cost. Table 17 sets out the quantity and value of Retaining Structures.

Table 17: Summary of Retaining Wall & Underpass Assets

Type	Quantity (2017 Valuation)	Units	Optimised Replacement Cost (\$)	Optimised Depreciated Replacement Cost (\$)	Annual Depreciation (\$)
Anchored	3	No	134,230	144,388	2,911
Bagged Concrete	22	No	35,440	21,521	882
Gabion	38	No	618,362	515,094	16,675
Gravity	4	No	141,687	94,040	3,072
Railway Irons & Boards	7	No	251,059	226,367	5,444
Reinforced Earth	5	No	169,030	142,909	3,665
Boards & Pile	168	No	9,040,109	6,259,284	196,509
Rock	7	No	66,541	40,031	1,649
Rockfall Catch Fence	1	No	20,252	12,183	502
Sheet Pile	4	No	52,200	34,646	1,132
Single Crib	43	No	457,375	303,567	9,917
Unknown	2	No	40,503	24,972	1,004
Stock Underpass	3	No	342,864	282,738	2,857
Total	302		11,369,650	8,101,741	246,218

Retaining Structures ORC and Retaining Structures AD below show the Optimised Replacement Cost and Annual Depreciation of Retaining Structures. Majority of Retaining Structures are Boards & Piles and they account for 80% of ORC and 80% of AD.

Figure 35: Retaining Structures ORC

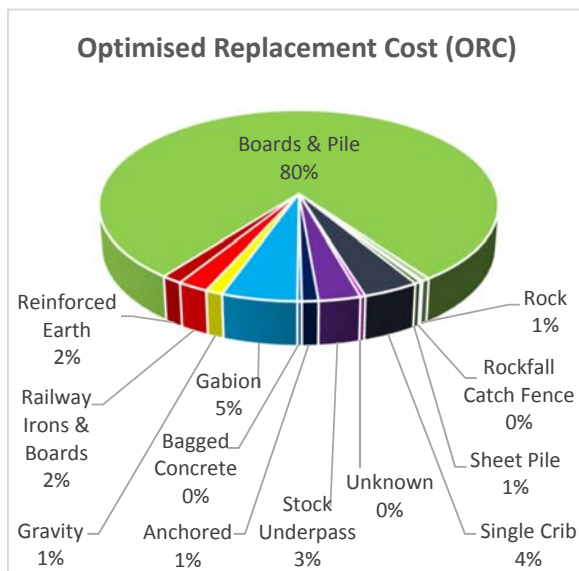
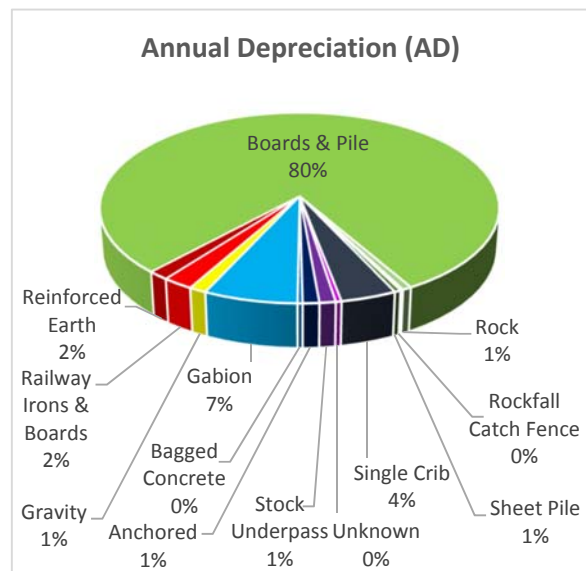


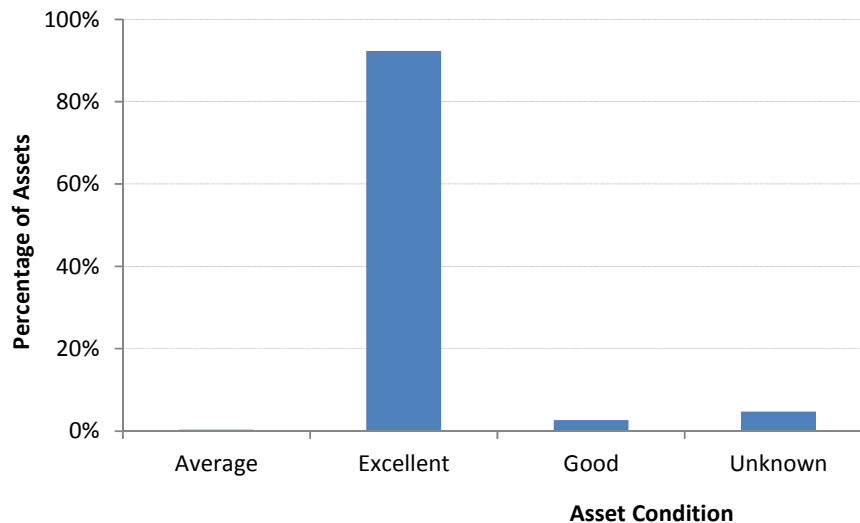
Figure 36: Retaining Structures AD



Asset Condition

Retaining Structures are condition rated as part of the Bridge rating inspection. Figure below illustrates the condition profile of Retaining Structure assets based on data recorded in RAMM. Note that the condition surveys have been carried out in 2011 or prior to that.

Figure 37: Condition of Retaining Structures



Asset Capacity/Performance

Retaining Asset capacity is linked to several factors:

- Traffic volume
- Loading

Due to the unstable nature of Aramoana Ward retaining structures play a critical part in protecting the network from subsidence. Identify retaining structures in the network where retaining structure failure would severely compromise access due to topography. A higher design criteria for 'whole of life' structural integrity needs to be implemented for these identified retaining structures.

6.5.5 Operations and Maintenance Plan

Retaining Walls Maintenance

The Lifecycle Management Plan objective for maintenance of **Retaining Walls** is:

Maintain an inspection regime to identify any superficial maintenance and structural requirements on the retaining structures

Maintenance of the retaining structure is completed as part of the bridge maintenance contract. Data has been obtained on all retaining structures.

6.5.6 Renewal Plan

Retaining Walls Component Replacements

As part of Pavement Rehabilitation Design, old existing structures are identified and renewed as part of the overall Road Design. Structures will need to be considered for replacement where they have an overall rating of > 4 . The inspection of the retaining structures is on the same time line as bridges and half the stock is inspected yearly as for bridges.

Renewal Decision Process

(a) Identify failure modes, including the following:

- Shoulder/pavement subsidence
- Loading exceeding design capacity

(b) Review condition indicators

- Cracking
- Roughness

(c) Assess economic indicators – Increasing maintenance costs

Development Works Plan

Generally as part of Pavement Rehabilitation projects, areas of instability are identified and new Retaining Structures designed and added. The other process of new retaining assets is through flood events and storm damage.

The Creation / Acquisition / Augmentation Plan is as follows:

(e) Selection Criteria

- Where subsidence exists and has been identified in rehabilitation sections, geotechnical inspection is undertaken and suitable designs completed. This work is incorporated into the projects.
- Where areas of the network have been identified as subsidence that may require wall installation, these areas are investigated and designed as a one off basis.

(f) Standards and specifications – adopt those standards and specifications currently used in the construction industry.

(g) Forecast of acquisition needs, costs and timing – Currently as there is no comprehensive inspection of the network to identify areas of subsidence, a forecast of renewal sites is not identified. However as part of the FWP field review areas of subsidence are being identified and sectioned out as treatment length if this is appropriate dependant on severity of the subsidence. The risk register currently identifies the risk associated with this issue and treatment plan involved. Cash flow forecast is as provided through the current forward work programme for pavement renewal

(h) Forecast of acquisition needs, costs and timing – Currently requirements are identified through the bridge & retaining wall inspection programme. As part of the FWP field review, areas of subsidence are being identified and the reasons behind the subsidence are investigated including any retaining wall failures. The risk register currently identifies the risk associated with this issue and treatment plan

involved. Cash flow forecast is as provided through the current forward work programme for pavement renewal

- (i) Funding Strategy – Funding is acquired through the Roding Rate and the NZTA Transport New Zealand. In the event of large scale storm damage and emergency, NZTA provide a higher subsidy rate for the replacement of and construction of structures associated with storm damage.

6.5.7 Disposal Plan

Disposal of Retaining Structures will only occur where a wall that is in very poor condition is being replaced.

6.5.8 Retaining Structures Expenditure

Retaining Structures expenditure is included under Life Cycle Management Plan for Bridges, Large Culverts and Guard Rails.

6.6 Carriageway Lighting

6.6.1 Overview

Council has a large number of streetlights, which play a key traffic safety role in the urban areas and at major rural intersections. Streetlights are also important for creating a walkable urban environment after dark and for providing general social and security lighting in the urban area.

The fundamental goal of a structured approach to streetlight management is to allow Council to establish an effective strategy for the asset that achieves an optimised balance between life-cycle cost, risk and level of service.

The purpose of this Streetlight Lifecycle Management Plan is to:

1. Document our approach to streetlight management and adopted management strategies for whole-life asset optimisation.
2. Monitor the streetlight characteristics, conditions, serviceability and risk.
3. Provide analysis of the streetlight asset to inform lifecycle management decision making at a network level.
4. Respond to risk exposure and the changing operating environment.

6.6.2 Key Issues and Risks

Some of the key life cycle management issues that affect traffic services assets are:

Key Issue	Strategies to Address Key Issues
Street lighting columns in high use areas fall over in high wind or earthquake causing death or serious injury	Ensure accurate & regular condition grading and timely maintenance and renewal programmes.
Changing to LED - LED (light emitting diode) street lighting offers a number of benefits compared to HPS (high pressure sodium) lighting, including reduced energy and maintenance costs, and better light quality leading to increased public safety. (1)	CHBDC will develop an LED strategy which will consider LED application both for new and renewal of existing installations, based on the lowest whole of life cost

6.6.3 Business Case

Council considers that it has an intermediate approach (confidence level is “Moderate”) to Carriageway Lighting investment, and has identified areas for improvement.

Investment in traffic services assets is required because:

- Street lights illuminate the carriageways, improve the visibility of the carriageway, identify hazards at night and support the facilitation of safe movement. It is particularly needed in areas with a likelihood of conflict between vehicles, pedestrians or cyclists.

An analysis of the current investment includes:

- Carriageway Lighting assets form 0.2% (\$1.6 M) of the total Land Transport Activity Optimised Replacement Cost and 1.2% (\$91,270) of the annual depreciation. Street Lights have shorter useful lives compared to other asset types.
- Budget for Carriageway Lighting is included in the Traffic Facilities budget. Traffic Facilities also includes signs, road marking, and site rails (refer Life Cycle Management Plan for Traffic Facilities). The annual budget (maintenance, renewal and improvements) for Traffic Facilities over the next 10 years is 7.1% (\$0.9 M) of the total Land Transport Activity budget.
- The annual renewal budget for Traffic Facilities over the next 10 years is \$176,500.
- Streetlight calls have decreased over the last five years.

Processes and methods currently employed are described in the maintenance, renewals and capital works sections and include:

- Routine inspections.
- Repair/replacement of faulty/failed components within specified timeframes.
- Identification, prioritisation and programming of improvements and ordered works.
- Clear reporting requirements based on KPIs.

Future enhancements to be considered to improve asset management and the business case include the following:

- Developing an LED strategy for the changeover to LED lighting. This is expected to achieve long-term savings through reduced electricity consumption and longer lamp lives.

6.6.4 Physical Parameters

Asset Values & Quantities

The carriageway lighting data is contained within the RAMM database. This information is continually updated as lights/poles are replaced and upgraded.

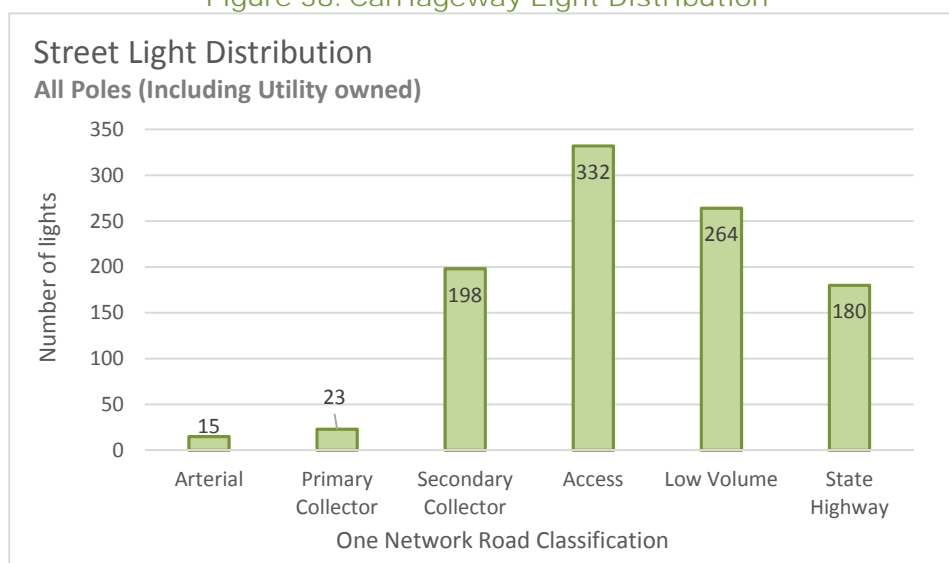
Table 18 sets out the quantity and value of lighting components on the network.

Table 18: Carriageway Lighting Asset Summary

Asset Type	Quantity (2017 Valuation)	Quantity (from asset registers)	Units	Optimised Replacement Cost (\$)	Optimised Depreciated Replacement Cost (\$)	Annual Depreciation (\$)
Lighting Poles	277	348	No	1,047,194	341,302	41,888
Lighting Brackets	902	933	No	218,411	51,485	7,793
Lighting Lights	919	926	No	334,215	93,013	41,588
Total				1,599,820	485,800	91,270

Asset Distribution

Figure 38: Carriageway Light Distribution



Age and Condition

Through the process of routine maintenance and inspection, it is communicated that the lighting stock is in average condition overall, inclusive of poles where owned by Council, brackets and lights which encompass lamp, gear etc. This is shown below.

Figure 39: Carriageway Light Condition

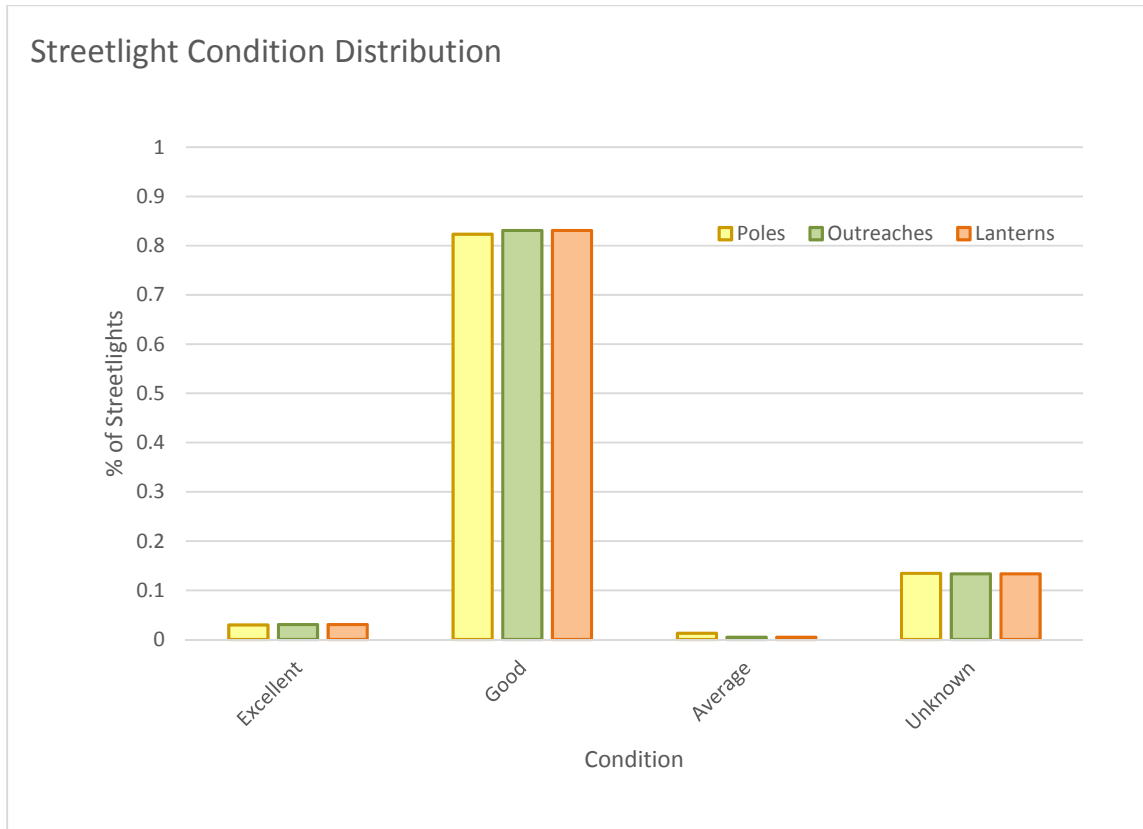
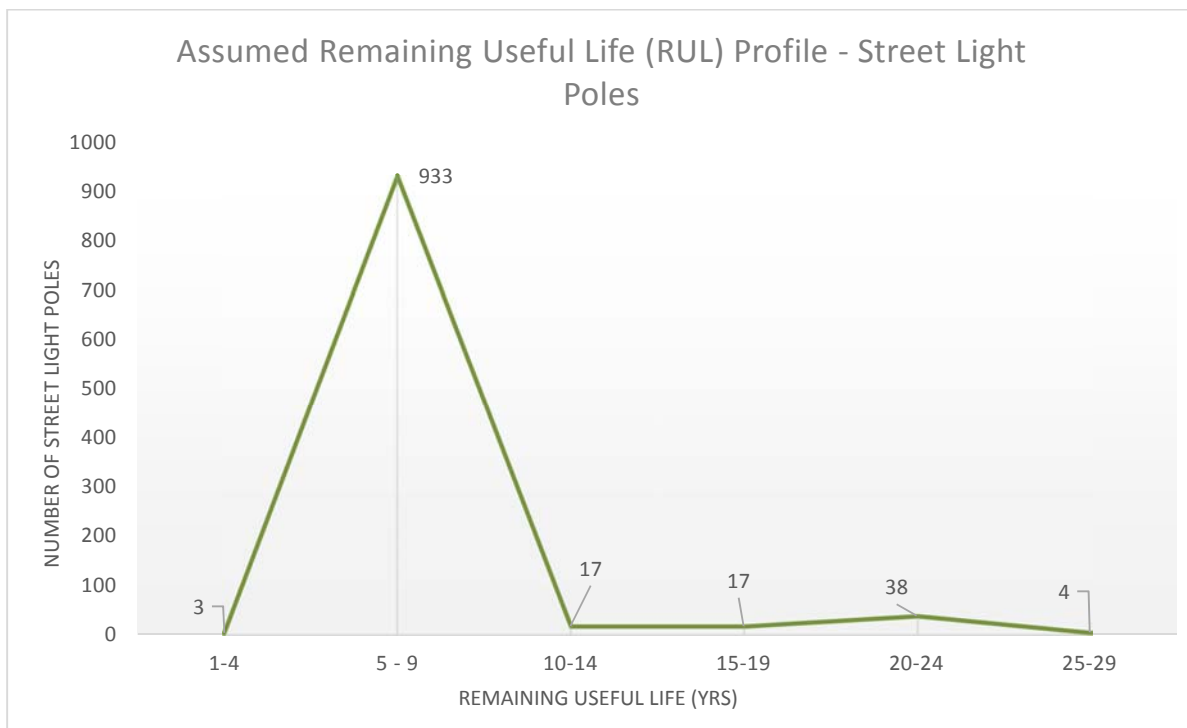
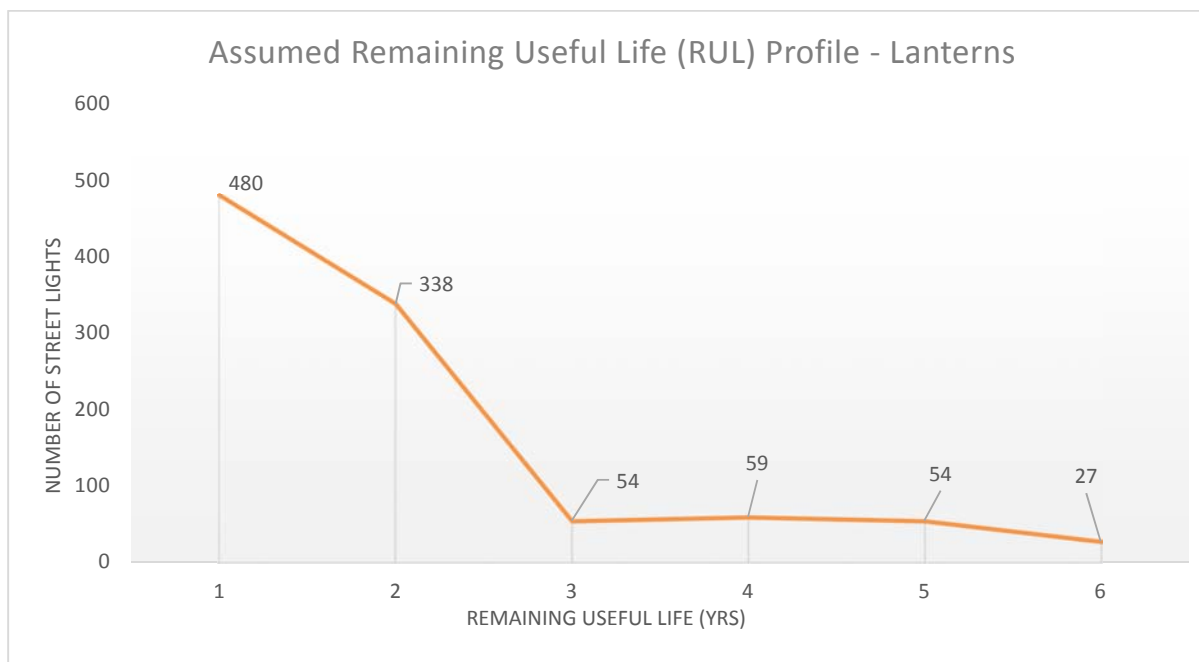


Figure 40: Remaining Life - Carriageway Light Poles



The assessed remaining useful life indicators for Poles indicate that the majority portion of the asset will have reached the end of its useful life within 9 years. This asset depreciation will need to be monitored effectively through condition rating assessments to ensure that the structural integrity of Poles remains satisfactory and does prevent injury.

Figure 41: Remaining Life - Lanterns



The assessed remaining useful life indicators for lanterns indicate that the majority portion of the asset will have reached the end of its useful life within 1 year. The majority of the lanterns are high pressure sodium which generally produces a yellow light and has poor colour rendering properties. The HPS lamp has a slightly higher lumen output per lamp when compared with other lantern types and also has a slightly longer operating life.

Any deterioration in this regard needs to be monitored, albeit mindful that the rated life does not account for the lumen depreciation, colour change, and loss of efficacy (lumens per watt) as lamps age. Economic life is a much better description of actual lamp life rather than rated life. It refers to the hours of operation a lamp is designed to provide in terms of optimum light output, aesthetic quality, and economic energy consumption.

So whilst a typical response may be to replace on failure as opposed to bulk replacement programmes, it should be noted that while lamps may continue to run well past their rated lifespan, their lumen output may have significantly decreased and they will still be consuming full power. This characteristic means that many luminaires appear to be working, even though they are well past their effective operating life, and are often overlooked for maintenance when they should have their lamps replaced. So unless lamps are routinely replaced the lighting installation will not comply with the mandatory requirements of the road lighting standards.

Asset Capacity/Performance

Asset capacity for carriageway lighting is related to a number of factors:

- Location and intent of the lighting
- Traffic volume
- Currently the asset performance is not completely understood in terms of lighting brightness (Lux). Although based on customer inquiry levels the lighting asset would seem to be performing well as there is only limited number of complaints concerning lights not working.

6.6.5 Operations and Maintenance Plan

The Operations and Maintenance plan is under development. This includes a replacement strategy for bulb replacement to incorporate a LED upgrade programme.

Carriageway Lighting Maintenance

The Lifecycle Management Plan objective for **Carriageway Lighting Maintenance** is:

To routinely inspect and maintain the lights in good operational condition

The District's streetlight inventory has been established in RAMM asset database, recording against a unique identifier, the location, size, type and fittings associated with that particular light.

The routine maintenance of the lighting stock includes repairing of lights not working and routine inspection and cleaning of lamps. The frequency of inspection and maintenance is once every two weeks. The contractor also undertakes a monthly night time inspection, and yearly general fault inspection.

6.6.6 Renewal Plan

Carriageway Lighting Renewals

The Lifecycle Management Plan objective for renewal of **Carriageway Lighting** is:

To actively upgrade lamps and fittings to current ASNZ standard on local, distributor, arterial and state highway where the management and ownership is by Council

The standardisation of the fittings and lamps to the GL500 fitting with 70 Watt lamps for Local Roads, 150 Watt lamps for Distributor and Arterial routes, and 250 Watt lamps on Oclite poles on Highways and major urban streets has continued to a degree now where there are a minimal amount of older fluorescent lights on the network. Therefore, there is no specific expenditure allowed for future street lighting renewals. Any requirements will be met within the Minor Safety or Maintenance budgets.

Renewal Decision Process

(a) Identify failure modes, including the following:

- Power supply problems
- Old lights
- Damage and Vandalism

(b) Review condition indicators

- Faded lamp covers
- Failing brackets and poles
- Reducing Lux (requires measuring)

(c) Assess economic indicators – Increasing maintenance costs, increasing replacement and inspections

6.6.7 Development Works Plan

Where new subdivisions occur in the District, street lights are in the majority of cases added as part of the design and transferred to Council on completion.

The increase in lighting assets impacts on the cost of maintenance. Often poles installed are of a decorative nature and the continued maintenance can be extremely high and replacement poles can be difficult to source due to manufactures not continuing or phasing out a particular decorative style. This needs to be managed in relation to the community expectations in these areas.

The Creation / Acquisition / Augmentation Plan is as follows:

(a) Selection Criteria

- Other than additional lighting identified for Safety Improvement, Council has no formal lighting acquisition strategy in place. The only addition happens through subdivision development and where requested by the community. Where the community has requested new lighting this is considered in respect to design standards, intent of lighting and request for funding either made in the next financial year or in the current financial year if funds are available.
- Safety Improvement

(b) Standards and specifications – adopt those standards and specifications currently used in the construction industry.

(c) Forecast of acquisition needs, costs and timing – Except for Safety Improvements there is no Forward Programme identified for lighting asset and the forecast is one of on demand. Cash flow forecast is in the current funding year if affordable or is requested next financial year.

(d) Funding Strategy – Funding is provided through Rooding rate and NZTA subsidy for rooding, and community funding.

6.6.8 Disposal Plan

Disposal forecasting for lighting is only associated with the continued upgrade of old fittings to new GL500.

6.6.9 Carriageway Lighting Expenditure

Carriageway Lighting expenditure is included under Traffic Facilities Life Cycle Management Plan.

6.7 Traffic Facilities

6.7.1 Overview

Traffic services are the assets that are designed to assist road users use the road in a safe way. Included in this asset category are signs, pavement marking and sight rails.

6.7.2 Key Issues and Risks

Some of the key life cycle management issues that affect traffic services assets are:

Key Issue	Strategies to Address Key Issues
Vandalism	Education and monitoring, and law enforcement if applicable

6.7.3 Business Case

CHBDC considers that it has a basic approach to traffic services investment, and has identified areas for improvement.

Investment in traffic services assets is required because:

- Traffic services are the assets that are designed to assist road users use the road in a safe way. Included in this asset category are signs, pavement marking and sight rails.
- Service request calls for Traffic Facilities have decreased over the last 4 years (from 59 to 9). All these are related to signage. No request calls related to pavement markings have been recorded over the last four years.

An analysis of the current investment includes:

- Although Traffic Services assets form only 0.3% (\$2.4 M) of the total Land Transport Activity Optimised Replacement Cost it is 3.6% (\$0.3 M) of the annual depreciation due to short average useful lives of traffic service assets compared to other asset groups.
- The 2020/21 Traffic Facilities maintenance, renewal and improvements budget is 7.1% (\$0.9 M) of the total Land Transport Activity Budget (\$12.3 M). Note that these figures include the budget for Street Lighting which is a separate LCMP containing specific asset information and management strategies (Section 6.6).
- The largest proportion (57% or \$0.5 M) of the 20120/21 traffic services budget is for operations and maintenance (O&M).
- The annual renewal budget over the next 10 years (\$176,500) is well below the annual depreciation of \$269,100 and slightly below the historical expenditure (which is \$181,860 and \$274,476 for 2016/17 and 2017/18 years respectively).

Processes and methods currently employed are described in the maintenance, renewals and capital works sections that follow and include:

- Routine inspections - CHBDC undertakes regular inspections of these assets to ensure that they are fit for purpose
- Repair/replacement of faulty/failed components within specified timeframes.
- Identification, prioritisation and programming of improvements and ordered works.
- Clear reporting requirements based on KPIs.

Future enhancements to be considered to improve asset management and the business case include the following:

- Implementing the requirements of the ONRC.
- Improve asset data quality in RAMM asset register

6.7.4 Physical Parameters

Asset Values & Quantities

The large majority of traffic facilities data is contained within the RAMM database. This information is continually updated and new traffic signs installed and replaced. Traffic Facility asset relates to signs, markings and sight rails.

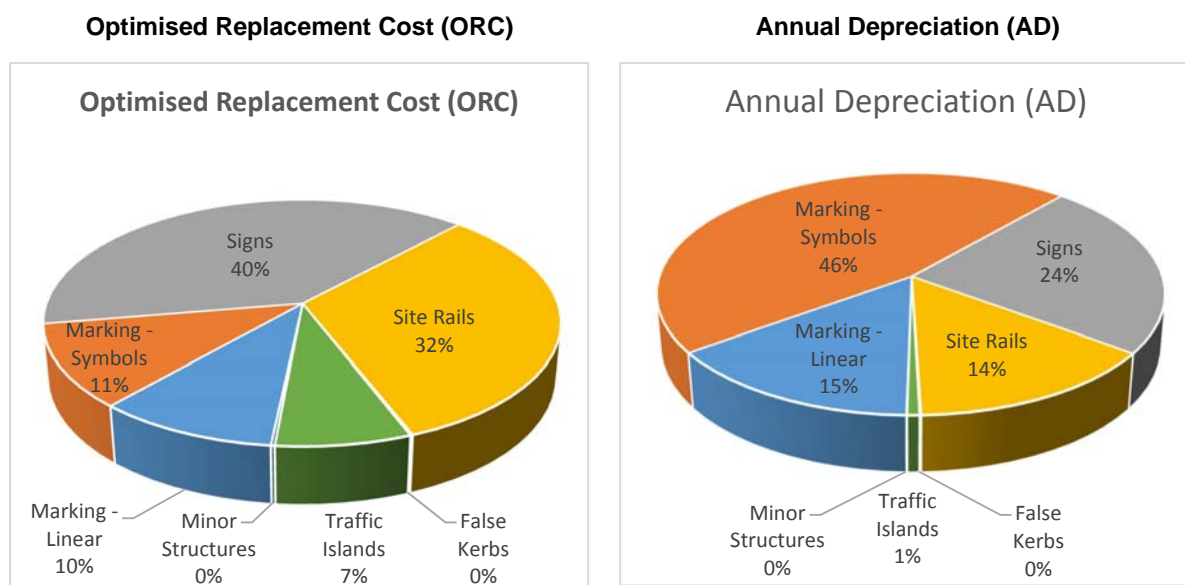
Table 19 sets out the quantity and value of traffic facilities on the network as at June 2017. Note that guard rails are included under LCMP for Bridges and Large Culverts.

Table 19: Summary of Traffic Facilities Assets

Asset Group	Asset Type	Quantity	Units	Optimised Replacement Cost (\$)	Optimised Depreciated Replacement Cost (\$)	Annual Depreciation (\$)
Traffic Facilities	Marking - Linear	990,725	m	239,539	37,608	39,635
	Marking - Symbols	1,648	No	265,325	118,450	124,835
	Signs	5,296	No	962,892	354,840	63,744
	Site Rails	7,512	m	784,441	219,272	38,780
	False Kerbs	9	No	3,054	382	191
	Traffic Islands	9	No	178,172	243,681	1,865
	Minor Structures	1	No	4,887	4,790	49
Total - Traffic Facilities				2,438,312	979,022	230,271

Traffic Facilities assets have very low values compared to the other asset types. This accounts for only 0.3% of ORC of Land Transport asset values. Annual Depreciation portion (4.3% of total AD) is higher than ORC portion, due to shorter useful lives of these assets.

Figure 42: Values of Traffic Facilities Assets



Asset Age and Condition

As no formal rating process is undertaken on the traffic facilities asset, the actual condition of the asset cannot be determined. This however is not a priority as the stock is in general continually inspected and maintained through consultant and Council network inspections and routine inspections completed under the Maintenance Contract.

It can be assumed due to the revolving nature of the asset that it is in average condition. There are some very old signs on the network that are in poor condition. These are identified on an ongoing basis through auditing and inspections, and replaced when they are no longer fulfilling their intended purpose.

Availability of asset age data for traffic facilities is low. In average, signs have a useful life of 15 years and rails have 30 years. Road Markings have a very low useful life which is estimated as 2 years.

Asset Capacity/Performance

Asset capacity for traffic facilities is related to a number of factors:

- The appropriate message in the appropriate spot at the appropriate time
- Road widths
- Daily traffic

The appropriate message relates to the road user being able to traverse the road network without surprise. Road width and traffic are related to providing accurate message to the road user for the changing condition.

6.7.5 Operations and Maintenance Plan

Traffic Services Maintenance

The Lifecycle Management Plan objective for **Traffic Services Maintenance** is:

Undertake regular inspection of signs and delineation devices to ensure that they are fit for purpose.

Routine maintenance for signage only relates to the:

- Painting of Posts
- Cleaning of signs and surfaces
- Straightening of posts and edge marker posts
- Re-erecting of non-damaged signs and edge marker posts.

6.7.6 Renewal Plan

Traffic Services Renewals

The Lifecycle Management Plan objective for **Traffic Services Renewals** is:

Implement a higher standard of delineation and signage on those routes of strategic importance.

Also to identify areas of the network which are considered inadequate in terms of delineation and signage. To ensure that the appropriate traffic device is located at the appropriate spot in the appropriate environment.

For Road Marking the annual outputs have averaged approximately 490km for the last three years. This amount will trend upwards as roads are sealed and widened thereby enabling centreline marking to be applied

Due to the new performance measures within the ONRC the signage and roadmarking standards will be reviewed within the next 2 years with an increasing focus on meeting those performance measures.

6.7.7 Development Works Plan

A previous Crash Reduction Survey identified sites requiring the upgrade of edge marker post and signage. These were completed under the Minor Safety Category from the 2005/2006 financial year onwards with the exception of 2006/2007, where funds were not allocated.

Night drives and audits of the network highlighted the need for this activity to be continued to maintain consistency throughout the network and this activity has been following a strategic programme since 2007/2008. This programme is providing a staged completion of sealed roads based on hierarchy and priority.

Due to the new performance measures within the ONRC the signage standards will be reviewed within the next 2 years with an increasing focus on meeting those performance measures.

The Creation / Acquisition / Augmentation Plan is as follows:

- (a) Selection Criteria based on a strategy of:
- Upgrading / Installing EMP as required by the ONRC,

- Where identified through safety audits, crash investigation reports, customer request placement of curve direction and speed advisory signs.
- (b) Standards and specifications – adopt those standards and specifications currently used in the construction industry.
- (c) Forecast of acquisition needs, costs and timing – As in the Annual Plan.
 - Funding Strategy – Funding is provided through Rounding rate and NZTA subsidy for roading, and community funding. Further when Council can fund Minor Safety, extra level of funding is available from NZTA.

6.7.8 Disposal Plan

In general the disposal of Traffic Facilities occurs through replacement of stock due to:

- Traffic accidents
- Vandalism
- Strategy replacement upgrade.

6.7.9 Traffic Facilities Expenditure

The figures below sets out the 2015-18 annual average, 2018-21 annual average, the LTP 10 year expenditure forecast and the 10 year average forecasted expenditure until 2037 for operations and maintenance, and renewal expenditure for Traffic Facilities assets. Refer to section 7.5 for the key assumptions these figures are based on. Average annual budget of \$0.5 M, \$0.2 M and \$0.2 M are allocated for Traffic Facilities operations and maintenance; renewal; and improvement works respectively.

Figure 43: Traffic Facilities Total Expenditure

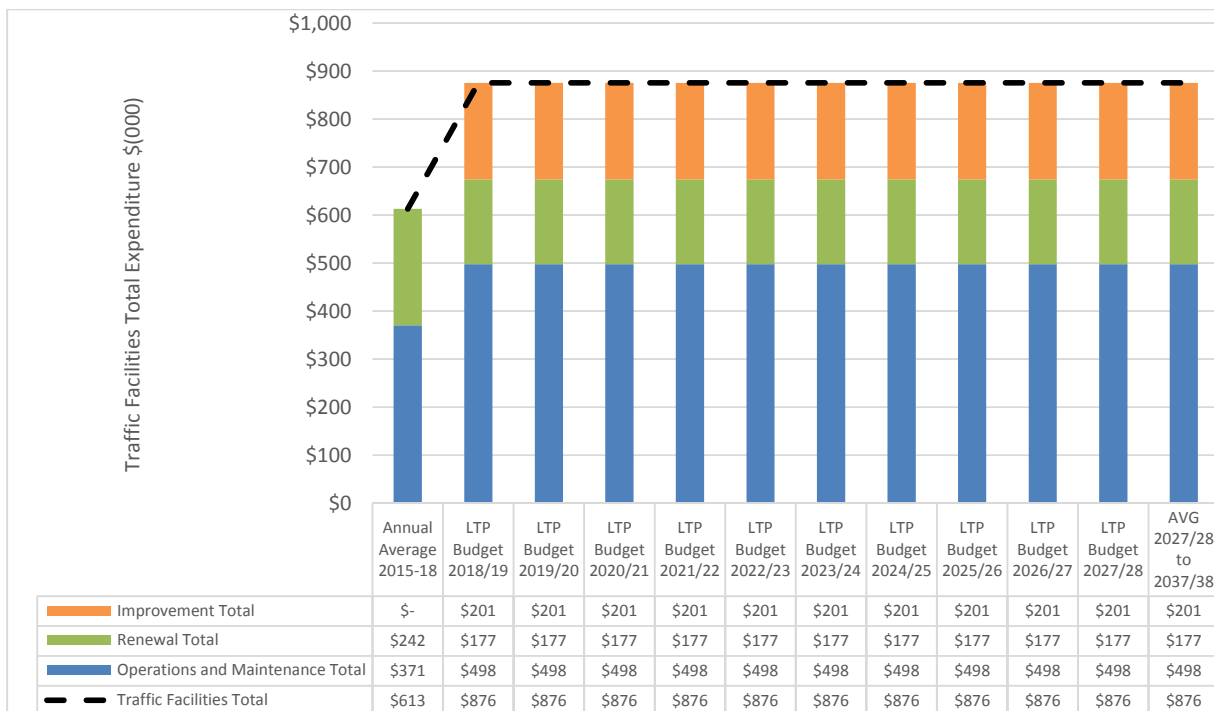


Figure 44: Traffic Facilities Operations and Maintenance Expenditure

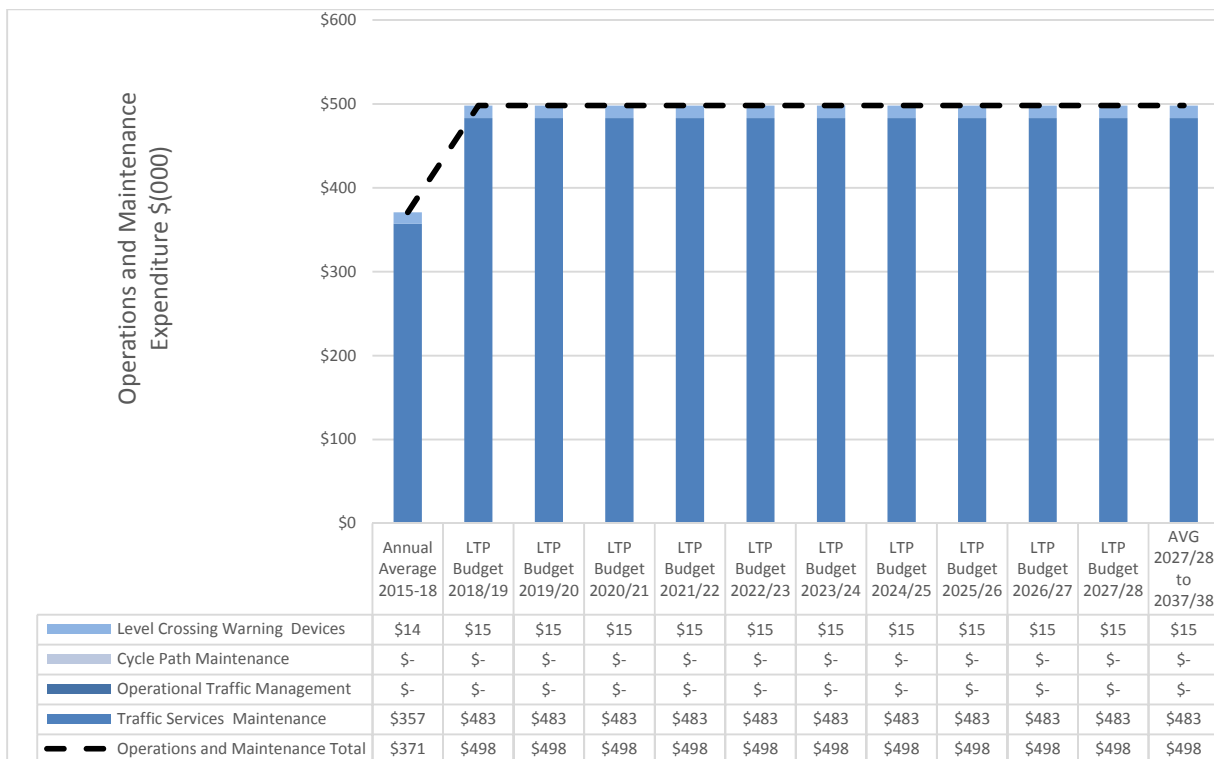


Figure 45: Traffic Facilities Capital Renewal Expenditure

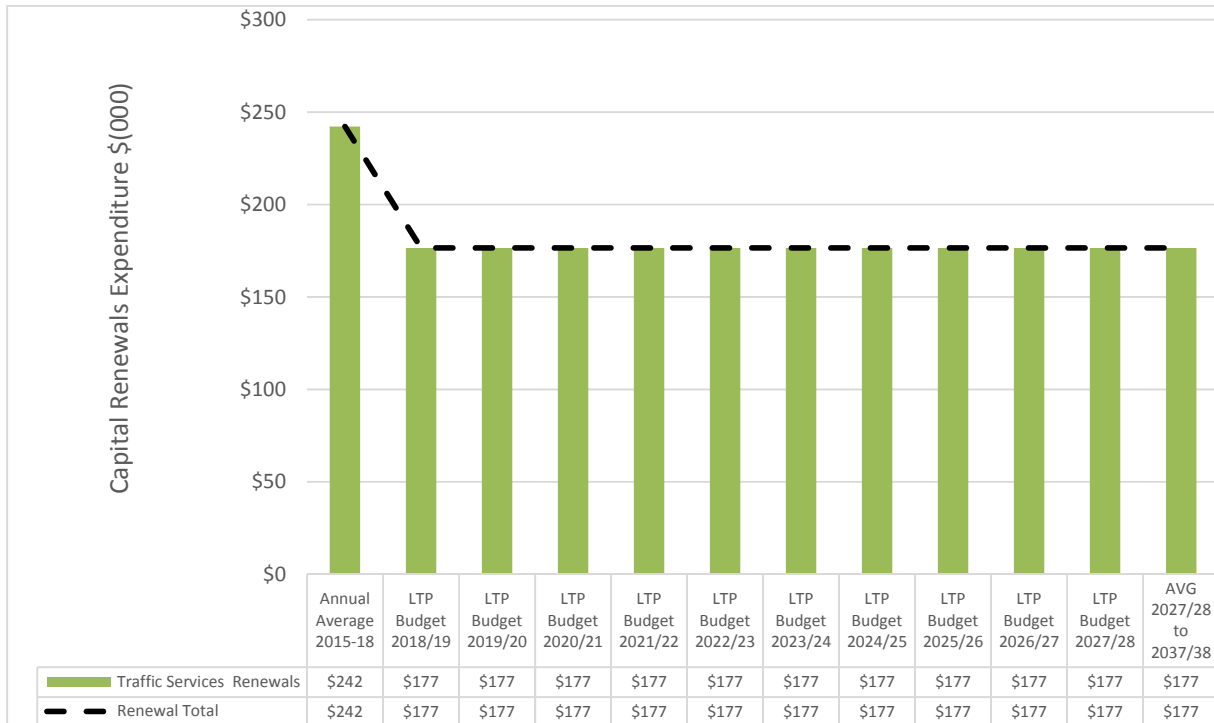
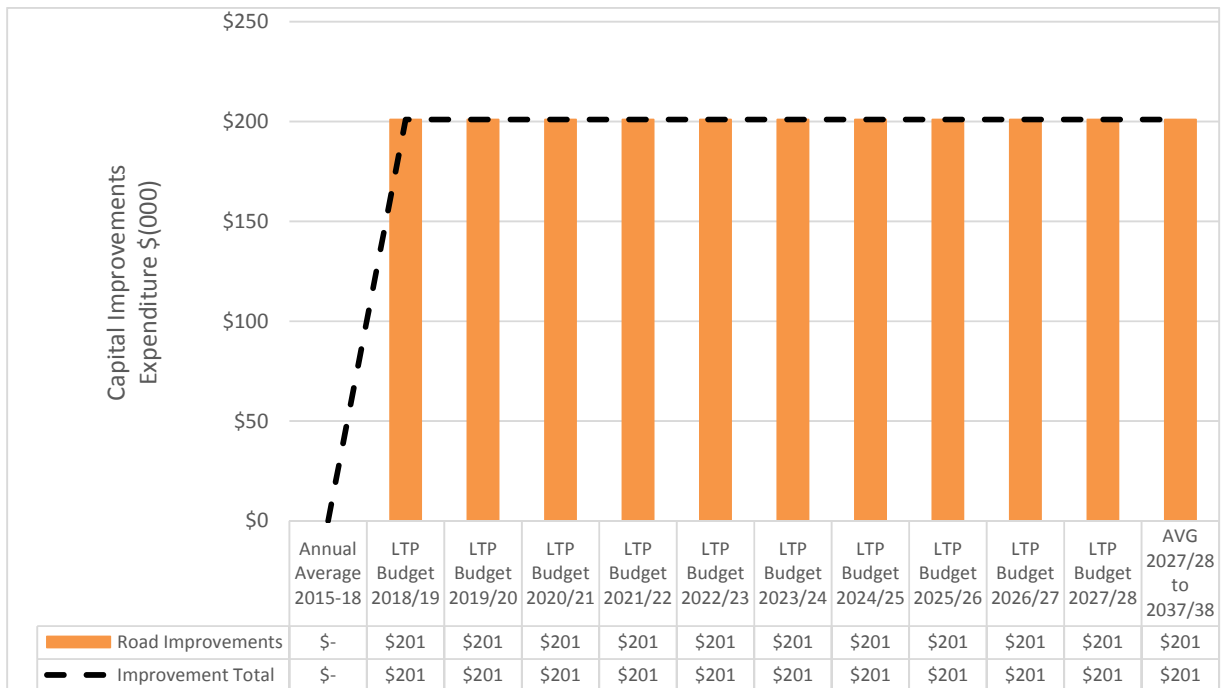


Figure 46: Traffic Facilities Capital Improvements Expenditure



6.8 Vegetation and Streetscapes

6.8.1 Overview

Vegetation and streetscapes provide the amenity elements to the land transport environment and includes grass berms, gardens and trees. The verges can be in an urban or rural environment and create a buffer between the road pavement and private land.

6.8.2 Key Issues and Risks

Key Issue	Description	Strategies to Address Key Issues
1	Programme Optimisation in Difficult Conditions	Status quo, re-allocate as appropriate within existing budgets.
2	Failure of Ageing Structures	Increase AM and NM activities to improve data, analysis (dTMS) and studies for predicting failures and renewals of ageing bridges. Increase Structures Renewals budget for ageing structures.
3	Falling Trees	Increase O&M budget for roads, drainage and safety related works such as fallen trees. Also some of the Minor Improvement budget for proactive identification and removal of hazardous / unstable trees. Work with property owners to manage trees on critical routes in the District.
4	Log Hauling from Forestry Land Use	Re-allocate existing pavement heavy maintenance and renewals budgets to focus on routes of known and expected log haulage
5	Understanding Critical Assets and Critical Routes	Increase AM and NM activities to improve data, analysis (dTMS) and studies for predicting failures and renewals of critical assets and routes; including on routes of single entry point and on Lifelines routes. Check ONRC categories and importance of these routes.

6.8.3 Business Case

CHBDC considers that it has a low confidence approach to vegetation and streetscape investment. Well managed roadside vegetation maintains unobstructed driving visibility and assists with protection of the assets and the environment.

A high risk has been identified with the safety of the trees within the network corridor and an investment is needed to continue to remove the high risk trees. This asset group has the second largest operations and maintenance expenditure. Service request calls for vegetation management have increased suddenly from 2013 due to the increasing age and deterioration of the district tree stock.

6.8.4 Physical Parameters

Table 1 below shows the current extent of the Vegetation and Streetscape assets.

Table 20: Extent of Assets

Berm Type	Sum of Length (m)	Width (m)	Area (m ²)	Number
Cover	4,617	88	9,129	44
Flowers	529	8	523	5

Flowers, Cover	309	3	423	2
Grass	84,324	2,191	313,514	636
Shrubs	2,368	94	11,910	22
Trees	N/A	N/A	N/A	160,663
Grand Total	92,147	2,384	335,499	161,372

Asset Values

Vegetation and Streetscapes physical data is contained within the RAMM database.

For all intent and purpose, the length of the network centreline determines the length of vegetation in the network that has to be managed and maintained. Of specific interest to Council is the district tree stock. A portion of this asset is kept on the register and is updated on a regular basis as trees are removed and replanted.

Asset Age and Condition

The entire tree stock is now entered into the RAMM database. A total of 160k trees have been identified, located and graded from good to poor. There are 37,000 poor to very poor condition.

The condition of the verges - turf and gardens has not been assessed. The useful lives of these assets (excluding trees and standard turf) tends to be less than 10 years and renewal and replacements are managed via cyclic maintenance rather than capital replacement schedules.

Asset Capacity/Performance

The asset can be divided into two components:

- Vegetation – Berm mowing / spraying
- District Tree Stock

The maintenance of the berm gardens is not a land transport function.

In terms of asset performance, the tree stock can be assessed against and its intended purpose. The tree stock was initially planted some years ago to stabilise areas and protect the roading network.

The trees were never actively managed and this has resulted in many trees falling over, or at risk of falling over. This is a liability for Council due to the large risk associated with the trees.

The grass and garden verges are maintained under the current Road Maintenance Contract.

6.8.5 Operations and Maintenance Plan

The Lifecycle Management Plan objective for **Environmental Maintenance** is:

Maintain verge (fire prevention) mowing and intersection sight distance mowing at the intervention levels specified in contract service specifications.

Undertake a programme of tree removal to target areas of high risk exposure from falling trees.

Table 21: Environmental Maintenance Annual Operational Service Level Targets

Activity Description	Annual OSL Target Quantities
Vegetation Control	\$400,000
Tree Removal	\$360,000

For the purpose of this LTAMP the asset component of Vegetation and Streetscapes will cover such things as the traditional verge mowing as completed through maintenance contracts, tree management and all related vegetation issues.

Mowing within the District is typically completed in rounds of the whole district (3 to 4 times per year) or in partial rounds not less than 25% of the District. The Contractor is responsible for identifying (using growth rate) and scheduling the mowing rounds accordingly throughout the year. Grass heights should not be allowed to exceed 250 mm on the rural network.

Tree removal remains a critical activity. The entire tree stock is now entered into the RAMM database. A total of 169,000 trees have been identified, located and graded 1 (good) to 5 (poor). There are 35,000 grade 5 trees.

6.8.6 Renewal Plan

Environmental Renewals

The Lifecycle Management Plan objective for **Environmental Renewals** is:

Undertake a programme of tree replanting to target areas of high risk exposure from road subsidence

1. Environmental renewals includes replanting of trees where large dangerous trees have been removed and required where land stability remains a problem and subsidence and dropouts are causing road stabilisation issues. This expenditure is captured in the pavement management renewal programme.

Table 22: Environmental Renewals Annual Operational Service Level Targets

Activity Description	Annual OSL Target Quantities
Tree Planting	\$50,000

The Renewal Replacement Plan is as follows:

(a) Selection Criteria

- Replacement of low risk stock in areas of poor stability and known subsidence

(b) Standards and specifications – adopt those standards and specifications currently used in the construction industry.

(c) Forecast of acquisition needs, costs and timing – No forecasts of new acquisitions is included in this plan.

- (d) Funding Strategy – NZTA subsidy allocation of council rates, where storm damage has occurred and remedial works include stabilisation through replanting then this avenue of funding is utilised at the higher NZTA subsidy rate.

6.8.7 Development Works Plan

The Creation / Acquisition / Augmentation Plan is as follows:

- (a) Selection Criteria
- Rank asset creation/acquisition projects – Under this plan the creation has been accounted for within the Renewal Replacement plan as this forms over 90% of the strategy.
- (b) Standards and specifications – adopt those standards and specifications currently used in the construction industry.
- (c) Forecast of acquisition needs, costs and timing – As defined in the Renewal Replacement Plan.
- (d) Funding Strategy – As defined in the Renewal Replacement Plan.

6.8.8 Disposal Plan

Disposal is any activities associated with disposal of a decommissioned asset, including sale, demolition or relocation. As part of the tree removal process, the disposal programme needs to be focused on those trees that pose the greatest risk.

6.8.9 Vegetation and Streetscapes Expenditure

The figures below sets out the 2015-18 annual average, 2018-21 annual average, the LTP 10 year expenditure forecast and the 10-year average forecasted expenditure until 2037 for operations and maintenance, and improvement expenditure for Vegetation and Streetscapes. Refer to section 7.5 for the key assumptions these figures are based on.

LIFECYCLE MANAGEMENT

Figure 47: Vegetation and Streetscape Total Expenditure



Figure 48: Vegetation and Streetscape Operations and Maintenance Expenditure

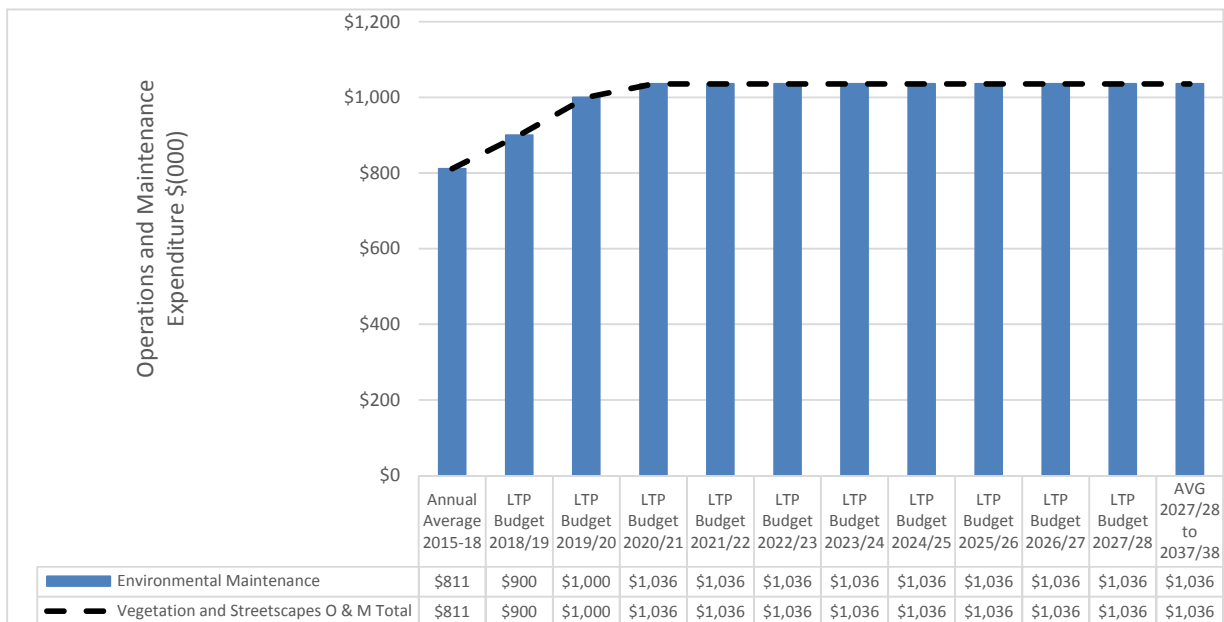


Figure 49: Vegetation and Streetscape Renewals Expenditure

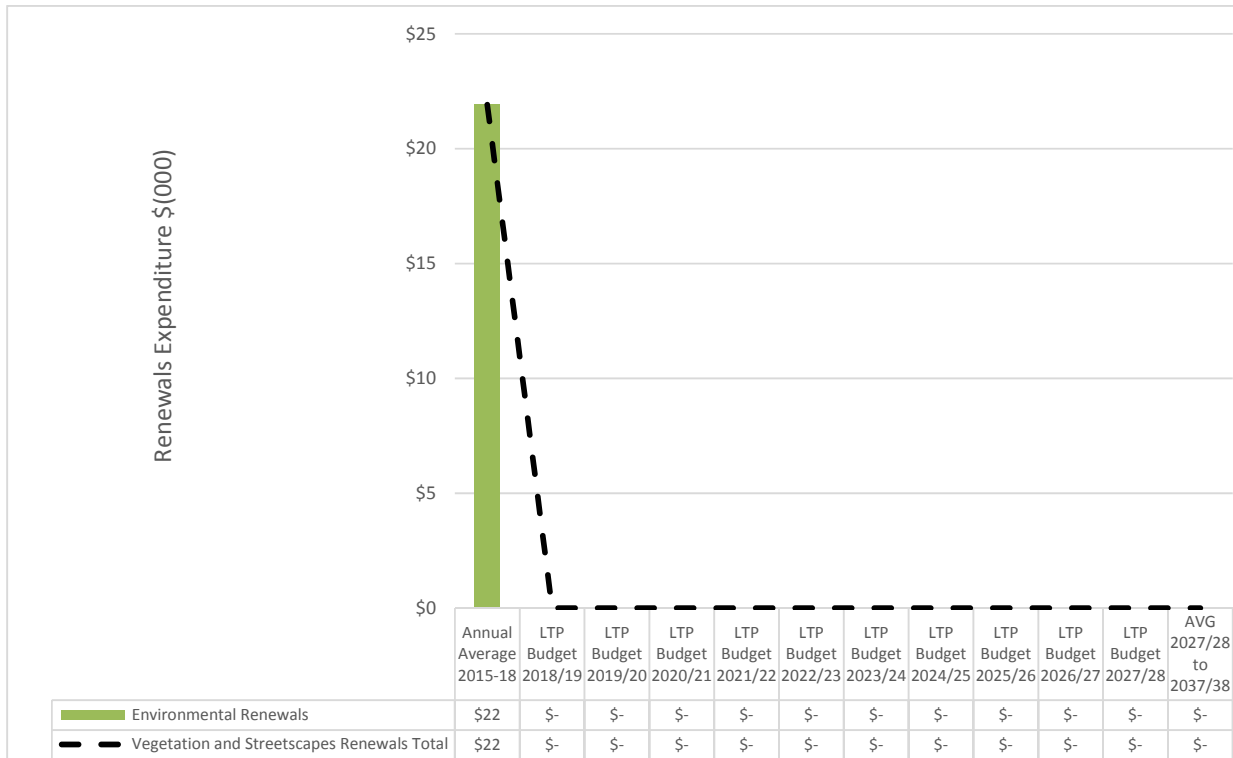
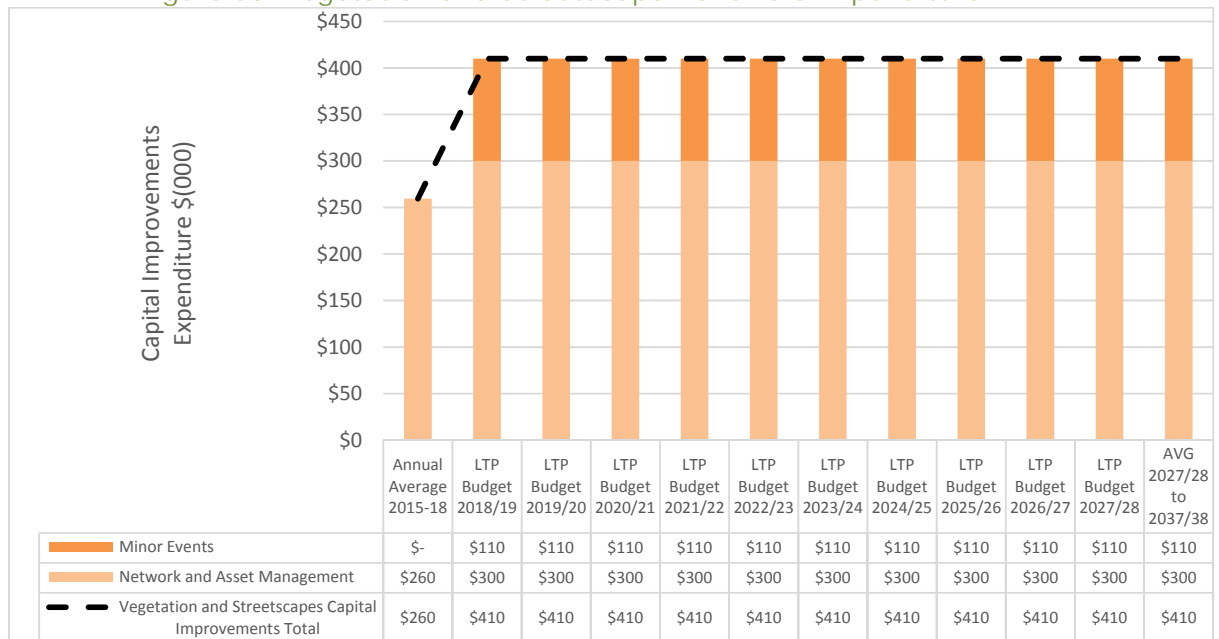


Figure 50: Vegetation and Streetscape Renewals Expenditure



6.9 Footpath, Pedestrian Accessways and Cycleways

6.9.1 Overview

The purpose of footpaths and pedestrian ways is to provide a safe, convenient and defined means for pedestrian movement alongside and linking roadways and public space.

6.9.2 Key Issues and Risks

Although Council undertakes general road corridor inspections for maintenance purposes, it currently does not undertake footpath condition rating, nor have a planned programme of footpath renewals.

Footpath repairs are a combination of scheduled and reactive works to ensure safety hazards are eliminated and to prevent an increase in size or cost to repair the damaged area.

6.9.3 Business Case

CHBDC considers that it has a MEDIUM level of confidence in its approach to footpath investment, and has identified areas for improvement.

Investment in drainage asset is required because:

- Provide a safe, convenient and defined means for pedestrians and cyclists linking roadways and public space.

An analysis of the current investment includes:

- Drainage assets form 9% (\$72.8 M) of the total Land Transport Activity Optimised Replacement Cost and 14% (\$1.1 M) of the annual depreciation.

Processes and methods currently employed are described in the maintenance, renewals and capital works sections that follow and include:

- Focus and effort go into spending only what it needs to; to make better investment decisions to sustain the transport network in the long term; by targeting the right treatments, to the right places, at the right times and for the right costs.
- This is explained further in the maintenance and renewal strategies.
- Footpath condition ratings are carried out yearly.

6.9.4 Physical Parameters

Asset Value & Quantities

The footpath physical data is contained within the RAMM database. This information is continually updated as footpaths are rehabilitated, and new footpaths added. Currently there are no identified cycle-ways in RAMM; however this will be updated when the implementation of the Walking and Cycling Strategy has been completed. Table 23 sets out the type and quantity of footpaths.

Table 23: Summary of Footpath Assets

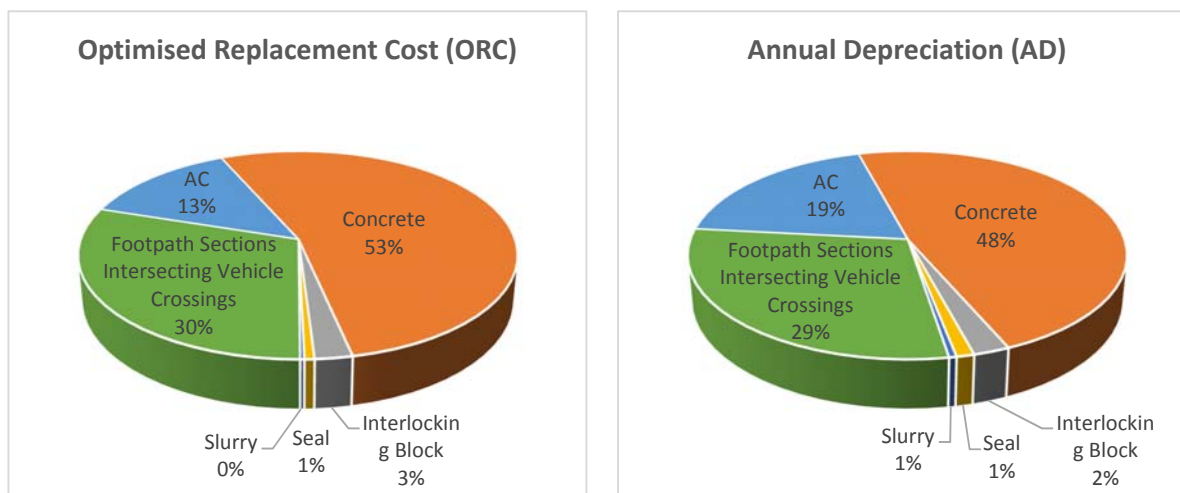
Asset Type / Material Type	Quantity (2014 Valuation)	Units	Optimised Replacement Cost (\$)	Optimised Depreciated Replacement Cost (\$)	Annual Depreciation (\$)
AC	9,579	m	2,153,057	441,809	52,829
Concrete	55,690	m	8,559,945	4,049,448	131,524
Interlocking Block	1,255	m	384,729	246,092	6,412
Metal	1,810	m	101,920	17,731	3,135
Seal	589	m	42,485	2,497	1,311
Slurry	9,579	m	2,153,057	441,809	52,829
Footpath sections intersecting Vehicle Crossings			4,840,258	3,135,312	80,671
Total			\$16,082,393	\$7,892,891	\$275,882

The footpath, pedestrian access-way and cycleway asset comprises of:

- Footpath, inclusive of kerb let downs, disabled crossings and pedestrian crossings
- Pedestrian access-ways
- Cycle-ways

Figure 50 below indicates, concrete footpaths account for 53% of the ORC and 48% of AD of footpaths.

Figure 51: Values of Footpath Assets



Asset Age and Condition

Every year the footpath is rated for defects. The rating methodology is focused on identifying the length of footpath that falls within a certain condition profile. The full rating methodology is set out in the Database Operation document. In general there are five levels of condition, 1 – Excellent with no work required, through to 5 – Very Poor with immediate renewal required.

Asset Capacity/Performance

Footpath asset capacity is linked to several factors:

- Pedestrian Volume/Use
- Traffic Volumes
- Location

Current capacity of footpath asset meets utilisation where provided, although not all urban streets have a footpath down each side.

6.9.5 Operations and Maintenance Plan

The Lifecycle Management Plan objective for **Footpath Maintenance** is:

To ensure that a safe surface is maintained on existing footpaths within the District. This will be achieved through the continued condition rating of the District footpaths to identify and programme areas of fault.

The maintenance of the footpath asset is generally not eligible for NZTA funding unless the footpath is part of a safety footpath, as part of subsidised street widening, part of a reconstruction project or as part of the Walking and Cycling Strategy.

In terms of maintenance, the footpath asset is generally maintained through renewal rather than maintenance. For this reason the funding of the footpath maintenance will appear in the renewal section of this LTAMP. A limited amount of maintenance is completed on sections of footpath (e.g. existing sealed or asphalt surface that is prone to pothole), which are treated through Routine Maintenance to maintain safety. Table 24 sets out the routine maintenance for the footpath asset.

Table 24: Footpath, Pedestrian Access-way and Cycle-way Maintenance Annual Operational Service Level Targets

Activity Description	Annual OSL Target Quantities
Footpaths and Pedestrian Access-ways	\$14,617
Cycle-ways	\$0

6.9.6 Renewal Plan

The Lifecycle Management Plan objective for **Footpath renewal** is:

To undertake a programme of renewal based on a condition and need. To protect against asset consumption and to maintain in a safe condition for pedestrians.

The footpath asset is generally maintained through the renewal of sections of footpath identified as being in poor or very poor condition (rated as ≥ 4). This forms the basis of the contract schedule of sites and is visually confirmed in the field. During this process the footpath length in total is considered and where there

are areas of lesser fault, but economics of treating the entire length can be realised, then the entire length is treated.

Table 25: Footpath, Pedestrian Access-way and Cycle-way Renewal Annual Operational Service Level Targets

Activity Description	Annual OSL Target Quantities
Footpaths and Pedestrian Access-ways	\$289,394
Cycle-ways	\$0

No further expenditure has been identified at this time for cycle-routes as the primary routes were installed in 2009/2010, in accordance with the Walking and Cycling Strategy.

Vehicle Crossings

Council's Policy of June 2007 places responsibility of the maintenance and renewal of vehicles crossings in residential areas on the respective property owners.

In the event of the footpath component of a vehicle crossing being renewed (generally) the remainder of the crossing is completed in conjunction with this work at the property owner's expense.

6.9.7 Development Works Plan

Capital works are those works that create a new asset that did not previously exist or work, which upgrade or improve an existing asset beyond its present capacity. They may result from growth, social or environmental needs. Assets may be acquired at no direct cost to the organisation (i.e. sub divisional development).

The Renewal Replacement Plan is as follows:

(a) Selection Criteria

- Formal procedure to rank asset creation/acquisition projects is to be determined through workshop with Council staff, a ratepayer request or petition submitted and approved by Council. Council policy states that Council will provide a footpath on one side of all developed community areas over time.
- Council's Walking and Cycling Strategy identifies actions to develop the pedestrian and cycle route network identified in the strategy.

Table 26 sets out the required length to meet this objective.

Table 26: Urban Footpath Length within the Network

Area	Both Sides (m)	One Side (m)	No Footpath (m)
Ruahine Ward	7,300	6,952	348
Ruataniwha Ward	60,931	59,633	1,298
Aramoana Ward	692	218	474
TOTAL	68,923	67,113	1,810

Table 27 sets out the current capital investment Council are making in the footpath asset.

Table 27: Footpath, Pedestrian Access-way and Cycle-way Capital Expenditure

Activity Description	Capital Expenditure Quantities
Footpaths and Pedestrian Access-ways	\$0
Cycle-ways	\$0

Although it is Council policy is to provide a footpath on one side of all developed community areas, there is no funding identified for this purpose, so surpluses from the renewal budgets are used. No capital expenditure has been identified for cycle-ways.

- (a) Standards and specifications – adopt those standards and specifications currently used in the construction industry.
- (b) Forecast of acquisition needs, costs and timing – No future need for creation or acquisition is identified in this LTAMP. Without further investigation into the expected demand on the asset as defined in the Section 4 Future Demand any programme of creation acquisition would be forecasting funding on little knowledge.
- (c) Funding Strategy – Total cost of acquisition proposals, costs apportionment i.e. NZTA, Developers, TLA, etc.

6.9.8 Disposal Plan

The only disposal associated with the footpath asset is at the time of renewal where footpath in very poor condition is being renewed.



FINANCIAL SUMMARY

7	Financial Summary	700
7.1	Business Case Approach and Investment Assessment	700
7.2	Expenditure Forecasts	700
7.3	Funding Strategy and Forecasts	707
7.4	Valuation Forecasts	708
7.5	Key Assumptions	710
7.6	Future Improvements	711

7 Financial Summary

7.1 Business Case Approach and Investment Assessment

7.1.1 Business Case Approach and Investment Assessment Framework

The Business Case Approach

Business Case Approach (BCA) is a process that improves investment decision-making by clarifying why we are doing work, defining our strategic problems and benefits, ensuring there is robust evidence behind our strategic response, and building a robust case for investment.

BCA demonstrates the degree to which the proposed programme of works is the right solution to invest in. BCA seeks at the earliest stage of the process, to clearly define the problems and contextual state of the district, with engagement of key partners and stakeholders where necessary. This early engagement is to get consensus on and understanding of the cause, scale of consequences and scale of benefits of addressing the problems. This approach will help filter whether a problem is worth investing more time and resource.

The business case also seeks to make sure during the lifecycle of a programme or project that the 'reasons' for doing it are still sound, and that it has a clear link back to organisational priorities and issues.

Underpinning this approach is good quality evidence to support the investment proposed in the AMP.

More details on the Business Case Approach is in the Executive Summary Section 1.8 and Lifecycle Management Section 6.

Investment Assessment Framework

NZTA requirements for BCA also include its Investment Assessment Framework (IAF), which is used to give effect to the Government Policy Statement (GPS) by prioritizing proposals from Approved Organisations (AO) for the 2018-21 National Land Transport Programme (NLTP).

The latest IAF gives greater importance in prioritizing and allocating funding to AOs whose proposals demonstrate BCA and are in terms of value-for-money, 'Results Alignment' to GPS priorities and Cost-Benefit appraisals.

More details on the Investment Assessment Framework is in the Programme Business Case Sections 1.4.1, 1.4.2, and 1.4.3.

7.2 Expenditure Forecasts

7.2.1 Introduction

CHBDC's Infrastructure Strategy 2018 – 2048, considers how Council will manage its significant infrastructure assets over the next 30 years. The other sections of this AMP describe strategies to manage the Land Transport assets. This section summarises the expenditure forecasts and funding strategies to implement these management strategies.

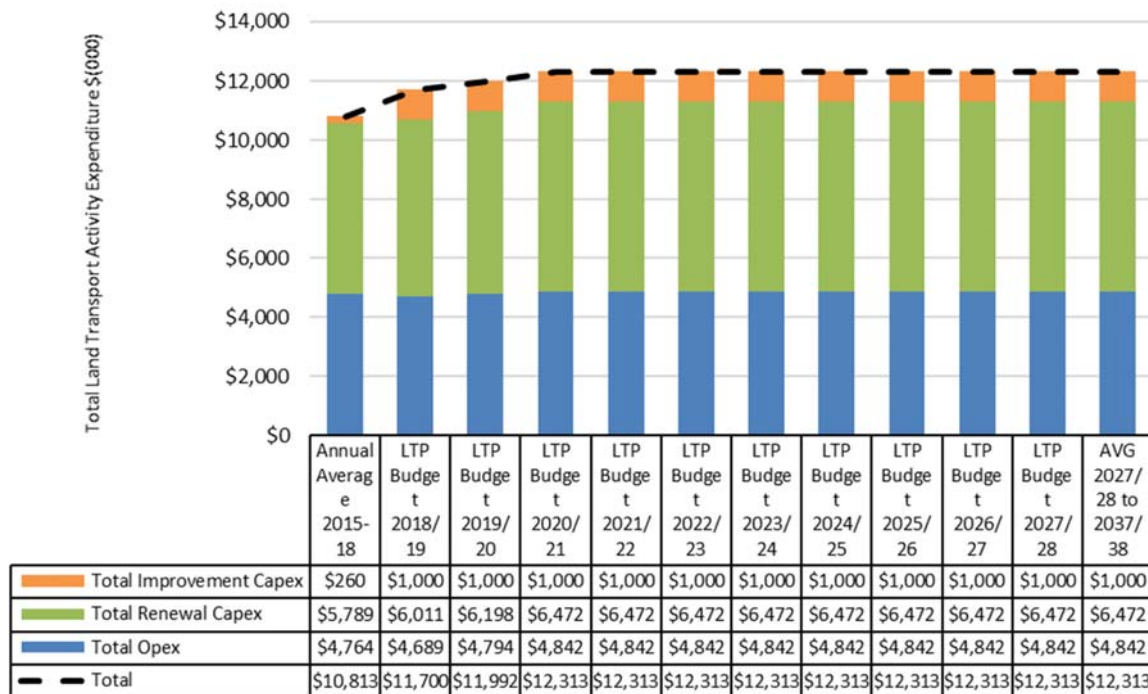
A table of the Land Transport Financial Forecasts showing subsidised and unsubsidised expenditure for 20-year period from 2018/19 to 2037/48 is included as Figure 1 this section. The forecast for the first 10-year

period is detailed further in this section below. The financial forecasts are updated on a regular basis as the road network needs change.

7.2.2 Total Expenditure

Figure 1 sets out the 2015-18 average actual achieved, LTP 10 year expenditure forecast and the 10 year average forecasted expenditure until 2037/38, for all expenditure types for the Land Transport activity. Refer to Section 7.5 for the key assumptions these figures are based on.

Figure 1: Land Transport Activity Overall Expenditure by Expenditure Type



Forecasted expenditure is relatively flat with no out of the ordinary expenditure foreseen over the next 20 years. This is based on limited growth, a stable infrastructure and the Council's strategy to maintain the infrastructure in an "as is" state. These values are only for subsidised budgets, not unsubsidised budgets.



FINANCIAL SUMMARY

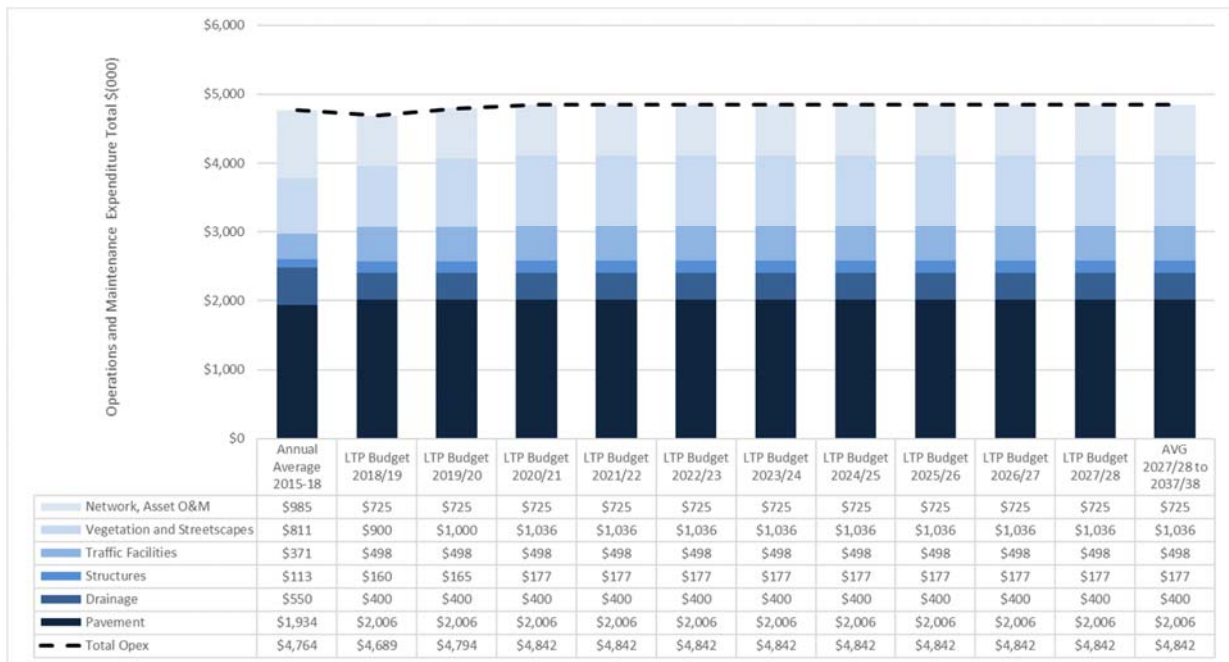
Table 1: Land Transport Activity Overall Expenditure Breakdown

Subsidised/ Unsubsidised	Expenditure Type	Activity Type	NZTA Code	Activity Subtype	Annual Average 2015- 18	LTP Budget 2018/19	LTP Budget 2019/20	LTP Budget 2020/21	LTP Budget 2021/22	LTP Budget 2022/23	LTP Budget 2023/24	LTP Budget 2024/25	LTP Budget 2025/26	LTP Budget 2026/27	LTP Budget 2027/28	AVG 2027/28 to 2037/38
Subsidised	O & M	Pavement	111	Sealed Pavement Maintenance	\$ 1,261,824	\$ 1,363,993	\$ 1,363,993	\$ 1,363,993	\$ 1,363,993	\$ 1,363,993	\$ 1,363,993	\$ 1,363,993	\$ 1,363,993	\$ 1,363,993	\$ 1,363,993	\$ 1,363,993
Subsidised	O & M	Pavement	112	Unsealed Pavement Maintenance	\$ 335,210	\$ 342,125	\$ 342,125	\$ 342,125	\$ 342,125	\$ 342,125	\$ 342,125	\$ 342,125	\$ 342,125	\$ 342,125	\$ 342,125	\$ 342,125
Subsidised	O & M	Drainage	113	Routine Drainage Maintenance	\$ 550,116	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000	\$ 400,000
Subsidised	O & M	Bridges, Guardrails & Retaining Structures	114	Structures Maintenance	\$ 113,009	\$ 160,000	\$ 165,000	\$ 177,009	\$ 177,009	\$ 177,009	\$ 177,009	\$ 177,009	\$ 177,009	\$ 177,009	\$ 177,009	\$ 177,009
Subsidised	O & M	Vegetation and Streetscapes	121	Environmental Maintenance	\$ 811,296	\$ 900,000	\$ 1,000,000	\$ 1,035,548	\$ 1,035,548	\$ 1,035,548	\$ 1,035,548	\$ 1,035,548	\$ 1,035,548	\$ 1,035,548	\$ 1,035,548	\$ 1,035,548
Subsidised	O & M	Traffic Facilities	122	Traffic Services Maintenance	\$ 357,132	\$ 483,000	\$ 483,000	\$ 483,000	\$ 483,000	\$ 483,000	\$ 483,000	\$ 483,000	\$ 483,000	\$ 483,000	\$ 483,000	\$ 483,000
Subsidised	O & M	Traffic Facilities	123	Operational Traffic Management	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Subsidised	O & M	Traffic Facilities	124	Cycle Path Maintenance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Subsidised	O & M	Traffic Facilities	131	Level Crossing Warning Devices	\$ 13,557	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000
Subsidised	O & M	Pavement	140	Minor Events	\$ 337,219	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000
Subsidised	O & M	Network, Asset Management & Overhead	151	Network and Asset Management	\$ 984,585	\$ 724,855	\$ 724,855	\$ 724,855	\$ 724,855	\$ 724,855	\$ 724,855	\$ 724,855	\$ 724,855	\$ 724,855	\$ 724,855	\$ 724,855
				Subtotal O&M:	\$ 4,763,948	\$ 4,688,973	\$ 4,793,973	\$ 4,841,530	\$ 4,841,530	\$ 4,841,530	\$ 4,841,530	\$ 4,841,530	\$ 4,841,530	\$ 4,841,530	\$ 4,841,530	\$ 4,841,530
Subsidised	Renewal	Pavement	211	Unsealed Road Metalling	\$ 754,064	\$ 475,000	\$ 475,000	\$ 475,000	\$ 475,000	\$ 475,000	\$ 475,000	\$ 475,000	\$ 475,000	\$ 475,000	\$ 475,000	\$ 475,000
Subsidised	Renewal	Pavement	212	Sealed Road Resurfacing	\$ 1,642,831	\$ 1,363,674	\$ 1,903,675	\$ 1,863,675	\$ 1,863,675	\$ 1,863,675	\$ 1,863,675	\$ 1,863,675	\$ 1,863,675	\$ 1,863,675	\$ 1,863,675	\$ 1,863,675
Subsidised	Renewal	Drainage	213	Drainage Renewals	\$ 1,052,871	\$ 1,206,625	\$ 1,206,625	\$ 1,206,625	\$ 1,206,625	\$ 1,206,625	\$ 1,206,625	\$ 1,206,625	\$ 1,206,625	\$ 1,206,625	\$ 1,206,625	\$ 1,206,625
Subsidised	Renewal	Pavement	214	Sealed Road Pavement Rehabilitation	\$ 1,352,987	\$ 1,889,611	\$ 1,536,000	\$ 1,850,000	\$ 1,850,000	\$ 1,850,000	\$ 1,850,000	\$ 1,850,000	\$ 1,850,000	\$ 1,850,000	\$ 1,850,000	\$ 1,850,000
Subsidised	Renewal	Bridges, Guardrails & Retaining Structures	215	Structures Component Replacements	\$ 722,663	\$ 900,000	\$ 900,000	\$ 900,000	\$ 900,000	\$ 900,000	\$ 900,000	\$ 900,000	\$ 900,000	\$ 900,000	\$ 900,000	\$ 900,000
Subsidised	Renewal	Vegetation and Streetscapes	221	Environmental Renewals	\$ 21,918	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Subsidised	Renewal	Traffic Facilities	222	Traffic Services Renewals	\$ 242,151	\$ 176,500	\$ 176,500	\$ 176,500	\$ 176,500	\$ 176,500	\$ 176,500	\$ 176,500	\$ 176,500	\$ 176,500	\$ 176,500	\$ 176,500
				Subtotal Renewals:	\$ 5,789,485	\$ 6,011,410	\$ 6,197,800	\$ 6,471,800	\$ 6,471,800	\$ 6,471,800	\$ 6,471,800	\$ 6,471,800	\$ 6,471,800	\$ 6,471,800	\$ 6,471,800	\$ 6,471,800
Subsidised	Capital Improvements	Pavement	324	Road Improvements		\$ 339,000	\$ 339,000	\$ 339,000	\$ 339,000	\$ 339,000	\$ 339,000	\$ 339,000	\$ 339,000	\$ 339,000	\$ 339,000	\$ 339,000
Subsidised	Capital Improvements	Traffic Facilities	324	Road Improvements		\$ 201,000	\$ 201,000	\$ 201,000	\$ 201,000	\$ 201,000	\$ 201,000	\$ 201,000	\$ 201,000	\$ 201,000	\$ 201,000	\$ 201,000
Subsidised	Capital Improvements	Vegetation and Streetscapes	357	Resilience Improvements		\$ 110,000	\$ 110,000	\$ 110,000	\$ 110,000	\$ 110,000	\$ 110,000	\$ 110,000	\$ 110,000	\$ 110,000	\$ 110,000	\$ 110,000
Subsidised	Capital Improvements	Vegetation and Streetscapes	341	Minor Improvements	\$ 259,508	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000
Subsidised	Capital Improvements	Bridges, Guardrails & Retaining Structures	322	Replacement of Bridges and Structures		\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000
				Subtotal Capital Improvements:	\$ 259,508	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000	\$ 1,000,000
				Total budget:	\$ 10,812,941	\$ 11,700,383	\$ 11,991,773	\$ 12,313,330	\$ 12,313,330	\$ 12,313,330	\$ 12,313,330	\$ 12,313,330	\$ 12,313,330	\$ 12,313,330	\$ 12,313,330	\$ 12,313,330

7.2.3 Operations and Maintenance Expenditure

Figure 2 sets out the 2015-18 average actual achieved, LTP 10 year expenditure forecast and the 10 year average forecasted expenditure until 2037/38 for operations and maintenance per asset group/activity.

Figure 2: Operations and maintenance expenditure per asset group/ activity



Note: Structures includes bridges (including large culverts), guardrails and retaining structures. Traffic facilities include street lighting.

The increase in pavement maintenance expenditure is due to undertaking heavy maintenance work that is caused by log hauling trucks.

7.2.4 Capital Expenditure – Renewal

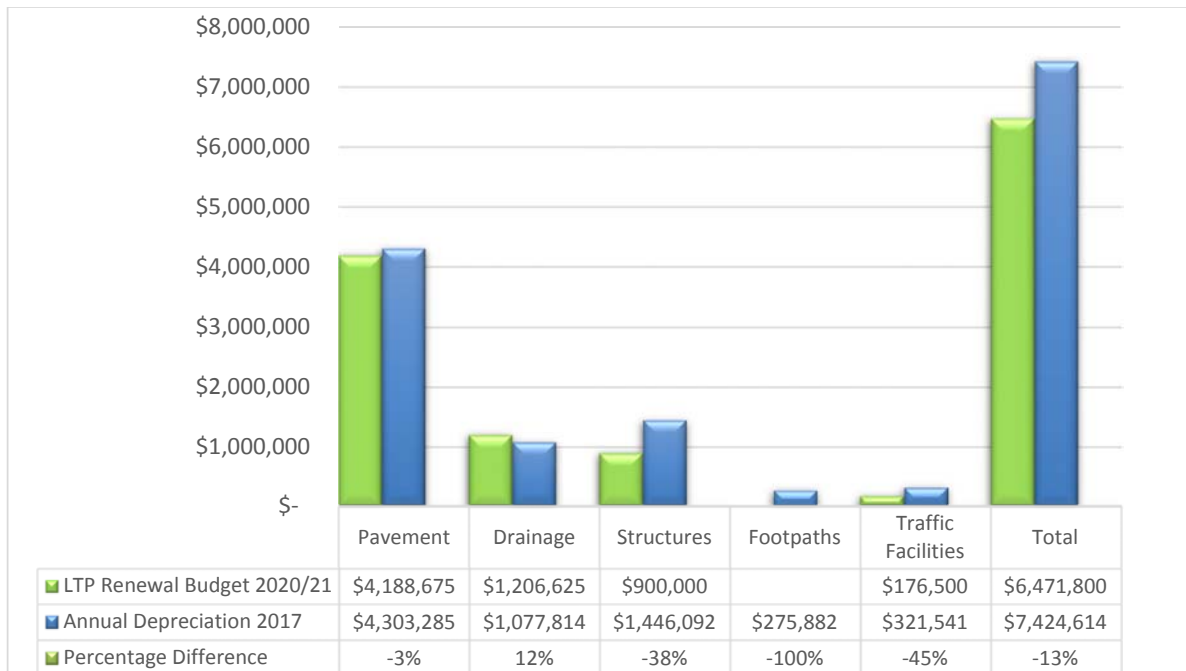
Figure 3 sets out the 2015-18 average actual achieved, LTP 10 year expenditure forecast and the 10 year average forecasted expenditure until 2037/38 for renewals per asset group/activity.

Figure 3: Capital Renewal Expenditure per Asset Group/Activity



Figure 4: 2020/21 LTP Renewal Budget Compared to 2017 Annual Depreciation per Asset Group

Figure 4 provides a comparison between the 2020/21 LTP Budget and the 2017 Annual depreciation. Forecasted expenditure difference is within 15% of the annual depreciation for pavements, drainage, traffic facilities and overall.



Aside from drainage, the proposed LTP Renewal Budget is consistently less than the Annual Depreciation. Overall the 2020/21 Renewal Budget is 13% less than the 2017 Annual Depreciation. The expenditure varies based on requirements and the Council programme to ensure that contracts are of sufficient size to attract good competition.

7.2.5 Capital Expenditure - Improvements

Figure 5: Capital Improvements Expenditure



Figure 5 sets out the 2015-18 average actual achieved, LTP 10 year expenditure forecast and the 10 year average forecasted expenditure until 2037/38 for improvements.

Items identified as Improvement projects primarily include road pavements, traffic services and retaining walls. Due to natural occurring phenomena, hazardous trees fall onto the pavement. Resilience improvements will fund risk mitigation by removing them as well as replanting them. Other heavy damage to the pavements include faults caused by log hauling. Council made a decision in 2009 to limit the amount of seal extensions undertaken in the district. In addition to this Council changed its requirements on sub-division development through the District Plan, where developers are required to create any new infrastructure and depending on location also maintain the newly created infrastructure for a set period. This coupled with the low growth projections enables the council to minimise the level of capital improvements across the district.

Cycleway projects are primarily not developed within the road corridor due to a lack of room in the district's existing road corridors to construct new cycle ways. Any cycleway and walkway created is therefore funded either by external sources or from other council budgets.

As outlined in section 4, there has been limited growth in the District in recent years and this trend is expected to continue. Therefore, all capital improvement projects identified are related to meeting LOS requirements.

7.3 Funding Strategy and Forecasts

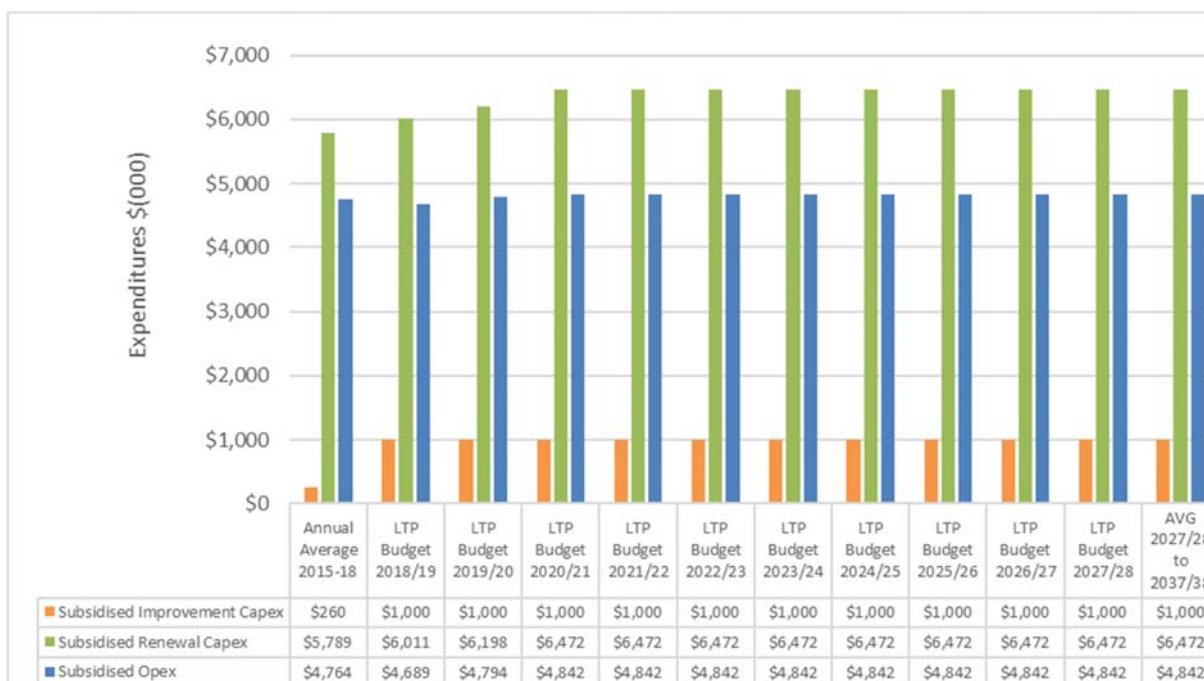
Council's funding policy in the past has been to utilise a combination of the New Zealand Transport Agency (NZTA) subsidy and land transport Council rates for maintenance and development of the roading network. Where appropriate, and agreed by Council, loans may be raised for the development of the roading infrastructure. It is envisaged that this policy will continue in the future.

7.3.1 NZTA funding subsidy

The management and maintenance of the roading network is subsidised by financial assistance received from NZTA. Different funding criteria apply to different road categories. The roads that Hawke's Bay District Council are responsible for are all Local Roads. CHBDC receives subsidy rates of 60% for Operations, Capital Renewals and Capital Improvements.

In order to qualify for the NZTA subsidy Council must ensure that any project meets one or more of the objectives of the Land Transport Management Act. Figure 6 sets out the expenditure that meets this criteria for each expenditure type.

Figure 6: Subsidised Expenditure per Expenditure Type



7.3.2 Development Contributions

Council seeks to adopt a revised policy by June 2018. The key purpose of the policy is to ensure that new growth funds infrastructure needed to support new residents and business, and those who cause the need for and benefit from that infrastructure fund a fair share of the cost of additional infrastructure to meet that growth. Funding should therefore be sourced from the community or communities that benefit from the development. Development contributions are not a tool to fund the cost of maintaining infrastructure or changing levels of service for existing users. Those costs will be met from other sources.

No development contributions are allowed for in the 10 year funding forecasts.

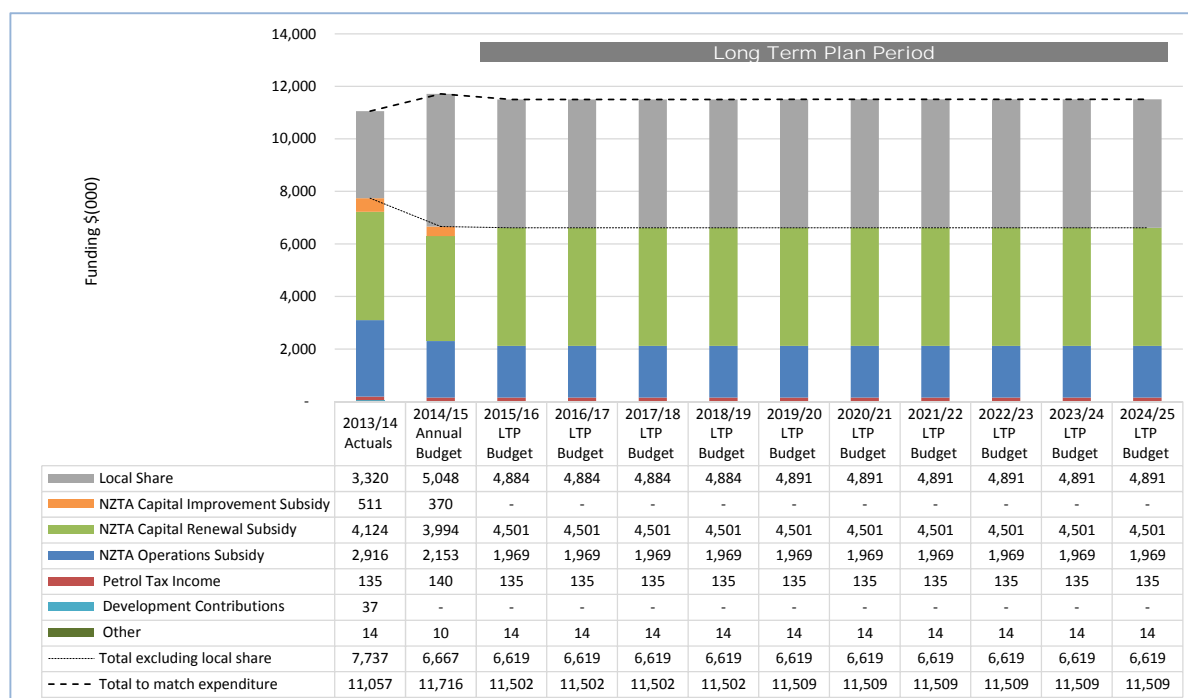
7.3.3 Other funding sources

Council forecasts \$14,000 annual revenue for next 10 years from fees and charges. This includes fees from traffic management plans, corridor access requests, vehicle crossings and overweight permits.

Council also has an annual income of \$135,000 over the next 10 years from Petrol Tax.

Figure 7 is a summary of the funding for the Land Transport Activity in 2014. Local Share funding sources for 2015 and 2016 are currently under review.

Figure 7: Summary of funding for the Land Transport Activity \$(000)



7.4 Valuation Forecasts

An asset valuation is used for asset management (calculating long term asset renewal projections), identifying loss of service potential (depreciation) and for financial reporting purposes. Statutory financial reporting requirements require CHBDC to revalue its fixed assets at least once every 5 years, or in any year where there has been a significant movement in asset values.

CHBDC undertakes a full valuation of land transport assets every 3 years and a short form valuation annual in between. The current value of depreciation is approximately 13% more than what is proposed to be invested in the renewals of assets (refer Figure 4).

7.4.1 Valuation Methodology

The valuations completed for Council are either a short form or a full valuation carried. A full valuation was undertaken in 2017 and the methodology is outlined below:

- **Asset Data:** Transportation assets owned by CHBDC and held in the RAMM asset information management system were included in the valuation. The data was reviewed to establish confidence in its accuracy and completeness.
- **Unit Replacement Cost:** The rate change from applying the latest cost adjustment factors resulted in increases of 4.73% for the bridge asset class, 3.29% for the construction index and a significant 13.91% for the revised reseal index respectively. The net effect of these changes is a reversal of the reduction in rates for the 2015/16 valuation where rates were adjusted based on these indices.
- **Useful Lives:** The existing valuation setup applies a modification to the remaining useful life for assets, based on the populated available condition data for that asset. The modification can either extend the remaining useful life for assets in good or excellent condition, or conversely, reduce the remaining usual life for those assets in poor or very poor condition.
- **Depreciation Methods:** The annual depreciation indicates the quantity of funding that should be funded each year, to cover the cost of renewing existing assets with a modern equivalent asset at the end of its useful life. These calculations are performed within the RAMM Asset Valuation module. For the 2016/17 valuation, the depreciation method for the Traffic Facility – False Kerbs assets have been revised to use the straight-line depreciation method, in recognition of the revised total useful life and for consistency with the depreciation approach used for other assets.
- **Valuation Tool:** RAMM Valuation Module was used to carry out the valuation.

More details are provided in the CHBDC RAMM Asset Valuation for the 2016/17 Financial Year.

7.4.2 Valuation Summary

Asset valuation derives the following values at component level for each asset:

- **Optimised Replacement cost (ORC):** The cost of the modern equivalent asset that would be used to replicate the existing asset. The asset cost is 'optimised' down to allow for surplus capacity or technical obsolescence.
- **Optimised Depreciation Replacement Cost (ODRC):** The optimised replacement cost after deducting the wear of an asset to reflect the remaining useful life of the asset, calculated on the gross replacement cost of modern equivalent assets (MEA).
- **Annual Depreciation (AD):** Annual depreciation is the rate of depreciation (straight-line) per year and is the optimised replacement cost divided by the estimated useful life.

Table below, summarises the current valuation by asset group.

Table 2: Valuation Summary (October 2017)

Asset Group	Asset Type/Component	ORC	ODRC	AD
Pavement	Base Course	\$121,173,074	\$64,748,826	\$1,827,754
	Formation	\$223,338,608	\$223,338,608	\$0
	Sub Base	\$224,526,579	\$214,598,752	\$313,299
	Top Surface	\$	\$6,839,983	\$2,087,032
	Wearing Course - Unsealed	\$9,089,514	\$1,298,502	\$1,298,502
	Land Under Roads	\$37,782,749	\$37,782,749	\$0
Drainage	Drainage	48,823,082	24,205,416	717,158
	SW Channel	\$23,643,779	\$13,668,477	\$496,756
Bridges, Guardrails & Retaining Structures	Bridge (Culvert)	\$21,586,138	\$10,531,044	\$297,955
	Bridge (Deck)	\$85,889,954	\$43,517,119	\$861,120
	Bridge (Railing)	\$1,051,779	\$545,959	\$35,059
	Guard Rails	\$57,362	\$12,267	\$1,877
	Retaining Wall	\$5,867,414	\$4,063,929	\$132,817
	Minor Structure	\$337,801	\$287,009	\$2,815
Traffic Facilities	Street Light (Pole)	\$998,209	\$416,864	\$39,929
	Street Light (Bracket)	\$193,193	\$74,097	\$7,724
	Street Light (Light)	\$264,161	\$56,240	\$30,037
	Marking	\$385,664	\$91,123	\$91,123
	Traffic Facility	\$3,009	\$1,505	\$201
	Railing	\$581,208	\$346,900	\$19,366
	Sign	\$1,654,669	\$653,667	\$105,795
Footpaths	Footpath	\$8,495,799	\$2,833,975	\$188,458
	Crossing	\$4,768,800	\$1,887,402	\$160,402
Total for Land Transport Assets		\$817,061,457	\$633,947,323	\$8,434,401

7.5 Key Assumptions

Key assumptions made in the financial forecasts are as follows:

1. The figures indicated in this section are average actual dollar values for 2015-18 and uninflated dollar values with base year 2020/21 for 2018 to 2038.

2. Overheads such as staff costs, vehicles and training are not included, as well as loan repayments and transfers to and from reserves
3. NZTA will continue to provide subsidised funding to Council for the road network at its current rates
4. Depreciation will be raised and used to fund renewals and replacement of deficient infrastructure
5. Council will continue to fund the level of service currently set out in the LTAMP
6. No account has been taken of the impacts of the One Road Network Classification system, but implemented changes to the levels of service will be updated within the AMP.
7. No account has been taken of the impacts related to the acceptance and implementation of the Risk Management Plan
8. Assumptions made on Total Useful Life and Residual Useful Lives of the assets in relation to the asset valuation
9. The asset data is considered to be reliable and fit for the purpose for developing the long term financial forecasts.

7.6 Future Improvements

The following improvements to the financial summary section have been identified:

1. Road Improvements
 - Road pavements
 - Street widening
 - Repair damaged roads
 - Traffic services
 - Retaining walls
2. Resilience Improvements
 - Hazardous tree removal due to wind
3. Minor Improvements
 - Hazardous tree removal due to wind
 - Replanting of trees
4. Replacement of Bridges, Guardrails and Structures
 - Repair bridge approach
 - Fix guardrails
5. Safety Improvements



Table of Contents

8	Asset Management Practice	800
8.1	Introduction.....	800
8.2	Business Systems	802
8.3	Asset Management Systems	803
8.4	Data Management	806
8.5	Support Process and Systems.....	807
8.6	Consultation.....	808
8.7	Emergency Planning.....	808
8.8	Business Continuity Plans	809
8.9	Asset Management Team.....	809
8.10	Asset Management Plan review and monitoring	810

8 Asset Management Practice

8.1 Introduction

This section covers the key Business Processes in place to assist CHBDC in delivering asset management and services.

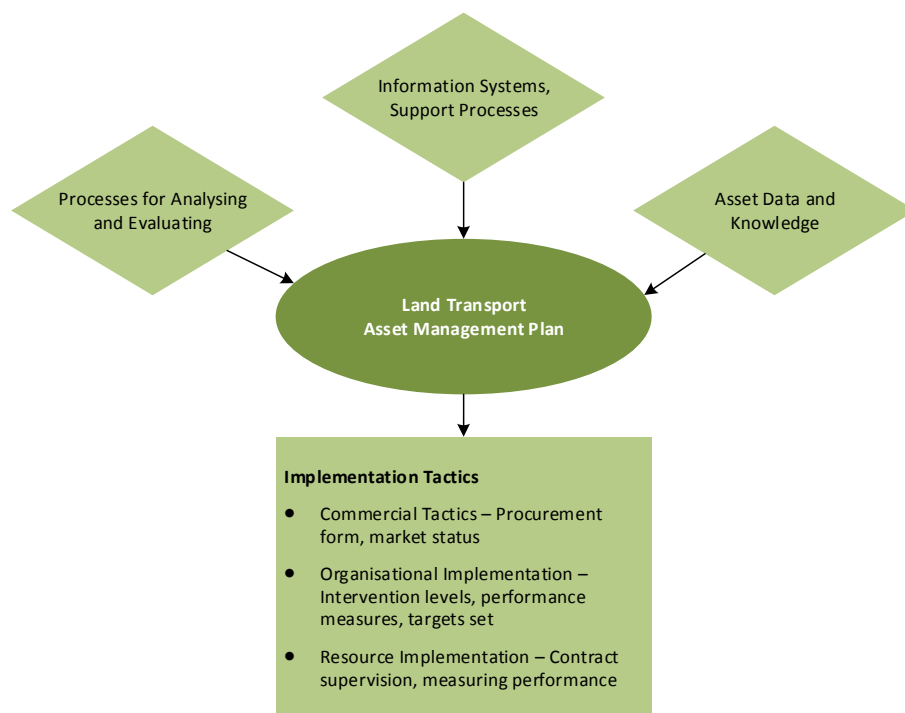
Specific detail is provided on the following aspects:

- **Business Systems** – Software systems to support the operations of the Transport group and to analyse the data for decision making purposes
- **Data Management** - How data is recorded, where it is stored and how it is used
- **Support Processes and Systems** - Describes the quality management practices in place to enable and sustain asset management practices and decision making.
- **Emergency Planning** – Outlines the responsibilities around preventing and managing emergencies
- **Consultation** – details of the consultation and research undertaken to establish the clients and stakeholders expectations of extent and levels of services provided and key projects
- **Business Continuity Plan** –Details the CHBDCs' ability to function and respond to a crises
- **Asset Management Teams** - Clarifies roles and responsibilities in relation to the lifecycle of the asset.
- **Asset Management Plan review and monitoring** - Provides guidance on the long term sustainability of this document

Figure 1 outlines the three key inputs to the AMP in order to develop outputs for Implementation Tactics.

New Asset Management Practices should be implemented to abide per NZTA's regulations.

Figure 1: Inputs and Outputs



8.1.1 Optimised Decision Making

Council and its consultants use a range of tools and techniques to ensure that the decisions on future road asset maintenance requirements are optimal both in terms of the intervention timing and the lowest whole of life solution. This LTAMP outlines details and applications of these tools which include the following:

- Treatment Selection Algorithm (TSA)
- Pavement Performance Model (dTMS)
- CAS (Crash Analysis Studies)
- Traffic Counts
- Benefit Cost Ratio (BCR) – justification for capital works projects
- Net Present Value (NPV)
- Multi-Criteria Analysis (MCA) - to rank options that are not easily quantified in terms of dollar values.

Optimised Decision Making applications are as follows:

- Routine Maintenance - Maintenance cost information in RAMM enables the development of more accurate maintenance cost prediction models that can be used in both BCR and NPV analysis of various pavement maintenance, rehabilitation and capital works projects.
- Resurfacing - Ensuring that the lifecycle of each reseal is maximised without risking the integrity of the lifecycle of the underlying pavement. This is done by checking the performance and condition of the existing surface against default lives and the expected design life within the context of the reseal length. This information along with the recent trends in routine maintenance costs within the

treatment length will then enable the economics of proceeding with another reseal or undertaking an alternative treatment.

- **Area Wide Pavement Treatments (AWPT's)** - The condition and maintenance cost information stored within RAMM is used as the basis for the selection and timing of the FWP AWPT's. Prior to project selection, AWPT's are supported by field testing to verify the appropriate solution. The justification of these treatments will be primarily driven by agency cost savings and analysed through the comparison between the Net Present Value of the continuing "Do Minimum" maintenance and that for the AWPT option over a 25 year period.
- **Seal Extensions and Seal Widening** - Justification and prioritisation of these capital works items is required through a BCR analysis. In addition the funding of the future maintenance of the increased sealed surface must be allowed for in the FWP. This analysis will again need to utilise the pavement condition information and associated routine maintenance costs data held in RAMM.
- **Traffic Management Decisions** - The traffic count data recorded in RAMM has a direct application to Regional land transport studies and strategies, Network hierarchy, Temporary Traffic Management Plans, assigning and management of traffic detours in the event of road closure and prioritisation of resources in the event of large scale road closures.

8.2 Business Systems

CHBDC has developed its IT infrastructure around a number of key products that provide a platform for all IT applications. The table below sets out the cornerstone IT applications used at CHBDC.

Table 1: Cornerstone Applications

Function	Product	Version (current and planned upgrades)	Group Responsible	Primary users
Word, spread sheets, email, project	Microsoft Office Suite	TBC	Information Services	All organisation
Financial accounting and reporting	Napier Computing Systems (NCS)	TBC	Finance	All organisation
Budgeting and Forecasting	Napier Computing Systems (NCS), and Excel	TBC	Finance	All organisation
Asset and Maintenance Management	Road Assets Maintenance and Management (RAMM)	TBC	Transport	Transport
Service Request System	Napier Computing Systems (NCS)	TBC	Information Services	All organisation
Geographical Information System	Intra maps by DMS & Map Info	TBC	Technical Services	All organisation

8.2.1 Accounting and Financial Systems

Financial management processes will be carried out through the Council's Financial Management and job costing systems provided by Napier Computing Systems (NCS). The Council will record costs

against specific funding categories as they are incurred through contractual arrangements or as they are processed through the Council's payroll structure.

The accounting system Council uses is an Accrual Accounting System, which backdates the expenditure to the financial year in which it occurred even if it is paid in the next financial year.

For asset management purposes, expenditure on maintaining the roading asset is divided into categories included in Table 2.

Table 2: Expenditure Categories

Category	Description
Operational	Activities which have a no effect on asset condition but are necessary to keep the asset utilised appropriately (e.g. power costs, overhead cost, etc.)
Maintenance	The on-going day-to-day work required to keep assets operating at required service levels, i.e. repairs and minor maintenance.
Renewal	Significant work that restores or replaces an existing asset towards its original size, condition or capacity.
New Work (development, capital works)	Works to create a new asset, or to upgrade or improve an existing asset beyond its original capacity or performance, in response to changes in usage, customer expectation, or anticipated future need.
Disposal	Any cost associated with the disposal of a decommissioned asset.

The category of expenditure needs to be determined as the physical work is completed and paid for.

For accounting purposes, expenditure is divided into two categories:

- Operational
- Capital

The accounting system aggregates operational and maintenance costs into an operational category, and renewal and new works into a capital category. This fits in with NZTA's current Work Category Structure. This structure will be reviewed in light of the ONRC changes.

8.3 Asset Management Systems

8.3.1 RAMM – Road Assets Maintenance and Management System

The roading network physical data is contained within the RAMM database. This information is continually updated as roads are constructed, sealed, resealed or rehabilitated, structures built and new traffic signs installed. RAMM holds the following inventory data.

Table 3: RAMM Tables and Properties

Table Name	Properties
Road names	• Road Names
	• Road ID's
Carriageway Sections	• Location/displacement
	• Description
	• Summarised data form linked tables

Table Name	Properties
Traffic Volume	<ul style="list-style-type: none"> Counts/estimates Location
Loading Volume	<ul style="list-style-type: none"> Traffic classification/ light/commercial/heavy Percentage splits Percentage heavy growth Estimated Standard axle
Carriageway Surfacing	<ul style="list-style-type: none"> Surface history Location/description/age
Pavement Structure	<ul style="list-style-type: none"> Pavement layer composition Location/constructed date
Drainage	<ul style="list-style-type: none"> Culverts : location/description/dimensions Kerb and channel: location description Manholes, Sumps, Subsoil drains and other : location/description/dimensions
Surface Water Channels	<ul style="list-style-type: none"> Location/description/dimensions
Bridges	<ul style="list-style-type: none"> Bridge ID's Location/description/dimension
Minor Structures	<ul style="list-style-type: none"> Location/description/dimension Constructed date/surface type
Railings	<ul style="list-style-type: none"> Location/description/dimension Constructed date/railing type
Street Lights	<ul style="list-style-type: none"> Poles, brackets and lights: location/description/dimension/constructed date/type
Traffic Facilities	<ul style="list-style-type: none"> Signs - location/description/dimension Markings – location/description/dimension
Footpaths	<ul style="list-style-type: none"> Location/description/dimension Constructed date/surface type
Berms	<ul style="list-style-type: none"> Location/description/dimension/type
Trees	<ul style="list-style-type: none"> Location/description/dimension/Species

In addition, RAMM also stores condition information (visual inspection observations, roughness survey) of the sealed network and footpaths.

The RAMM system also includes the following suite of tools to help manage the roading asset:

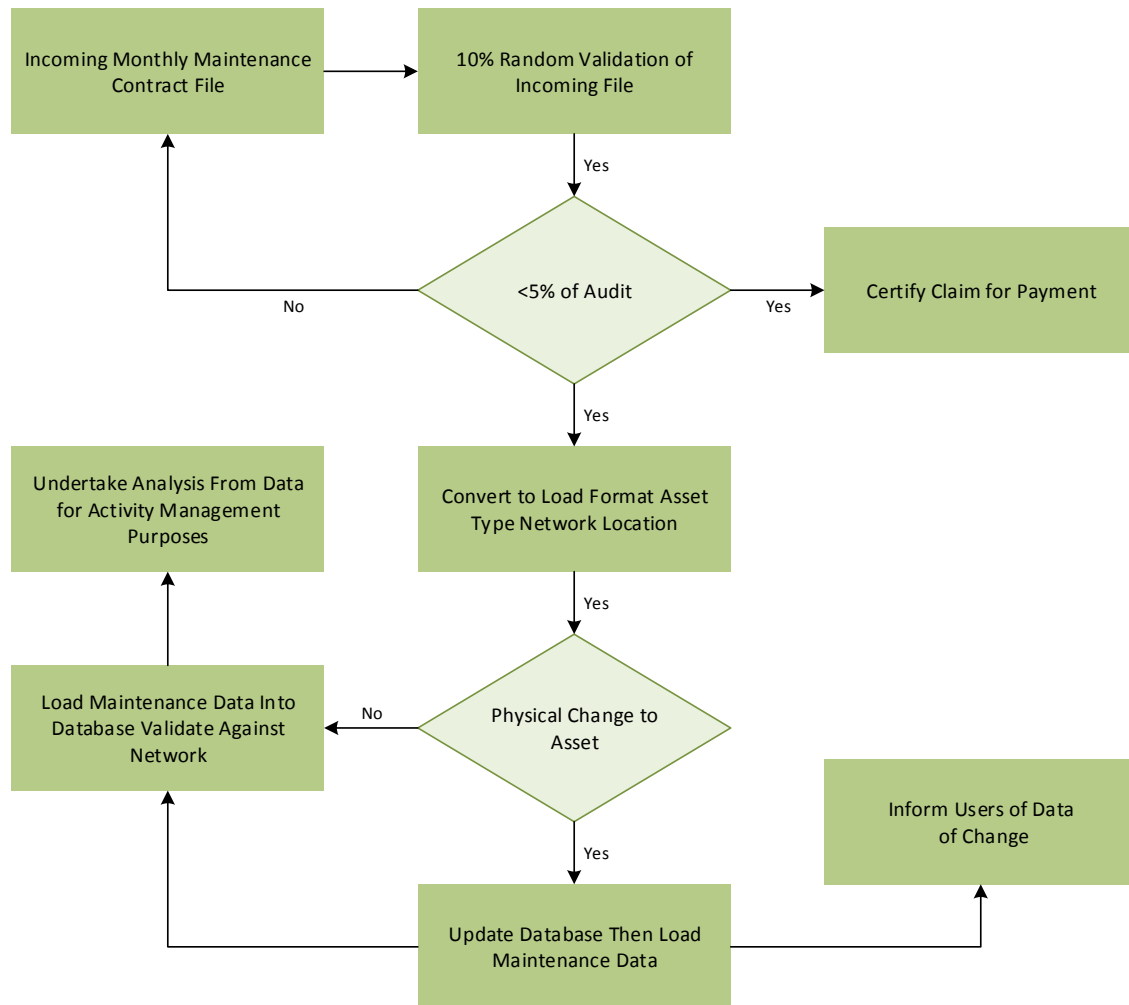
- RAMM Mapping – Spatially represents asset inventory on a map held in RAMM of the roading network. This form of visual data representation helps in assessing the current level of service of an asset component. For example if the current service level is to provide footpath on all urban streets where the traffic counts are 200 and greater, the inventory of footpath data and count data

can be plotted on the map and an instant visual representation of the deficiency in service level can be determined and from this a programme to achieve the service level put in place.

- RAMM Asset Valuation – The asset valuation system in RAMM allows for the valuation and depreciation of the asset. Council requires an annual valuation using the RAMM valuation system.
- RAMM Contractor – This allows managing the road asset maintenance contracts. This provides special features to support managing signs and street lights maintenance.
- RAMM Treatment Selection Algorithm (TSA) – This helps to develop the forward work programme (for next two years). The output contains required treatment, financial costs and user benefits of the treatment for each road section (treatment length)
- RAMM NOMAD Programme – This holds the CHBDC's 10-year Forward Work Programme

Maintenance cost information is stored in RAMM and is used to evaluate historic trends in maintenance expenditure on the network. These costs can be analysed down to the treatment length level to ascertain if the cost of maintenance per kilometre is excessive. Information on works undertaken on the network is received from the contractor and loaded into RAMM.

Figure 2: Maintenance Cost Recording Process



8.3.2 Service Request System

Council uses the Napier Computing Systems (NCS) customer service request system to manage and respond to customer requests. This database is used to log calls from customer and stakeholders. The Council logs requests and passes road related issues onto the roading contractor for action and monitoring. Council are informed once the issue has been actioned and completed and they are then able to reply to the customer on the outcome of their request.

In conjunction with this process, Council also maintains a database of service requests as received from both public and Council. This system tracks the service request and maintains a history of actions.

More information on the service requests is detailed in the Levels of Service section of this Asset Management Plan.

8.4 Data Management

Table 4 outlines current data availability, location and comments.

Table 4: Data Availability

Data Type	Location	Comments
Asset Inventory	RAMM Asset Register	Maintained through professional service contract
As Built Plans	Hard Copy	
Condition Data	RAMM	On applicable asset types not all assets have condition assessments
Job tracking	Contractor system	
Maintenance history	RAMM	
Customer Enquiries	Service request register	Asset Managers Files Finance and records (Historical)
Network Maps	GIS	
Asset Valuations	RAMM Valuation Module	
Financial data	Finance System	
Contract Data	Finance System, RAMM and external records	
Development Data	RAMM Nomad forward planning tool	

8.5 Support Process and Systems

Figure 3 and Figure 4 outline information flow paths for customer service requests and operational decision making that have been developed from current practice.

Figure 3: Service Request Flow Paths

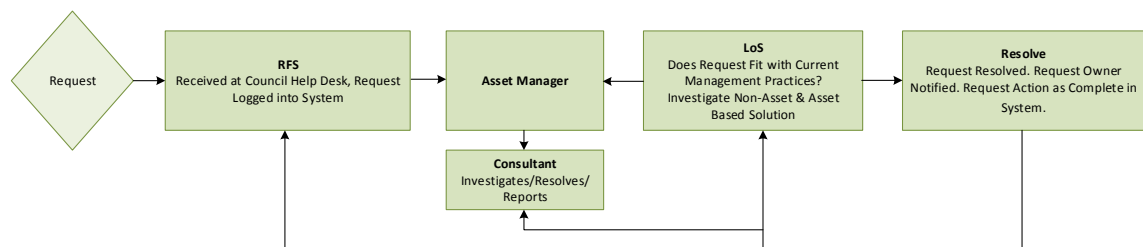
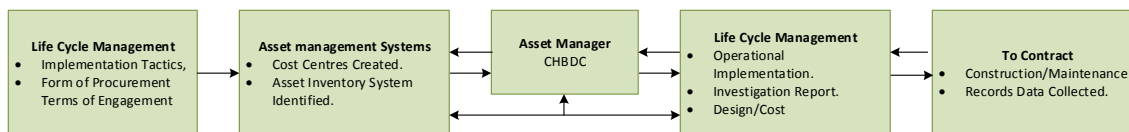


Figure 4: Operational Implementation Decision Process



8.5.1 Quality Management

A Quality management system should strengthen the business. The level of documentation should be appropriate to the risks, complexity and resources associated with each activity. As a general principle, processes should only be documented to the extent necessary to assure effective planning, operation and control. Once implemented quality processes can evolve in an iterative manner over time to an optimal level through continuous monitoring and improvement.

Currently CHBDC does not have ISO9000 accreditation or any specific Quality Management framework. This is an opportunity for improvement.

8.6 Consultation

8.6.1 Consultation Methods

Consultation by CHBDC is primarily through the Long Term Plan and Annual Plan processes. On significant projects there may be specific community consultation required.

8.6.2 Engagement Process

Engagement is communicating effectively with the people who affect, and are affected by, the Land Transport activities (its stakeholders).

A good engagement process typically involves identifying and prioritising stakeholders, conducting a dialogue with them to understand their interest in an issue and any concerns they may have, exploring with them ways to address these issues, and providing feedback to stakeholders on actions taken.

There are two key Levels of Engagement with stakeholders.

Strategic Engagement is related to outward focussing strategies and enables stakeholders to influence the holistic place of the organisation in its business operations.

Operational Engagement targets the Stakeholders impacted by the business at an operational level.

8.7 Emergency Planning

CHBDC has a documented Emergency Management (EM) Plan which identifies the key issues and how they would be handled as the need arises.

The CDEM procedures required under the Civil Defence Emergency Management Act 2002 are integrated into this plan. CHBDC has qualified individuals within all teams to fill any role required in the Emergency Management structure.

There are numerous hazards which have been identified that may potentially impact on the District including earthquakes, floods and tsunamis. Processes to address each of these scenarios are incorporated in the EM Plan.

Training is offered to all staff including consultants and maintenance contractor personnel to ensure a coordinated response. Exercises are conducted not just locally, but in close association with the regional and national response

The bulk of the information regarding emergency planning is held in other Council documents and is not duplicated in this AMP.

8.8 Business Continuity Plans

CHBDC has a documented Business Continuity Plan which encompasses all departments within the council. This plan is not duplicated in this AMP.

8.9 Asset Management Team

Asset Management roles and responsibilities need to be clearly defined and specifically allocated to people and teams to ensure that what is required is being achieved.

The optimal approach is to consider the lifecycle of an asset in two parts - asset planning and delivery.

The asset planning aspect encompasses the majority of the planning and analysis required to define what needs to be delivered at the operational and project level.

The delivery aspect responsible for operational delivery of projects and programmes of works (including proactive maintenance) placing the responsibility for asset planning across the lifecycle in a single team enabling a real focus on minimising lifecycle costs.

8.9.1 Roles & Responsibilities

The following table outlines the role and responsibilities around asset management.

Table 5: Roles and Responsibilities

Role	Responsibility
Mayor and Council	<ul style="list-style-type: none"> Endorse Asset Management Plan
Chief Executive Officer	<ul style="list-style-type: none"> Sponsor Asset management and Infrastructure Strategy
Land Transport Manager	<ul style="list-style-type: none"> Develop Land Transport Asset Management Plan Develop Levels of Service Manage Risk register Manage operational contracts
Land transport Consultant	<ul style="list-style-type: none"> Update Asset register

Role	Responsibility
Technical Services Manager	<ul style="list-style-type: none"> Develop Drainage and Water, Waste and Stormwater AMPs
Utilities Manager	<ul style="list-style-type: none"> Solid Waste and Recreation & Community Facilities AMPs
Finance Manager	<ul style="list-style-type: none"> Maintain fixed asset register Allocate depreciation

8.9.2 Strategic Asset Management Coordination

Asset Management is undertaken across the activities of Land Transport, Water, Stormwater, Wastewater, Solid Waste and Recreation & Community Facilities. This is undertaken by the Land Transport, Utilities and Technical Services Teams.

Asset management within the organisation is led by the Chief Executive Officer.

8.9.3 Capability Requirements

This is the sixth iteration of the Land Transport Activity Management Plan and has involved key staff from Council and its Consultants. As the AM Plan develops further and is implemented key staff will continue to be involved in the review and updating of the plan.

8.10 Asset Management Plan review and monitoring

8.10.1 Asset Management Plan Review

To ensure the asset management plan remains useful and relevant, the following on-going process of plan monitoring and review will be undertaken, as summarised in Table 6.

Table 6: AM Plan Review and Monitoring Processes

Activity	Action	Target Date
AM Policy	<ul style="list-style-type: none"> Full review of the AM Policy including principles, responsibilities etc. 	3 yearly
AM Plan development	<ul style="list-style-type: none"> Signoff of AM Plan principles 	3 yearly
	<ul style="list-style-type: none"> Signoff of Land transport outcomes by the Council 	3 yearly
	<ul style="list-style-type: none"> Annual review of plan context by the Land Transport Manager Check AM Plan content for consistency with approved programmes and plans Compliance with agreed AM Plan improvement programmes 	Yearly
AM Plan review	<ul style="list-style-type: none"> Full review of the AM Plan and external review of technical content including an assessment of the effectiveness and adequacy of AM processes, systems and data 	3 yearly
	<ul style="list-style-type: none"> Revision of AM Plan annually to incorporate and document changes to works programmes, outcome of service level reviews and new 	Yearly

Activity	Action	Target Date
	knowledge resulting from the asset management improvement programme	
	<ul style="list-style-type: none"> Quality assurance audits of asset management information to ensure the integrity and cost- effectiveness of data collected 	3 Yearly
	<ul style="list-style-type: none"> Endorsed reviewed AM Plan by Council 	3 Yearly
	<ul style="list-style-type: none"> External review of AM Plan information by Independent party 	3 Yearly
	<ul style="list-style-type: none"> Peer reviews will be undertaken to assess the effectiveness with which this plan meets corporate objectives (periodic internal reviews will be undertaken to assess the adequacy of asset management processes, systems and data, to measure performance against desired practice) 	3 Yearly
Levels of service	<ul style="list-style-type: none"> Review service performance measures (including consultation process) and formally approve levels of service 	3 yearly
	<ul style="list-style-type: none"> Consolidate performance against actual level of service delivered and report in Annual Report 	Yearly
Risk	<ul style="list-style-type: none"> Review of risk framework by Council 	3 Yearly
	<ul style="list-style-type: none"> Annual review of risk register by Land Transport Team 	Yearly

8.10.2 Asset Management Plan Monitoring

The following indicators identified in Table 7 will be monitored to measure the effectiveness of this asset management plan.

Table 7: Monitoring AM Plan Effectiveness

Indicator	Measure	Source of information
Compliance with legislative requirements	Unqualified audit opinion relating to asset management plan outputs	Audit report
Quality of services delivered	100%, compliance with Level of Service targets	AM Plan monitoring
Quality of risk management	No potential identifiable event occurring outside of risk profile	AM Plan monitoring



Table of Contents

9	Plan Improvement and Monitoring	900
9.1	Continuous Improvement.....	900
9.2	Improvement Cycle.....	900
9.3	Current Practice Assessment	900
9.4	Identify Improvement Actions.....	901
9.5	Development Improvement Plan & Prioritise Actions	901
9.6	Deliver the Improvement Plan.....	901
9.7	Monitor the Outcomes	901
9.8	Improvement Programme	902
9.9	Land Transport Activity Management Improvement Plan.....	903
9.9.1	AM Planning.....	903
9.9.2	Level of Service	904
9.9.3	Growth and Demand	905
9.9.4	Risk Management	906
9.9.5	Life Cycle Management	907
9.9.6	Business Processes (Asset Management Practice)	909
9.9.7	Projects and Financial Forecasts	910
9.9.8	Improvement Planning	911
9.10	Strategies for Improving Asset Management	912
9.10.1	Setting Priorities	912
9.10.2	Three-Year Improvements	913
9.10.3	Monitoring and Review Procedures.....	914

9 Plan Improvement and Monitoring

This section provides details of how Council plans to improve this version of the LTAMP.

9.1 Continuous Improvement

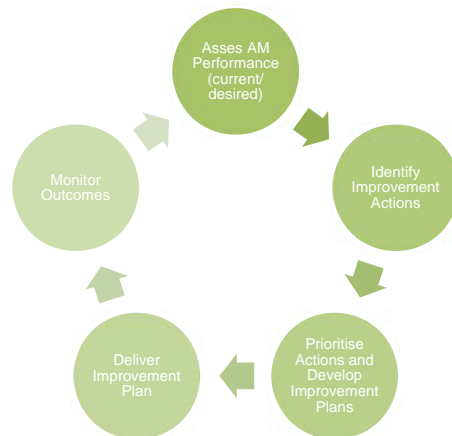
Council is adopting a strategic management approach to improvement planning, and implementing improvement processes and practices. This Improvement Plan is integral to that approach, quantifying current business practice and measuring progress toward an identified future position.

Council is committed to a policy of continual improvement through data collection, procedural improvements, investment studies, system developments and organisational developments. A key objective is to dovetail the asset management planning process with the other key planning processes particularly the Long Term Plan.

9.2 Improvement Cycle

The purpose of the Improvement Plan is to identify, prioritise and implement specific projects and tasks which will increase the level of maturity over time.

Figure 1: Continuous Improvement Cycle



9.3 Current Practice Assessment

The first step of Asset Management improvement plan is to understand the current and future “**appropriate practices**”.

The 17 IIMM key element indicators have been consolidated into the AMP chapters to better align the improvement task to an outcome.

The key elements that make up the assessments are critical to achieving sustained performance of the organisation at the lowest life cycle cost and to form a clear picture of how well it is performing in each of these elements and where the weaknesses lie. Each of the elements “adds value” to the raw business processes which leads to good asset management practice.

9.4 Identify Improvement Actions

A clear understanding of the gap between current and appropriate practice will help drive identification of improvement actions. However identifying improvements should also be an ongoing activity, not just a “one-off” gap assessment process.

Improvement actions need to be clearly scoped and defined. Failure to recognise the full costs associated with improvements may see the projects inadequately resourced and potentially not meeting the desired outcomes.

Previous versions of the LTAMP have incorporated updates and improvements to produce an intermediate level of Asset Management Planning.

A brief summary of the weaknesses in this current LTAMP and the gap between these and required practice are included in Table 1.

9.5 Development Improvement Plan & Prioritise Actions

The improvement plan will be developed to identify the high priorities requiring action to focus the organisation on the most important areas. Utilising a simple improvement framework that has a clear relationship to the assessment elements will help people understand how the actions relate to the appropriate level of Asset Management required.

9.6 Deliver the Improvement Plan

The improvement plan needs to be strongly led, properly resourced and regularly monitored. Clear targets must be well defined with well specified deliverables that help focus on what is required.

9.7 Monitor the Outcomes

Organisations are under pressure to show the quantifiable benefits from improving Asset Management outcomes and this is a real challenge. Regular Asset Management assessments using the frameworks in this section are currently the best way to demonstrate ongoing improvement to Asset Management practices and should be utilised over a number of years to track progress. Tasks are aligned to the level of maturity identified by the organisation.

Table 1: Areas of Weakness in LTAMP and Gap Analysis between Current and Best Practice

Key Element	Current Practice	Best Practice
Providing Defined Levels of Service and Performance Monitoring	<ul style="list-style-type: none"> ▪ Consultation has been undertaken through the LTP process (refer to Council Website) through which the community has been made aware of the LOS provided and associated costs. ▪ The current LOS are documented as a combination of the Asset Register, Contract processes which describe some elements of the quality of service provided, Customer request for service and historical survey which can be interpreted to indicate some elements of reliability and responsiveness of the service provided. ▪ Currently performance is measured as per contractual requirements and changes in indicators such as road roughness and customer request levels. This only gives a partial indication of the performance of the Transportation Activity. 	<p>Requires:</p> <ul style="list-style-type: none"> ▪ Additional engagement from the customers (community) and other stakeholders is required in order to explore alternative LOS options and their willingness to pay for higher levels of service ▪ Augmentation of existing information (e.g. clearer definitions on roughness, street lighting levels etc.) ▪ Utilisation of a LOS model defining quality, quantity, location, and timeframe. This would continue to be based on the IIMM but would better define the transport service in terms of Accessibility, Health and Safety, Quality, Reliability and Responsiveness, Sustainability, Functionality. <p>Further augmentation of performance measures in line with clearer LOS definitions and application of the ONRC)</p>
Understanding and meeting the impact of growth through demand management and infrastructure investment	<p>An assessment of demand on the network has been completed utilising Census population data and RAMM traffic count information. This LTAMP does not take into account any future land use changes. However traffic count information is inconsistent and incomplete.</p>	<p>Complete further research to assess future demand on the network. A strategy for comprehensive traffic and HCV counts should be implemented, particularly on Porangahau and Wimbledon log hauling routes.</p>
Understanding and applying a risk framework	<p>A assessment of risks associated with the land transport assets has been undertaken but the framework is based on a 2009 process,</p> <p>Risks have been reviewed and updated from the 2010 plan.</p>	<p>Review the risk framework and look at its application across the wider council.</p> <p>Undertake a further risk identification process and identify mitigation measures.</p>

9.8 Improvement Programme

The review and improvement of the plan requires resource and budget in order to complete the selected improvement tasks. Section 9.9 outlines the current performance, the target levels of items for improvement, relative urgency, resource, priority, budget and the authority sought to give approval to complete each item.



IMPROVEMENT PLAN

9.9 Land Transport Activity Management Improvement Plan

9.9.1 AM Planning

1 Introduction – AM Planning									
Element	Minimum 0 – 25		Core 26 – 50	Intermediate 51 – 75			Advanced 76 – 100		
1 Introduction – AM Planning	Plan contains basic information on assets, service levels, planned works and financial forecasts (5-10 years) and future improvements AM decisions based largely on staff judgement and agreed corporate priorities		As for 'Minimum' plus executive summary, description of services and key/critical assets, top down condition and performance description, future demand forecasts, description of supporting AM processes, 10 year financial forecasts, 3 year AM improvement plan	As for 'Core' plus analysis of asset condition and performance trends (past/future), effective customer engagement in setting LoS, ODM, risk techniques applied to major programmes			As for 'Intermediate' plus evidence of programmes driven by comprehensive ODM techniques, risk management programmes and level of service/cost trade-off analysis Improvement programmes largely complete with focus on ongoing maintenance of current practice		
Current Status	45	Core	<ul style="list-style-type: none">AM Plan in placeAsset information providedDemand influences and basic service levels reviewed and establishedPlanned works programme in placeCritical assets identified and management strategies put in placeUnderstanding of asset management risks10 year financial forecasts						
Appropriate Target	60	Intermediate	<ul style="list-style-type: none">Further development of the AM PlanDevelopment of customer engagement on setting LoSRegular monitoring and improvementIntegration with 30 Infrastructure Strategy						
Improvement Tasks Required to Achieve Target				Priority	Indicative Timing		Person Responsible	Resource Required	Estimated Cost
					Q1 - 4	Year			
1.1	Development of detailed with 30 yr. investment strategy			A	2	2020/21	SM	Council & Network Consultant	NA
1.2	Further emphasis on detailed plans, demand and LoS for no road carriageway assets			B	2	2020/21	SM	Council & Network Consultant	NA
1.3	Implementation of the transition plan towards the ONRC			A	1	2018/19	SM	Council & Network Consultant	NA



IMPROVEMENT PLAN

9.9.2 Level of Service

2 Levels of Service and Performance Management									
Element	Minimum 0-25		Core 26-50	Intermediate 51-75			Advanced 76-100		
2 Levels of Service	Asset contribution to organisations objectives and some basic levels of service have been defined		Internal Customer Groups defined and requirements informally understood Levels of service and performance measures in place covering a range of service attributes Annual reporting against performance targets	Customer Group needs analysed Costs to deliver alternate key levels of service are assessed Customers are consulted on significant service levels and options			Levels of service consultation strategy developed and implemented Technical and customer levels of service are integral to decision making and business planning		
Current Status	30	Core	<ul style="list-style-type: none">Customer groups understoodBasic levels of service defined						
Appropriate Target	60	Intermediate	<ul style="list-style-type: none">Integrate impact of government policy on servicesLoS current performance understoodLoS targets identified achievable and measurableONRC in place						
Improvement Tasks Required to Achieve Target				Priority	Indicative Timing		Person Responsible	Resource Team	Estimated Cost
					Q1 - 4	Year			
2.1	Implementation of ONRC performance measures into Levels of Service			A	1	2018/2019	SM	Network Consultant / External Consultant	Unknown
2.2	Determine methodology for measurement of LOS currently not measured			A	1	2018/2019	SM	Council & Network Consultant	Unknown
2.3	Developing reporting mechanism to measure LOS achievement after methodology developed incorporating the requirements of the ONRC.			B	4	2018/2019	SM	Council & Network Consultant	Unknown
2.4	Develop LOS model defining quality, quantity, location, and timeframe (this also will be determined by ONRC unless more requested by ratepayers which is not likely due to nature of the district			B	2	2019/20	SM	External Consultant	Unknown
2.5	Identify the need for engaging customers and key stakeholders in a formal process (beyond that undertaken through the LTP process) to examine their willingness to pay for alternative LOS.			B	4	2019/20	SM	Council & Network Consultant (Professional Services Contract)	Unknown

9.9.3 Growth and Demand

3 Demand									
Element	Minimum 0 – 25		Core 26 – 50	Intermediate 51 – 75			Advanced 76 – 100		
3 Demand	Demand forecasts based on experienced staff predictions, with consideration of known past demand trends and likely future growth patterns.		Demand forecasts based on robust projection of a primary demand factor (e.g. population growth) and extrapolation of historic trends. Risk associated with demand change broadly understood and documented.	Demand forecasts based on mathematical analysis of past trends and primary demand factors. A range of demand scenarios is developed (e.g. high/medium/low).			As for 'intermediate' plus risk assessment of different demand scenarios with mitigation actions identified.		
Current Status	51	Intermediate	<ul style="list-style-type: none">Good understanding of market and current provisionStarting to identify demand and growth requirements more robustly						
Appropriate Target	60	Intermediate	<ul style="list-style-type: none">Analysis applied to all growth decisionsRisk factors brought into analysis						
Improvement Tasks Required to Achieve Target				Priority	Indicative Timing		Person Responsible	Resource Team	Estimated Cost
					Q1 - 4	Year			
3.1	Conduct a research study, including the impact of District Plan changes, to assess future demand on the network, in particular identifying any expected change in use such as the operation of High Performance Vehicles on the network, specific impacts of Ruataniwha Dam development etc.			A	4	2020/21	Council	Council and External providers	Unknown
3.2	In conjunction with the wider Council, undertake a Customer Survey to establish any changes in customer expectations as they relate to demand on the network Subject to the impact of District Plan changes			B	1	2020/21	Council	Council and External providers	Unknown
3.3	Undertake a high level review of demand factors on a yearly basis identifying any significant changes impacting on the Land Transport Activity.			A	1	2018/19	SM	Council	Non identified
3.4	Review the impact of demand on non-pavement assets such as bridges.			B	3	2019/20	SM	Council	Non identified
3.5	kl			C	2	2020/21	SM	Council	Non identified



IMPROVEMENT PLAN

9.9.4 Risk Management

4 Risk Management									
Element	Minimum 0 – 25		Core 26 – 50	Intermediate 51 – 75			Advanced 76 – 100		
4 Risk Management	Critical assets understood by staff involved in maintenance/renewal decisions.		Risk framework developed. Critical assets and high risks identified. Documented risk management strategies for critical assets and high risks.	Systematic risk analysis to asset key decision-making. Risk register regularly monitored and reported. Risk managed consistently across the organisation.			Formal risk management policy in place. Risk is quantified & mitigation options evaluated. Risk integrated into all aspects of decision making.		
Current Status	30	Core	<ul style="list-style-type: none">Critical assets understoodrisk framework developed but not current						
Appropriate Target	60	Intermediate	<ul style="list-style-type: none">Critical assets documentedRegular risk reviews in placeRisk framework applied across Council						
Improvement Tasks Required to Achieve Target				Priority	Indicative Timing		Person Responsible	Resource Team	Estimated Cost
					Q1 - 4	Year			
4.1	Review Risk framework for Land Transport and the wider organisation.			A	1	2018/19	Council and SM	Council and External providers	Unknown
4.2	Aligning operational with corporate risks and Corporate Risk Plan			B	2	2018/19	Council and SM	Council	None identified
4.3	Identify and document the critical assets and management plans			A	2	2018/19	SM	Council & Network Consultant	None identified
4.5	Review Risk Register on a yearly basis and update with change to risk ratings and consequences.			A	Ongoing	2018/19	SM	Council & Network Consultant	None identified

9.9.5 Life Cycle Management

5 Life Cycle Management				
Element	Minimum 0-25	Core 26-50	Intermediate 51-75	Advanced 76-100
5 Life Cycle Management	<p>Basic physical information recorded in a spreadsheet or similar (e.g. location, size, type) but may be based on broad assumptions or not complete</p> <p>Maintenance records maintained and legislation and regulations complied with</p> <p>Condition assessment at asset group level (top down)</p> <p>Supports minimum requirements for managing critical assets and statutory requirements (e.g. safety)</p> <p>There is a schedule of proposed capital projects and associated costs, based on staff judgement of future requirements</p>	<p>Asset identification and asset attribute documented</p> <p>Asset criticality considered in maintenance response processes</p> <p>Data supports asset life assessment</p> <p>Data management standards and processes documented</p> <p>Programme for data improvement developed</p> <p>Fault tracking and closure processes for maintenance</p> <p>Strategy for prescriptive vs performance based maintenance developed</p> <p>Projects have been collated from a wide range of sources such as business unit planning processes, operational staff and corporate risk processes</p> <p>Capital projects for the next 4 years are fully scoped and estimated</p>	<p>A reliable register of physical and financial attributes recorded in an information system with data analysis and reporting functionality</p> <p>Systematic and documented data collection process in place. High level of confidence in critical asset data</p> <p>Data management processes fully integrated into business processes. Data validation process in place</p> <p>Contingency plans exist for all maintenance activities</p> <p>Asset failure modes are understood.</p> <p>Maintenance management software implemented</p> <p>Formal options analysis and business case development has been completed for major projects in the 3-5 yr. period</p> <p>Major capital projects for the next 10 years are conceptually identified and broad cost estimates are available</p>	<p>Information on work history type and cost, condition, performance, etc. recorded as asset component level. Systematic and fully optimised data collection programme</p> <p>Complete data base for critical assets; minimal assumptions for non-critical assets</p> <p>Periodic reviews of programme suitability carried out</p> <p>Forensic root cause analysis in conducted for major faults</p> <p>Optimisation of all reactive and planned maintenance programmes alongside renewal planning</p> <p>Long term capital investment programmes are developed using advanced decision making techniques, such as predictive renewal modelling</p>
Current Status	55	Intermediate	<ul style="list-style-type: none"> Core information entered into RAMM Information from condition survey available but not a complete register. 15 year plan of maintenance and renewals available via condition assessment. Most maintenance recorded in RAMM Capital works are planned out by asset group Data management processes in place with network contractor. Contingency plans in place Maintenance Management software in place 	
Appropriate Target	75	Intermediate	<ul style="list-style-type: none"> Asset Criticality understood. Maintenance and request tracking in place Business Case processes in place High level of confidence in data Understanding of asset failure modes Use of formal options analysis. 	



IMPROVEMENT PLAN

Improvement Tasks Required to Achieve Target		Priority	Indicative Timing		Person Responsible	Resource Team	Estimated Cost
			Q1 - 4	Year			
5.1	Explore opportunities to utilise MCA in assessing road transport related options where the intangible benefits or costs are significant.	A	1	2018/2019	SM	Council & Network Consultant	None identified
5.2	Review process, selection and testing frequency criteria of pavement sections for future FWD surveys to meet long term pavement management strategy outcomes.	A	1	2018/19	SM	Council & Network Consultant	None identified
5.3	Implement the better business case model for asset groups	A	4	2018/19	SM	Council & Network Consultant	None identified



IMPROVEMENT PLAN

9.9.6 Business Processes (Asset Management Practice)

6. Business Processes									
Element	Minimum 0 – 25		Core 26 – 50	Intermediate 51 – 75			Advanced 76 – 100		
6 Business Processes	Operational responses are understood by key staff, but plans may not be well documented, mainly reactive in nature. Asset utilisation is measured for some key assets but is not routinely analysed AM allocated primarily to one or two people with AM experience Service delivery roles clearly allocated (internal and external), generally following historic approaches Asset registers record core asset attributes and asset information reports can be generated Simple process documentation in place for service critical activities		Emergency response plan is developed. Demand management is considered in major asset planning Asset utilisation is measured for critical asset groups and is routinely analysed and documented AM training in place for primary staff The management team have considered options for AM functions and structures with defined policy and basic QM system Asset register enables hierarchal reporting and customer request tracking and planned maintenance functionality enabled	Emergency response plans and business continuity plans are routinely developed and tested. Demand management is a component of all operational decision making Asset utilisation is measured and analysed for most asset groups Staff receive training aligned to that role and fully understand their role in AM A person on the management team has responsibility for delivering the AM Policy/strategy/plan Process documentation implemented in accordance with the QM System to appropriate level of detail			Operational plans routinely analysed, tested and improved Formal debriefs occur after incidents A formal AM capability building programme is in place and routinely monitored Asset utilisation measured real-time and effectiveness analysed across all asset groups Operational programmes are optimised using benefit-cost and risk analysis ISO9001 certification achieved and a surveillance audit demonstrates the satisfactory operation of the Quality Management System		
Current Status	51	Intermediate	<ul style="list-style-type: none">Staff identified with Asset Management responsibilitiesBasic processes in place for maintenanceOperations Manual undated and relevant						
Appropriate Target	65	Intermediate	<ul style="list-style-type: none">Asset expenditure information is linked with asset performance informationProcesses relating to AM are documented						
Improvement Tasks Required to Achieve Target				Priority	Indicative Timing		Person Responsible	Resource Team	Estimated Cost
					Q1 - 4	Year			
6.1	Review Health and Safety section and update with current information			B	1	2019/20	SM	Council	Non identified
6.2	Ensure AM responsibilities are allocated and prioritised			A	1	2018/19	SM	Council	Non identified



IMPROVEMENT PLAN

9.9.7 Projects and Financial Forecasts

7 Projects and Financial Forecasts									
Element	Minimum 0 – 25		Core 26 – 50	Intermediate 51 – 75			Advanced 76 – 100		
7 Projects and Financial Forecasts	Financial forecasts are based on extrapolation of past trends and broad assumptions about the future		Ten year+ financial forecasts based on current AMP outputs. The quality of forecasts meets IFRS requirements	Ten year+ financial forecasts are based on current and comprehensive AMPs with detailed supporting assumptions / reliability factors			The business unit publishes reliable ten year+ financial forecasts based on comprehensive, advanced AMPs with detailed underlying assumptions and high confidence in accuracy		
	Assets are re-valued in accordance with International Financial Reporting Standards (IFRS).		Significant assumptions are specific and well-reasoned Expenditure captured at a level useful for AM analysis	Asset expenditure information is linked with asset performance information			Advanced financial modelling provides sensitivity analysis, evidence-based whole of life costs and cost analysis for level of service options		
Current Status	51	Intermediate	<ul style="list-style-type: none">Trend information starting to be collatedValuations undertaken at asset group levelAssumptions are identified10 year forecasted						
Appropriate Target	75	Intermediate	<ul style="list-style-type: none">Historical data available and able to be reported on and analysedAsset values and useful lives available at the component levelAsset Management links to financial system10 yr.+ forecasts						
Improvement Tasks Required to Achieve Target				Priority	Indicative Timing		Person Responsible	Resource Team	Estimated Cost
					Q1 - 4	Year			
7.1	Clearly defining capital versus operational budgets /projects			A	1	2018/19	SM	Council & Network Consultant	Non identified
7.2	Confirm a 10 year rolling base budget for AMP			A	1	2018/19	SM	Council & Network Consultant	Non identified
7.3	Prioritising expenditure across the 10 year forecast and detailing associated projects			A	1	2018/19	SM	Council & Network Consultant	Non identified



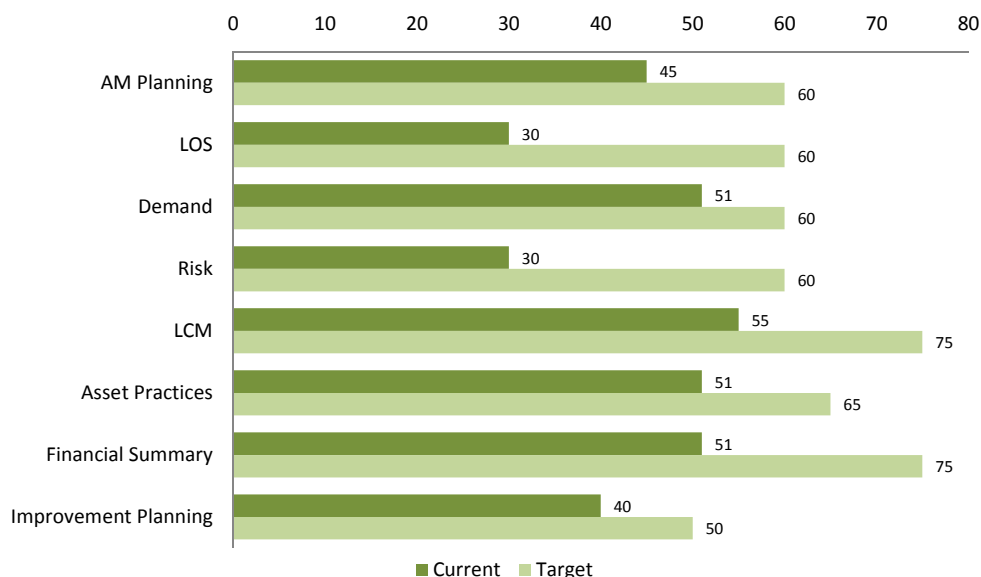
IMPROVEMENT PLAN

9.9.8 Improvement Planning

8 Improvement Planning									
Element	Minimum 0 – 25		Core 26 – 50	Intermediate 51 – 75		Advanced 76 – 100			
8 Improvement Planning	Improvement actions identified and allocated to appropriate staff.		Current and future AM performance assessed and gaps used to drive the improvement actions. Improvement plans identify objectives, timeframes, deliverables, resource requirements and responsibilities.	Formal monitoring and reporting on the improvement programme to Executive Team. Project briefs developed for all key improvement actions.		Improvement plans specify key performance indicators (KPIs) for monitoring AM improvement and these are routinely reported.			
Current Status	40	Core	<ul style="list-style-type: none">Have completed first iteration Improvement Plan						
Appropriate Target	50	Core	<ul style="list-style-type: none">Need to keep focus on improvement and bedding down processes.						
Improvement Tasks Required to Achieve Target				Priority	Indicative Timing		Person Responsible	Resource Team	Estimated Cost
					Q1 - 4	Year			
8.1	Incorporate improvement plan task review into work plans			A	4	2018/19	SM	Council	Non identified
8.2	Develop terms of reference for AM meetings across organisation			A	3	2018/19	SM	Council	Non identified

The summary results of the current practice assessment are illustrated below in Figure 2 in 2014. These results require ongoing validation and review.

Figure 2: Current Practice Assessment Results



Overall this AMP is identified as an INTERMEDIATE level AMP.

9.10 Strategies for Improving Asset Management

9.10.1 Setting Priorities

A thorough Asset Management review process will often identify more improvements that an organisation is able to realistically deliver within a short timeframe. Therefore there is a need to prioritise these actions so they are realistic and affordable is important. The projects/tasks are prioritised based on the gap between the current maturity and what is the appropriate target for the organisation. Table 2 below provides a general meaning ranging from Priority A (very high priority) to Priority E (very low priority).

Table 2: Prioritisation General Meaning

Priority		Explanation
A	Very High priority	These improvement tasks should be implemented in the short term (i.e. in the next year) Typically the higher benefit improvements improve legislative compliance, greatly enhance operational efficiency, provide significant cost savings or mitigate major risk
B	High Priority	These improvement tasks should be implemented in the short to medium term
C	Medium Priority	These improvement tasks should be considered for implementation in the longer term
D	Low Priority	These improvements provide relatively low value for money, and should only be implemented after higher priority improvement tasks
E	Very Low Priority	These improvement tasks provide the least benefit for the highest cost, and should only be implemented if they are a pre-requisite for another task, or there are no other higher priority tasks

9.10.2 Three-Year Improvements

Since the last LTAMP the following improvements have been completed:

- ONRC transition plan implemented.
- (as we take things off the task list put it here.)

The following table contains all the improvement projects/tasks to be undertaken over the next 3 years by Priority.

Task Number	Task Name	Priority	Year	Complete
9.1	Implement a strategy for comprehensive traffic and HCV counts, particularly for log hauling routes.	A	1	2019
1.1	Development of detailed with 30 yr. investment strategy	A	1	2019
1.3	Implementation of the transition plan towards the ONRC	A	1	2019
2.1	Implementation of ONRC performance measures into Levels of Service	A	1	2019
2.2	Determine methodology for measurement of LOS currently not measured	A	1	2019
3.1	Conduct a research study, including the impact of District Plan changes, to assess future demand on the network, in particular identifying any expected change in use such as the operation of High Performance Vehicles on the network, specific impacts of Ruataniwha Dam development etc.	A	2	2020
3.3	Undertake a high level review of demand factors on a yearly basis identifying any significant changes impacting on the Land Transport Activity.	A	Ongoing	2019
4.1	Review Risk framework for Land Transport and the wider organisation.	A	1	2019
4.3	Identify and document the critical assets (Risk)	A	1	2019
4.5	Review Risk Register on a yearly basis and update with change to risk ratings and consequences.	A	Ongoing	2019
5.1	Explore opportunities to utilise MCA in assessing road transport related options where the intangible benefits or costs are significant. Correlate traffic count data with data relating to growth and road usage.	A	1	2019
5.2	Review process, selection and testing frequency criteria of pavement sections for future FWD surveys to meet long term pavement management strategy outcomes.	A	1	2019
5.3	Implement the better business case model for asset groups	A	1	2019
6.1	Review Health and Safety section and update with current information	B	1	2019
6.2	Ensure AM responsibilities are allocated and prioritised	A	1	2019
7.1	Clearly defining capital versus operational budgets /projects	A	1	Complete
7.2	Confirm a 10 year rolling base budget for AMP	A	1	2019
7.3	Prioritising expenditure across the 10 year forecast and detailing associated projects	A	1	2019
8.1	Incorporate improvement plan task review into work plans	A	1	2019

Task Number	Task Name	Priority	Year	Complete
8.2	Develop terms of reference for AM meetings across organisation	A	2	2020
1.2	Further emphasis on detailed plans, demand and LoS for no road carriageway assets	B	2	2020
2.3	Developing reporting mechanism to measure LOS achievement after methodology developed incorporating the requirements of the ONRC.	B	2	2020
2.4	Develop LOS model defining quality, quantity, location, and timeframe (this also will be determined by ONRC unless more requested by ratepayers which is not likely due to nature of the district	B	2	2020
2.5	Identify the need for engaging customers and key stakeholders in a formal process (beyond that undertaken through the LTP process) to examine their willingness to pay for alternative LOS.	B	2	2020
3.4	Review the impact of demand on non-pavement assets such as bridges.	B	2	2020
4.2	Aligning operational with corporate risks and Corporate Risk Plan	B	2	2020

9.10.3 Monitoring and Review Procedures

This LTAMP is to be reviewed on a 3-yearly basis, with the next full review taking place in 2020/21 financial year. During the three year period leading up to this review, the items in the Improvement Programme should be addressed within the timeframes provided. These improvements can then be incorporated into the next review of the LTAMP.

This LTAMP is also audited externally with the review including process, data integrity and Levels of Service. The last external audit was completed by Land Transport New Zealand in December 2017. It is expected that this LTAMP will be audited again by the NZTA prior to the next review in 2020/21.

The plan will be prepared by the Land Transport Manager through the use of consultants. Those feeding into the plan will include the planning department, the finance committee and the other asset managers.