Transport
Asset Management Plan
2018 - 28

Nelson City Council
te kaunihera o whakatū

Quality Assurance Statement

Version No.	Date	Description	Prepared by	Reviewed by	Approved by
1	23/8/17	Draft for assets team review	R Palmer	Assets Team	A Louverdis
2	04/09/17	Draft for Senior Leadership Team	R Palmer	A Louverdis	A Louverdis
3	28/09/17	Draft for Works and Infrastructure Committee Approval	R Palmer	Senior Leadership Team	Senior Leadership Team
4	31/10/17	Draft recommended by Works and Infrastructure Committee to Council to inform LTP	R Palmer	A Louverdis	Works and Infrastructure Committee
5	9/11/17	Draft approved by Council to inform LTP	R Palmer	A Louverdis	Council
6	3/10/18	Final approved by SLT following LTP adoption	P Devereux	M Parfitt	A Louverdis
7		Final approved by Works and Infrastructure Committee following LTP adoption			
8		Final approved by Council following LTP adoption			

Cover Photos listed clockwise from top left:

NBus depot Bridge Street, Tasman St / Brook Street, Maitai River, Waimea Road.

CONTENTS

EXECUTIVE SUMMARY 1

1. Introduction 43

1.1 Background 43

1.2 Goals and objectives of asset ownership 53

1.3 Core and advanced Asset Management 56

2. Levels of service 57

2.1 Customer research and expectations 57

2.2 Strategic and corporate goals 62

2.3 Legislative requirements 63

2.4 Current level of service 65

2.5 Desired level of service 98

3. Future Demand 101

3.1 Demand drivers 101

3.2 Demand forecasts 101

3.3 Demand impacts on assets 112

3.4 Demand management plan 117

3.5 Asset programmes to meet demand 118

4. Lifecycle management 119

4.1 Background data 119

4.2 Operations and maintenance plan 126

4.3 Renewal/Replacement plan 130

4.4 Creation/Acquisition/Augmentation plan 131

4.5 Disposal plan 135

5. Risk management plan (Dealing with uncertainty) 136

5.1 Critical assets 136

5.2 Risk assessment 138

5.3 Infrastructure Resilience Approach 148

5.4 Infrastructure resilience approach 149

6. Focus Areas 153

6.1 Arterial Traffic 153

6.2 Sealed Pavement and Surface 156

6.3 Unsealed Pavements 169

6.4 Drainage 170

6.5 Structures 174

6.6 Environmental Maintenance 181

6.7 Traffic Services 187
6.8 Emergency Works 193
6.9 Parking 194
6.10 City Centre 199
6.11 Cycle network 204
6.12 Footpaths and walkways 211
6.13 Public Transport and Total Mobility 217
6.14 Road Safety Action Plan 223

7. Financial summary 228
7.1 Financial statements and projections 228
7.2 Funding strategy 234
7.3 Valuation forecasts 236
7.4 Key assumptions made in financial forecasts 237
7.5 Forecast reliability and confidence 240

8. Asset Management Practices 242
8.1 AM Leadership and Structure 244
8.2 Management Systems 244
8.3 Information Systems and Tools 249
8.4 Service Delivery Models 251

9. Plan improvement and monitoring 253
9.1 Status of AM practices 253
9.2 Improvement programme 259
9.3 Monitoring and review procedures 276
9.4 Performance measures 276

10. Appendices 278

List of Appendices

Appendix A Relevant transport legislation **278**

Appendix B Nelson's Strategies and Policies **282**

Appendix C Strategic documents, studies and models providing demand data .. **287**

Appendix D NZTA Subsidised Maintenance and Network Operations and renewals Programme Business case worksheet (A1784758) **289**

Appendix E Risk **290**

Appendix F Definition of Levels of Service **307**

Appendix G Resurface Treatment Selection Flowchart **308**

Appendix H Nelson-Tasman Transportation Model 2023 and 2033 Traffic Volume Plots and Levels of Service Plots **309**

Appendix I Previous Level of Service and why they have changed **333**

Appendix J Infrastructure planning process for growth projects **335**

Appendix K Regional Land Transport Programme 2015-2021 ..... **336**

Appendix L Financial Expediture by Cost Centre **342**

Appendix M Low Cost Low Risk and New Footpaths Priority Matrix **344**

Appendix N Footpath Rehabilitation Sites and new footpath connection sites **353**

Appendix O Smart Buyer Assessment **360**

LIST OF TABLES

Table ES - 1: Transport Assets 2
Table ES - 2: Transport levels of service 7
Table ES 1 - 3: Summary Improvement Programme 41
Table 1 - 1: Regional Land Transport Plan 2015-2021 Top of the South Objectives, Polices and Measures 45
Table 1 - 2: Regional Land Transport Plan 2015-2021 – Nelson Objectives, Polices and Measures 45
Table 1 - 1: Transport Assets 50
Table 1 - 3: ONRC Breakdown 51
Table 2 - 1: Transport Consultation Process 57
Table 2 - 2: Transport Community Outcomes 62
Table 2 - 3: Level of Service - Quality – A smooth road surface (not slippery) 65
Table 2 – 4: ONRC Roughness Limits 67
Table 2 – 5: Level of Service - Quality – A smooth footpath surface 70
Table 2 - 6: Footpath Rating Descriptions and Summary 71
Table 2 - 7: Level of Service - Resurfacing Quantity 72
Table 2 - 8: Level of Service - Public Transport 74
Table 2 - 9: Level of Service - Walking and Cycling Mode Share 76
Table 2 - 10: Level of Service - Arterial Traffic 79
Table 2 - 11: Level of Service - Parking 86
Table 2 - 12: Level of Service – Customer Satisfaction 87
Table 2 - 13: Level of Service – Road Safety DSI 89
Table 2 - 14: Level of Service – Road Safety Risk 91
Table 2 - 15: Level of Service - Walk and Cycle Related Crashes 94
Table 2 - 16: Negative Effects 96
Table 2 - 17: Resilience 99
Table 2 - 18: Fresh Water Quality 100
Table 3 - 1: Population and household projections (high series), 2018-2048, Nelson 104
Table 3 - 2: Stoke Projections 104
Table 3 - 3: Projected household demand (medium) and residential capacity, 2018-2048, Nelson[1] 105
Table 3 - 4: Projected household demand 106
Table 4 – 1: Key Stages in the Asset Lifecycle 119
Table 4 – 2: Transport Asset Valuation 121
Table 4 - 3: Operations and Maintenance Strategies 128
Table 4 - 4: Renewal Strategy General Approach 131
Table 4 - 5: Selection Strategy 132
Table 4 - 6: Creation/Acquisition/Augmentation Strategies 134
Table 4 - 7: Disposal Strategies 135
Table 5 - 1: Transport Risk Register 140

Table 5 - 4: Risk Reduction, Readiness, Response and Recovery Status 150
Table 6 - 1: Sealed Network Summary 157
Table 6 - 2: Total Network Journeys 158
Table 6 – 3: Sealed Surface Data Reliability Assessment 158
Table 6 – 4: Pavement Structure Data Reliability Assessment 158
Table 6 – 5: Practical seal lives in Nelson 164
Table 6 – 6: Proportion of Road Surface in Nelson by Type and Traffic Volume 165
Table 6 – 7: Pavement Renewal 3 Year Programme 168
Table 6 – 8: Drainage Pipes Data Reliability Assessment 172
Table 6 – 9: Drainage Intakes, Outfalls and Sumps Data Reliability Assessment 172
Table 6 – 10: Drainage Surface Water Channels Data Reliability Assessment 172
Table 6 - 13: Bridge Structure Data Reliability Analysis 175
Table 6 - 14: Large Culvert Structure Data Reliability Analysis 176
Table 6 - 14: Retaining Wall Structure Data Reliability Analysis 176
Table 6 - 15: Handrail and Safety Barriers Data Reliability Analysis 176
Graph 6 – 9: Retaining Wall Condition Summary 177
Table 6 – 4: Structure Renewals 179
Table 6 – 14: Streetlights – Luminares Data Reliability Assessment 188
Table 6 – 15: Streetlights – Poles Data Reliability Assessment 188
Table 6 – 16: Signs Data Reliability Assessment 188
Table 6 – 17: Traffic Signals Data Reliability Assessment 188
Table 6 – 18: Parking Equipment Reliability Assessment 195
Table 6 – 19: Parking Pavement Data Reliability Assessment 196
Table 6 – 20: Off street Car Parking Spaces in Nelson and Stoke 196
Table 6 – 21: Annual Changes in Average Quarterly Retail Spend by Precinct 200
Table 6 – 22: Cycle Infrastructure Data Reliability Analysis 205
Table 6 – 23: Footpath Data Reliability Analysis 212
Table 6 – 24: Fares as at July 2017 219
(Changes are proposed from 31 March 2019) 219
Table 7 – 1: Forecasted Annual Expenditure 3 Year Summary Table updated 229
Table 7 – 2: Forecasted Annual Expenditure 10year Detail Table updated 230
Table 7 – 3: Financial Treatment of Activities 235
Table 9 – 1: Actions proposed and timetables for improving accuracy and confidence in the AM plan 259
Table C – 1: 287
Table E – 1: Consequence Rating (Impact) 290
Table E – 2: Risk Matrix – Consequences x Likelihood 291
Table E – 3: Residual Risk Tolerance 292
Table E – 4: Comprehensive Risk Table 293
Table F – 1: Definition of Levels of Service 307

Table I – 1: Previous level of service and why they have changed 333
Table K – 1: Extract from Regional Land Transport Plan – Agreed Top of the South Significant Activities 336
Table K – 2: Extract from Regional Land Transport Plan - Activities proposed within Nelson City (Refer Table 4 for significant Nelson and inter-regional activities) 340
Table M – 1: Low Cost Low Risk and Footpaths Priority List 344
Table M – 2: Network Deficiencies - Footpaths 350
Table N – 1: Proposed Footpath Rehabilitation sites 353
Table N – 2: Network Deficiencies – New Footpath Connection Updated 357
Table O – 1: Evidence / Examples to support the scoring of 4 and 5 362

LIST OF FIGURES

Figure ES 1 - 1: Nelson Arterial Traffic Volumes 7 Day ADTs....15
Figure 1 - 1: Relation between key planning documents....47
Figure 2 – 2: Number of Fatal and Serious Injuries on Local Roads in Nelson (A820297)....90
Figure 3 - 1: Population and household projections (high series), 2018-2048, Nelson....102
Figure 3 - 2: Population projections by age groups (high series), 2018-2048, Nelson....103
Figure 3 - 3: Population estimates, 2006-2016, and projections (low, medium, medium-plus, high), 2013-2048, Nelson....106
Figure 4 – 1: Network Map....120
Figure 4 – 2: High speed data collection vehicle....120
Figure 5 - 1: Interventions for Critical Assets....137
Figure 5 - 2: Interventions for Non-Critical Assets....137
Figure 5 - 3: Interventions for Non-Critical Assets....138
Figure 5 - 4: Interdependency Matrix – Business As Usual....151
Figure 5 - 5: Interdependency Matrix – During / Post Disaster Event....152
Figure 6 – 1: Arterial Road Hierarchy....153
Figure 6 – 2: Expected Future Resurfacing Costs/Liability....166
Figure 6 – 3: Remaining Asset Life of Retaining Walls....178
Figure 6 – 5: Volume of Material Disposed of From Stock Effluent Disposal Facility....184
Figure 6 – 6: Streetlight Pole Condition....190
Figure 6 - 7: Streetlight Pole Renewal Programme....191
Figure 6 – 8: Condition of Signs....192
Figure 6 – 9: CBD pedestrian counts – Thursday and Saturdays....202
Figure 6 – 10: Pedestrian Counts (7hr manual counts)....214
Figure 6 - 11: New driveway construction with steeper ramp.....215
Figure 6 - 12: Zone Structure and Bus Routes....219
Figure 6 - 13: Overall Bus Patronage 2013-2017....220
Figure 6 – 14: Patronage on each of the four City routes.....221
Figure 7 – 1: Financial Summary Chart updated....234
Figure 8 – 1: Core Asset Management Practices....243
Figure 8 – 2: Asset Management Structure....244
Figure 8 – 3: Quality Management Lifecycle:....245
Figure 8 - 4: Business Case Process....248
Figure 8 – 5: Asset Information Systems....249
Figure 9 - 1: Transport – AM Maturity by Practice Area....254
Figure J - 1: Nelson Growth Areas and Infrastructure Timing....335

LIST OF GRAPHS

Graph ES 1 - 1: Travel Time variability between Annesbrook Roundabout and Selwyn Place via Waimea Road during the AM peak hour excluding school holidays 16

Graph ES 1 - 2: Travel Time variability between Selwyn Place and Annesbrook Roundabout via Waimea Road during the PM peak hour excluding school holidays 17

ES Graph 1 - 3: Comparison of Daily VKT and Nelson Southern link Study Area Population 19

Graph ES 1 - 4: Comparison of Daily Traffic on Screen Lines 20

Graph ES 1 - 5: Rat Run Traffic Volumes on Port Hills 20

Graph ES 1 - 6: Network Summary – Rutting and Shoving 21

Graph ES 1 -7: Pavement Integrity Index 22

Graph ES 1 - 8: Surface Condition Index 22

Graph ES 1 - 9: Gross Domestic Product Growth – Nelson Tasman 23

Graph ES 1 - 10: Increasing HCV traffic over time on key freight routes in Nelson 23

Graph ES 1 - 11: Increasing Class 8-13 (large) HCV traffic over time on key freight routes in Nelson 24

Graph ES 1 - 12: Retaining Wall Condition Summary 25

Graph ES 1 - 13: Nelson Age Projections 26

Graph ES 1 - 14: New Zealand Age Projections 26

Graph ES 1 - 15: Weekday time restricted parking occupancy 28

Graph ES 1 – 16: Centre's Retail spend 29

Graph ES 1 – 17: Financial Summary Chart updated 33

Graph 1 - 1: ONRC Breakdown 52

Graph 2 – 1: Customer Satisfaction with the Transport Activity 59

Graph 2 – 2: Reasons for Transport dissatisfaction (2017) 60

Graph 2 – 3: Smooth Travel Exposure ONRC Peer Group Comparison 68

Graph 2 – 4: Smooth travel exposure over time by traffic volume (A1592518) 69

Graph 2 – 5: Footpath Condition Rating 71

Graph 2 – 6: Public Transport Patronage Growth Target (A883923) 75

Graph 2 – 7: Census journey to work 77

Graph 2 – 8: Resident Survey Travel to Work Mode 77

Graph 2 – 9: Historical numbers and forecast of pedestrian and cyclist numbers at 5 screen lines (A861021) 78

Graph 2 - 10: Waimea Road Northbound Median Peak Hour Travel Time (A1517938) 80

Graph 2 - 11: Waimea Road Southbound Median Peak Hour Travel Time (A1517938) 81

Graph 2 - 12: Rocks Road Northbound Median Peak Hour Travel Time (A1517938) 81

Graph 2 - 13: Rocks Road Souththbound Median Peak Hour Travel Time (A1517938) 82

Graph 2 – 14: Arterial Road Peak Hour Occupancy (A468929) 83

Graph 2 - 15: Weekday time restricting car park occupancy 85

Graph 2 – 16: Saturday time restricting car park occupancy 85

Graph 2 – 17: Collective Risk ONRC Peer Group Comparison 92
Graph 2 – 18: Personal Risk ONRC Peer Group Comparison 93
Graph 2 – 19: Pedestrian crash performance 95
Graph 2 – 20: Cycle crash performance 95
Graph 3 – 1: Nelson Age Projections Projections 108
Graph 3 - 2: New Zealand Age 108
Graph 3 - 3: Gross Domestic Product Growth – Nelson Tasman Region 109
Graph 3 - 4: Percentage Change in public transport patronage compared with same month previous year 111
Graph 3 - 5: Comparison of Daily VKT and Nelson Southern link Study Area Population 114
Graph 3 - 6: Comparison of Daily Traffic on Screen Lines 115
Graph 3 - 7: Rat Run Traffic Volumes on Port Hills 116
Graph 3 - 8: Weekday time restricted parking occupancy 117
Graph 4 – 1: Maintenance and operations expenditure - 5 year average by funding category 123
Graph 4 – 2: Historic Subsidised Transport Expenditure 124
Graph 4 – 3: Historic Non Subsidised Transport Expenditure 124
Graph 4 – 4: Historic Parking and Centre Enhancement Expenditure 125
Graph 4 – 5: Historic Public Transport and Total Mobility Expenditure 125
Graph 6 – 3: Five Year Annual Sealed Pavement Cost Comparison 159
Graph 6 – 4: Network Rutting and Shoving 160
Graph 6 – 5: Pavement Integrity Index 160
Graph 6 – 6: Surface Condition Index 161
Graph 6 - 7: Increasing HCV traffic over time on key freight routes in Nelson 161
Graph 6 - 8: Increasing Class 8-13 (large) HCV traffic over time on key freight routes in Nelson 162
Graph 6 – 10: Quarterly Retail Spend by Precinct 200
Graph 6 -11: Summer Cycle Counts 206
Graph 6 – 12: Cyclists Counts (7 hr manual) 207
Graph 6 – 13: Cycle Crashes - Nelson 208
Graph L - 1: 5001 Subsidised Roading Expenditure Chart updated 342
Graph L - 2: 5002 Unsubsidised Roading Expenditure Chart updated 342
Graph L – 3: 5505 Parking Regulation Expenditure Chart updated 342
Graph L – 4: 5510 Parking & Centre Enhancement Expenditure Chart updated 343
Graph L – 5: 5560 Public Transport Expenditure Chart updated 343
Graph L – 6: 5570 Total Mobility Expenditure Chart updated 343
Figure O – 1: Smart Buyer Self-Assessment 360

Executive Summary

i. The purpose of the plan

This Transport Asset Management Plan (TAMP) provides Council with the year to year financial guidance on the allocation of transport funds. It is a tactical, locally focused document; developed around national and regional transport funding guidelines as indicated by the requirements of the New Zealand Transport Agency (NZTA) guided by the Road Efficiency Group (REG), the Government Policy Statement (GPS) on Land Transport Funding and the NZTA Long Term Strategic View. It is the business case for subsidised funding and will guide the transport spending for the years 2018-2028, as updated each year by the annual plan. The project programme in this TAMP will inform the transport spending in the Long Term Plan, both for the subsidised and unsubsidised assets and activities.

This Asset Management Plan provides evidence based information on how transport activity in Nelson is performing, based on measurable levels of service and performance indicators.

National and Local Policy on Transport

This document has been developed within the broad guidelines set by the 2015 Regional Land Transport Plan (RLTP)[1] which has the objectives of efficient, safe, resilient, integrated, and sustainable land transport system. These guidelines have influenced the management of transport, specifically the subsidised policy, in Nelson over the last 9 years.

The Government Policy Statement (GPS) on Land Transport Funding is issued by the Minister of Transport every three years. The 2018 GPS has set out the below focus areas for the government's priorities for expenditure from the National Land Transport Fund over the next 10 years, broadly continuing the overall direction set by the Government Policy Statement in 2015, 2012 & 2009.

- Safety: A safe system, free of death and serious injury;
- Access: provides increased access to economic and social opportunities, enables transport choice and access, is resilient;
- Environment: reduces greenhouse gas emissions, as well as adverse effects on the local environment and public health;
- Value for money: delivers the right infrastructure and services to the right level at the best cost;
- Putting the right infrastructure in place to support high growth urban areas;
- Supporting the regions – for New Zealand to thrive we need our local economies to thrive and we want to support regional freight and tourism movements while increasing the resilience of critical regional routes;

1 Regional Land Transport Plan – A1393798

- Improving how freight moves on our network by focusing on high quality and resilient connections;
- Focusing on ensuring that the network is resilient in the face of shocks and challenges – like responding to earthquakes or catering for increasing numbers of tourists using our transport network. We want to minimise the risk of transport disruption.

The Regional Land Transport Plan 2015 – 2021 (RLTP) sets out the subsidised transport prioritised programme for six years in accordance with the NZ Transport Agency's Investment and Assessment Framework and in accordance with the GPS and this TAMP.

The RLTP 2015 – 2021 had a mid-term review in late 2017 to confirm the direction detailed above.

NZTA Programme Business Case for the Southern Link

Under the high growth scenario, which Nelson has been experiencing, construction of a new state highway corridor would be brought forward into the timeframe of the next LTP and the Draft AMP would need to respond accordingly. Transport infrastructure between Nelson and Richmond, including new routes, would need to be planned and designed to respond to any change to the state highway.

The next stage in the NZTA Business Case process includes the development of a Detailed Business Case to develop a new arterial road and progress other activities to ease congestion on arterial routes.

NZTA and Council have been delayed in progressing the NSLI next stage while the new Government has been formed and Ministers appointed.

As a result, this Transport AMP, does not include any funding (capital or maintenance) to respond to the options in the NSLI Programmed Business Case.

ii. Asset description

The Transport services and assets associated with this activity are primarily focussed on connecting people and moving goods across Nelson safely, efficiently and effectively. This includes the provision, operation and maintenance of physical infrastructure on the road reserve such as for driving, parking, cycling, walking and amenity, as well as the provision of safety, traffic control and public transport services.

The replacement cost of these assets is approximately $758 million, and the depreciated value is $607 million. This represents nearly 43% of Council assets.

Table ES - 1: Transport Assets

Transport	Asset	Quantity	Replacement Value
	Roads	268km (251km sealed and 17km unsealed)	$203M

Transport	Asset	Quantity	Replacement Value
	Bridges (including footbridges) Retaining walls	97 419 comprising 32,365m^2	$116.8M
	Footpaths, walkways and cycle ways	380km	$43.3M
	Off street carpark areas	8 (1100 spaces)	$2.7M
	Drainage channels Culverts Sumps /drainage assets	380km 72.2km 6413	$78.3M
	Streetlights	4,538	$32.5M
	Signs, signals and other road and transport assets		$22.4M
	Land for legal Road		$259M
TOTAL VALUE OF TRANSPORT ASSETS			**$758M**

iii. Key issues

This transport asset management plan has been developed using a strategic focus on the key issues to seek a clear understanding of the key problems, opportunities, causes, consequences of transport activities. This key issues summary is underpinned by good quality evidence which can be found in sections 2, 3 and 6 of this document. The four key issues below are not intended to be an exhaustive list of problems and opportunities but rather the area of focus where continuing to do

what we have always done will not respond to the demands being placed on the network.

Problem 1: The arterial transport network is constrained during the morning and evening peak periods and is unable to respond to strong regional population, tourism and business growth resulting in congestion.

Cause	Consequence
The average annual population increase of 0.9%/pa plus tourism and business growth is causing congestion during the peak hours. **Nelson's enviable proportion of work trips by walk, cycle and bus for a small metro (18.3% 2013 Census) is not growing at a fast-enough rate to meet the arterial travel demand.**	Arterial road congestion resulting in average 15 minute travel time delays in the peak periods on SH6 (Rocks Road route) ranging between 2 and 4.5 minutes, and between 2 and 12 minutes on Waimea Road. Peak hour volume to capacity ratios on Nelson's two arterials, exceed 80% congestion limit with measures ranging from 83% to 95%. Motorists rerouting via residential streets to avoid arterial road congestion reducing amenity and increasing safety risk in residential areas. Refer graph 1.5 of the AMP.
The parking policy and charging regime of both Council and its near neighbour Tasman District Council is set to encourage activity in the city centre over alternatives modes to car travel resulting in static single occupant vehicle proportion and high inner-city parking demand.	Travel time delay as a result of congestion from single occupant vehicle users. 25% utilisation of short term inner city parking spaces by long staying vehicles for all day low economic use. Poor inner-city amenity from circulating traffic looking for car parks.
The National Policy Statement for Urban Development Capacity requires councils to provide serviced capacity for residential growth	Transport capacity in growth areas such as Stoke need to meet projected demand in the short (0-3 years) medium (3-10 years) and long term (10 years +). The NPS-UDC requires an additional 3450 residences in the short to medium term, and the transport system needs to respond to this demand with LOS on the existing network.

Problem 2: A backlog of renewals is contributing to an increase in maintenance costs and poor network resilience.

Cause	Consequence
Recent increases in investment have reduced the risk of the sealed surface failures however a backlog still exists as a result of underinvested in previous decades. The underinvestment is resulting in a backlog of sites that have degraded under UV and the action of traffic.	Loss of integrity of the base layers due to water ingress or increased maintenance costs to maintain the LoS resulting in high long-term maintenance and renewal costs. Refer graph 1-6. The measure of rutting and shoving has increased 2007 to 2014. The 2015 AMP targeted the sealed surface backlog and has reversed trend although results remain high.
The retaining wall asset and associated handrails has been recently revalued up from $51M to $95M which has shown a significant gap between the current renewal investment level and the annual depreciation. The condition of 130 of	High forecast maintenance and renewal costs and risk of poor network resilience in seismic or heavy rainfall events.

Cause	Consequence
the total 419 walls is not well understood.	
28 bridges and large culverts have transferred from stormwater to transport to receive NZTA co-investment.	Additional maintenance and renewal investment in the transport account, with a reduction in the stormwater account.
A recent sign inventory and condition assessment has highlighted significantly more assets than were previously estimated. The survey counted 6163 signs compared with the previous valuations of 2910. 4292 (70%) are of poor, very poor or unknown condition.	Increased costs to renew signs as they reach the end of their useful life. Potential for increase crashes/poor network safety performance due to signs not adequately providing the regulatory and warning functions.
Traffic loading has increased through the introduction of HPMV traffic, business and industry growth and increases in permitted axle loading from rule changes. There has been 35% growth in HPMV traffic on key freight routes over the last 5 years against average growth of 16% across all freight classes.	More pavement failures resulting in increased maintenance costs and rougher ride. Starting to identify load restrictions for large culverts that were not designed for this traffic.
Climate change (increased storm intensity), urban intensification and local geology are increasing stresses on the structural and drainage assets leading to more frequent failures.	Unplanned road closures often when other utility providers need the road network to restore their services following an event and restrictions to heavy vehicle access.

Problem 3: Changing population demographic requires different transport services

Cause	Consequence
The over 65 population cohort is growing at twice the NZ average growth rate. Census data and Statistics NZ forecasts indicate that Nelson population aged over 65 will change from 17% (2013) to 32% (2043). The NZ average is expected to be 23% (2043).	The transport system will need to respond to the changing demographic. E.g. road environment that accommodates increased reaction times, safe pedestrian facilities (including for mobility scooters) and convenient public transport and total mobility services.
	Uncertain demand for services / potential for social isolation due to the ageing population typically only know car travel as a means of mobility. NZTA research in 2017 indicates that the private car will continue to be the main transport choice for this sector of the population. The growth of the health and social service sector is shown in graph 1-9, and is second only to Transport and postal services.

Opportunity: Adoption of emerging technology could reduce congestion, enable our aged population to move about more freely and improve environmental outcomes.

Opportunity	Consequence
Use technology to manage parking demand.	Greater turnover of short term central city spaces to enable better use of the valuable central parking resource. Improved central city vibrancy and amenity by incentivising all day parking to occur in lower value fringe locations.
Encourage use of electric bikes for everyday transport journeys.	Reduced peak hour arterial congestion because electric bikes take up minimal road space compared with a single occupant vehicle. Environmental benefits such as reduced fossil fuel consumption and tailpipe emissions. Improved health outcomes due to uses being active during their journey. Reduced central city parking space demand.
Be NZ's leader in the trial and use of autonomous vehicles.	A reduction in crashes and the resulting injuries. Increases in arterial road capacity by enabling closer following distances. Enhanced mobility for children, the elderly, disabled and transport disadvantaged. Provide relief to travellers from driving and navigation chores. Environmental benefits such as reduced fossil fuel consumption and tailpipe emissions. Reduced parking demand that will enable reuse of the valuable central parking asset. Facilitate different business models for mobility as a service.
Nelson can lead the national change to the transport system to meet the needs of the ageing population.	The transport system will respond to the changing demographic by enabling: • Enhanced mobility, • Seamless multi modal journeys, • Improved health outcomes due to uses being active during their journey.

iv. Levels of service

The transport levels of service are summarised in the table below.

It must be recognised that Council has varying ability to influence some of these levels of service.

Table ES - 2: Transport levels of service

Community Outcomes	Level of service	Performance measure	Previous and current performance			Performance Target			
						2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our infrastructure is efficient, cost effective and meets current and future needs	Quality – A smooth road surface. ^*	The average quality of ride on a sealed local road network, measured by smooth travel exposure	2014/15 89% 2015/16 92% 2016/17 90%			87%			
Our infrastructure is efficient, cost effective and meets current and future needs	Quality – A smooth road surface.	The average quality of ride on a sealed local road network, measured by smooth travel exposure by One Network Road Classification (ONRC)	***ONRC***	***Smooth Travel Exposure***		The following average Smooth Travel Exposure targets are not exceeded:			
				15/16	***16/17***	***ONRC***		***Smooth Travel Exposure Target***	
			Regional	84	97	Regional		90	
			Arterial	90	95	Arterial		85	
			Primary Collector	83	71	Primary Collector		80	
			Secondary Collector	80	78	Secondary Collector		80	
			Access	85	84	Access		75	
			Low Volume	83	83	Low Volume		75	
Our infrastructure is efficient, cost effective	Quality – A smooth footpath surface^	The percentage of footpaths within a territorial authority district that fall within the level of	2014 95% no greater than 3 2017 92% no greater than 3			95% of the footpath network by length has a condition rating of no greater than 3			

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target 2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
and meets current and future needs		service or service standard for the condition of footpaths that is set out in the territorial authority's relevant document.					
Our infrastructure is efficient, cost effective and meets current and future needs	Affordability – Optimising the amount of resurfacing undertaken ^*	The percentage of the sealed local road network that is resurfaced.	2014/15 4.8% 2015/16 7.4% 2016/17 5.6%	Not less than 3% or not more than 8.5%			
Our infrastructure is efficient, cost effective and meets current and future needs	Accessibility - Providing transport choices via public transport and, Efficiency – Maximise movement of people via public transport. ^	The fare recovery ratio (equitable sharing of costs)	2014/15 64% 2015/16 56% 2016/17 52%	Not less than 45% and not more than 55%			
Our infrastructure is efficient, cost effective and meets current and future needs	Accessibility - Providing transport choices via public transport and, Efficiency – Maximise movement of	NBus patronage	2014/15 415,326 annual number of passengers 2015/16 414,212 annual number of passengers 2016/17 426,237 annual number of passengers	4% increasing trend over time			

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target 2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
	people via public transport.^						
Our infrastructure is efficient, cost effective and meets current and future needs	Efficiency – Maximise movement of people via walk and cycle modes	Percentage of the community that travel to work by walking or cycling	2013 Census - 18.3% of commuters made up of walker/joggers 9.6%, cyclists 8.7%. 2016 Residents Survey - 21% walked or cycled. 2017 Residents Survey - 19% walked or cycled.	20% combined of all journeys to work by walking or cycling	20% combined of all journeys to work by walking or cycling	21% combined of all journeys to work by walking or cycling	25% combined of all journeys to work by walking or cycling
Our infrastructure is efficient, cost effective and meets current and future needs	Efficiency – Maximise movement of people via walk and cycle modes	Numbers of people walking or cycling on the Railway Reserve, Bishopdale shared Path, Whakatu shared path Atawhai shared Paths and Rocks Road	***Year*** / ***Cycle*** / ***Walk*** ***2014/15*** 2561 1110 ***2015/16*** 2716 1220 ***2016/17*** 3018 1283	2% increasing trend over time			
Our infrastructure is efficient, cost effective and meets current and future needs	Reliability - An operational arterial transport network.^	Median AM and PM peak hour travel times on Waimea Road and the State Highway between Annesbrook and Haven Road roundabout	2015/16 financial year data shows the following exceedances of the upper limit: 24 weeks in the Waimea Road northbound AM peak 9 weeks in the Waimea Road southbound AM peak 11 weeks in the Rocks Road northbound AM peak 27 weeks in the Rocks Road southbound AM peak	Weekly median peak hour travel time delays are no greater than 5 minutes above uncongested travel times.			
Our infrastructure is efficient, cost effective	Efficiency – Making better use of existing capacity	Percentage of vehicles with more than one occupant on Waimea Road	2014/15 25% 2015/16 25% 2016/17 24%	25.5%	26%	26.5%	30%

Community Outcomes	Level of service	Performance measure	Previous and current performance			Performance Target 2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
and meets current and future needs		and Rocks Road during the am and PM peak hours							
Our infrastructure is efficient, cost effective and meets current and future needs	Efficiency - Supply and pricing of short stay parking managed to encourage vitality and commercial activity in the city centre.^	Parking Occupancy - Percentage of short stay parking spaces occupied in midweek peak in December (excluding taxi and loading bays)	2012 - 85% 2016 – 94%			No survey planned	No greater than 95% in the peak hour	No survey planned	No greater than 95% in the peak hour
Our infrastructure is efficient, cost effective and meets current and future needs	Efficiency - The supply and pricing of long stay parking is managed to incentivise greater use of travel options other than cars as well as encouraging vitality and commercial activity in the city centre ^	Occupancy of long-stay parking spaces between peak travel times measured at 5 locations within the CBD fringe.	2015/16 92% 2016/17 87%			Between 85% and 95% in the peak hour			
Our urban and rural environments are people-friendly, well	Customer Service – Total customer asset / activity satisfaction^	Percentage of public satisfied and dissatisfied with the	***Year***	***Satisfied or very Satisfied***	***Dissatisfied or very dissatisfied***	More than 50% of respondents are either very satisfied or satisfied, and less than 10% are either dissatisfied or very dissatisfied.			
			2013/14	55%	17%				

Community Outcomes	Level of service	Performance measure	Previous and current performance			Performance Target 2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
planned and sustainably managed		transport activity2 (based on Nelson City Council Annual Residents Survey).	***2014/15***	No survey Undertaken	No survey Undertaken				
			2015/16	44%	13%				
			2016/17	48%	27%				
Our urban and rural environments are people-friendly, well planned and sustainably managed	Responsiveness – Timely response to customer 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	2015/16 82% 2016/17 78%			80% of service requests are responded to within five working days			
Our urban and rural environments are people-friendly, well planned and sustainably managed	Road Safety – a safe transport network.^*	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. ONRC Customer Outcome 1 measure.	2014 10 Serious injuries 2015 11 Serious injuries 2016 15 Serious injuries and 1 fatality			-1	0	-1	-5
			2014 – 0.038 crashes/km			2% reducing trend over time			

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target 2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our urban and rural environments are people-friendly, well planned and sustainably managed	Road Safety – a safe transport network	Number of injury crashes per kilometre of road. Collective Risk ONRC Customer Outcome 2 measure	2015 – 0.042 crashes/km 2016 – 0.051 crashes/km	Collective risk less than 0.043	Collective risk less than 0.042	Collective risk less than 0.041	2028 Calendar year Collective risk less than 0.034 (year 10)
Our urban and rural environments are people-friendly, well planned and sustainably managed	Road Safety – a safe transport network	Total number of reported serious injuries and fatalities by traffic volume Personal Risk ONRC Customer Outcome 3 measure	2014 – 5.1 Personal Risk per 100M VKT 2015 – 5.9 Personal Risk per 100M VKT 2016 – 8.3 Personal Risk per 100M VKT	2% reducing trend over time			
				Personal Risk per 100M VKT less than 6.1	Personal Risk per 100M VKT less than 5.9	Personal Risk per 100M VKT less than 5.8	2028 Calendar year Personal Risk per 100M VKT less than 4.8
Our urban and rural environments are people-friendly, well planned and sustainably managed	Road Safety – a safe transport network^	Number of crashes involving cyclists.	Ten year average 22 cycle crashes/yr. 2014 – 13 cycle crashes 2015 – 16 cycle crashes 2016 – 19 cycle crashes	Number of cycle crashes less than 22	Number of cycle crashes less than 22	Number of cycle crashes less than 22	Number of cycle crashes less than 22
Our urban and rural environments are people-friendly, well planned and sustainably managed	Road Safety – a safe transport network^	Number of crashes involving pedestrians	Ten year average 10 pedestrian crashes/yr. The number of crashes involving pedestrians in 2015 was 12, over 100% more than the target maximum of 5. The number of crashes involving pedestrians in 2014 and 2013 was also 12.	Number of pedestrian crashes less than 10	Number of pedestrian crashes less than 10	Number of pedestrian crashes less than 10	Number of pedestrian crashes less than 10

Community Outcomes	Level of service	Performance measure	Previous and current performance		Performance Target 2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our infrastructure is efficient, cost effective and meets current and future needs	Resilience – The impact of unplanned events on journeys	The number of vehicles affected by closures annually. ONRC Resilience Customer Outcome 1.	***ONRC***	***16/17 vehicles impeded***	***ONRC***	***vehicles impeded/year***		
			Regional	1450	Regional	3000		
			Arterial	298	Arterial	3000		
			Primary Collector	1073	Primary Collector	1500		
			Secondary Collector	467	Secondary Collector	2000		
			Access	845	Access	2000		
			Low volume	0	Low volume	2000		
Our infrastructure is efficient, cost effective and meets current and future needs	Resilience - Access to properties is available whenever practicable.	The number of vehicles affected by closures when there was no viable detour. ONRC Resilience Customer Outcome 2.	***ONRC***	***16/17 Journeys not made***	***ONRC***	***Journeys not made/year***		
			Regional	0	Regional	0		
			Arterial	0	Arterial	0		
			Primary Collector	0	Primary Collector	0		
			Secondary Collector	0	Secondary Collector	2000		
			Access	0	Access	3000		
			Low volume	0	Low Volume	3000		
Our unique natural environment is healthy and protected	Environmental Sustainability – Stormwater runoff from our roads is clean^	Investigation work to inform a level of service measure for the 2021 AMP is developed	New measure. No previous performance		Testing regime developed to determine current	Street sweeping and sump cleaning frequencies tested to determine optimum balance between		To be determined

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target 2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
				per-formance	amenity / cost / water quality		

^L.O.S. included in LTP

* Level of Service measure required by Local Government Act 2002.

v. Future demand

i. Regional & Arterial Traffic

Section iii of this executive summary discussed the first key issue of the 'The arterial transport network is constrained during the morning and evening peak periods and is unable to respond to strong regional population, tourism and business growth resulting in congestion' The section below summarises the current and future demand on the network in relation to this issue.

Traffic Count Data – Current Performance

Traffic count data on key ONRC regional and arterial routes within Nelson for the period 2006 to 2016[3] is presented in ES Figure 1-1. The light dashed lines represent the monthly traffic count information with the horizontal solid lines showing the annual average. The data shows arterial traffic volumes starting trending up with strong growth in the 2015 and 2016 years compared with the preceding six years.

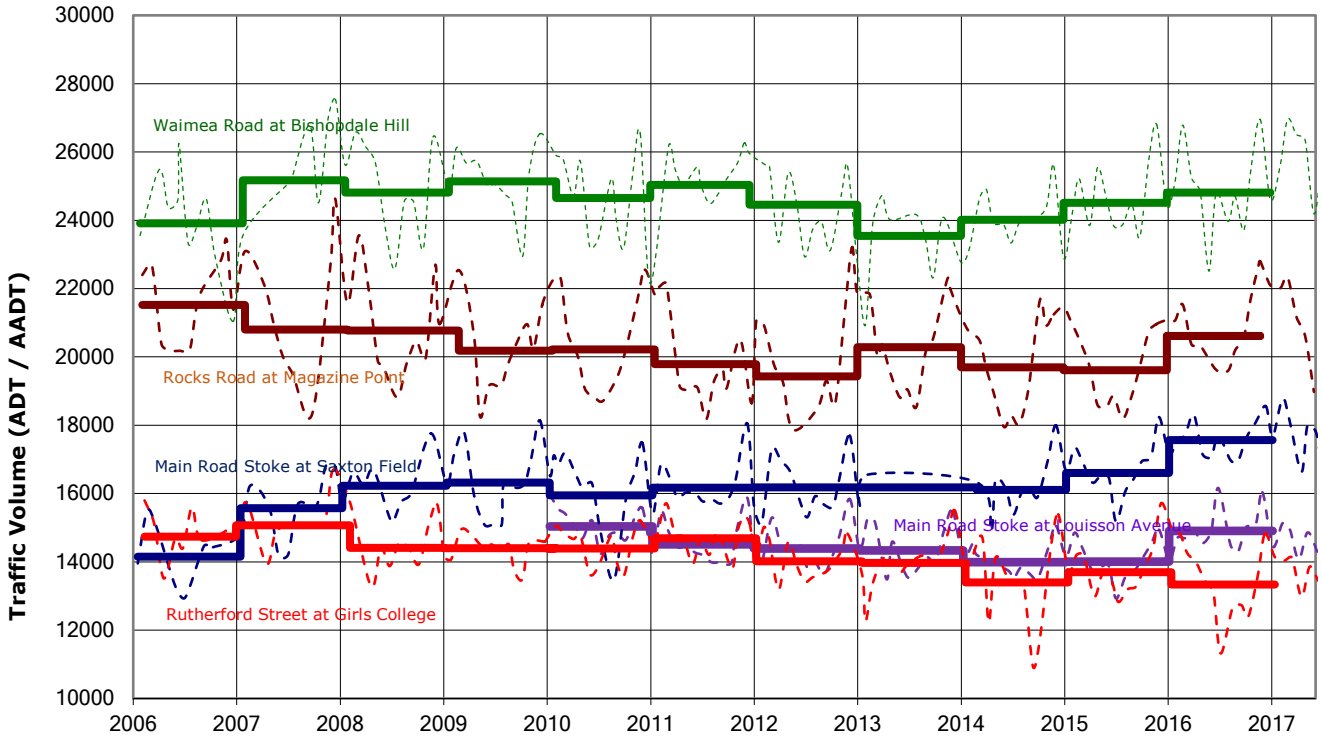


Figure ES 1 - 1: Nelson Arterial Traffic Volumes 7 Day ADTs

The figure above shows a notable increase in Rocks Road traffic in 2016 (5.1% growth) which is likely due to the busy summer period driven by residential, business and tourism growth coupled with the impact from the parallel arterial route of Waimea Road having road works for a significant

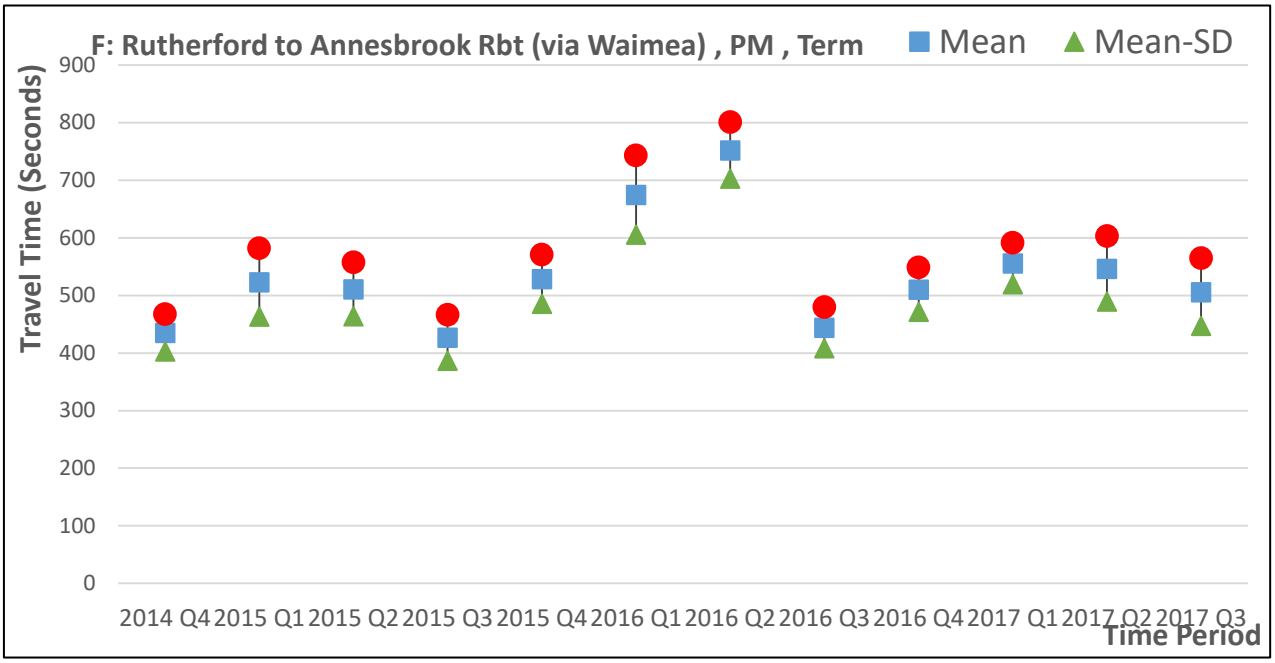
3 Refer A1672546 for data set

portion of the year. It is also noted that Waimea Road even though it had road work delays experienced 1.2% growth in the 2016 year.

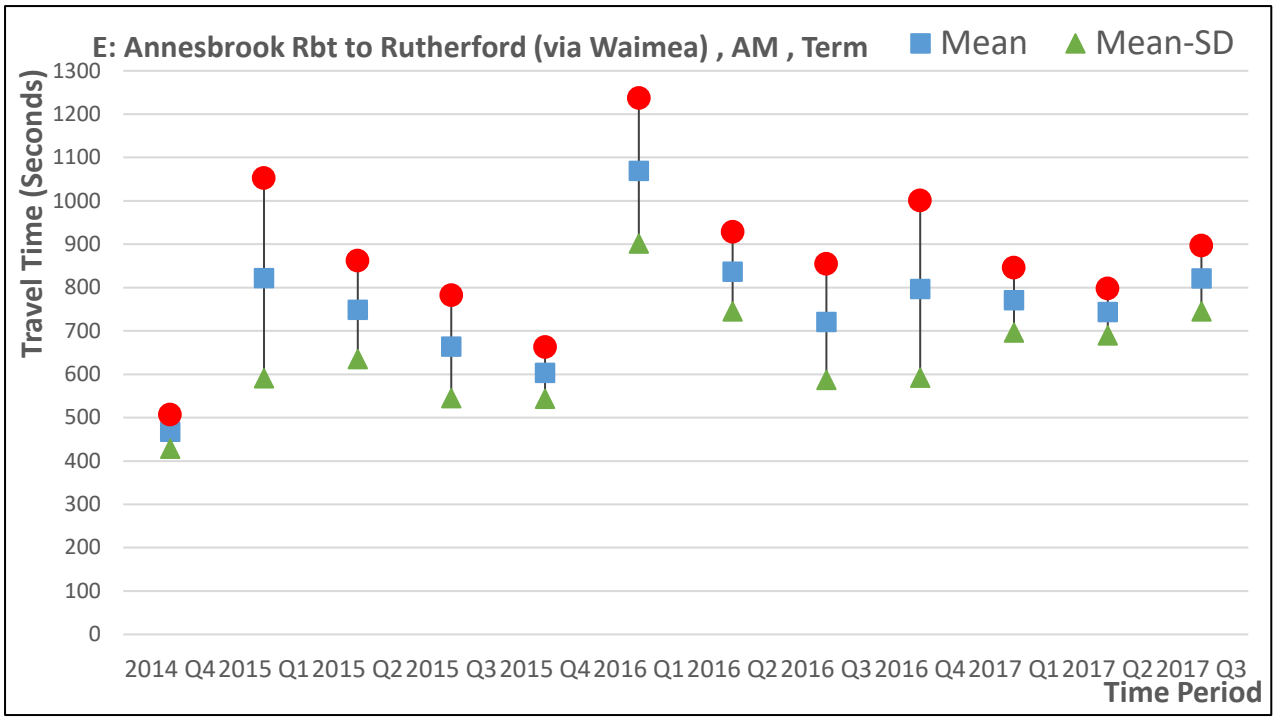
Travel Time Data - Current Performance

The increase in volume is also reflected in a significant increase in peak hour travel time (from Bluetooth data) during the peak period when comparing 2015 and 2016 travel time data. This is shown graphically below for the Waimea Road Route. Of note is the increase in travel time between the two summer quarters, 2015 quarter 1 and 2016 quarter 1 which showed an increase of 270 seconds or four and a half minutes in mean travel time. The latest 2017 data however does show a drop back to levels similar to 2015.

Graph ES 1 - 1: Travel Time variability between Annesbrook Roundabout and Selwyn Place via Waimea Road during the AM peak hour excluding school holidays



Graph ES 1 - 2: Travel Time variability between Selwyn Place and Annesbrook Roundabout via Waimea Road during the PM peak hour excluding school holidays



The Transport Agency's definition of congestion in the Southern Link Investigation is "where the volume to capacity ratio exceeds 80% for 5 days per week over at least a 1 hour time period that affects at least 1.5 km of a route". Bluetooth travel time data presented in the Nelson Southern Link Strategic and Programme Business Case provides evidence for congestion as summarised below:

- Peak hour volume to capacity ratios on Nelson's two arterials range from 83% to 95%, confirming current traffic congestion in the peak hours on Nelson's two arterial routes;
- Average 15 minute travel time delays in the peak periods on SH6 (Rocks Road route) range between 2 and 4.5 minutes, and between 2 and 12 minutes on Waimea Road;
- Uncongested daytime travel speeds on SH6 are approximately 40km/hr, reducing to as low as 25km/hr in the southbound peak; and
- Uncongested daytime travel speeds on Waimea Road are approximately 50km/hr, reducing to as low as 18km/hr in the northbound peak.

Future Urban Development Demand

The National Policy Statement for Urban Development Capacity (NPS-UDC) requires local authorities to ensure there is sufficient development capacity to meet demand in the urban environment in the short term (within 3 years), medium term (3-10 years) and long term (10-30 years). Short-term capacity must be feasible, zoned and serviced while long-term capacity must be feasible, with servicing planned but does not need to be zoned yet.

Local authorities with a medium or high growth urban area such as Nelson also need to provide an additional margin of feasible development capacity over and above projected demand of at least: 20% in the short and medium term; and 15% in the long term.

For Nelson, future housing demand is based on household projections for area units in the Nelson Urban Area with an additional 5% to meet demand for visitor/non-resident accommodation, such as holiday homes.

The location of actual growth will depend on where there is capacity for residential growth (residential zoning, infrastructure servicing) and where development is feasible. Residential growth areas and the sequencing of urban development capacity in the short, medium and long term are provided in Appendix J.

Future Regional and Arterial Demand

The Nelson Southern Link Investigation updated the Regional Transport Model in 2015/16 to understand future Regional and Arterial traffic demand[4]. The model update was based on the best information available at the time which included using Statistics NZ 2015 medium growth scenario. It must be noted that the recent medium plus growth forecasts are likely to have an impact on the model findings. The findings of the 2015/16 model update are summarised below.

Acknowledging that the rate of growth in the study area that eventuates over the next 20 years will be sensitive to a number of internal and external influences, including investment in future infrastructure projects to facilitate growth (e.g. the enabling effect of the proposed Waimea Dam on economic and land use growth in the Tasman District), sensitivity tests have been undertaken to consider low and high land use growth scenarios.

The future baseline 2023 and 2033 models demonstrate modest growth in travel demand between 2013 and 2023 and relatively flat growth between 2023 and 2033. The growth in traffic volumes on the Rocks Road and Waimea Road corridors increases by between 5% and 10% in all periods and in both directions between 2013 and 2023. These results are in line with land use development growth rates. The growth tapers off significantly post-2023 with flows between Stoke and Nelson flattening out or decreasing, especially flows in the peak periods. Similar trends are observed on Main Road Stoke and Stoke Bypass although there is a consistent yet modest increase in traffic volumes in both direction post 2023.

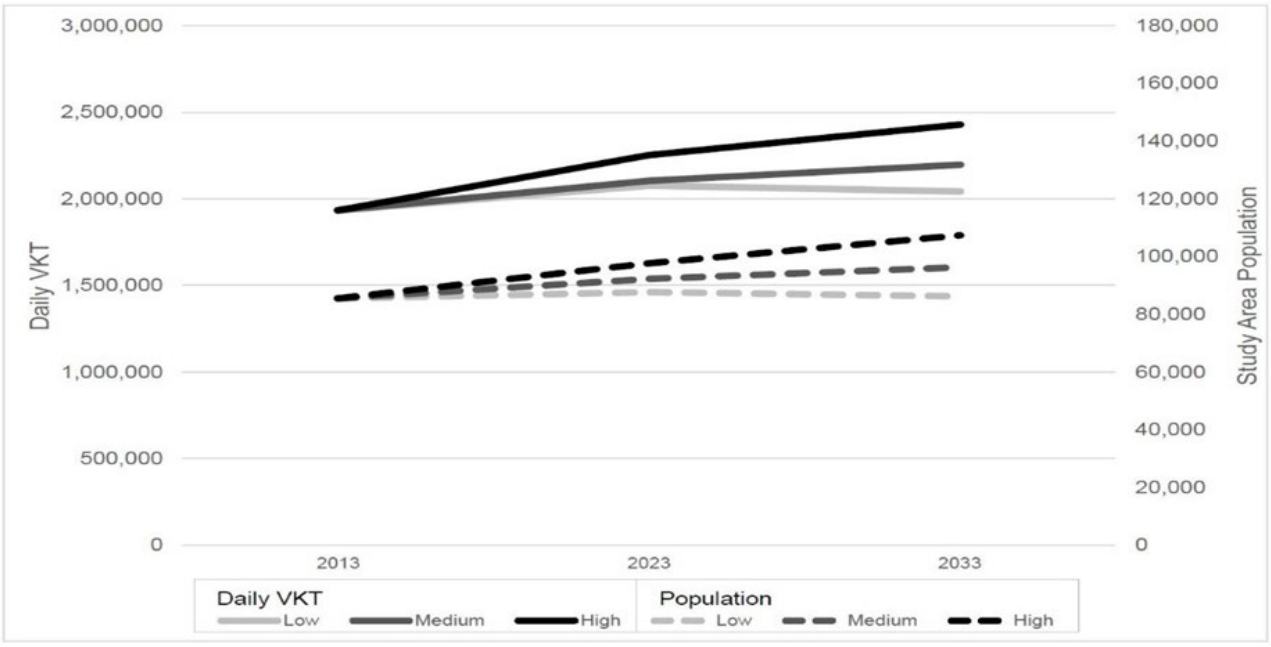
Travel times and intersection delay do not significantly deteriorate on the Stoke Bypass or Rocks Road corridors. However, intersection delay increases by 30-40% in the northbound direction, and 10-15% in the southbound direction between 2013 and 2023 on the Main Road Stoke and Waimea Road corridors. Delays only increase marginally post-2023, which is consistent with the flat demographic growth and travel demand. Under the revised medium

4 https://www.nzta.govt.nz/assets/projects/nelson-southern-link/Nelson-Southern-Link-Investigation-Future-Forecasting-FINAL.pdf

growth scenario, the increase in traffic demand resulting from revisiting the household occupancy, workforce participation, commercial vehicle and airport growth assumptions, equated to 2-4% more vehicle kilometres travelled on the network compared to the baseline. The impacts of the changes in assumptions are noticeable with traffic volumes on Rocks Road and Waimea Road corridors increasing by up to 4% in the future year models.

The network wide daily vehicle kilometres travelled graph (VKT) is shown below alongside population forecasts for the low, medium and high scenarios. The graph shows how these indicators are closely correlated as they exhibit very similar growth patterns over time.

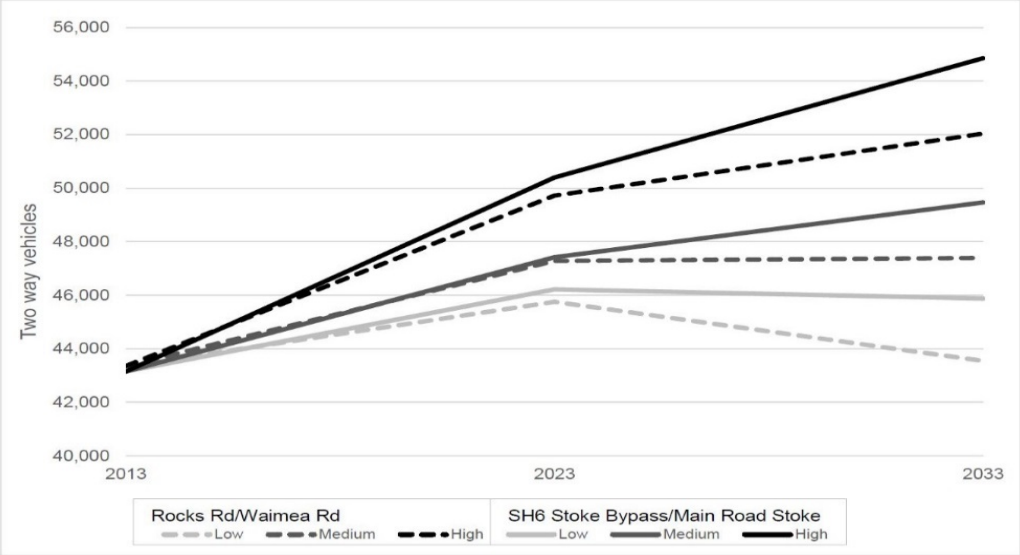
ES Graph 1 - 3: Comparison of Daily VKT and Nelson Southern link Study Area Population



Area Population

The growth in traffic volumes over the next 20 years in Stoke (combining Main Road Stoke plus Stoke Bypass flows) and Nelson (combining Rocks Road plus Waimea Road flows) is plotted below. The results demonstrate higher growth between 2013 and 2023, relative to growth post-2023, under all growth scenarios. Traffic volumes decrease from 2023 under a low growth scenario and the high growth scenario clearly results in a consistently accelerated rate of traffic growth compared to the more conservative scenarios. In all scenarios the growth across the combined Waimea Road and Rocks Road, and Whakatu Drive and Main Road Stoke screen lines occurs at a similar rate up to 2023 with very similar flows in Nelson and Stoke, but there is comparatively more growth on the Stoke screen line by 2033. This suggests that there is more traffic interaction occurring between Richmond and Stoke post-2023 compared to between Stoke and Nelson as a result of changing land use patterns in the Stoke Foothills and Richmond over time.

Graph ES 1 - 4: Comparison of Daily Traffic on Screen Lines

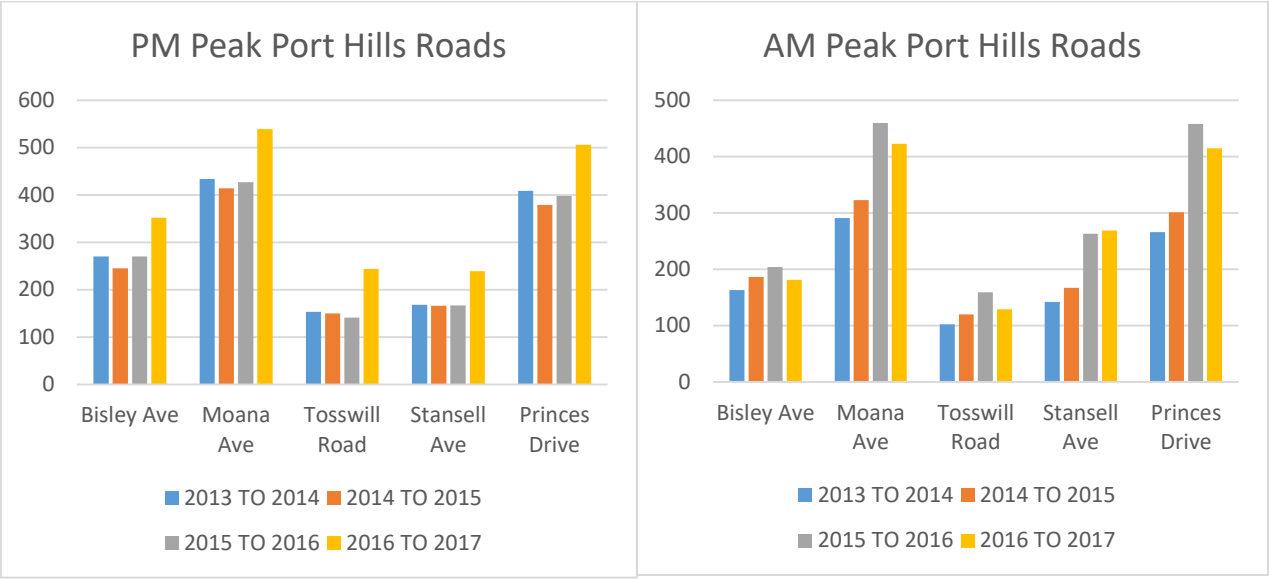


Traffic Volumes on Alternatives to Arterial Roads - Current Performance

There has been significant growth in traffic volume, and subsequently complaints during the am and pm peak on the routes that provide an alternative to the arterials of SH6 and Waimea Road. A snap shot of a selection of roads in the Port Hills that provide an alternative to SH6 Rocks Road is presented below. It must be noted however that this is not confined to this particular section of network as there are several other routes across the city that are also experiencing increases as a result of the increase in arterial road demand. This traffic that is avoiding the arterial routes is typically known as "rat running".

The customer complaints often express a concern for safety due to the rat running traffic often travelling fast as well as a loss of amenity as a result of increased traffic noise.

Graph ES 1 - 5: Rat Run Traffic Volumes on Port Hills



In summary, whilst Nelson leads the country with the highest percentage of people riding to work in the 2013 Census, and has a higher than average proportion of the number of workers walking, working from home and catching the bus these modes have not been able to absorb the significant increase in travel demand as a result of population, commercial and tourism growth that Nelson has experienced since 2014. This is reflected in increasing volumes on the two key arterials into and out of Nelson centre, increases in peak hour travel time, and significant increases in the volume of vehicles using alternative low hierarchy roads as alternatives (rat running) to the arterial network.

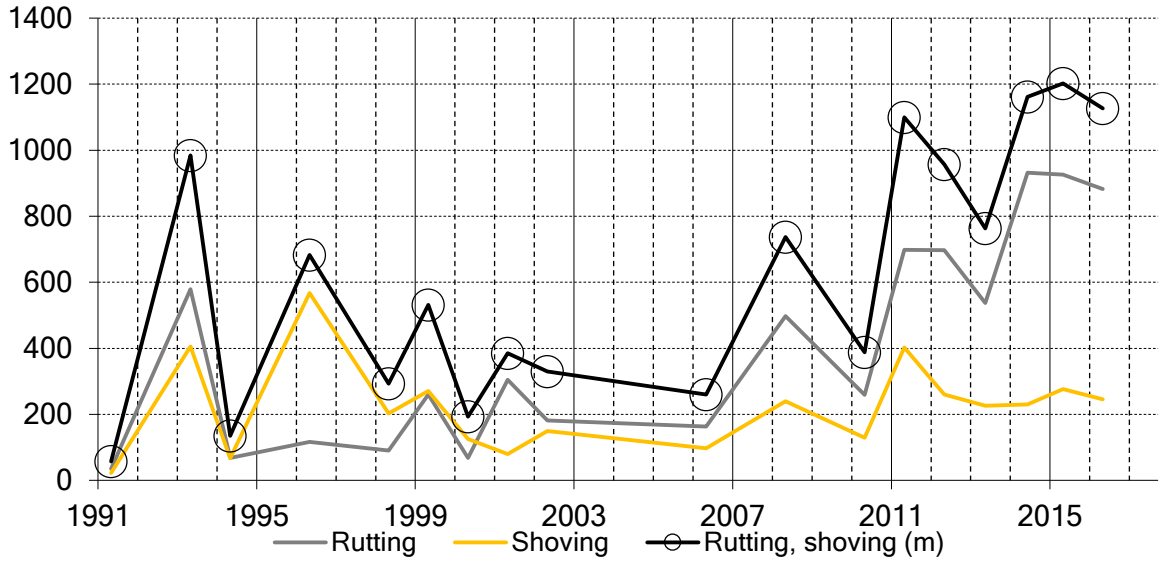
ii. Renewal Backlog

Section iii of this executive summary discussed the second key issue of *the* '***A backlog of renewals is contributing to an increase in maintenance costs and poor network resilience.***' The section below summarises the current and future demand on the network in relation to this issue.

Road Pavement - Current Performance

Road condition assessments show that the rutting and shoving which is generally associated with deformation of the subgrade materials and failure of the basecourse due to heavy truck loading has been increasing since the mid 2000 as shown by the graph below:

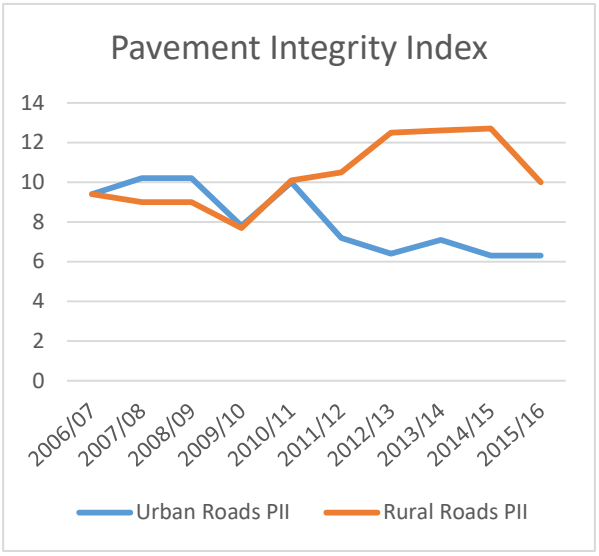
Graph ES 1 - 6: Network Summary – Rutting and Shoving



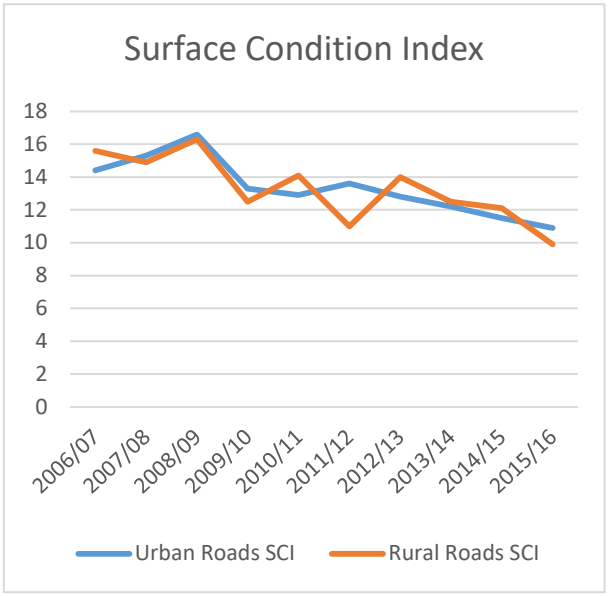
The top sealed surface in Nelson is aged and over the last five years Council has stepped up its resurfacing programme to replace oxidised and cracked surfaces that were past the end of their useful lives and beginning to let water through into the structural pavement layers. This response is shown in graph 1-8 below that shows an improving surface condition index (SCI), however a SCI of 11 is still regarded as poor condition with good being between 2 and 5, and fair between 5 and 10.

Nelson's Pavement Integrity Index (PII) is shown in graph ES 1 – 7 below. Urban roads which make up the majority of the network are improving again as a result of the recent focus on improving the waterproofness of the surface and are rated with an index of 6 as in fair overall condition.

Graph ES 1 -7: Pavement Integrity Index



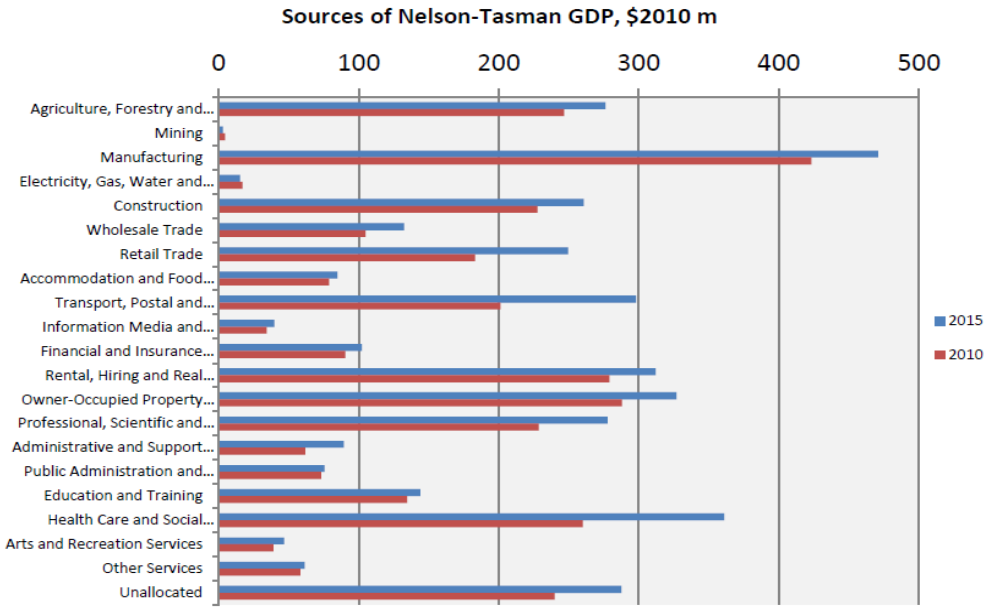
Graph ES 1 - 8: Surface Condition Index



Road Pavement – Future Demand

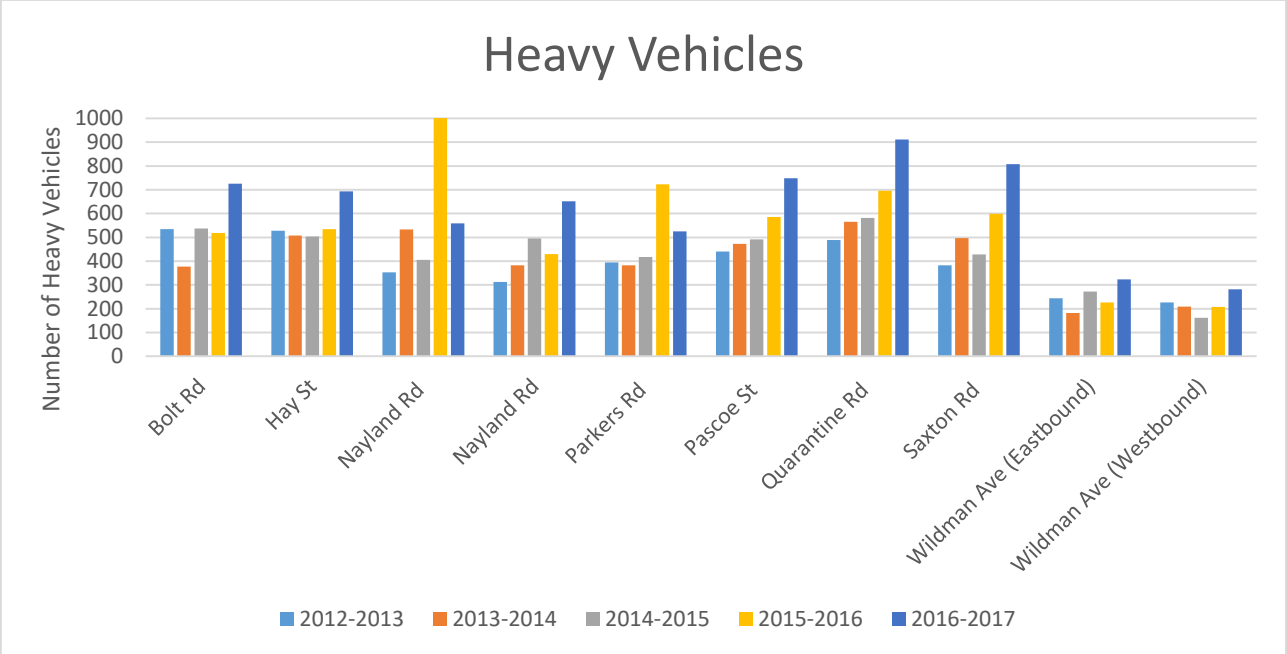
Road pavement asset consumption or damage caused by heavy commercial vehicles (HCV) is orders of magnitude greater than that caused by light vehicles. In order to understand future pavement structural demand the focus must be on heavy commercial freight vehicles. Road transport is the only means of getting export products to the port or airport as there is no regional rail network. Nelson City and Tasman District have one of the highest export road freight levels in NZ per capita coupled with strong growth in gross domestic product earnings across all industries in the Nelson Tasman region. This is shown graphically below:

Graph ES 1 - 9: Gross Domestic Product Growth – Nelson Tasman



Heavy vehicle traffic (all vehicles over 3.5 tonnes) on Nelson's key freight routes has also been increasing overtime. The increase associated with all heavy commercial vehicles is regularly measured through an ongoing programme of traffic counts which are shown below.

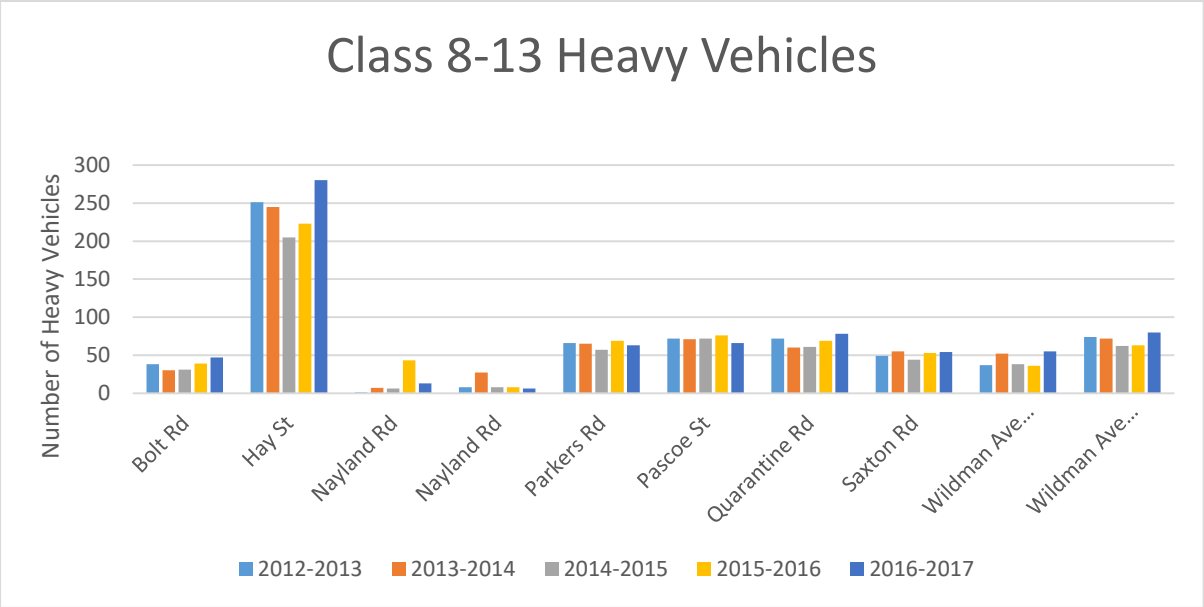
Graph ES 1 - 10: Increasing HCV traffic over time on key freight routes in Nelson



The increase in large commercial vehicles has also increased overtime. High Productivity Motor Vehicles (HPMV) were introduced in order move more freight on fewer vehicles acknowledging that nationally the freight task was increasing. Nelson has permitted 50Max HPMV vehicles across the vast majority of the network and larger HPMV vehicles on key selected freight routes however even with this network optimisation for moving freight the

number of large (class 8-13) HCVs has still increased on most of the key freight routes that we monitor over the last five years as shown in the graph below.

Graph ES 1 - 11: Increasing Class 8-13 (large) HCV traffic over time on key freight routes in Nelson

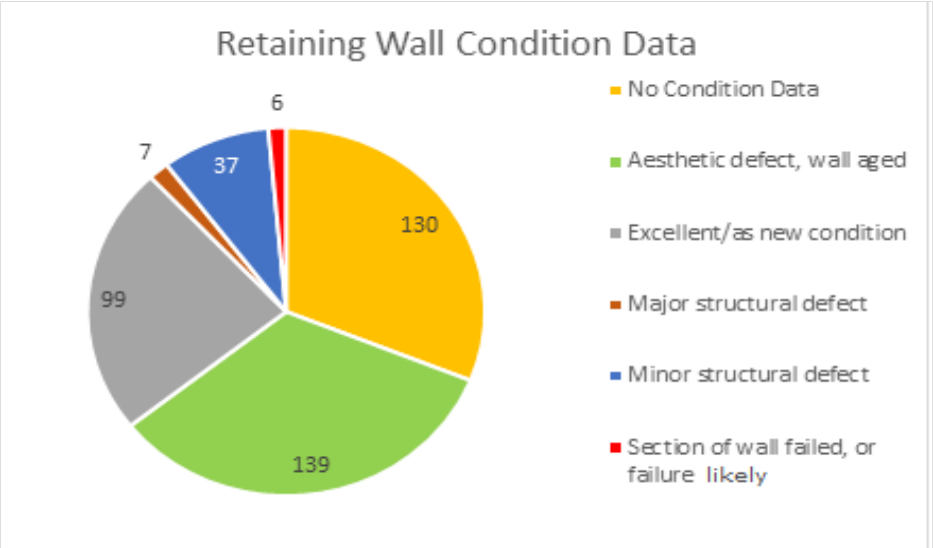


Retaining walls – Current Performance & Future Demand

Nelson's hilly topography results in many high value retaining walls and structures compared to its ONRC peers on flatter ground in order to support the transport network. Recent interrogation of the retaining wall asset has highlighted a significant gap between the previous valuation and the actual replacement value.

The condition of a number of walls is not well understood. The last detailed inspection for this asset was carried out in 2007, however since that piece of work a further 130 walls have been identified and these are yet to have a formal condition assessment. The known condition of the retaining walls as assessed in 2007 is shown in the graph below, with the yellow segment showing the significant proportion of retaining wall with no condition assessment.

Graph ES 1 - 12: Retaining Wall Condition Summary



The retaining wall asset is not the only asset class that has a backlog of renewals forecast.

- A similar issue exists for road signs where a recent network wide inventory and condition exercise showed that asset is significantly larger than originally thought with an increase from 2882 to 6200 signs.
- A recent transfer of 28 bridges and large culverts from the stormwater asset to the transport asset in order to access co investment from NZTA will result in an increase in renewal liability and maintenance costs.

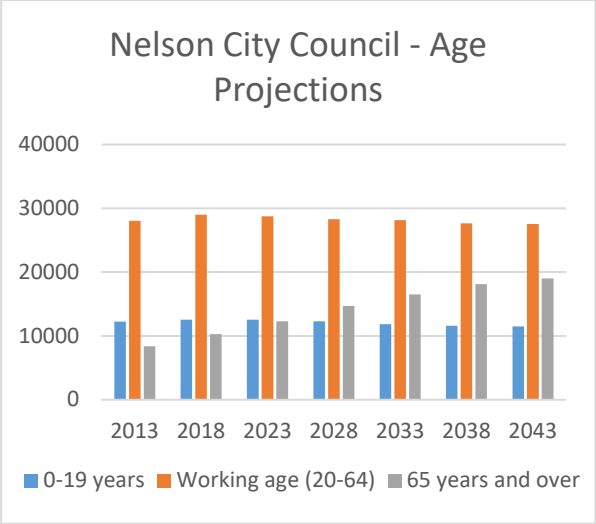
iii. Aged Population

Section iii of this executive summary discussed the third key issue of the '***Changing population demographic requires different transport services***.' The section below summarises the current and future demand on the network in relation to this issue.

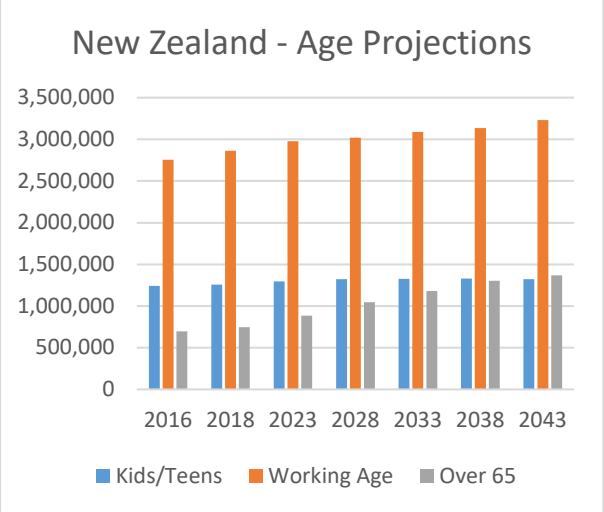
Census data shows an ageing population trend over recent years and this combined with Statistics NZ forecasts into the future indicate that 32 per cent of the Nelson population will be aged over 65 in 2043 compared with 17 per cent in 2013. This is significantly greater than the NZ average of 23 per cent over 65 in 2043.

The age profile forecasts for Nelson and the whole of New Zealand are shown in the two graphs below:

Graph ES 1 - 13: Nelson Age Projections



Graph ES 1 - 14: New Zealand Age Projections



Mobility declines with increasing age, reflecting the onset of physical or mental infirmity, affordability of travel for those on retirement incomes, and the often poor design of the transport infrastructure and operational arrangements not suiting the aged cohort.

NZTA research[5] in 2012 showed public transport is expected to continue to be a minor mode for older people unless planning and public transport policy changes substantially, with the present reliance on the car, either as driver or passenger expected to continue. However, the absolute size of public and special transport activities will need to increase to cater for the greater older population, if only to keep pace with growth.

5 http://www.nzta.govt.nz/assets/resources/research/reports/481/docs/481.pdf - section 12.6

The elderly cohort is more active and the demand for good quality footpaths and safe cycle facilities to facilitate mobility will continue.

iv. Natural Hazards - Demand

Floods are the most commonly occurring major natural hazard in Nelson that impacts on the transport network. They occur across the entire region and is the natural hazard that has caused the most damage in recent times especially to the bridge, retaining wall and drainage assets. Flooding can range from widespread overland flood flows from the region's principal rivers affecting much of their flood plains to more localised and isolated flooding in smaller catchments.

Service disruptions to the transport network associated with severe weather are typically due to flooding from under capacity / overwhelmed drainage and bridge structures, the road acting as the secondary flow path, slope and retaining wall failures blocking roads and fallen trees due to the typical occurrence of high winds that are often associated with major storm events.

The close proximity to the Flaxmore & Alpine faults systems present considerable risk to the transport network especially in the areas of reclaimed coastal margin and the steep hillside suburbs. The transport assets most at risk are the bridge and retaining wall stock.

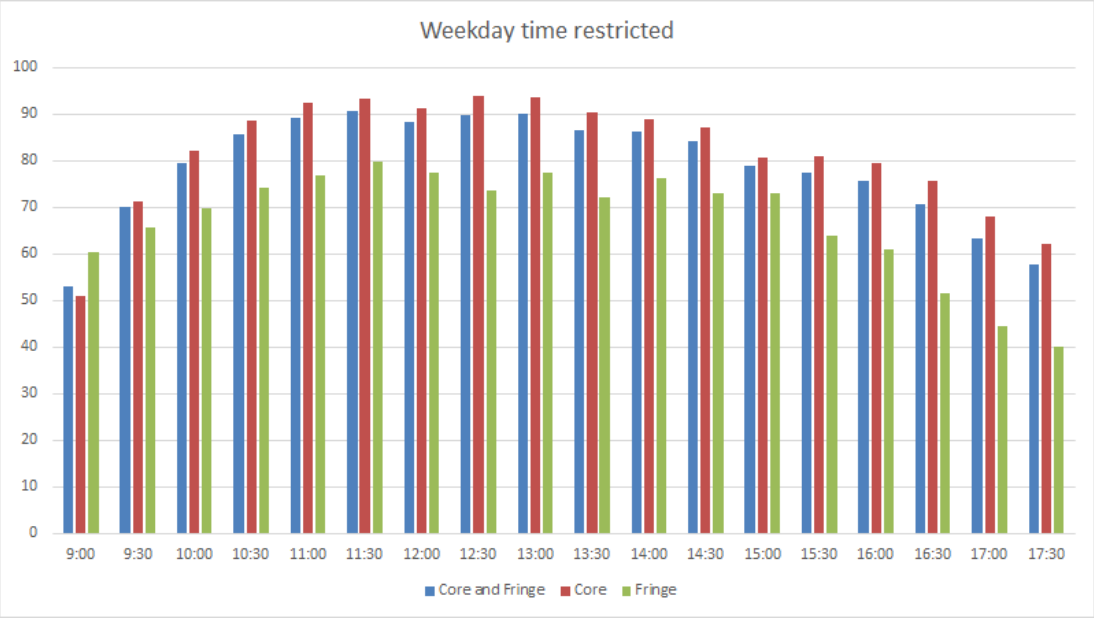
Climate change and the resulting sea level rise are leading to more frequent and more significant service disruptions. There has been an increasing occurrence of erosion in the coastal margin areas that will increase with increasing sea level and northerly storm intensity.

Recently the Nelson Tasman Civil Defence Emergency Management Group completed a Nelson Tasman Lifelines Project. One of the key findings that came from this piece of work is that the transport asset of roads bridges and retaining structures is vitally important to allow reinstatement of other services and the community to rebound from natural hazard events. The road network gives access to the water supply, sewer and storm water networks as well as the private but critical telecom and power reticulation. It also provides the means for food and fuel to be moved around the region, all critical elements to enable the community to respond and recover.

v. Parking Demand

Survey data collected in 2005, 2008, 2012 and 2015 showed there was an appropriate supply of parking, however the most recent survey data in 2016 as displayed in the graph below shows demand exceeding 85% which has historically been regarded as the practical maximum occupancy by NZ Traffic Engineers before circulating traffic looking for a car park congests the transport network. Continued retail and commercial growth in the region will drive further demand.

Graph ES 1 - 15: Weekday time restricted parking occupancy

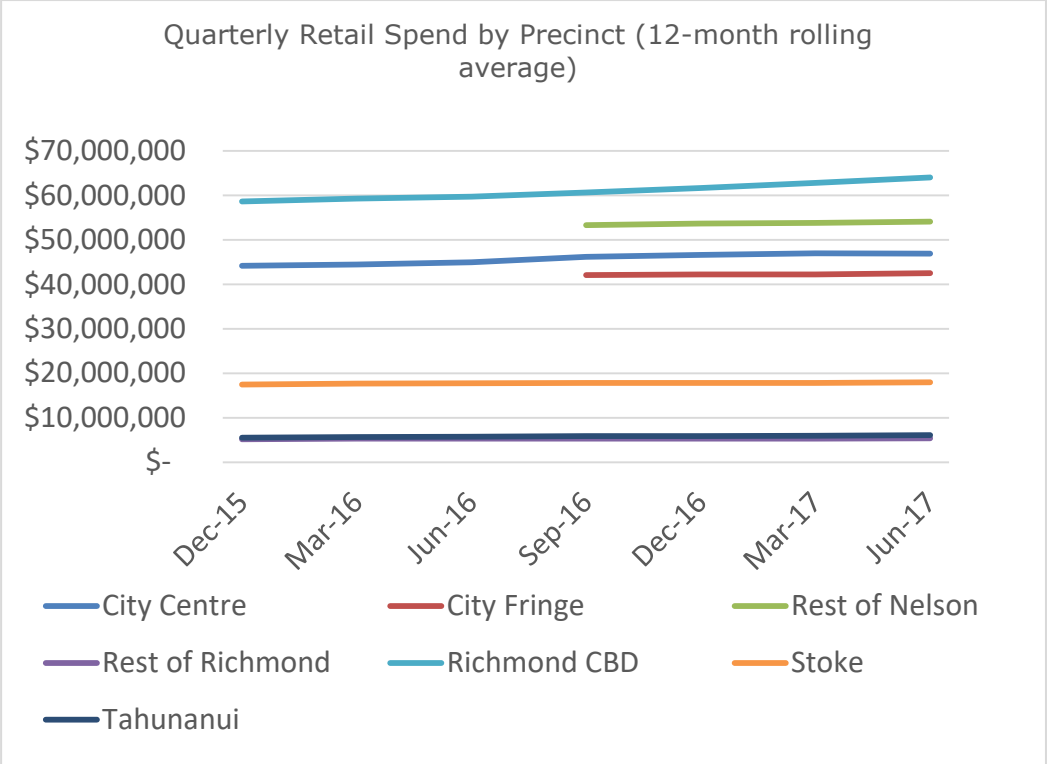


vi. Nelson and Stoke Centres Demand

The city centre is of critical importance to the wellbeing of the region and its respective economies as it is the main commercial centre in the top of the south with just under 8000 employees, as well as a progressive retail and entertainment centre. Data collected on the retail spend in the central city shows positive growth with static retail spend in Stoke as presented in Graph ES-16 below. The strong tourism, commercial and industry growth across the region suggests that this demand will continue[6].

6 Refer First Retail - Nelson CBD - Project Prioritisation Report Sept 2015 (A1444524)

Graph ES 1 – 16: Centre's Retail spend



Half of Nelson's population growth is expected to occur in Stoke primarily in Marsden Valley and Ngawhatu Valley with further potential at Saxton. It is also clear from community engagement activities to inform the current work underway with the community centre that that the existing residents feel the Stoke centre has been neglected over recent years with the severance created by Main Road Stoke and poor centre amenity being the principal complaints.

vii. Active Transport / Bus Demand

The census travel to work data shows Nelson is growing its proportion of the working population that use walking or cycling as a means of getting to work, however pedestrian and cycle count sites spread across the cycle network have shown static growth in the last 5 years.

Electric bicycles are gaining in popularity in Nelson and across the world as power density increases and costs to access reduce. It is expected that these vehicles will drive increasing demand for cycle infrastructure or a safer road environment to operate within. In the most recent resident's survey 21% of those dissatisfied with transport cited 'cycleways need improving' as the reason for their dis-satisfaction.

Walking demand is forecast to increase as:

- Walking is the start and end of every journey and the number of journeys is increasing with increasing population growth;
- Walking is an accessible transport choice for those without easy access to a car;
- Walking can be the only form of mobility to the transport disadvantaged.

The aging population demographic is driving a pedestrian demand to reshape of the vehicle crossings between the back of the kerb and the property boundary. Historically the shape of the access has been graded to suit the vehicle resulting in steep grades and undulating sections for both pedestrians to walk across and mobility scooters.

Modelling undertaken for the Arterial Traffic Study indicated low public transport patronage uptake unless there is a significant increase in vehicle use costs (i.e. fuel prices and/or parking charges). There has been growth in public transport demand of approximately 4% over the last four years since the introduction of the NBus service. National experience shows that demand could increase with an improved service or fare reduction with typical rates of 4.0% patronage increase for a 10% reduction in fare.

vi. Lifecycle management plan

Assets have a lifecycle as they move through from the initial concept to the final disposal. Depending on the type of asset, its lifecycle may vary from 5 years for CCTV equipment to over 100 years for bridges.

i. Operations and Maintenance

Operations and Maintenance strategies set out how the transport activity will be operated and maintained on a day-to-day basis to consistently achieve the optimum use of assets and meet levels of service.

Key changes in this Transport Asset Management Plan from previous plan are:

- Increase in budget in the order of $400,000 per year for the day to day management of the network to enable improved data collection and asset management practices so informed decisions can be made to best optimise the asset.
- Increase from $57,000 per year to $250,000 per year to enable greater focus on technology, intelligent transport solutions and travel demand management. This budgets objective is aligned with key '***Problem 1: The arterial transport network is constrained during the morning and evening peak periods and is unable to respond to strong regional population, tourism and business growth resulting in congestion***' and key ***Problem 3:*** '***Changing population demographic requires different transport services***'. In the short term activities such as real time bus tracking, increased emphasis on ride sharing, and workplace travel plans are programmed to be implemented, with a medium to long term strategy to position Nelson as a national technology leader in autonomous vehicles. Among the potential benefits of autonomous cars is:
    - A significant reduction in crashes the resulting injuries; and related costs;
    - Major increases in traffic flow by enabling closer following distances;
    - Enhanced mobility for children, the elderly, disabled and transport disadvantaged;

- Provide relief to travellers from driving and navigation chores;
- Enable lower fuel consumption;
- Significantly reduced needs for parking space;
- Facilitate different business models for mobility as a service.

- Decrease in power and streetlight maintenance costs associated with the introduction of LED light technology in 2017/18 and 2018/19 of approximately $100,000 per year.
- Decrease of approximately $80,000 per year for operation savings associated with the total mobility scheme to reflect changes to the management and contract structures that has delivered savings.
- Increase in bus operating cost in the order of $235,000 to allow alterations to the fare zones and structure, low floor buses on the suburban routes and a low frequency Stoke Loop.

ii. Renewal Replacement Plan

Renewal is major work that does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing component. Renewal activities align with ***'Problem 2: A backlog of renewals is contributing to an increase in maintenance costs and poor network resilience.'***

Key changes in this Transport Asset Management Plan from previous plan are:

- A reduction in sealed road resurfacing of approximately $230,000 per year to reflect the increase in sealed life recommended by the NZTA audit team;
- An increase of approximately $89,000 per year for pavement rehabilitation to reflect the increased loading from commercial and industrial growth and to reflect the demands as a result of changes to the vehicle dimension and mass rule changes.
- An increase of $340,000 for the first 3 years for structures renewals focussed on renewal of at risk retaining structures, bridges and culverts.
- An increase of $100,000 per year to enable the high value street furniture and paved surfaces in the CBD to be renewed as they reach the end of their serviceable life.
- Addition of a resurfacing programme for the CBD carparks of $2M over 10 years.
- Subsidy for maintenance and renewal of footpaths

iii. Creation/Acquisition/Augmentation Plan

Creation/Acquisition/Augmentation works create a new asset that previously did not exist, or upgrade or improve an existing asset. They may result from growth, social or environmental needs, levels of service.

Key changes in this Transport Asset Management Plan from previous plans are:

- The planning and delivery of transport interventions to improve network connectivity and resilience for the Saxton growth area at a cost of $10.8 million;
- The planning and delivery of an intersection to connect the proposed Toi Toi subdivision development to Princes Drive to improve network connectivity and resilience at a cost of $1.0 million;
- Intersection upgrades to roads in the Stoke area to connecting high growth areas to the arterial road network safely and efficiently.
- A share of the costs with Tasman District Council and developers for capacity improvements at the Champion Road Salisbury Road intersection to improve the existing level of service and enable development in the Saxton area off Champion Road.
- Funding allocated for improvements to the central city environment
- A cycle connection between Nelson east and the railway reserve via the schools.

For further details on the lifecycle management refer to section 4 of this TAMP.

vii. Risk management plan

Nelson City Council is committed to using risk management principles and techniques to understand and appropriately manage all internal and external factors and influences which affect the achievement of its objectives. Doing this will:

- Provide a reliable basis for sound decision making
- Increase the likelihood of achieving objectives
- Provide an agreed basis for prudent risk taking
- Enable the organisation to understand the level of risk associated with each decision as well as the Council's aggregate exposure to risk
- Improve accountability and assurance of control
- Enable the Council to avoid threats and seize opportunities
- Foster an organisational culture based on reasonable foresight and responsible hindsight.

The Council's standardised risk assessment method explicitly follows the process part (section 5) of AS/NZS 31000:2009.

Risk analysis involves consideration of the sources of risk, their consequences and the likelihood that those consequences may occur.

The following consequences are considered:

- Safety
- Health
- Asset performance/Service Delivery

- Environmental/Historical/Cultural
- Financial
- Political/Community/Reputational
- Relationship with Iwi
- Legal compliance
- Information/Decision support

Consequences of an event are rated 1 - 5 (Insignificant to Extreme). Likelihood is then rated 1 – 5 (Rare to Almost certain) to calculate a risk level rated 1 – 5 (Very Low to Very High).

The objective of risk analysis is to separate the low impact risks from the major impact risks, and to provide data to assist in the evaluation and treatment of the risks.

The specific objectives that guide the risk analysis are taken from the Transport levels of service:

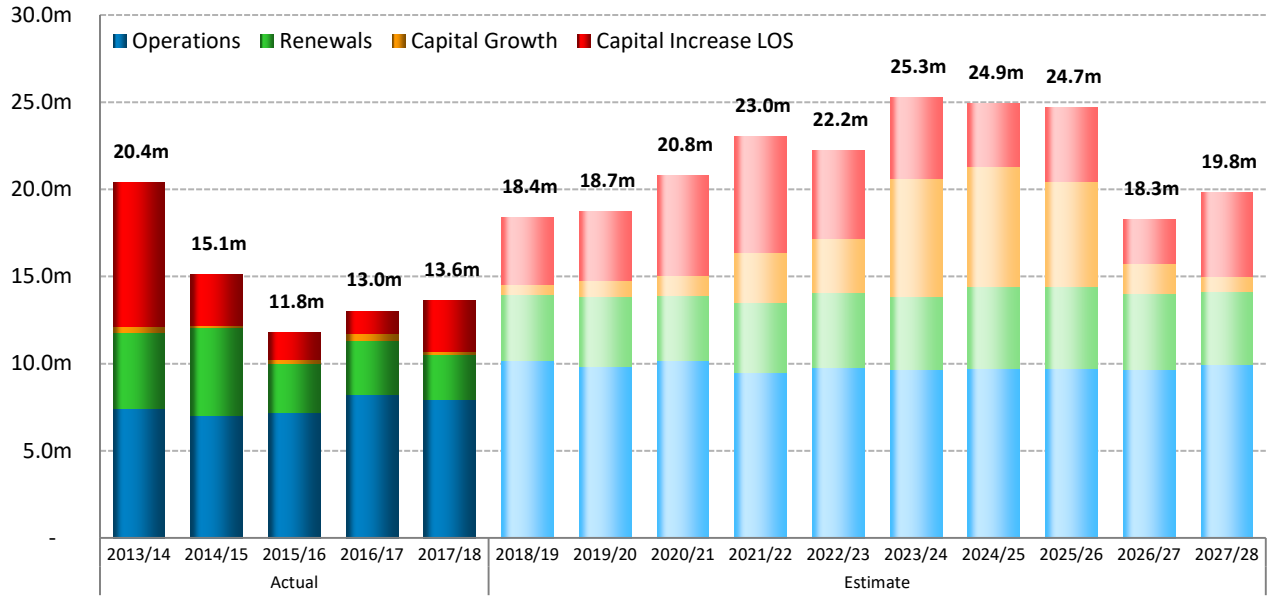
- Reliability – an operational transport network;
- Contractor response – provide a prompt, reliable and timely response to service requests;
- Protection for the transport network from natural hazard events through upgrading, maintaining, repairing and renewing assets to standards in the Transport Asset Management Plan.

A full risk register is located in section 5.2.

viii. Financial summary

The following graph charts the recent historical and proposed expenditure for the next ten years for the entire transport activity. A breakdown by cost centre can be found in appendix L and full financial details can be found in section 7.

Graph ES 1 – 17: Financial Summary



$k	2018/19 LTP	2019/20 LTP	2020/21 LTP	2021/22 LTP	2022/23 LTP	2023/24 LTP	2024/25 LTP	2025/26 LTP	2026/27 LTP	2027/28 LTP
Grand Total	**22,520.0**	**22,839.8**	**24,935.2**	**27,151.4**	**26,333.2**	**29,396.9**	**29,033.2**	**28,811.3**	**22,405.8**	**23,930.4**
5001 Subsidised Roading	**11,111.0**	**10,979.7**	**12,378.7**	**13,246.5**	**11,993.9**	**17,183.5**	**16,428.7**	**17,678.6**	**11,041.1**	**11,938.7**
Expenses	**4,426.6**	**3,825.2**	**3,778.2**	**3,502.0**	**3,776.0**	**3,725.9**	**3,769.3**	**3,687.9**	**3,639.5**	**3,868.0**
Base Expenditure	4,087.4	3,591.4	3,613.4	3,502.0	3,612.0	3,682.1	3,752.1	3,589.5	3,639.5	3,754.5
Programmed Expenses	339.3	233.8	164.8	-	164.0	43.8	17.2	98.4	-	113.5
Capital Expenditure	**6,684.4**	**7,154.6**	**8,600.5**	**9,744.5**	**8,217.9**	**13,457.6**	**12,659.4**	**13,990.7**	**7,401.6**	**8,070.7**
Renewals	3,472.0	3,304.0	3,288.1	3,608.7	3,641.7	4,044.1	4,146.6	4,049.1	3,651.6	3,654.1
Capital Growth	204.0	211.5	977.4	1,865.7	1,932.4	6,333.2	5,222.3	5,981.6	1,750.0	900.0
500176551375. WC 341 Marsden Valley Ridgeway Upgrade	50.0	100.0	500.0	50.0	-	-	-	-	-	-
500176551532. WC 341 MI Waimea Ridgeway	-	10.0	50.0	100.0	20.0	-	-	-	-	-
500176552933. WC324 Main Rd Stoke/Marsden Rd	-	10.0	32.4	75.7	32.4	800.0	170.0	-	-	-
500176553094. WC151 Saxton Growth Area Transport Programme	-	-	-	1,170.0	1,170.0	4,420.0	4,420.0	4,420.0	-	-
500176553167. WC 341 Market Rd Intersection improvements	-	12.0	-	-	-	-	20.0	80.0	700.0	100.0
500176553168. WC 341 Gloucester Street intersection improvements	-	-	-	-	-	70.0	150.0	500.0	500.0	500.0
500176553169. WC341 Montreal Princes Drive Intersection	-	-	-	-	-	25.0	75.0	800.0	100.0	-
500176553171. WC341 Polstead Suffolk Intersection Upgrade	-	10.0	-	-	-	-	50.0	100.0	100.0	-
500176553172. WC324 Polstead Main Road Stoke Intersection Upgrade	-	10.0	-	200.0	300.0	700.0	-	-	-	-
500176553173. WC341 Ngawhatu Suffolk Intersection	-	10.0	-	-	-	-	-	50.0	50.0	250.0
500176553214. WC 341 Toi Toi Emano Street intersection	-	-	-	-	-	12.0	-	50.0	300.0	50.0
500176553215. WC324 Arapki Road Upgrade	50.0	50.0	300.0	50.0	-	-	-	-	-	-
500176553232. WC341 Market Road/Bishopdale Ave Intersection improvements	-	-	15.0	20.0	200.0	-	-	-	-	-
500176752172. WC 341 Railway Reserve/Princes Dr cycle crossing upgrade	104.0	-	-	-	-	-	-	-	-	-
500176753175. WC341 Stoke Centre Traffic Calming and Pedestrian Safety Work	-	10.0	-	-	-	-	-	-	-	-
500176753176. WC341 Stoke Pedestrian Refuges	-	10.0	30.0	100.0	160.0	-	-	-	-	-
500176803174. WC452 Stoke East West Cycle Connection	-	-	50.0	100.0	50.0	350.0	350.0	-	-	-
50017697. Growth: investigation, options, testing, engagement	-	-20.5	-	-	-	-43.8	-12.7	-18.4	-	-
Capital Increased LOS	3,008.4	3,639.0	4,335.0	4,270.1	2,643.8	3,080.3	3,290.5	3,960.0	2,000.0	3,516.5
500179551525. WC 341 Minor Improvements	525.0	350.0	350.0	350.0	350.0	350.0	350.0	1,000.0	1,000.0	2,500.0
500179552168. WC 324 Waimea Rd/Van Diemen Jct improvements	-	-	-	-	54.1	108.1	20.0	900.0	300.0	-
500179552624. WC 341 Nile St/Clouston Tce intersection improvement	7.0	-	-	-	-	-	-	-	-	-
500179552934. WC 324 Quarantine/Nayland intersection upgrades	-	50.0	50.0	108.1	500.0	1,312.2	2,000.0	700.0	-	-
500179552947. WC 341 Muritai SH6 intersection	-	-	-	-	-	-	-	-	-	50.0
500179553009. WC341 Toi Toi/Vanguard intersection upgrade	-	16.2	37.8	600.0	100.0	-	-	-	-	-

$k	2018/19 LTP	2019/20 LTP	2020/21 LTP	2021/22 LTP	2022/23 LTP	2023/24 LTP	2024/25 LTP	2025/26 LTP	2026/27 LTP	2027/28 LTP
500179553025. WC341 Sharedzone - Beachville Cres	40.0	180.0	-	-	-	-	-	-	-	-
500179553026. WC341 Sharedzone - Wigzell	-	87.0	10.0	200.0	-	-	-	-	-	-
500179553027. WC341 Sharedzone - Mayroyd	30.0	-	-	-	-	-	-	-	-	-
500179553032. WC341 Airport Bridge Replacement	-	250.0	-	-	-	-	-	-	-	-
500179553035. WC 341 St Vincent Street Toi Toi Street safety improvements	-	-	50.0	150.0	200.0	-	-	-	-	-
500179553036. WC452 Main Road Stoke cycleway Saxton Creek to Champion Rd	-	80.0	400.0	-	-	-	-	-	-	-
500179553106. WC 341 Jenkins Creek shared path widening	180.0	-	-	-	-	-	-	-	-	-
500179553119. WC324 Streetlight conversion to LED	723.0	-	-	-	-	-	-	-	-	-
500179553226. WC 341 Waimea Road / Hampden Street intersection upgrade	40.0	250.0	-	-	-	-	-	-	-	-
500179553227. WC 341 Waimea Road Franklyn Street intersection improvements	-	15.0	20.0	50.0	700.0	100.0	-	-	-	-
500179553239. WC341 Railway Reserve improvements	-	-	12.0	-	25.0	200.0	200.0	200.0	-	-
500179701080. WC 341 Streetlight Improvement	-	50.0	100.0	100.0	-	-	-	-	-	-
500179752798. WC341 New Footpaths	700.0	700.0	700.0	400.0	350.0	450.0	650.0	650.0	650.0	650.0
500179801314. WC 452 UCP Saltwater Creek Crossing	400.0	-	-	-	-	-	-	-	-	-
500179802173. WC452 Maitai shared path to Nelson east programme	50.0	50.0	150.0	750.0	250.0	60.0	-	-	-	-
500179802199. WC341 Waimea Road Retaining Wall at Snows Hill	20.0	50.0	10.0	900.0	-	-	-	-	-	-
500179802537. WC 452 CBD Cycle parking facilities	-	-	-	12.0	35.0	-	-	-	-	-
500179803151. WC 341 Maitai shared path to Anzac Park active transport fac	60.0	300.0	250.0	-	-	-	-	-	-	-
500179803182. WC 452 Tahunanui Cycle Network - SH6 Tahunanui Drive connect	200.0	800.0	1,800.0	-	-	-	-	-	-	-
500179803212. WC452 Cross Town Links Brook to Central Programme	35.0	10.0	100.0	500.0	50.0	500.0	50.0	500.0	-	-
500179803224. WC452 Isel Park Cycle Connections	-	50.0	50.0	150.0	50.0	-	-	-	-	-
500179803233. WC452 Atawhai Shared path extension to Todds Valley	-	-	-	-	-	-	25.0	10.0	50.0	350.0
500179903213. WC 341 CCTV at traffic signals	10.0	130.0	-	-	-	-	-	-	-	-
500179903299. WC452 Travel demand management improvements	-	250.0	250.0	-	-	-	-	-	-	-
50017997. LoS: investigation, options, testing, engagement	-11.6	-29.2	-4.8	-	-20.3	-	-4.5	-	-	-33.5
5002 Unsubsidised Roading	**5,628.0**	**6,379.3**	**6,890.7**	**6,372.1**	**5,798.6**	**6,120.0**	**7,109.9**	**5,521.8**	**5,812.3**	**6,542.7**
Expenses	**1,105.8**	**1,338.0**	**1,743.5**	**1,238.1**	**1,150.5**	**1,153.4**	**1,123.7**	**1,142.9**	**1,184.4**	**1,171.3**
Base Expenditure	955.9	966.8	957.8	973.8	994.8	975.8	966.8	976.8	1,006.8	976.8
Programmed Expenses	149.9	371.2	785.7	264.3	155.7	177.6	156.9	166.0	177.6	194.5
Capital Expenditure	**4,522.2**	**5,041.3**	**5,147.3**	**5,134.1**	**4,648.0**	**4,966.6**	**5,986.2**	**4,379.0**	**4,627.8**	**5,371.4**
Renewals	8.8	8.9	8.9	8.9	9.0	9.0	9.1	9.1	9.1	9.2
Capital Growth	4,120.0	4,790.0	4,130.0	4,145.0	4,180.0	4,210.0	5,817.2	4,120.0	4,120.0	4,120.0
500276552200. Marsden Valley Road Upgrade	-	-	10.0	25.0	60.0	90.0	1,697.2	-	-	-
50027691. Vested Assets	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0
500276912826. Hill Street North improvements	-	670.0	-	-	-	-	-	-	-	-

$k	2018/19 LTP	2019/20 LTP	2020/21 LTP	2021/22 LTP	2022/23 LTP	2023/24 LTP	2024/25 LTP	2025/26 LTP	2026/27 LTP	2027/28 LTP
Capital Increased LOS	393.4	242.5	1,008.4	980.1	459.1	747.6	160.0	249.9	498.7	1,242.2
50027710. Land Purchase - LOS	54.1	54.1	54.1	54.1	54.1	54.1	54.1	54.1	54.1	54.1
500277701076. Road Frontage Planting Program	37.8	38.1	38.3	38.5	38.8	39.0	39.2	39.5	39.7	39.9
500277701078. Street Garden Dev	7.6	7.6	7.7	7.7	7.8	7.8	7.8	7.9	7.9	8.0
500277701079. Street Tree Dev	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	17.0	17.1
500279552074. Milton St (Grove to Cambria)	-	-	50.0	70.0	50.0	430.0	-	-	-	-
500279552075. Halifax (Maitai to Milton)	-	-	-	-	-	-	51.3	100.0	180.0	1,100.0
500279552079. Mount Street and Konini Street upgrade	50.0	20.0	200.0	350.0	-	-	-	-	-	-
500279552166. Haven/Halifax Jct improvements	-	-	-	-	-	-	-	-	-	70.0
500279553010. Toi Toi St upgrade	50.0	80.0	550.0	100.0	-	-	-	-	-	-
500279553229. Additional survey markers	-	20.0	50.0	50.0	-	-	-	-	-	-
500279753262. Grove Street Footpath upgrade	-	10.0	50.0	300.0	300.0	200.0	-	-	-	-
500279803139. Maitai Valley Road shared path modifications	180.0	-	-	-	-	-	-	-	-	-
500279803228. Hampden Street walkway upgrade	-	-	-	-	-	-	-	50.0	200.0	-
50027997. LoS: investigation, options, testing, engagement	-2.3	-3.6	-8.1	-6.7	-8.1	-	-9.3	-18.4	-	-46.9
5505 Parking Regulation	**600.9**	**613.8**	**600.8**	**600.8**	**613.8**	**600.8**	**600.8**	**613.8**	**600.8**	**600.8**
Expenses	**600.9**	**600.8**	**600.8**	**600.8**	**600.8**	**600.8**	**600.8**	**600.8**	**600.8**	**600.8**
Base Expenditure	600.9	600.8	600.8	600.8	600.8	600.8	600.8	600.8	600.8	600.8
Capital Expenditure	-	**13.0**	-	-	**13.0**	-	-	**13.0**	-	-
Capital Growth	-	13.0	-	-	13.0	-	-	13.0	-	-
55057440. Capital: Plant & Equipment	-	13.0	-	-	13.0	-	-	13.0	-	-
5510 Parking and CBD Enhancement	**2,673.4**	**2,574.2**	**2,614.9**	**3,656.2**	**4,442.2**	**2,836.2**	**2,531.0**	**2,531.7**	**2,521.7**	**2,381.7**
Expenses	**1,909.9**	**1,830.9**	**1,824.9**	**1,901.2**	**1,907.2**	**1,871.2**	**1,926.0**	**1,866.7**	**1,866.7**	**1,866.7**
Base Expenditure	1,844.1	1,808.1	1,808.9	1,809.7	1,810.5	1,855.1	1,856.0	1,856.0	1,856.0	1,856.0
Programmed Expenses	65.8	22.8	16.1	91.5	96.8	16.1	70.0	10.8	10.8	10.8
Capital Expenditure	**763.5**	**743.4**	**790.0**	**1,755.0**	**2,535.0**	**965.0**	**605.0**	**665.0**	**655.0**	**515.0**
Renewals	313.5	683.4	430.0	415.0	655.0	165.0	505.0	665.0	655.0	515.0
Capital Increased LOS	450.0	60.0	360.0	1,340.0	1,880.0	800.0	100.0	-	-	-
551079552994. Strawbridge Sq Layout & access improvement	-	-	10.0	70.0	600.0	100.0	-	-	-	-
551079552995. Putaitai St/ Main Rd Stoke Right turn	40.0	-	-	-	-	-	-	-	-	-
551079553100. Church Street Improvements	400.0	50.0	-	-	-	-	-	-	-	-
551079553120. Stoke Centre Traffic Calming and Ped Safety Works non sub ae	-	-	300.0	500.0	1,100.0	700.0	100.0	-	-	-
551079752984. Stoke Centre Enhancements	-	-	-	20.0	80.0	-	-	-	-	-
551079803236. Polytech to CBD enhancements	10.0	10.0	50.0	750.0	100.0	-	-	-	-	-

$k	2018/19 LTP	2019/20 LTP	2020/21 LTP	2021/22 LTP	2022/23 LTP	2023/24 LTP	2024/25 LTP	2025/26 LTP	2026/27 LTP	2027/28 LTP
5560 Public Transport	**2,207.0**	**1,978.6**	**2,120.7**	**2,930.3**	**3,122.2**	**2,275.7**	**1,962.8**	**2,045.0**	**1,987.9**	**2,001.6**
Expenses	**1,847.0**	**1,928.6**	**1,884.7**	**1,894.3**	**1,964.5**	**1,915.4**	**1,926.8**	**2,009.0**	**1,951.9**	**1,965.6**
Base Expenditure	1,837.0	1,875.6	1,884.7	1,894.3	1,904.5	1,915.4	1,926.8	1,939.0	1,951.9	1,965.6
Programmed Expenses	10.0	53.1	-	-	60.0	-	-	70.0	-	-
Capital Expenditure	**360.0**	**50.0**	**236.0**	**1,036.0**	**1,157.6**	**360.3**	**36.0**	**36.0**	**36.0**	**36.0**
Capital Growth	360.0	50.0	200.0	1,000.0	1,121.6	324.3	-	-	-	-
556075902218. WC 531 Stoke interchange	-	-	-	-	21.6	324.3	-	-	-	-
556075902945. WC 531 Integrated Ticketing GRETS	310.0	-	-	-	-	-	-	-	-	-
556075902997. WC 531 CBD interchange	50.0	50.0	200.0	1,000.0	1,100.0	-	-	-	-	-
Capital Increased LOS	-	-	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
556079902335. WC 531 PT Minor Improvements	-	-	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
5570 Total Mobility	**299.7**	**314.0**	**329.3**	**345.4**	**362.6**	**380.7**	**400.0**	**420.4**	**442.0**	**464.9**
Expenses	**299.7**	**314.0**	**329.3**	**345.4**	**362.6**	**380.7**	**400.0**	**420.4**	**442.0**	**464.9**
Base Expenditure	299.7	314.0	329.3	345.4	362.6	380.7	400.0	420.4	442.0	464.9

Key assumptions used in developing the transport financials include:

- The National and Regional funding identified in the Regional Land Transport Plan will be supported in the National Land Transport Programme.
- The NZTA financial assistance rate will increase from the current 49% to 51% from 2018/19.
- Integration of the Nelson Southern Link project with the local road system has not been included but may need to be considered and amendments made to this plan once further discussions with NZTA and Government take place.
- Tasman District Council will contribute $80,000 per year to the Nelson / Richmond passenger transport service and $80,000 to the total mobility service.
- Public transport patronage will be at a level that continues to support the public transport level of service.
- Public Transport Supergold Government bulk funding allocation will reimburse total costs incurred by Council for administering the scheme.
- Energy prices will not increase/decrease significantly over the next three years with a consequent effect on vehicle use or shifts to other modes of transport.
- Tasman District Council will continue to promote free parking within Richmond.
- Parking meter revenue is collected at a level of approximately $550,000 pa.
- Free parking for the first hour and an increase thereafter to the rate of $2.00 per hour continues over the period covered by this Asset Management Plan.

Significant Sources of Transport Funding

Rates – in addition to funding from rate payers. Inner city and Stoke CBD ratepayers pay a higher differential to cover provision of special services in the CBD's.

New Zealand Transport Agency Co-Investment - The NZTA, like Council, works on a three year funding cycle. The Transport Agency allocates funding to local authorities through the National Land Transport Plan which it adopted in July 2018, after considering each Regional Land Transport Plan (RLTP). The eligibility rules for co-investment by NZTA can be found on their Planning and Investment Knowledge Base[7].

The Funding Assistance Rate (FAR) is the co-investment rate for transport activities that Council receives from the NZ Transport Agency. In 2013 and 2014 the NZTA reviewed the principals and methods used in setting the FAR and resolved to transition to a single FAR for most eligible activities. In 14/15 Nelson's effective FAR averaged across all subsidised activities was 46% and the NZTA is transitioning

7 https://www.pikb.co.nz/

the FAR by a 1% per annum increase to 51% over five years. NZTA has indicated that the standard FAR for NCC will be 51% from 18/19 and beyond.

There are several transport activities that Council already funds from rates without any co-investment. As investment rules tighten, Council always has the option of continuing with the activity or improving the level of service for an activity by increasing the activity's funding from rates over the three year AMP time frame.

Parking Charges and Enforcement – Income from parking charges, footpath dining and market rental and parking enforcement activities are used in the maintenance, renewal and capital activities in the carpark and CBD enhancement account.

Road Opening, Road Closures, Access Crossing, and Over Weight and Over Dimension Vehicle Applications – Income from various applications to undertake an activity or work within the road reserve is collected to cover the administration and monitoring cost of that activity.

Development Contribution - In addressing actual and potential adverse effects from Developments, the Council may seek financial contributions. The contributions go towards the necessary land and works to construct, widen or upgrade any new or existing road, where:

- roads are not available; or
- existing roads are of inadequate width or construction to cater for increased usage caused by the subdivision or development; or
- alterations or works to existing roads are required for traffic safety or efficiency as a consequence of the subdivision or development.

Furthermore, a financial contribution may be sought when the full number of on-site parking spaces is not provided as per the Resource Management Plan. Refer the Development Contributions Policy[8] for further details.

Tasman District Council – Contributions for the Public Transport and Total Mobility activities

Borrowing – Used to fund capital activities and buffer uneven depreciation.

ix. Asset management practices

Information systems

Asset information is typically stored in one of three locations.

- RAMM a specialist transport database system for most roading assets and data;
- Arcinfo (a computer based geographical information system) for public facing information on asset location;
- Infor Asset Management System for detailed information relating to drainage assets and the stock effluent facility;

8 http://nelson.govt.nz/building-and-property/property-land-use/development-contributions/

- OBIS Bridge Inventory System for detailed information relating to structures and bridges.

The information systems listed above are not fully integrated. The ongoing integration of these systems will assist in the optimisation of operations, renewals and the ongoing development of the transport activity.

Accounting and Financial Systems

The Nelson City Council uses integrated computer software supplied by MagiQ.

Asset management Recording System – Infor & RAMM

The use of the Infor and RAMM systems has enabled the following:

- Customer enquiries being logged directly and sent immediately to the contractor for action.
- Contractor directly enters resolution confirmation at completion of job.
- Tracking of expenditure on assets to allow assets that have a disproportionately high maintenance cost to be identified - upgrade or renewal can then be prioritised.

Procurement

Procurement activities for transport assets and services are guided by one of two procurement strategies. For NZTA subsidised activities a specific procurement strategy aligned with NZTA policy and procedures is followed. For non-subsidised activities the Council wide strategy is used. Both strategies have the following objectives:

- To attain value for money;
- To encourage competitive and efficient markets;
- To enable fair competition;
- To operate an efficient procurement process.

x. Monitoring and improvement programme

The Nelson City Council Transport Asset Management Plan is a regularly revised and evolving document and will be reviewed annually and updated at least every three years to coincide with the Annual and Long Term Plans and to incorporate improved decision making techniques, updated asset information, and Nelson City Council policy changes that may impact on the levels of service.

The Asset Management Plan will be improved throughout its life cycle as further information about the transport systems assets and activities are collected in terms of condition, performance and service delivery. Nelson City Council is committed to advanced data collection and management systems that will allow for a greater appreciation of the performance and condition of the Nelson City Council assets.

Nelson City Council will report variations in the adopted annual plan budgets against the original asset management plan forecasts and explain the level of service implications of budget variations.

Internal Audit

Internal audits will be taken every three years to assess the effectiveness of the plan in achieving its objectives. The internal audit will also assess the adequacy of the asset management processes, systems and data.

Statutory Audit

The Local Government Act requires that an independent, annual audit of the operations of the Nelson City Council be carried out.

Benchmarking

Benchmarking (trending) of the activity through Audit NZ, Local Government NZ and NZTA initiatives is carried out at the request of these organisations to give increased understanding of:

- The efficiency and efficiency variations of individual activities.
- Effects of any programmes instigated by the Asset Management Plan.
- Operating costs over range of individual activities.

Examples of types of benchmarking that are considered include tracking responsiveness to service calls and performance and costs against One Network Road Classification (ONRC) levels of service. Refer to section 6.2.2 for the five year annual sealed pavement cost comparison.

The effectiveness of the Asset Management plan will be monitored by the following procedures:

- Financial expenditure projections prior to year-end;
- Level of service reporting at year-end;
- ONRC benchmarking at year-end;
- The ongoing updating of the asset register of the transport assets when repairs or maintenance is carried out and the attributes are compared with the asset register attributes.

Table ES 1 - 3: Summary Improvement Programme[9]

Summary Improvement Programme
Improve accuracy of data through review and modification of collection, storage, and auditing
Commission testing and modelling of the pavement layers to better understand the future renewal demand
Review Levels of Service (especially in relation to water quality and resilience)
Include a more detailed strategy for critical assets such as life line routes and routes with only one exit.
Develop Traffic Management Plans for Civil Emergency response scenarios with Civil Defence and Maintenance Contractor

9 Refer section 9.2 for full improvement programme details.

Ongoing refinement of lifecycle decision making and financial forecasts
Develop Risk Plans
Review condition assessments across all assets. Structures assessed first due to high risk of failure.
Review life expectancy across all assets except the sealed surface.
Improve linkage to Environmental Activity & Transport Asset Management Plans including creating a chart to show the links
Survey all CBD assets and update GIS database, and understanding of assets and conditions

1. Introduction

1.1 Background

1.1.1 Purpose of plan

This Transportation Asset Management Plan (TAMP) provides Council with the year to year financial guidance on the allocation of transport funds. It is a tactical, locally focused document; developed around national and regional transport funding guidelines as indicated by the requirements of the New Zealand Transport Agency (NZTA) guided by the Road Efficiency Group (REG) and the Government Policy Statement (GPS) on Land Transport Funding. It will guide the transport spending for the years 2018-2028. Any exceptions to this document will be addressed each year via the Annual Plan process. The Project programme in this TAMP will inform the transport spending in the Long Term Plan, both for the subsidised and unsubsidised cost centres.

This Asset Management Plan provides evidence based information on how transport activity in Nelson is performing, based on measurable levels of service and performance indicators. It is based on a sustainable whole of system approach that supports the type of city we want Nelson to be; safe, efficient, effective, accessible and affordable to all.

1.1.2 Relationship with other planning documents

The overall legislative framework for planning, funding and managing the land transport system includes Acts, Polices, Regulations and Rules, a list of these fundamental to transport are provided in Appendix A. The documents of special relevance are discussed in more detail below.

Infrastructure Strategy

In 2014 the Local Government Act 2002 was amended to include section 101B - a requirement for local authorities to prepare an infrastructure strategy as part of the Long Term Plan. The strategy is expected to look at least thirty years into the future and detail the issues that the local authority can reasonably foresee. The office of the Auditor General has provided guidance documents for authorities to use when developing the strategy.

Much of the work required for the strategy comes from the development of this asset management plan and in order to avoid un-necessary duplication this plan focusses on the first ten years of the thirty year strategy timeframe.

Government Policy Statement on Land Transport

The Government Policy Statement on Land Transport Funding is issued by the Minister of Transport every three years. It sets out the government's priorities for expenditure from the National Land Transport Fund over the next 10 years.

The Government Policy Statement influences decisions on how money from the National Land Transport Fund will be invested in activity classes, such as state highways, local roads and public transport. It also guides the NZTA and local government on the type of objectives, policies and resulting activities that should be included in Regional Land Transport Plans.

The 2018 GPS has been released and sets out the below focus areas for government's priorities for expenditure from the National Land Transport Fund over the next 10 years, broadly continuing the overall direction set by the Government Policy Statements in 2009, 2012 & 2015;

- Safety: A safe system, free of death and serious injury;
- Access: provides increased access to economic and social opportunities, enables transport choice and access, is resilient;
- Environment: reduces greenhouse gas emissions, as well as adverse effects on the local environment and public health;
- Value for money: delivers the right infrastructure and services to the right level at the best cost;
- Putting the right infrastructure in place to support high growth urban areas;
- Supporting the regions – for New Zealand to thrive we need our local economies to thrive and we want to support regional freight and tourism movements while increasing the resilience of critical regional routes;
- Improving how freight moves on and through our network by focusing on high quality and resilient connections;
- Focusing on ensuring that the network is resilient in the face of shocks and challenges – like responding to earthquakes or catering for increasing numbers of tourists using our transport network. We want to minimise the risk of transport disruption.

The 2018 GPS and associated documents can be found at the link below.

GPS Website

Regional Land Transport Plan 2015-2021

The NZ Transport Agency subsidised components of this Asset Management Plan have been developed to be consistent with the objectives and policies set by the 2015-2021 Regional Land Transport Plan (RLTP)[10]. The RLTP has the objectives of efficient, safe, resilient, integrated, sustainable land transport system. These guidelines have influenced the management of transport, specifically the subsidised policy, in Nelson over the last 9 years.

The Regional Land Transport Plan 2015 – 2021 (RLTP) sets out the subsidised transport prioritised programme for six years in accordance with the NZ Transport Agency's Investment and Assessment Framework and in accordance with the GPS and this TAMP. The RLTP 2015 – 2021 had a mid-term review in late 2017 to confirm or amend the direction detailed above.

The objectives contained in the Regional Land Transport Plan 2015-2021 are split into regional (Top of the South) and local objectives as detailed in the two tables below:

10 Regional Land Transport Plan – A1393798

Table 1 - 1: Regional Land Transport Plan 2015-2021 Top of the South Objectives, Polices and Measures

GPS Objectives	Regional Objectives (Top of the South)	Policy/Direction	Measures of success for our communities
A land transport system that addresses current and future demand	1) A sustainable transport system that is integrated with well planned development, enabling the efficient and reliable movement of people and goods to, from and throughout the region 2) Supporting economic growth through providing better access across the Top of the South's key journey routes	Target investment in regional route improvements to key journey routes Consider Top of the South options to collaborate and improve road operations and maintenance delivery mechanisms Target investment in projects that reduce travel times and vehicle operating costs on key journey routes Develop and apply ONRC transition plans and programmes to close the Customer Level of Service gaps	Travel times between SH 6/60 and Port Nelson, and on SH1 between Picton and the Marlborough boundary are consistent Reduction in the distance per capita travelled in single occupancy vehicles ONRC is fully established by 2018 Routes available to HPMV increase over time
A land transport system that is reliable and resilient	3) Communities have access to a resilient transport system 4) Communities have access to a reliable transport system	Reduce the risk of disruption on lifeline routes Improve network resilience along key journey routes Improve network reliability along key journey routes	Reduction in the number of hours that sections of the key journey routes are closed due to unplanned disruptions Travel time variability on our key journeys does not increase

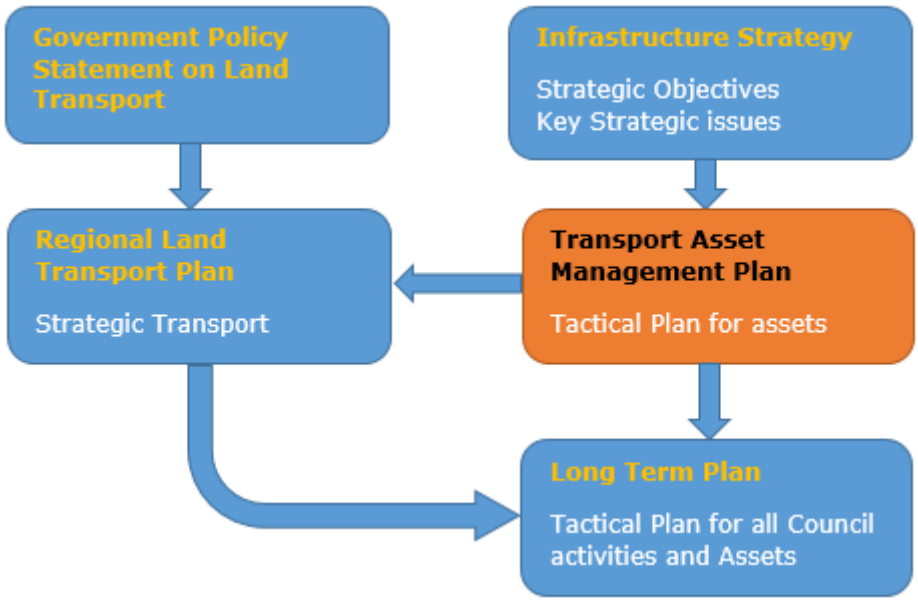
Table 1 - 2: Regional Land Transport Plan 2015-2021 – Nelson Objectives, Polices and Measures

GPS Objectives	Nelson Objectives	Policy/Direction	Measures of success for our communities
A land transport system that provides appropriate transport choices	N1) Communities have access to a range of travel choices to meet their social, economic, health and cultural needs N2) Enable access to social and economic opportunities by investing in public transport	Extend walking and cycling networks and improve urban routes for cyclists where this can be achieved at reasonable cost Maintain and grow public transport patronage by reconfigured and extended networks and improved ticketing methods	Increase in total trips travelled by walking, cycling, and public transport at peak times Increase in total trips travelled by walking, cycling, and public transport
A land transport system that appropriately mitigates the	N3)The transport system supports national strategies for energy efficiency and climate change,	Invest in local environmental mitigation measures with investment targeted on the most adverse cases	Reduction in the distance per capita travelled in single occupancy vehicles in Nelson

effects of land transport on the environment.	and protects natural systems and community values	Invest in methods to reduce fuel related vehicle operating costs Invest in travel demand management measures and infrastructure that enables more efficient trips	Increase in total trips travelled by walking, cycling, and public transport at peak times Increase in total trips travelled by walking, cycling, and public transport
A land transport system that is a safe system, increasingly free of deaths and serious injury	N4) Deaths and serious injuries on the Nelson network are reduced at reasonable cost	Adopt a 'Safe System Approach' to road transport Ensure road safety audits are undertaken on new roads or improvements to roads Safety budgets targeted to improvements that deliver road safety improvements with a focus on reducing deaths and serious injuries. Increase safe cycling through improvement of cycle networks	Reducing trend in deaths and serious injuries on the transport network A flat or declining number of cycle crashes on the network A declining number of pedestrian crashes on the network

The interaction of the Infrastructure Strategy, Government Policy Statement on Land Transport, and the Regional Land Transport Plan 2015-2021 is shown in the figure below.

Figure 1 - 1: Relation between key planning documents



NZ Transport Agency Long Term Strategic View

The NZ Transport Agency is in the process of developing a Long Term Strategic View (LTSV) to capture the pressure points and key economic, environmental, and population factors that will shape the transport system needed for the future. The first draft version released in March 2017.

The LTSV is a link between the Government Policy Statements (GPS) and business case investment proposals. The LTSV sets out the Agency's view of issues and opportunities and appropriate interventions, and will be an input into Strategic Business Cases.

The LTSV has been created based on discussions and feedback from the transport sector, as well as data and information that helps identify issues, opportunities and potential solutions in each part of the New Zealand wide transport system.

The Transport Agency is working with stakeholders to refine the LTSV and an updated version was released later in 2017. This next version will incorporate sector feedback and updated datasets, including population forecasts released by StatsNZ in 2017. It will also include content for new urban growth centres (identified under the National Policy Statement for Urban Development), and also additional Regional Economic Development regions[11] that have more recently been included in the Government's Regional Growth Programme.

Some of the key themes that are emerging from feedback from stakeholders so far include:

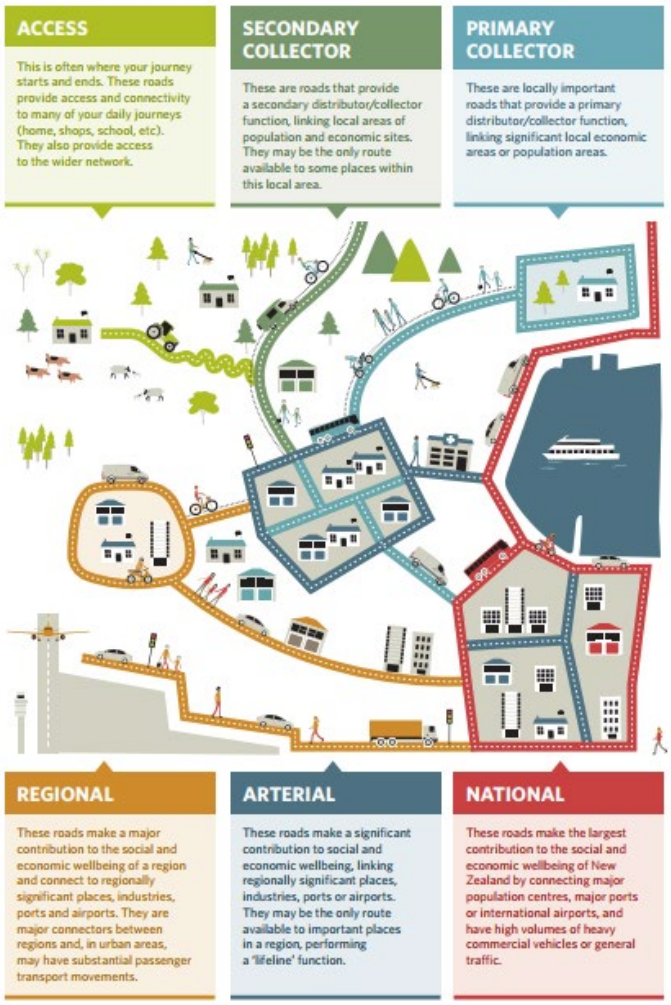
11 Nelson is not currently part of the Governments Regional Economic Development programme.

- The Long Term Strategic View will provide useful context for transport investment, but needs further work in collaboration with the sector if it is to become a 'shared view';
- The view does not look far enough into the future, considering only three years in the March 2017 document.
- Some of the data in the LTSV is no longer current, including the population growth forecasts;
- Assumptions made around population, employment and transport movements are not always clear and should be made explicit;
- The current LTSV feels 'road-centric' - more effort needs to be made to provide a system view incorporating rail, public transport, walking and cycling;
- Further work is required to align the LTSV with the key themes emerging from local growth planning, business case and Regional Land Transport Plan development processes;
- Care must be taken with the Immediate Priority and Future Opportunities maps to recognise that future investments are not set in stone, particularly in the second and third decades.

The March 2017 View can be found at https://www.nzta.govt.nz/assets/Planning-and-investment/long-term-strategic-view.pdf

One Network Road Classification

The One Network Road Classification (ONRC) is a major shift in the road management framework at national and regional levels, and divides New Zealand's roads into six categories based on how busy they are, whether they connect to important destinations, or are the only route available. These categories are identified in the graphic on the right.



By these definitions, Nelson's roads have been classified and these classifications are presented in section 1.1.3 below.

The most important concept behind the ONRC is that it places the customer at the heart of every investment decision. Consequentially, once a road has been classified under the ONRC, it should be maintained to the Customer Level of Service (CLoS) for roads of its type. The CLoS are:

- Mobility
- Safety
- Amenity
- Accessibility

The focus of the ONRC shifts from technical solutions to customer outcomes, and because of this the performance measures do not prescribe specific operational tasks – but rather an appropriate solution and work programme, providing it demonstrates good customer focus (specifically including road users and tax/rate payers). There are three types of ONRC performance measures:

- Customer Outcome
- Technical Output
- Cost Efficiency

Value-for-money is a key consideration, with an opportunity for smarter activity management and greater collaboration. Within the context of these road classifications, there are regional requirements and priorities that reflect the nature and makeup of the local community and associated economy, within the geographic context of Nelson.

Council's Strategies, Plans and Policies

Nelson City has a well-developed set of strategies and policies relating to the city's environment, its land use, transport systems, and its community. A summary of these is provided in Appendix B. The present suite of relevant documents has been developed over the past two decades, in line with statutory and associated requirements. Some of the separate strategies are not binding in a statutory sense, but help to clarify the Council's intended directions or approaches.

The strategies and policies have been developed with significant community input, and can be said to reflect the directions which the community wishes to follow to achieve the City we want Nelson to be.

1.1.3 Infrastructure assets included in the plan

The Transport services and assets associated with this activity are primarily focussed on the safe, efficient and effective transport of people and goods around the region. This includes the provision of physical infrastructure on the road reserve such as for driving, parking, cycling and walking as well as the provision of safety, traffic control and public transport services. A high level summary of the assets is documented in the table below.

Table 1 - 1: Transport Assets

Transport	Asset	Quantity	Replacement Value
	Roads	268km (251km sealed and 17km unsealed)	$203M
	Bridges (including footbridges) Retaining walls	97 419 comprising 32,365m^2	$116.8M
	Footpaths, walkways and cycle ways	380km	$43.3M
	Off street carpark areas	8 (1100 spaces)	$2.7M

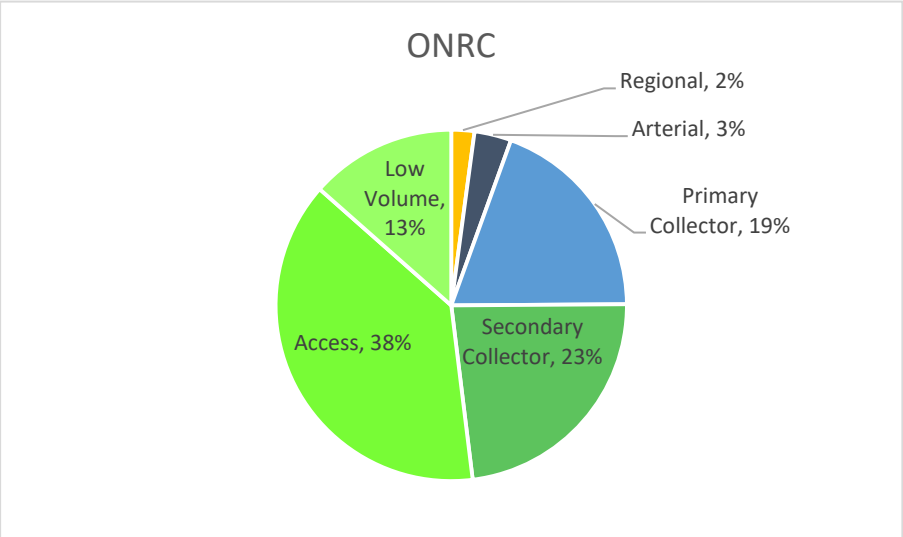
Transport	Asset	Quantity	Replacement Value
	Drainage channels Culverts Sumps /drainage assets	380km 72.2km 6413	$78.3M
	Streetlights	4,538	$32.5M
	Signs, signals and other road and transport assets e.g. street furniture		$22.4M
	Land for legal Road		$259M
TOTAL VALUE OF TRANSPORT ASSETS			**$758M**

The roads are categorised by ONRC hierarchy as shown in the table and pie chart below. Note that Nelson does not have any 'National' classified roads.

Table 1 - 3: ONRC Breakdown

ONRC Classification	Urban (m)	Rural (m)	Total (m)
Regional	5,983		**5,983**
Arterial	9,563		**9,563**
Primary Collector	44,593	9,915	**54,508**
Secondary Collector	53,946	11,213	**65,159**
Access	75,661	32,586	**108,247**
Low Volume	28,843	9,096	**37,939**

Graph 1 - 1: ONRC Breakdown



The replacement cost of these assets is approximately $758 million, and the depreciated value is $607 million.

1.1.4 Key partners and stakeholders in the plan

Council does not widely consult on its Asset Management Plans but formally consults via the Long Term Plan, Regional Land Transport Plan and individually on transport planning and engineering projects and activities depending on the significance and location.

In the development of this Asset Management Plan Council has engaged with our key funding partner the New Zealand Transport Agency in developing and testing the strategic issues detailed in sections iii and v of the executive summary section.

Below is a list of key partners, stakeholders, key user groups and area specific user groups that may be consulted to enable the implementation of this Plan.

- The community of Nelson, including Tangata Whenua comprising eight Iwi;
- New Zealand taxpayers who fund the co-investment provided by the NZ Transport Agency;
- Other asset and activity user such as visitors and tourists;
- The Ministry of Transport and the NZ Transport Agency;
- Tasman and Marlborough District Councils;
- New Zealand Police, fire and ambulance services;
- The Nelson Marlborough District Health Board;
- The Accident Compensation Corporation.
- The installers of ultra-fast broadband cables, power and telecom lines.
- Other key users groups that may be identified on a project by project basis.

Te Tau Ihu Treaty Settlement Act 2014

The Ngāti Kōata, Ngāti Rārua, Ngāti Tama ki Te Tau Ihu, and Te Ātiawa o Te Waka-a-Māui Claims Settlement Act 2014, Ngāti Apa ki te Rā Tō, Ngāti Kuia, and Rangitāne o Wairau Claims Settlement Act 2014 and the Ngati Toa Rangatira Claims Settlement Act 2014 (The Acts) provides statutory obligations for Council in respect to general decision making processes. The Acts are the culmination of Central Government's resolution of claims lodged by the eight iwi for redress of past wrong's and provides for cultural, relationship and financial redress.

Statutory acknowledgments may impact works programmes within the Asset Management Plan and the eight iwi will potentially be considered as affected parties under section 95E of the Resource Management Act, which the settlement legislation provides for.

The end users

The end users of this plan are the Council staff in the transport roading and utilities department. They will use this plan to manage the city's assets and activities on the road reserve in a cost effective, sustainable, well planned and coordinated manner to provide agreed levels of service.

This document is also the business case to support the RLTP for the local road component and assists in informing the LTP.

1.2 Goals and objectives of asset ownership

1.2.1 Reasons and justification for asset ownership

Council manages activities and assets on behalf of the ratepayers of Nelson to a value in excess of $1 billion. The assets are part of the city's physical infrastructure and are important because many public services rely upon them and because they represent a significant investment by the community, built up over the last 100 years and more. The activities are equally important, and represent the way in which services are delivered to ratepayers.

The Local Government Act 2002 and the Land Transport Management Act 2003 places a legal obligation on Council to manage its assets to provide a specified standard of service in a cost effective manner. Council has committed to undertake this obligation in accordance with this Asset Management Plan.

1.2.2 Links to organisation vision, mission, goals and objectives

Council-supplied transport infrastructure and transport planning contributes to achieving the Community Outcomes set via the Long Term Plan Process. These are listed in section 1.2 below.

Overview of Organisation View of Sustainability

The Local Government Act 2002 sets out principles that local authorities must act in accordance with. The legislation requires local authorities to ensure prudent stewardship and the efficient and effective use of its resources in the interests of its district or region; and in taking a sustainable development approach, take into account:

- The social, economic, and cultural interests of people and communities; and

- The need to maintain and enhance the quality of the environment; and
- The reasonably foreseeable needs of future generations

In 2011 Council began work on a 50 year vision of what Nelson could become, using sustainability principles called Nelson 2060. The vision statement was adopted in the LTP 2012-22 and the full Strategy in 2013. It identified ten goals that the Nelson community said were priorities for action and Council is now working to ensure that these goals and sustainability principles are integrated into all the decisions made about its activities.

Sustainable development actions and approaches as developed by the Nelson 2060 Strategy are embedded throughout this asset management plan. These include the following:

Goal 3

Our natural environment – air, land, rivers and sea – is protected and healthy

- The Balanced Approach to managing the transport assets moves the emphasis away from purely providing increasing road capacity. The emphasis is instead on providing for an appropriate mix of transport modes while maximising the efficient operation of the road assets we already have. The continued funding in NBus use contributes to a reduction in vehicle emissions, especially in the slower moving air sheds around Stoke, Victory, Hospital and Bishopdale areas.
- The focus on providing improved safety for pedestrians and cyclists has the effect of encouraging use of these transport modes further and in turn also contributing to a reduction in vehicle emissions.

Goal 5

We are able to rapidly adapt to change

- Constant monitoring of the traffic conditions and the split of mode choice will enable us to monitor trends in key performance indicators and allow us to respond early to any emerging issues.
- New technologies are rapidly developing which promise to revolutionise transport. Many of these technologies have the potential to help make Nelson's transport system more effective, efficient, clean, resilient, safe and responsible. Council has a key role in enabling and encouraging these technologies, including by ensuring that Nelson's network systems and bylaws enable new beneficial technologies to be used.
- Nelson transport technology work is focused particularly on intelligent transport systems (ITS). Nelson already has a few examples of ITS in operation, more planned over the coming years, and is keeping a close eye on emerging technologies. Examples in place now and planned are listed below:
- In place now - variable message signs to warn of delays or temporary works in place;
- In place now – Bluetooth travel time monitoring on key routes;

- In place now – carpool app to match drivers to those looking for transport;
- Planned in next three years - real-time systems to tell public transport users when their bus can be expected to arrive;
- Planned in next three years – Parking meter upgrades that should allow remote top up;
- As computer technology becomes both cheaper and more powerful, more ITS technologies will be deployed over time. It is important the both Council and Government is prepared for these technologies, so we are future-proofing regulation to ensure we don't miss out on the benefits ITS can provide. Examples of where this may be important in the future include autonomous car and truck technologies.

Goal 6

We move from using fossil fuels to renewable energy sources

- As with Goal three, the investment in the alternative transport modes of cycling, walking and public transport encourages their use. In turn any growth in use of these modes reduces use of fossil fuels.

Goal 9

Everyone in our community has their essential needs met

- There are three main groups within the Nelson community that are transport disadvantaged; youth, elderly and those at the lower end of the socio-economic spectrum. The ongoing provision of the NBus, Supergold card free off peak travel and total mobility is targeted at meeting this essential community need.

1.2.3 Plan framework and key elements

The framework of the Transport Asset Management Plan 2018-28 follows the generic layout identified in section 4.2 of the International Infrastructure Management Manual 2015.

The plan has the following key elements:

- Why we need a plan (Introduction)
- What we provide (Levels of service)
- Planning for the future (Future demand)
- How we provide the service (Lifecycle management)
- Dealing with uncertainty (Risk management plan)
- What it will cost and how we pay for it (Financial summary)
- What we're doing to improve (Plan improvement and monitoring)

1.3 Core and advanced Asset Management

1.3.1 International Infrastructure Management Manual

Asset Management is recognised as a critical component of Infrastructure Management globally and this sector has benefited from initiatives to formalise the practise of asset management since November 1996. The Association of Local Government Engineering New Zealand (Inc.) and the Institute of Public Works Engineering of Australia have led the development of the International Infrastructure Management Manual that forms the basis of Infrastructure Asset Management Practices at Nelson City Council.

The IIMM provides an AM Maturity Index. The Nelson City Council Asset Management Policy sets the level of maturity per activity. Refer to the Plan Improvement and Monitoring – Status of AM Practices section 9.1 of this plan for details about this activity's current maturity status and target levels of maturity.

The 'Core' Asset Management planning criteria of this manual was prepared by the New Zealand Auditor General in 2005 and is recognised as a standard minimum compliance for activity management provisions in the New Zealand Local Government Act 2002. The 'Advanced' criteria describe Audit expectations for the management of complex and high value infrastructure with high associate risks. Increasingly asset management for a city the size of Nelson is seen to be a mix of "Core" and "Advanced" practice, depending on the function and resources available.

Council's Asset Management practices in relation to the transport asset are summarised in section 9.1 and a full assessment using the tool in the International Infrastructure Management Manual 2015 is contained within CA1792947.

1.3.2 The Road Efficiency Group

The Road Efficiency Group (REG) was formed in 2012 on the recommendation of the National Road Maintenance Task Force. It is a collaborative project between Local Government and the NZ Transport Agency. Its aim is to create and embed a new national funding and activity management structure for roads (the One Network Road Classification); and improve value-for-money, customer focus, consistency, collaboration, and quality in road asset and activity management.

2. Levels of service

Asset Management Plans set out the level of service (LOS) Council seeks to provide the community for the respective activity.

Levels of service are the standards Council aims to meet when providing a facility or service in support of community outcomes. They are the measurable effect or result of a Council service, described in terms of quality, quantity, reliability, timelines, cost or similar variables.

It should be noted that LOS are not intended as a formal customer contract, rather, Council's responsibility is initially to aim to achieve these levels and then to achieve them more cost effectively through a process of improvement where it can be met within current budgets.

The levels of service provision for the transport activity, the current performance and the performance measures and targets by which these will be assessed are defined in this section.

This section also contains information on customer research undertaken, strategic and corporate goals and the legislative requirements adhered to in arriving at the levels of service.

Changes to the levels of service may significantly change funding requirements in some instances.

Performance measures that are included in the Long Term Plan are reported on annually, through the Annual Report.

Council uses the Significance and Engagement Policy to determine the level of engagement required for a particular issue e.g. levels of service change.

2.1 Customer research and expectations

While the Long Term Plan consultation process incorporates the Levels of Service associated with the transport activity, Nelson City Council has also undertaken a range of consultation processes in the past specifically targeted at gathering information on preferred levels of service or the extent of infrastructure that Council has/will be required to install. The extent of the historical and additional proposed consultation is detailed in Table 1-4 below.

Table 2 - 1: Transport Consultation Process

Consultation Processes	Date / Frequency	Reasons for Consultation	Extent of Consultation	Applicable to which Customer Value
Historical and Proposed				
NZ Transport Agency Engagement on AMP Strategic Business Case	Every 3 years	To meet Road Efficiency Group and NZ Transport Agency Better Business Case method of AMP development.	Consultation via NZ Transport Agency Officers on Strategic Business Case portions of AMP (Subsidised	**Sustainability Reliability Capacity Responsiveness**

			portions of Transport Activity).	
Residents' Survey	Most years since 1998	Rate satisfaction with services provided by Council.	300-400 residents surveyed by telephone.	**N/A**
Iwi – Yes in progress.	Every 3 years	Legislative requirement criteria of Local Government Act 2002.	Consulted on the 2015 AMP prior to public LTP consultation	**Sustainability**
Long Term Plan process	Every 3 years	Legislative requirement criteria of Local Government Act 2002.	Public, business and Industry submissions requested. Advertising in local papers.	**Sustainability** **Reliability** **Capacity** **Responsiveness**
Annual Plan process	Each year that changes to the Long Term Plan are proposed	Legislative requirement criteria of Local Government Act 2002.	Public, business and Industry submissions requested. Advertising in local papers.	**Sustainability** **Reliability** **Capacity** **Responsiveness**

NZ Transport Agency Engagement on AMP Strategic Business Case

The purpose of the consultation with the NZ Transport Agency is to ensure that at the early development stage of this Asset Management Plan officers from the NZ Transport Agency who are responsible for assessing the appropriate co-investment funding level have a good understanding of the key issues facing the Nelson local road transport network. Another key component of this consultation is to ensure that Nelson is able to embed a new national funding process via incorporation of the One Network Road Classification and Better Business Case way of developing this AMP. The target of both these processes is to improve value-for-money, customer focus, consistency, collaboration, and quality in road asset management.

Residents' Survey

The purpose of the Residents' Survey is to get statistically representative resident feedback on Council performance which is used to report on performance measures and identify areas for improvement.

Nelson City Council has been conducting annual surveys of residents since the late 1990s, covering a range of topics. Where possible, questions are repeated to enable comparisons over time. Council's current approach to annual residents' surveys is to run a long (20-minute) survey every three years, timed for the year before the Long Term Plan (LTP), for example, 2017. This allows a wider range of topics to be covered to inform LTP decision-making. In the intervening years, such as in 2016, shorter surveys (up to 10 minutes) are undertaken. These focus on collecting data to report on LTP performance measures and to inform Asset and Activity Management Plans.

2015 Residents' Survey

A residents' survey was not carried out in 2015.

2016 Residents' Survey

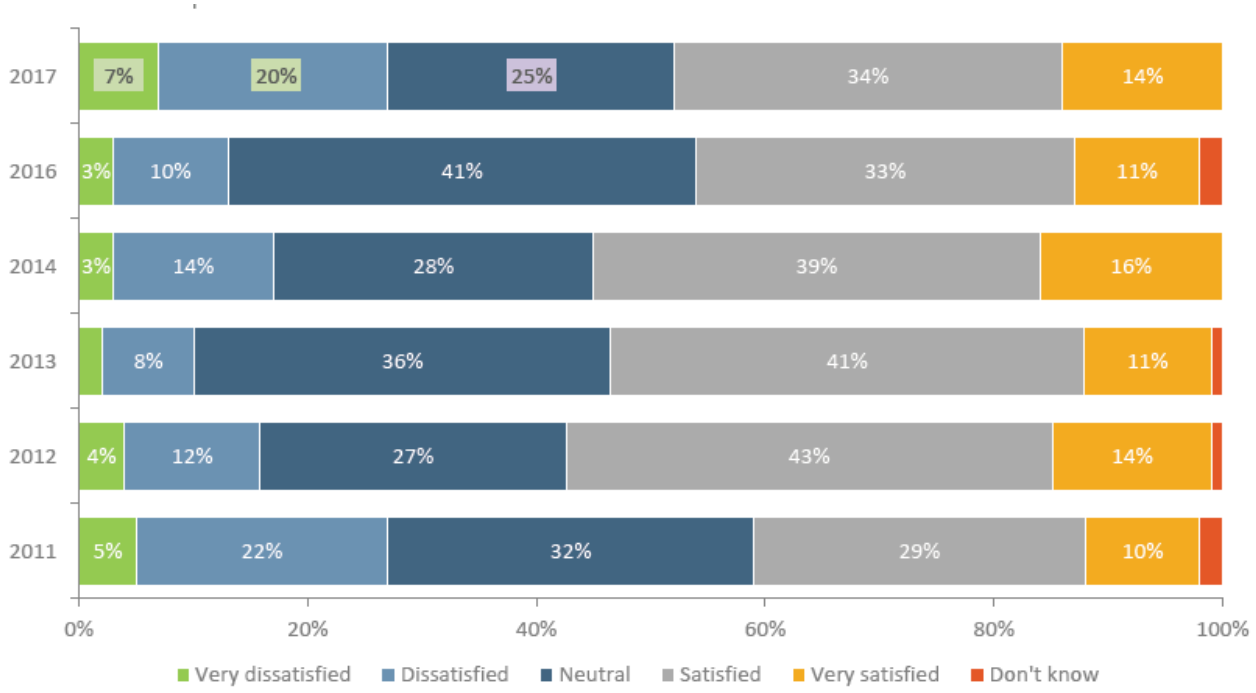
The 2016 Residents' Survey was conducted by Versus Research in May 2016 and involved a phone survey of 400 randomly selected Nelson residents. The overall results have a maximum margin of error of +/-4.8% at the 95 percent confidence interval. This means we can be 95% confident that these results are true of all Nelson residents, give or take 4.8%. Age and gender weightings have been applied to ensure specific demographic groups are not under or over represented. This also allows the reporting of any significant differences in the results for different age groups, genders, and for different parts of Nelson. The full survey report is located at A1580658.

2017 Residents Survey

The 2017 Residents' Survey was again conducted by Versus Research in May 2017 and involved a phone survey of 400 randomly selected Nelson residents and an online interview of 120 people. The overall results have a maximum margin of error of +/-4.3% at the 95 percent confidence interval. This means we can be 95% confident that these results are true of all Nelson residents, give or take 4.3%. Age and gender weightings have been applied to ensure specific demographic groups are not under or over represented. This also allows the reporting of any significant differences in the results for different age groups, genders, and for different parts of Nelson. The results, and key items of interest from a transport perspective are summarised below. The full survey report is located at A1789495.

In 2017, 48% of residents are satisfied (34%) or very satisfied (14%) with transport activities including roads, cycleways, footpaths and public transport. Of note, is a decrease in neutral ratings (25% cf. 2016, 41%) and an increase in dissatisfied (20% cf. 2016, 10%) and very dissatisfied (7% cf. 2016, 3%) compared to 2016 results. The comparison over time is shown in the graph below.

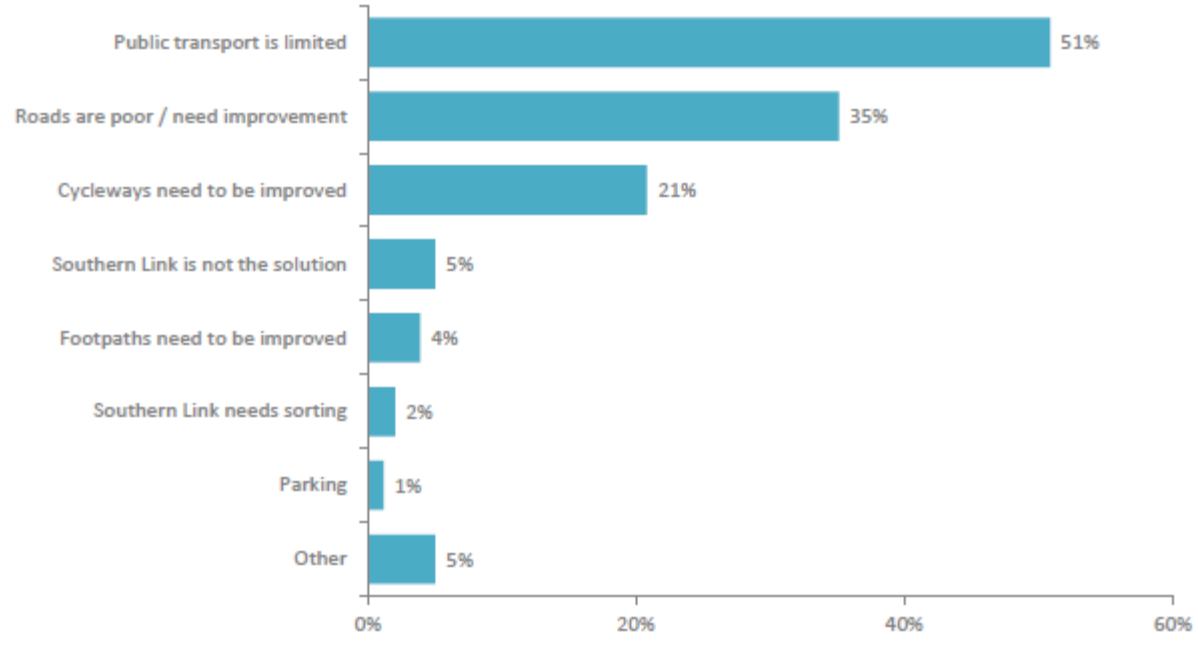
Graph 2 – 1: Customer Satisfaction with the Transport Activity



Base size: 2017 n=520; 2014 n=400; 2012 n=400; 2011 n=400.

Reasons for dissatisfaction with transport activities include public transport being limited (51%), the roads being poor and need improving (35%) and the cycleways need improving (21%). This is shown in graph 2 - 2 below.

Graph 2 – 2: Reasons for Transport dissatisfaction (2017)



Base size n=162.

Forty-five per cent of residents work fulltime, while 23% are employed part-time. This year there are significantly fewer residents (31%) not in the workforce when compared with previous years. Of those residents who are in the workforce, more

than half 58% travel to work in a private vehicle with 10% by bicycle and 9% walking or running.

Fifty-two per cent of residents are satisfied (42%) or very satisfied (10%) with roads and streets in the area. There are significantly fewer very satisfied ratings when compared with results from three years ago (10% cf. 2014, 14%). Reasons for dissatisfaction with roads and streets include the general condition of the roads (57%), roads which aren't repaired properly (37%) and the length of time taken for repairs (16%).

Sixty-three per cent of residents are satisfied (50%) or very satisfied (13%) with footpaths and walkways. There are significantly fewer very satisfied ratings when compared with results from three years ago (13% cf. 2014, 17%). Reasons for dissatisfaction with footpaths and walkways is the feeling there is not enough of them (42%), they are in bad condition (41%) and not maintained (17%).

More than half (54%) of residents are satisfied (38%) or very satisfied (16%) with the area's cyclelanes. There are significantly fewer very satisfied ratings when compared with results from three years ago (16% cf. 2014, 22%). Accordingly, there are significantly greater dissatisfied ratings when compared with 2014 (15% cf. 2014, 10%). Reasons for dissatisfaction with cyclelanes include the feeling they are too narrow and dangerous for cyclists to use (61%), needing more cyclelanes (24%), cyclelanes not getting a lot of use (9%), as well as better signage and education on use of cyclelanes (8%).

More than two-thirds of residents (70%) are satisfied (44%) or very satisfied (26%) with the area's shared pathways. There are significantly fewer very satisfied ratings when compared with results from three years ago (26% cf. 2014, 37%). Nineteen per cent are neither satisfied nor dissatisfied, this result is significantly greater than 2014 (19% cf. 2014, 11%). Reasons for dissatisfaction with shared pathways include that they are difficult and dangerous to use (16 mentions), lack of rules and education around safe use 10 mentions), the area should not have shared pathways or needing more of them (five mentions each).

About a third of residents (36%) are satisfied (27%) or very satisfied (9%) with the area's public transport. There are significantly fewer satisfied (27% cf. 2014, 36%) and very satisfied ratings (9% cf. 2014, 14%). There are significantly greater dissatisfied ratings when compared with 2014 (15% cf. 2014, 9%). Reasons for dissatisfaction with public transport included that it is not extensive enough or the area needs more buses (79%), it's too expensive or needs an alternative fare system (13%) and it is underutilised or needs incentives to use public transport (8%).

Close to two-thirds (60%) of residents are satisfied (44%) or very satisfied (16%) with the area's street lighting. There are significantly fewer very satisfied ratings when compared with results from three years ago (16% cf. 2014, 21%). Reasons for dissatisfaction with street lighting included that it is not bright enough (24 mentions), needing more lighting generally (18 mentions), and the positioning of street lighting needing improving (two mentions).

In a new question for 2017, more than half of residents (51%) are satisfied (41%) or very satisfied (10%) with the area's parking. A further 29% are neither satisfied nor dissatisfied, 19% are dissatisfied (13%) or very dissatisfied (6%). Reasons for

dissatisfaction with parking include that it is too hard to find a park or there is limited disabled parking spaces (34%) and needing more parking (32%) and that it costs too much (16%).

Long Term Plan Process

Every three years Council sets out the proposed plans for the provision of services to the community for the next ten years. The long term plan covers the operation of the transport activity including the reasons for undertaking the activity, levels of service, description of major projects, financial projections and any key risks that have been identified.

Annual Plan process

When variations to the long term plan are proposed by Council the Local Government Act requires these be set out in an annual plan for public consultation.

2.2 Strategic and corporate goals

Councils are required by the Local Government Act 2002 to have Community Outcomes - a statement of the measure of success that Council is working to achieve for the community. Council's community outcomes are set out in the Long Term Plan 2018 – 2028.

Long Term Plan

Table 2 - 2: Transport Community Outcomes

Community Outcome	How this Council activity contributes to the outcome
Our unique natural environment is healthy and protected	Through providing a range of transport modes that minimise the impact on the environment.
Our urban and rural environments are people-friendly, well planned and sustainably managed	Through taking into account the impact on public spaces when providing transport infrastructure.
Our infrastructure is efficient, cost effective and meets current and future needs	Optimisation of both maintenance and renewal expenditure is undertaken to ensure the least cost for the whole of the assets life. Through providing an effective and efficient transport system that meets the needs of residents and businesses.
Our communities are healthy, safe, inclusive and resilient	Through providing a safe and resilient transport network that provides for all modes.
Our communities have opportunities to celebrate and explore their heritage, identity and creativity	The transport asset provides the space and means to allow our community to interact.
Our communities have access to a range of social, educational and recreational facilities and activities.	The transport asset provides the space and means to allow our community to interact.
Our Council provides leadership and fosters partnerships, a regional perspective, and community engagement	Through providing a transport network that takes account of our regional placement. Through engaging with our community and regional partners as the transport network is developed.

Our region is supported by an innovative and sustainable economy	Through providing an effective and efficient transport system that meets the needs of residents and businesses.

Goal of the Transport Activity

The Transportation Asset Management Plan has to take long term higher level direction from the Government Policy Statement on Land Transport, the Infrastructure Strategy and Nelson 2060 and short term direction from the Regional Land Transport Plan.

In summarising these documents and referring back to the long term vision and mission underpinning the most recent Regional Land Transport Strategy the following goal has been developed for the Transport Activity:

GOAL OF THE TRANSPORT ACTIVITY
"A sustainable transport future for Nelson" *and* *"To have a land transport system that is safe, efficient, integrated and responsive and that meets the needs of the region in ways that are environmentally, socially and economically sustainable".*

Nelson 2060

As discussed in section 1.2.2 above a key strategic and corporate goal that has strong links to transport, is the Nelson 2060 Strategy.

Government Policy Statement on Land Transport

As discussed in section 1.1.2 above Council's subsidised transport programme needs to align with the Government Policy Statement on Land Transport.

2.3 Legislative requirements

The legislative requirements form the minimum level of service as Council is required to comply. The transport activity and its overall framework for planning, funding and managing the land transport system includes many Acts, Regulations, Bylaws, Bills and Rules. Section 1.2.1 discusses these and Appendix A also contains a comprehensive list. Below is a summary of the most significant pieces of legislation.

Health and Safety at Work Act 2015: Council must ensure the safety of the public and all workers (including contractors) when carrying out works.

The Local Government Act 2002: Defines the purpose of local authorities as enabling local decision-making by and on behalf of the community, and allows local authorities the power of general competence. The Nelson City Council is a local authority established under the Local Government Act 2002 (the Act) with purpose and responsibilities set out in the Act, in particular: 10(1)(b), 10(2) and 14(1)(h).

The Land Transport Management Act 2003. The purpose of this Act is to contribute to an effective, efficient, and safe land transport system in the public interest.

Resource Management Act 1991: The NRMP is a regulatory document that covers both district and regional activities. Council seeks to operate the current network in compliance with this document. To that end Council holds a range of resource consents for both global and site specific activities.

National Policy Statement for Freshwater Management Amendment 2017: Council is required to have a progressive implementation programme to maintain or improve fresh water quality.

Resource Consents Relevant to the Transport Asset

There are two resource consent associated with the maintenance of the bridge assets that are relevant to the transport activity and one resource consent refers to discharge to land.

RM175025: Land use consent for the disturbance of rivers including culvert and bridge maintenance works, deposition of material, vegetation removal, and gravel extraction throughout the Nelson Region for the purpose of maintenance and repair works.

Land use consent to exceed the Nelson Resource Management Plan permitted noise standards in the Rural, Residential, Inner City Fringe, Inner City Centre, Suburban Commercial, Industrial, Conservation and Open Space Recreation Zones.

RM175033: Water permit to temporarily dam (with coffer dams) and divert rivers and install fish baffles and other fish passage enhancement structures throughout the Nelson Region for the purpose of, and in association with, maintenance and repair works within rivers.

Both resource consent expire on the date that the relevant Regional Freshwater Rules in the Whakamahere / Nelson Plan become fully operative.

RM135024: To discharge agrichemicals onto land via land based and aerial application for the control of vegetation and pests on Nelson City Council administered parks and reserves.

2.4 Current level of service

The targets identified in this section are for three years because the Asset Management Plan is reviewed every three years. Council also has ten year targets in the Regional Land Transport Plan which are reported on annually to the Regional Transport Committee.

Table 2 - 3: Level of Service - Quality – A smooth road surface (not slippery)

Community Outcomes	Level of service	Performance measure	Previous and current performance			Performance Target			
						2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our infrastructure is efficient, cost effective and meets current and future needs	Quality – A smooth road surface.^	The average quality of ride on a sealed local road network, measured by smooth travel exposure[12]	2014/15 89% 2015/16 92% 2016/17 90%			87%			
Our infrastructure Our infrastructure is efficient, cost effective and meets current and future needs	Quality – A smooth road surface.	The average quality of ride on a sealed local road network, measured by smooth travel exposure by One Network Road Classification (ONRC)[13]	***ONRC***	***Smooth Travel Exposure***		The following Smooth Travel Exposure targets are not exceeded:			
				15/16	***16/17***	***ONRC***		***Smooth Travel Exposure Target***	
			Regional	84	97	Regional		90	
			Arterial	90	95	Arterial		85	
			Primary Collector	83	71	Primary Collector		80	
			Secondary Collector	80	78	Secondary Collector		80	
			Access	85	84	Access		75	

12 **Non-Financial performance measures Rules 2013 in in accordance with section 261B of the Local Government Act 2002 – Subpart 5 (2) – RAMM output based on annual high speed data collection**

13 RAMM output based on annual high speed data collection

Community Outcomes	Level of service	Performance measure	Previous and current performance			Performance Target			
						2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
			Low Volume	83	83	Low Volume		75	

Council and the NZ Transport Agency uses the National Association of Australian State Roading Authorities[14] metric to determine the road roughness, this is turn is then used to calculate Smooth Travel Exposure (STE). The roughness measure is collected by a special vehicle with lasers measuring the profile of the road.

STE reflects the roughness of the journey experienced by the user. It provides a high level indication on the historical performance of the local road maintenance and renewals programmes as well as the proportion of vehicle travel that occurs on roads that are less than the roughness limits. The limits are presented in table 3.4 below:

14 Road roughness is measured by a system developed by the former National Association of Australian State Roading Authorities. Values are obtained by a special-purpose vehicle travelling down both outside lanes of the length of a road. The rougher the road, the higher the National Association of Australian State Roading Authorities counts per lane kilometre.

Table 2 – 4: ONRC Roughness Limits

Traffic Volume	ONRC Classification	Urban NAASRA	Rural NAASRA
<=10,000	Regional and Arterial	<=110	<=130
4,000-9,999	Primary Collector	<=120	<=130
1,000-3,999	Secondary Collector	<=150	<=130
500-999	Access	<=150	<=150
<500	Low Volume	<=180	<=150

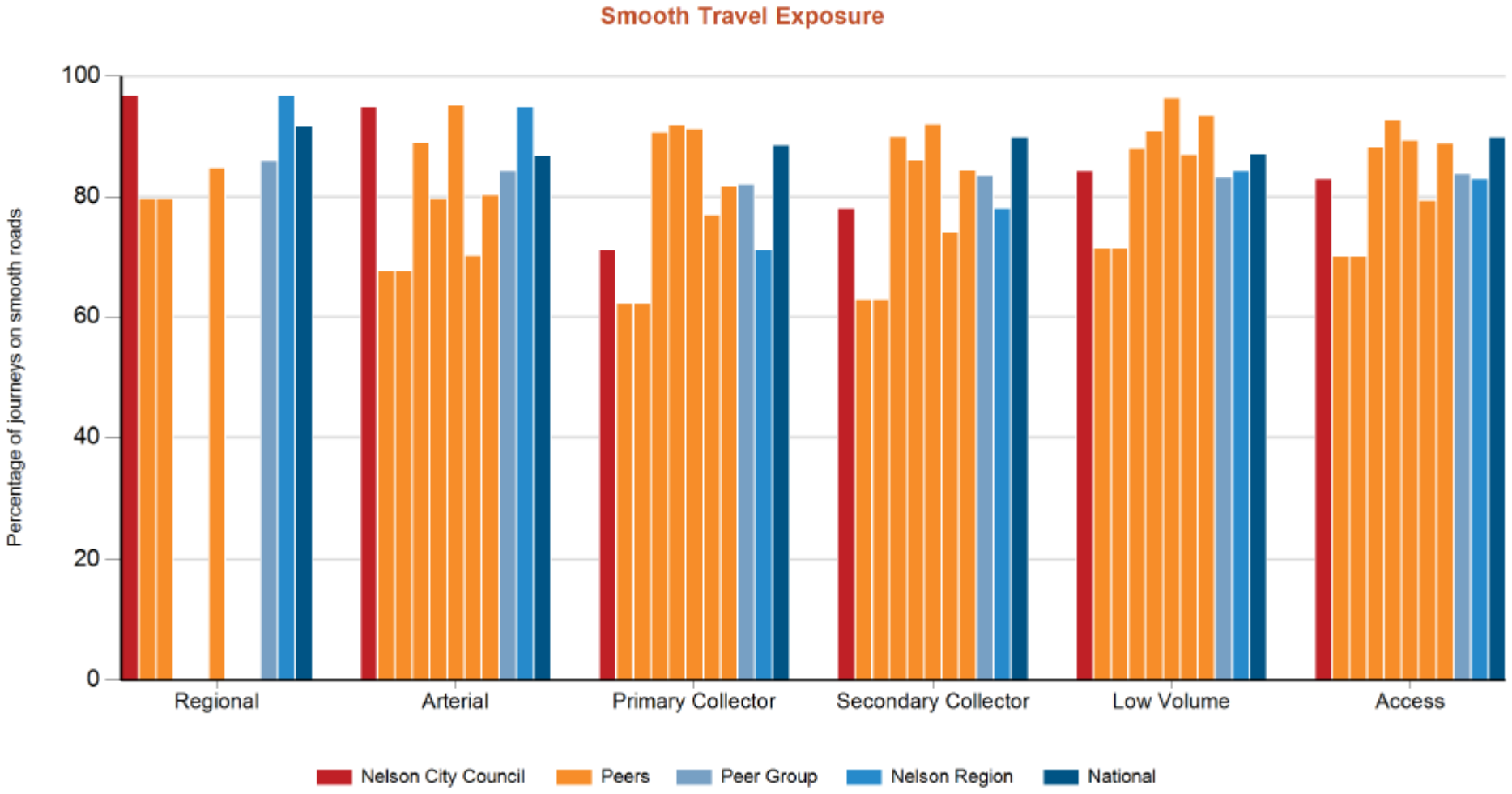
The current level of STE on the Regional and Arterial ONRC classified roads is expected to slowly degrade over the next decade as significant portions of this part of the network have recently been resurfaced and the result is skewed towards these Regional and Arterial sections as the network length is very short at just 15.6km.

The current level of STE on the Primary and Secondary Collector roads is below the target of 80 and prior to resurfacing these roads the opportunity should be taken to improve the ride by isolated smoothing.

The current level of STE on the Access and Low Volume classified roads is currently higher than the target and there is opportunity to allow these portions of the network to get slightly rougher whilst there is a focus on improving in the more heavily trafficked Primary and Secondary Collector network.

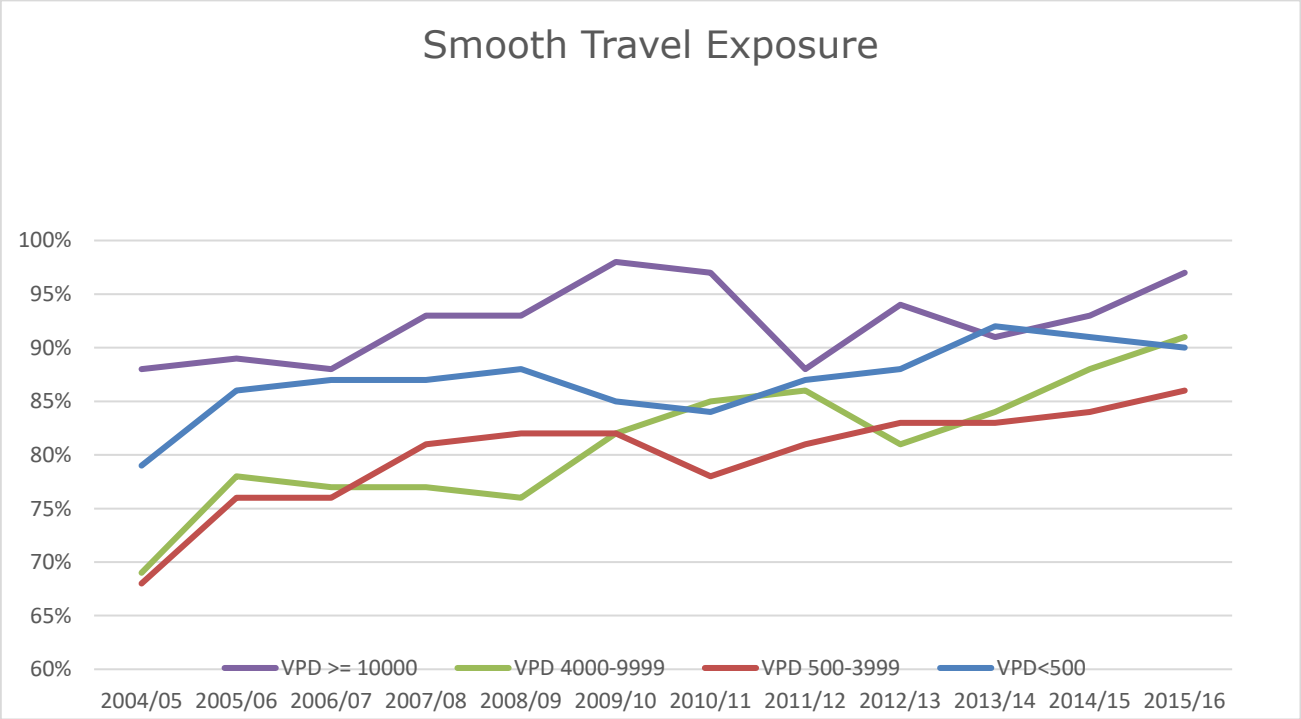
The graph 2.3 below shows Nelson's STE in comparison to our ONRC peers and the National average. As discussed above our Regional and Arterial network is performing above average, the Primary and Secondary Collector classifications need improving and the local and low volume road could be managed down slightly.

Graph 2 – 3: Smooth Travel Exposure ONRC Peer Group Comparison



A long term analysis of the roughness data shows that Nelson's roads have in general been getting smoother over time since the collection of robust data started in 2004. This is shown in graph 2.4 below. Of note is the current trend of low volume roads (shown by the blue line) being smoother than the roads in the next two volume categories (red and green lines) has existed historically.

Graph 2 – 4: Smooth travel exposure over time by traffic volume (A1592518)



2.4.1 Quality – A smooth footpath surface

The condition of the footpaths is of particular interest to the community, especially relating to the surface condition and how this relates to safe use. Safe use of footpaths is important for all ages but especially so for the elderly. Accordingly this measure has a strong link to the key issue of aging population identified in section iii.

Table 2 – 5: Level of Service - Quality – A smooth footpath surface

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target			
				2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our infrastructure is efficient, cost effective and meets current and future needs	Quality – A smooth footpath surface^	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. [15]	2014 95% no greater than 3 2017 92% no greater than 3 refer table 2-6	95% of the footpath network by length has a condition rating of no greater than 3			

Council undertakes condition rating surveys approximately every three years in order to track the condition of the footpath asset and set appropriate budgets. Surveys have been recently undertaken in 2014 and 2017.

15 Non-Financial performance measures Rules 2013 in in accordance with section 261B of the Local Government Act 2002 – Subpart 5 (4) – RAMM condition rating based.

Table 2 - 6 below shows the descriptions of each rating as well as the percentage, by length, of the footpath network that meets the criteria. This is also show by the graph 2 - 5 below.

Table 2 - 6: Footpath Rating Descriptions and Summary

Rating	Description	Percentage length with rating (2017)	Percentage length with rating (2014)
1	As new, no significant cracking, even surface.	15%	17%
2	Good condition, safe to use, some minor cracking and/or scabbing/ravelling.	48%	47%
3	Average condition, could be some cracking, scabbing/ravelling and/or untidy but safe to use, no significant hazards.	32%	27%
4	Poor condition, will need maintenance in near future, cracking more significant, may be some settlement or sections may be lifting, surface may be uneven, small bumps or ruts forming, broken edges, lichen, service covers may be raised or low.	4%	7%
5	Very poor condition, needs to be fixed now, not safe to use, significant tripping hazards, holes, humps and bumps, ruts and/or very uneven surface, service covers and/or tree roots hazardous.	1%	1%

Graph 2 - 5 shows the descriptions of each rating as well as the percentage, by length, of the footpath network that meets the criteria.

The table and graph above show that 92 percent of the network in 2017 was in average or better condition, 3% below the target of 95%.

Graph 2 – 5: Footpath Condition Rating

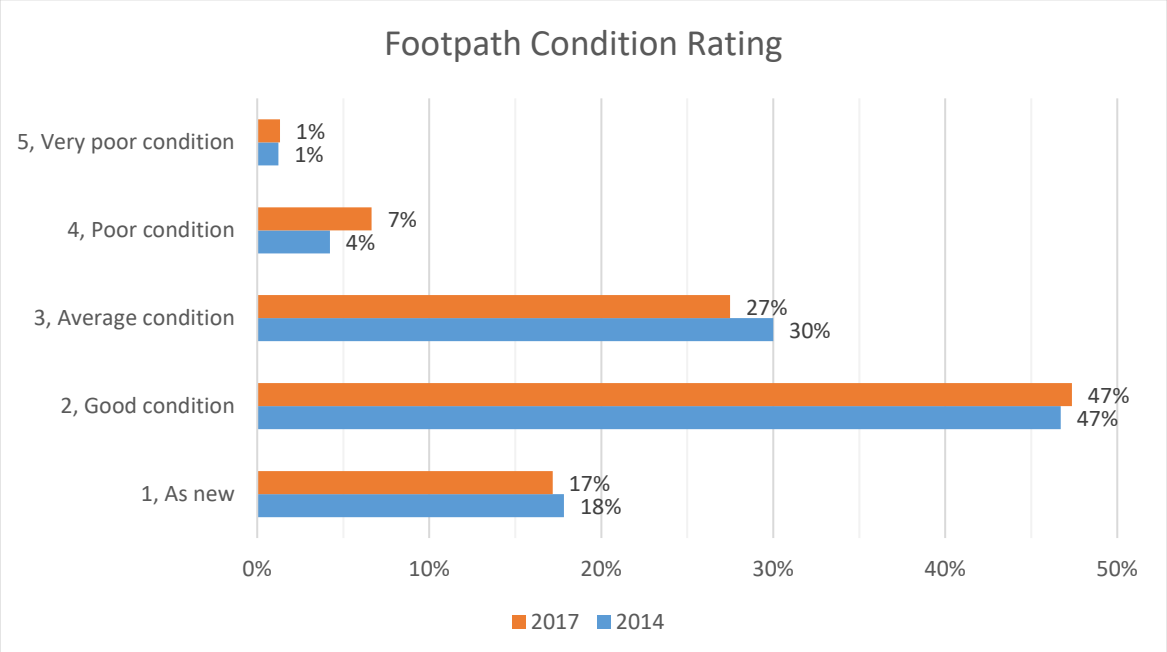


Table 2 - 7: Level of Service - Resurfacing Quantity

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target			
				2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our infrastructure is efficient, cost effective and meets current and future needs	Affordability – Optimising the amount of resurfacing undertaken^	The percentage of the sealed local road network that is resurfaced.[16]	2014/15 4.8% 2015/16 7.4% 2016/17 5.6%	Not less than 3% or not more than 8.5%			

16 **Non-Financial performance measures Rules 2013 in in accordance with section 261B of the Local Government Act 2002 – Subpart 5 (3) – RAMM output based on actual work quantities undertaken.**

The upper limit of the performance target of 8.5% of the network to be resurfaced annually has been set based on the area able to be resurfaced with the budgets assigned using a chipseal treatment selection only. The lower limit of 3% of the target allows for some level of uncertainty associated with the budget allocation from the NZ Transport Agency, cost fluctuations in raw materials, increases in contract labour costs and a significant proportion of the treatment selections being the much more expensive asphaltic concrete treatment selection.

The range allows for the programme to be changed should opportunities for optimisation be identified.

2.4.2 Public Transport

In early 2012 Council commenced an improved passenger transport service funded from increased parking charges. During the 2015 AMP / LTP development the link between parking charges and bus operational costs was removed when greater co-investment was gained from the NZ Transport Agency. Council's strategic direction on Passenger Transport is outlined in the Regional Public Transport Plan.

The two service levels for public transport are targeted towards providing the user with transport choices and as a means of reducing traffic congestion. The fare recovery ratio measures the contribution fares make to the operating cost of providing public transport services, and is expressed as a percentage. Few public transport systems costs are completely covered by fare revenue, so subsidies are usually required to cover the shortfall.

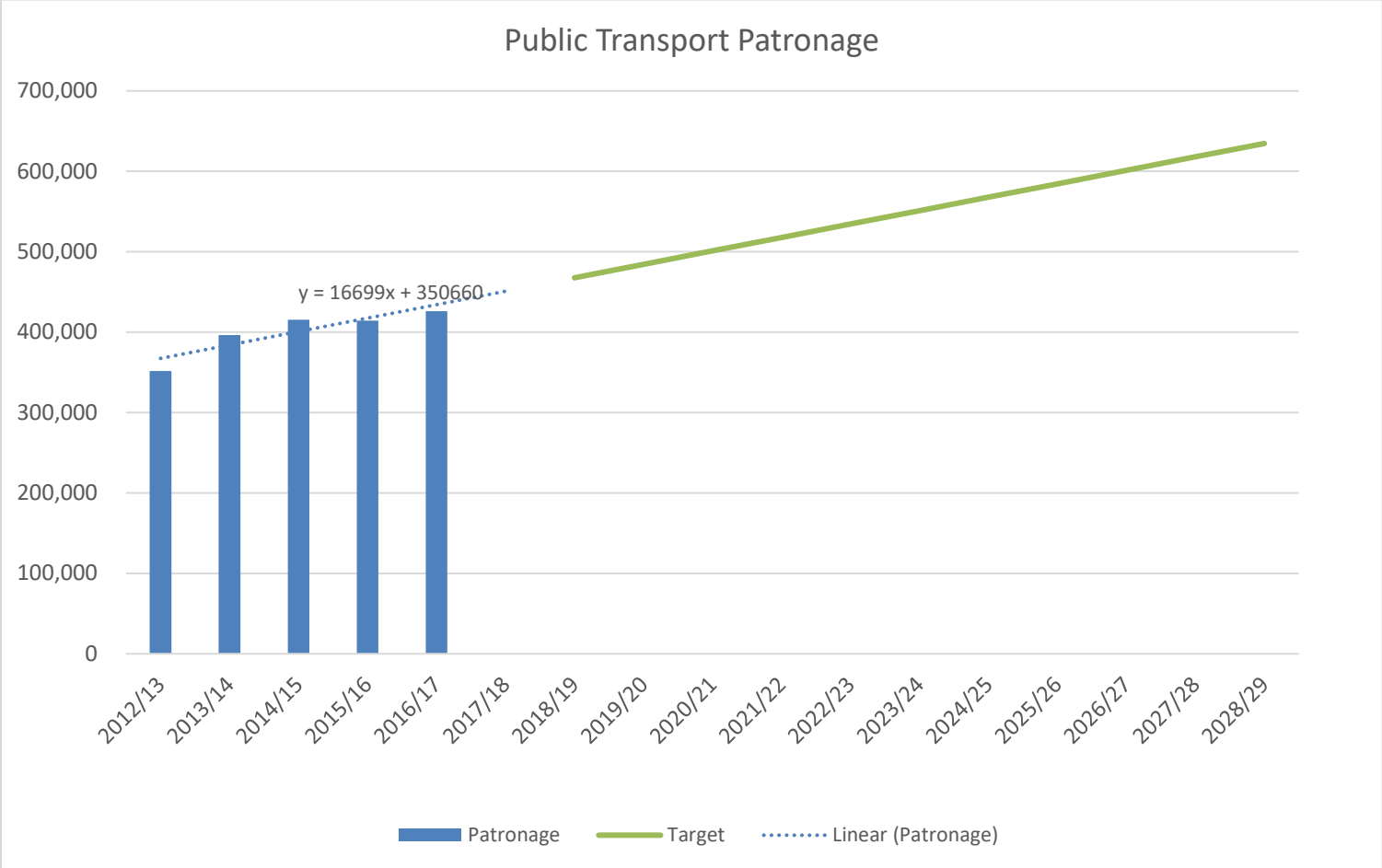
Table 2 - 8: Level of Service - Public Transport

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target			
				2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our infrastructure is efficient, cost effective and meets current and future needs	Accessibility - Providing transport choices via public transport and, Efficiency – Maximise movement of people via public transport.^	The fare recovery ratio (equitable sharing of costs)	2014/15 64% 2015/16 56% 2016/17 52%	Not less than 45% and not more than 55%			
Our infrastructure is efficient, cost effective and meets current and future needs	Accessibility - Providing transport choices via public transport and, Efficiency – Maximise movement of people via public transport.^	NBus patronage[17]	2014/15 415,326 annual number of passengers 2015/16 414,212 annual number of passengers 2016/17 426,237 annual number of passengers	4% increasing trend over time			

The bus patronage target has been set based on past performance and represents a growth of 4% per annum. The past performance since the introduction of the NBus service and future growth target is shown in graph 2 - 6 below.

17 Bus patronage data - Refer A883923

Graph 2 – 6: Public Transport Patronage Growth Target (A883923)



2.4.3 Walking and Cycling Mode Share

One of Council's key issues discussed in section iii is 'Transport network is under pressure due to growth in users and slow uptake of alternative options'. The following two level of service measures are included to track the trend and set a target to monitor performance against the statement 'slow uptake of alternative options'.

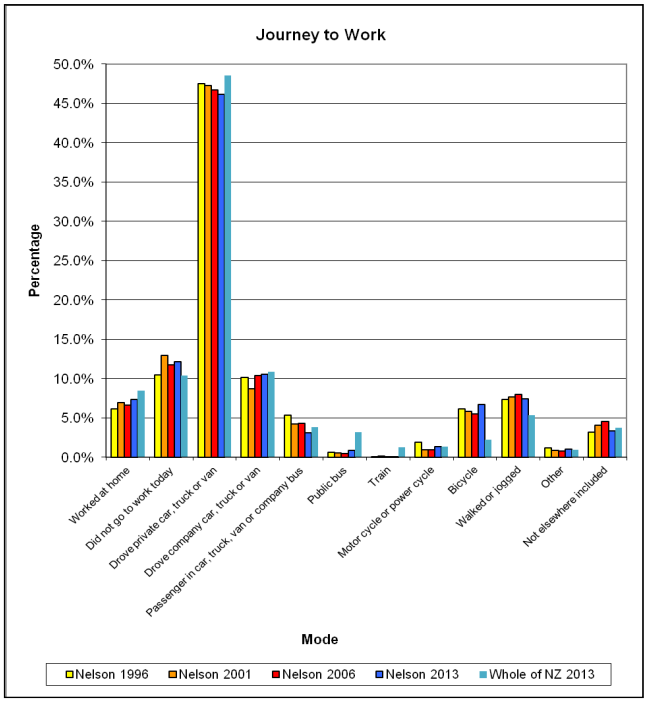
Table 2 - 9: Level of Service - Walking and Cycling Mode Share

Community Outcomes	Level of service	Performance measure	Previous and current performance			Performance Target			
						2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our infrastructure is efficient, cost effective and meets current and future needs	Efficiency – Maximise movement of people via walk and cycle modes	Percentage of the community that travel to work by walking or cycling	2013 Census - 18.3% of commuters made up of walker/joggers 9.6%, cyclists 8.7%. 2016 Residents Survey - 21% walked or cycled. 2017 Residents Survey - 19% walked or cycled.			20% combined of all journeys to work by walking or cycling	20% combined of all journeys to work by walking or cycling	21% combined of all journeys to work by walking or cycling	25% combined of all journeys to work by walking or cycling
Our infrastructure is efficient, cost effective and meets current and future needs	Efficiency – Maximise movement of people via walk and cycle modes	Numbers of people walking or cycling on the Railway Reserve, Bishopdale shared Path, Whakatu shared path Atawhai shared Paths and Rocks Road[18]	**Year**	**Cycle**	**Walk**	2% increasing trend over time			
			2014/15	2561	1110				
			2015/16	2716	1220				
			2016/17	3018	1283				

18 7 hour manual pedestrian and cycle counts A861021

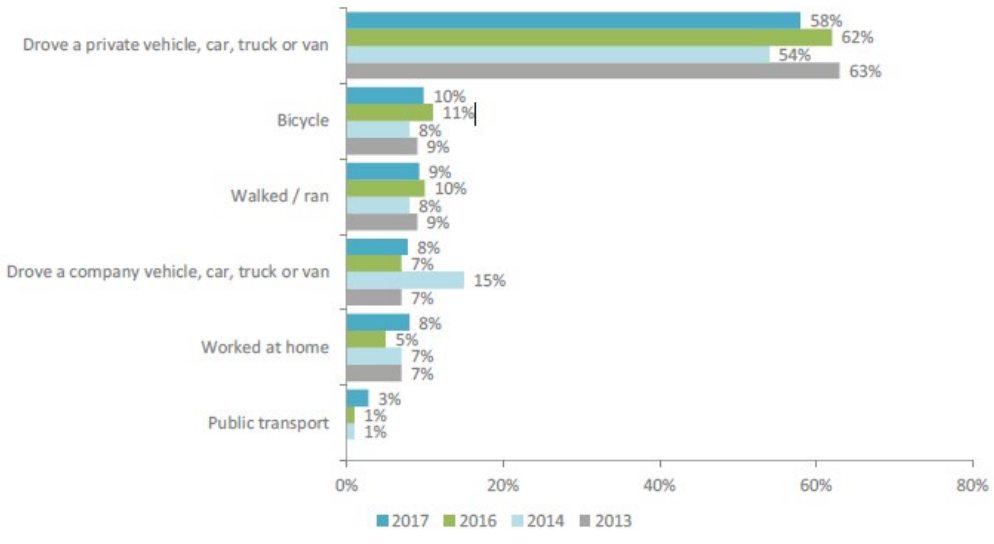
Council uses two measures to monitor walking and cycling. The first measure is the journey to work. Date is sourced from the Census and the Council's annual residents' survey. Graph 2 - 7 below shows the journey to work data from 1996 to 2013 from the Census and Graph 2 - 8 shows similar data from the annual residents' survey.

Graph 2 – 7: Census journey to work



The graph above shows that over half of the population travel to work by car, truck or van, although a higher proportion walk or cycle in Nelson than the rest of the country, averaging around 17% of all journeys to work. The census travel to work data set is a capture of the total working population and is thus more accurate representation of travel mode than the resident survey.

Graph 2 – 8: Resident Survey Travel to Work Mode

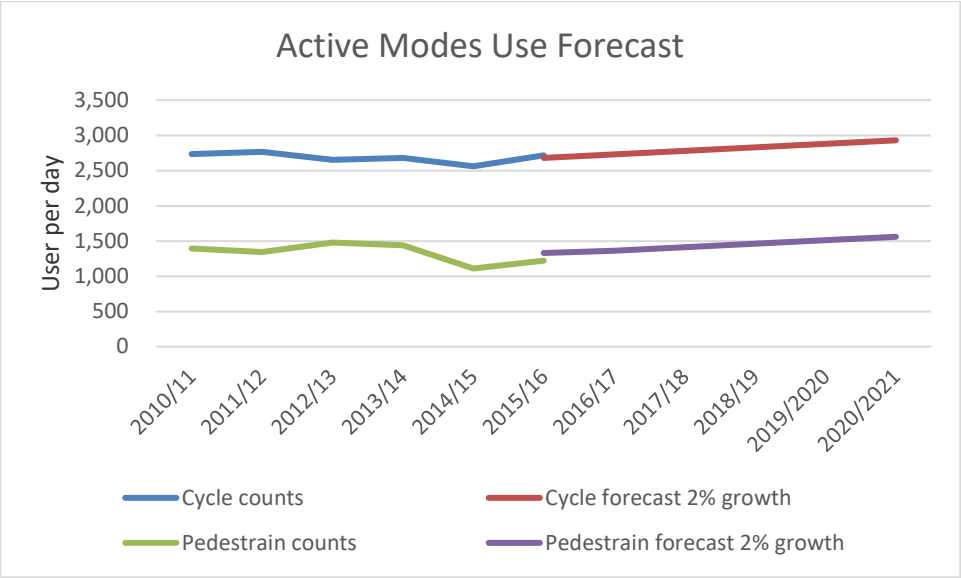


Base size: 2017 n=395; 2016 n=227; 2014 n=252; 2013 n=254.

In the 2017 residents' survey 19% of journey to work trips were by walking and cycling. This was slightly less than 2016 at 21%.

Council has been counting walk and cycle numbers at several screen lines within the established walk and cycle network over the last fifteen years. The locations include the Railway Reserve at Stoke and Bishopdale, Rocks Road, and Atawhai and Whakatu shared paths. This data has been summed in the graph below and the level of service measure above to give the daily number of cyclists at these 5 key locations for monitoring numbers and growth overtime. This data set includes all reasons for travel compared with the census and residents survey which just count the journey to work.

Graph 2 – 9: Historical numbers and forecast of pedestrian and cyclist numbers at 5 screen lines (A861021)



2.4.4 Arterial Traffic

One of Council's key issues discussed in section iii is 'Transport network is under pressure due to growth in users and slow uptake of alternative options'. The following two level of service measures are included to track the trend and set a target to monitor performance against the demands placed on the arterial road network.

Table 2 - 10: Level of Service - Arterial Traffic

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target			
				2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our infrastructure is efficient, cost effective and meets current and future needs	Reliability - An operational arterial transport network.^	Median AM and PM peak hour travel times on Waimea Road and the State Highway between Annesbrook and Haven Road roundabout	2015/16 financial year data shows the following exceedances of the upper limit: 24 weeks in the Waimea Road northbound AM peak 9 weeks in the Waimea Road southbound AM peak 11 weeks in the Rocks Road northbound AM peak 27 weeks in the Rocks Road southbound AM peak	Weekly median peak hour travel time delays are no greater than 5 minutes above uncongested travel times.			
Our infrastructure is efficient, cost effective and meets current and future needs	Efficiency – Making better use of existing capacity	Percentage of vehicles with more than one occupant on Waimea Road and Rocks Road during the am and PM peak hours[19]	2014/15 25% 2015/16 25% 2016/17 24%	25.5%	26%	26.5%	30%

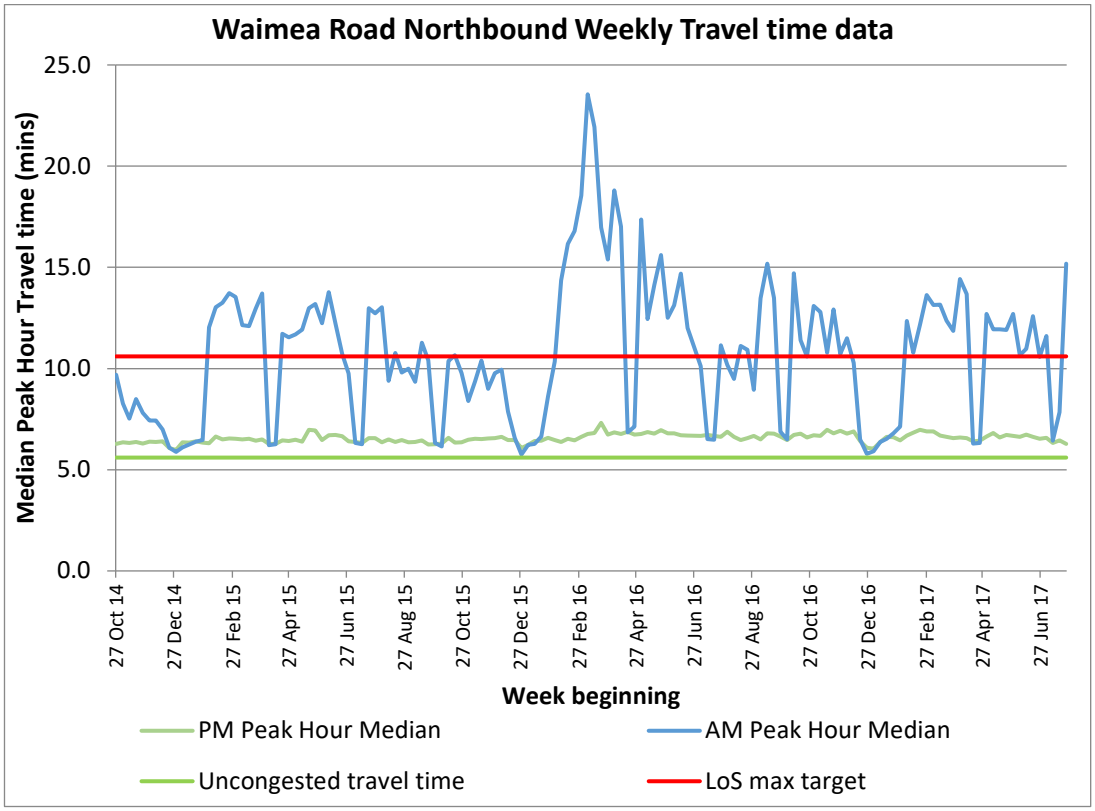
19 (A468929)

Council's main arterial corridor is from the Queen Elizabeth II / Haven Road roundabout, along Haven Road, Halifax Street, Rutherford Street, Waimea Road and Main Road Stoke to the 3 roundabouts at the Tasman District Council border. The other arterial corridor route, between Queen Elizabeth II / Haven Road roundabout and the Tasman border along State Highway 6 including Rocks Road, Tahunanui Drive, and Whakatu Drive are owned and managed by NZ Transport Agency. However these two routes are included in the above level of service as the two arterial routes operate together. When there is a delay or issue on one arterial route the volume and peak hour travel time on the other increases.

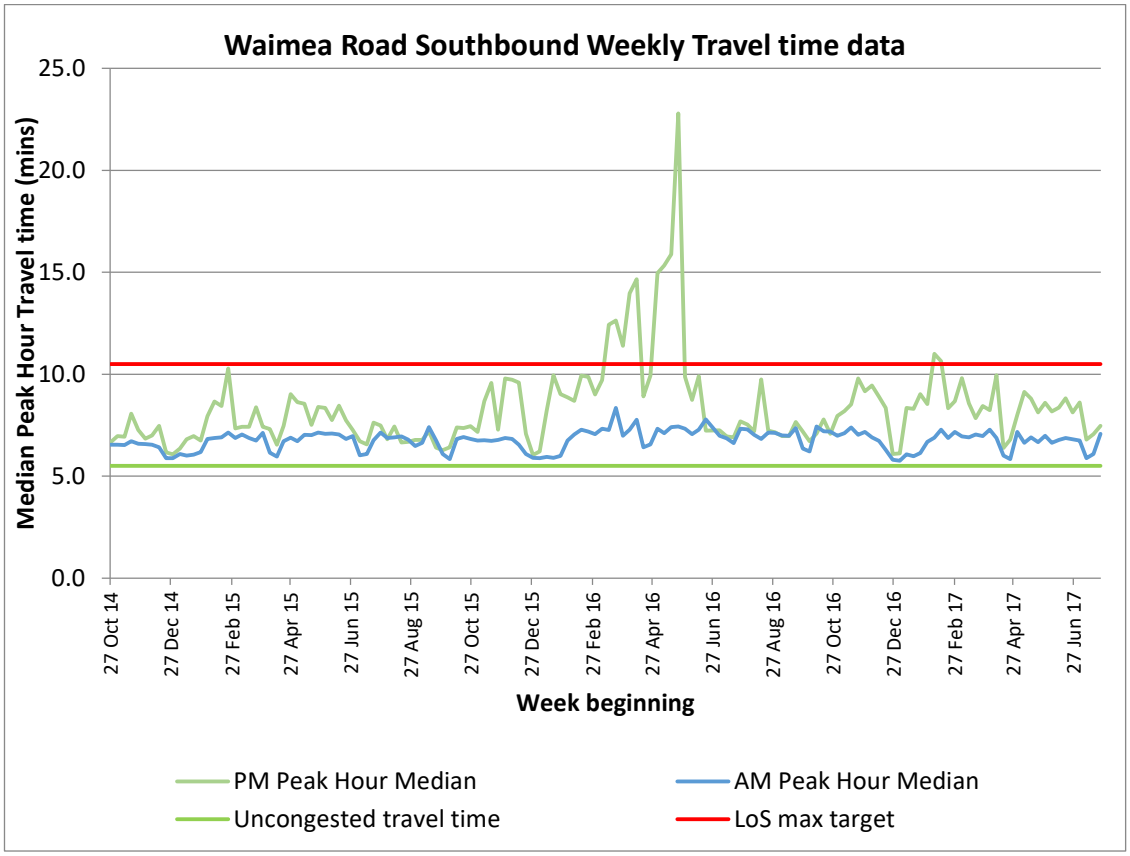
Travel Time is measured using a Bluetooth detection system resulting in a large sample size that captures the travel time experience of users. Council has partnering with NZTA and installed the Bluetooth wireless detection system to improve the effectiveness of this measure both on key arterial local roads and the State Highway network.

The current median peak hour delays are shown graphically below. The green line in all graphs is the uncongested travel time with the am median peak hour travel time in blue and the pm peak hour median travel time in pink. The red line is the level of service target. The median hourly travel times represent average conditions within the hour, meaning that shorter periods (within the peak hours) of more intense traffic demand and congestion will not be fully represented.

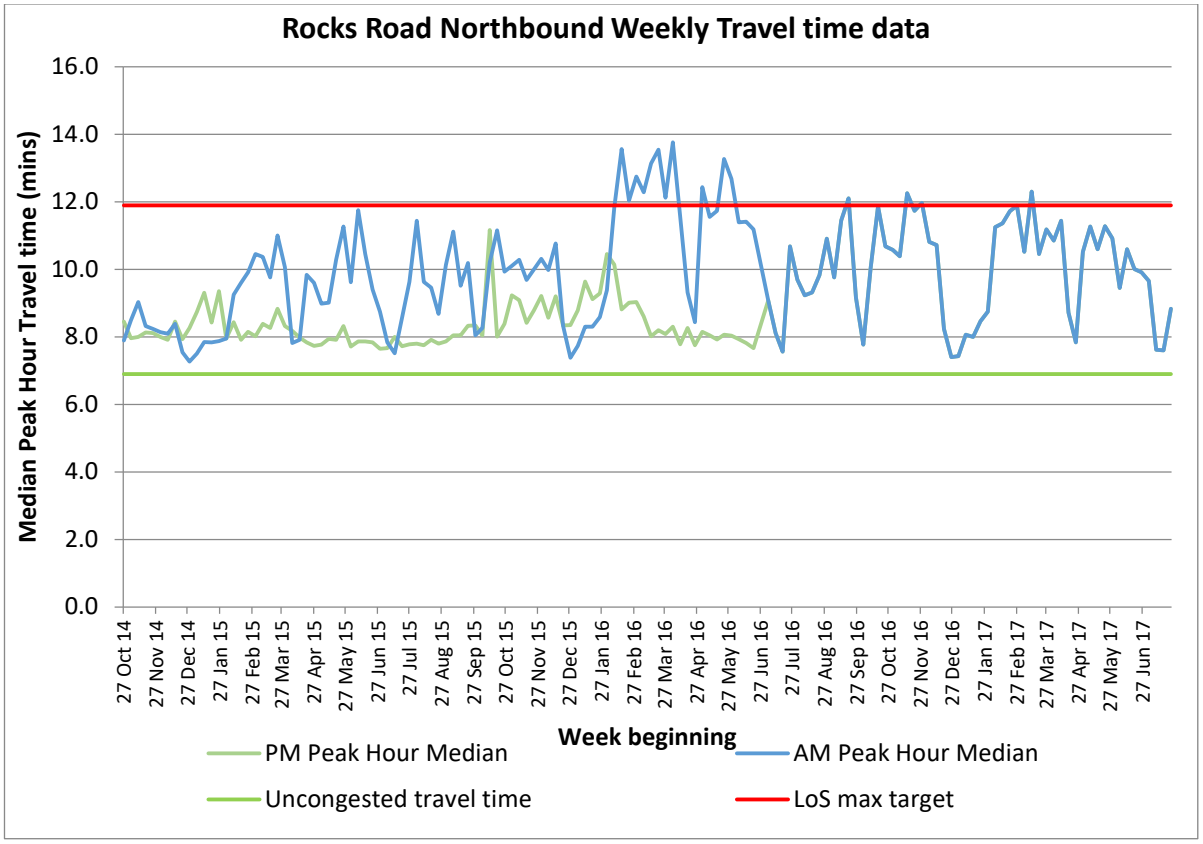
Graph 2 - 10: Waimea Road Northbound Median Peak Hour Travel Time (A1517938)



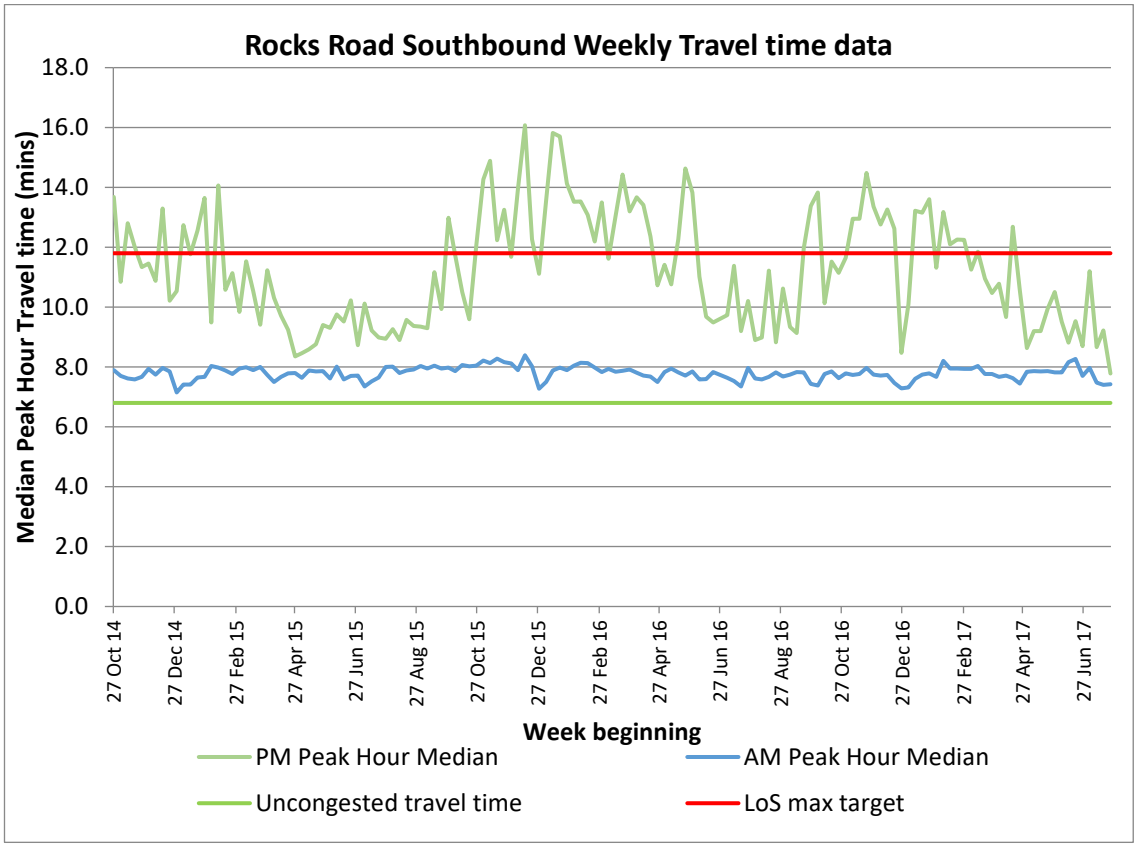
Graph 2 - 11: Waimea Road Southbound Median Peak Hour Travel Time (A1517938)



Graph 2 - 12: Rocks Road Northbound Median Peak Hour Travel Time (A1517938)



Graph 2 - 13: Rocks Road Southbound Median Peak Hour Travel Time (A1517938)

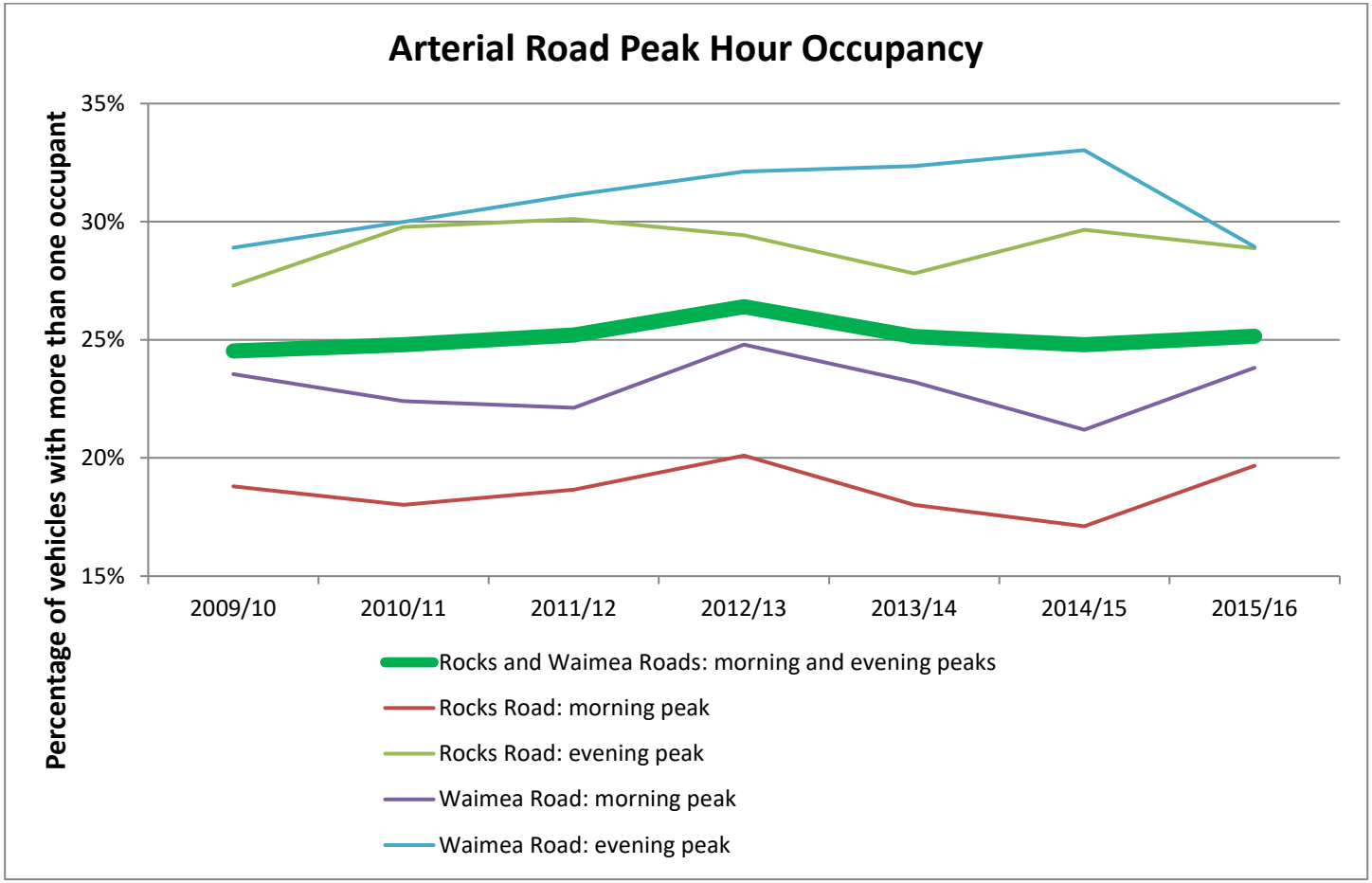


The 5 minute delay defined as the performance target represents an average delay of around 1 minute per kilometre over the measured distance. Based on the Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis, Sections 5.2.2 and 5.2.3, this level of delay is expected to result in a level of service of C for the route as a whole. The descriptions of the level of service flow characteristics contained in the Austroads guide are similar to those contained in Appendix F.

The Nelson Southern Link Investigation: Future Forecasting Report provides individual levels of service for the arterial transport corridors under their revised medium growth scenario. These level of service plots can be found in Appendix H.

The occupancy of vehicle on the arterial routes has a significant impact on the ability for the corridor to move people. The arterial road peak hour occupancy history is presented in graph 2 - 14 below.

Graph 2 – 14: Arterial Road Peak Hour Occupancy (A468929)



2.4.5 Parking

As most vehicular journeys involve parking at both the start and end of each trip, the availability and cost of car parking can influence decisions on the transport mode used, the time of travel and, potentially, the choice of destination. The provision of parking facilities also impacts on the urban environment and may take up valuable space, thereby increasing property development costs.

A balance must be struck between the provision of an adequate supply of parking to meet the needs of a dynamic, competitive economy, optimising valuable city centre land and encouraging the use of good alternatives to single occupancy vehicles.

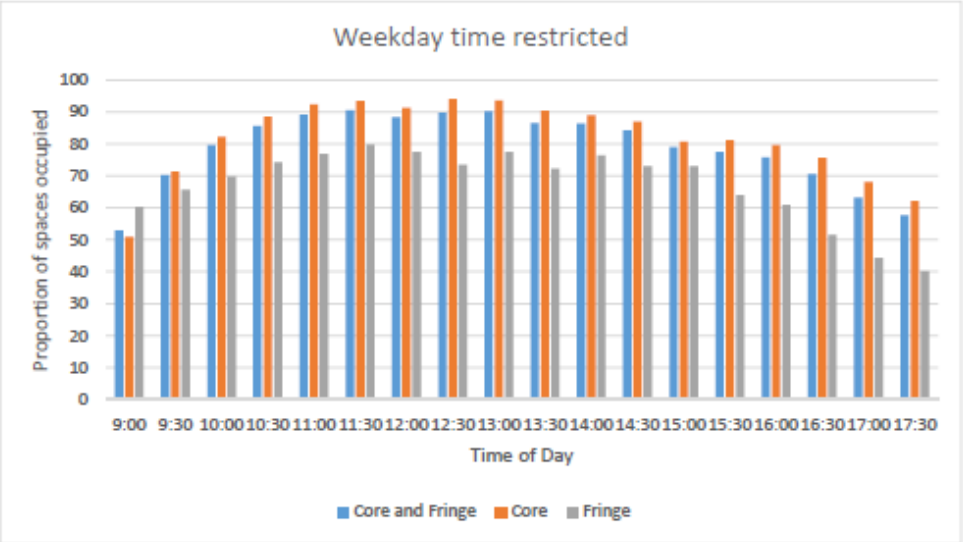
Essentially short stay parking should be of sufficient capacity, carefully costed, well located and accessible. Long stay parking should not compete with short stay capacity, and should align with the wider transport and city centre policy.

There are approximately 1,455 short stay parking spaces in the central core area; these had a peak midweek occupancy in December 2016 of around 94%. On Saturday the peak occupancy increased to 97%. These peak times tend to be in the middle of the weekdays, between 11am and 2pm and between 11am and 1:30pm on Saturdays.

Should occupancy rates drop constantly below the performance target then Council should consider relaxing the short stay time restrictions. Should occupancy rates be constantly above the performance target then Council could consider increasing parking fees, carry out stricter enforcement or making more short stay spaces available within the CBD.

The distance recognised in the New Zealand Pedestrian Planning Guide as being the optimum maximum distance commuters should be expected to walk from their car to their work is 1.6 kilometres, which is a 20 minute walk at 5 kilometres/hour for a fit healthy adult (i.e. 450m takes 5 minutes and 900m takes 10 minutes). This distance puts much of the fringe area of Central Nelson within parking distance of the core area. Uncontrolled all day commuter parking currently occurs in many residential, commercial and light industrial areas of the Central Nelson fringe area. It is important that as pressure on parking grows in the future this uncontrolled parking should be rationalised to minimise its impact on the viability and value of the fringe areas by greater use of multiple occupant vehicles, public transport and active modes.

Graph 2 - 15: Weekday time restricting car park occupancy



Graph 2 – 16: Saturday time restricted car park occupancy

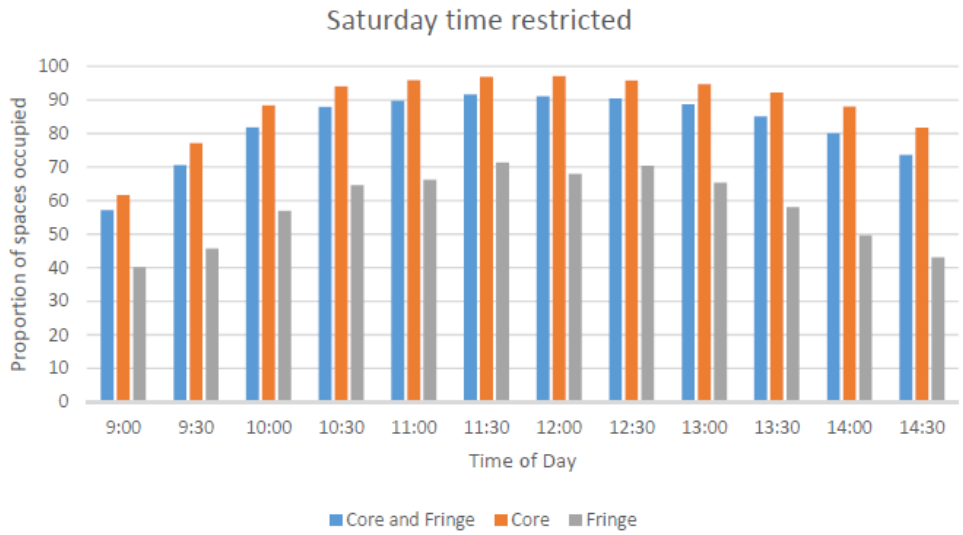


Table 2 - 11: Level of Service - Parking

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target			
				2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our infrastructure is efficient, cost effective and meets current and future needs	Efficiency - Supply and pricing of short stay parking managed to encourage vitality and commercial activity in the city centre.^	Parking Occupancy - Percentage of short stay parking spaces occupied in midweek peak in December (excluding taxi and loading bays)	2012 - 85% 2016 – 94%	No survey planned	No greater than 95% in the peak hour	No survey planned	No greater than 95% in the peak hour
Our infrastructure is efficient, cost effective and meets current and future needs	Efficiency - The supply and pricing of long stay parking is managed to incentivise greater use of travel options other than cars as well as encouraging vitality and commercial activity in the city centre.^	Occupancy of long-stay parking spaces between peak travel times measured at 5 locations within the CBD fringe.[20]	2015/16 92% 2016/17 87%	Between 85% and 95% in the peak hour			

2.4.6 Customer Service

There are two customer focussed level of service measures that are monitored. The first is the results of the annual resident's survey which is discussed in detail in section 2.1 above. The second is the LGA mandatory measure on response to customer questions, problems and issues associated with road and footpaths.

20 Long Stay Annual Parking Occupancy Data A1491124

Table 2 - 12: Level of Service – Customer Satisfaction

Community Outcomes	Level of service	Performance measure	Previous and current performance			Performance Target			
						2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our urban and rural environments are people-friendly, well planned and sustainably managed	Customer Service – Total customer asset / activity satisfaction^	Percentage of public satisfied and dissatisfied with the transport activity[21] (based on Nelson City Council Annual Residents Survey).	**Year**	**Satisfied or very Satisfied**	**Dissatisfied or very dissatisfied**	More than 50% of respondents are either very satisfied or satisfied, and less than 10% are either dissatisfied or very dissatisfied.			
			2013/14	55%	17%				
			2014/15	No survey Undertaken	No survey Undertaken				
			2015/16	44%	13%				
			2016/17	48%	27%				
Our urban and rural environments are people-friendly, well planned and sustainably managed	Responsiveness – Timely response to customer 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 [22]	2015/16 82% 2016/17 78%			80% of service requests are responded to within five working days			

21 Refer 2016 Report A1580658 and 2017 Report 1789495

22 Non-Financial performance measures Rules 2013 in in accordance with section 261B of the Local Government Act 2002 – Subpart 5 (4) – A1713511.

2.4.7 Road Safety

The road safety service levels are an essential part of managing the transport network and has been chosen to align with "Safer Journeys" which is the government's strategy to guide improvements in road safety over the period 2010 to 2020. The strategy's vision is "a safe road system increasingly free of death and serious injury"[23].

The safe system approach to road safety recognises that drivers make mistakes but should not die or be seriously injured as a result. As a local road controlling authority, Nelson City Council has a part to play in providing safe roads and roadsides along with safe speeds on the roads that it administers.

The road safety service level statement is:

> "To work towards a safe road system increasingly free of death and serious injury".

The Local Government Act 2002 requires all road controlling authorities to have a level of service relating to the number of fatalities and serious injuries and report on these annually. The measure requires the change be reported as a number. In a small network such as Nelson when the number of death and serious injury crashes is low setting a target that reduces year on year by a whole number is not realistic. Accordingly a target of a reduction of five death and serious injury crashes has been set over the ten year timeframe of this plan which closely mimics past death and serious injury crash reductions on the local road network in Nelson. The past performance and current performance target is shown in Figure 2 - 2 below.

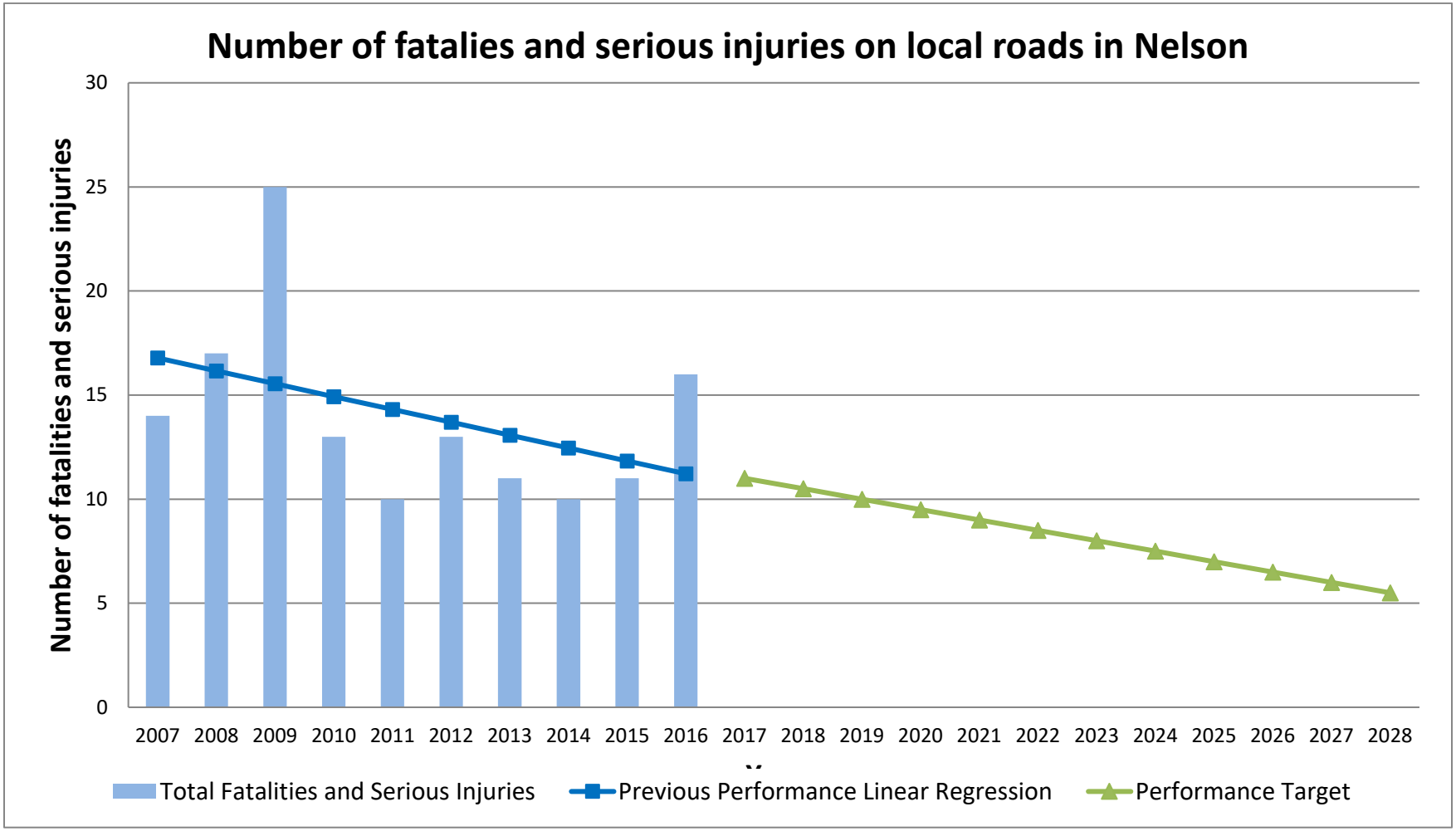
23 Refer http://www.saferjourneys.govt.nz/about-safer-journeys/

Table 2 - 13: Level of Service – Road Safety DSI

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target			
				2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our urban and rural environments are people-friendly, well planned and sustainably managed	Road Safety – a safe transport network.^	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.[24] ONRC Customer Outcome 1 measure.	2014 10 Serious injuries 2015 11 Serious injuries 2016 15 Serious injuries and 1 fatality	-1	0	-1	-5

24 Non-Financial performance measures Rules 2013 in in accordance with section 261B of the Local Government Act 2002 – Subpart 5 (1) – Data sourced from NZTA Crash Analysis System. (A820297)

Figure 2 – 2: Number of Fatal and Serious Injuries on Local Roads in Nelson (A820297)



Two key ONRC performance measures in road safety are the Collective Risk and Personal Risk.

Table 2 - 14: Level of Service – Road Safety Risk

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target			
				2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our urban and rural environments are people-friendly, well planned and sustainably managed	Road Safety – a safe transport network	Number of injury crashes per kilometre of road. Collective Risk ONRC Customer Outcome 2 measure	2014 – 0.038 crashes/km 2015 – 0.042 crashes/km 2016 – 0.051 crashes/km	2% reducing trend over time			
				2018 Calendar year Collective risk less than 0.043	2019 Calendar year Collective risk less than 0.042	2018 Calendar year Collective risk less than 0.041	2018 Calendar year Collective risk less than 0.034
Our urban and rural environments are people-friendly, well planned and sustainably managed	Road Safety – a safe transport network	Total number of reported serious injuries and fatalities by traffic volume Personal Risk ONRC Customer Outcome 3 measure	2014 – 5.1 Personal Risk per 100M VKT 2015 – 5.9 Personal Risk per 100M VKT 2016 – 8.3 Personal Risk per 100M VKT	2% reducing trend over time			
				Personal Risk per 100M VKT less than 6.1	Personal Risk per 100M VKT less than 5.9	Personal Risk per 100M VKT less than 5.8	2018 Calendar year Personal Risk per 100M VKT less than 4.8

Collective Risk

Collective Risk is a measure of the total number of fatal and serious injury crashes per kilometre over a section of road, as described in the equation below. (Collective Risk can also be described as the Crash Density).

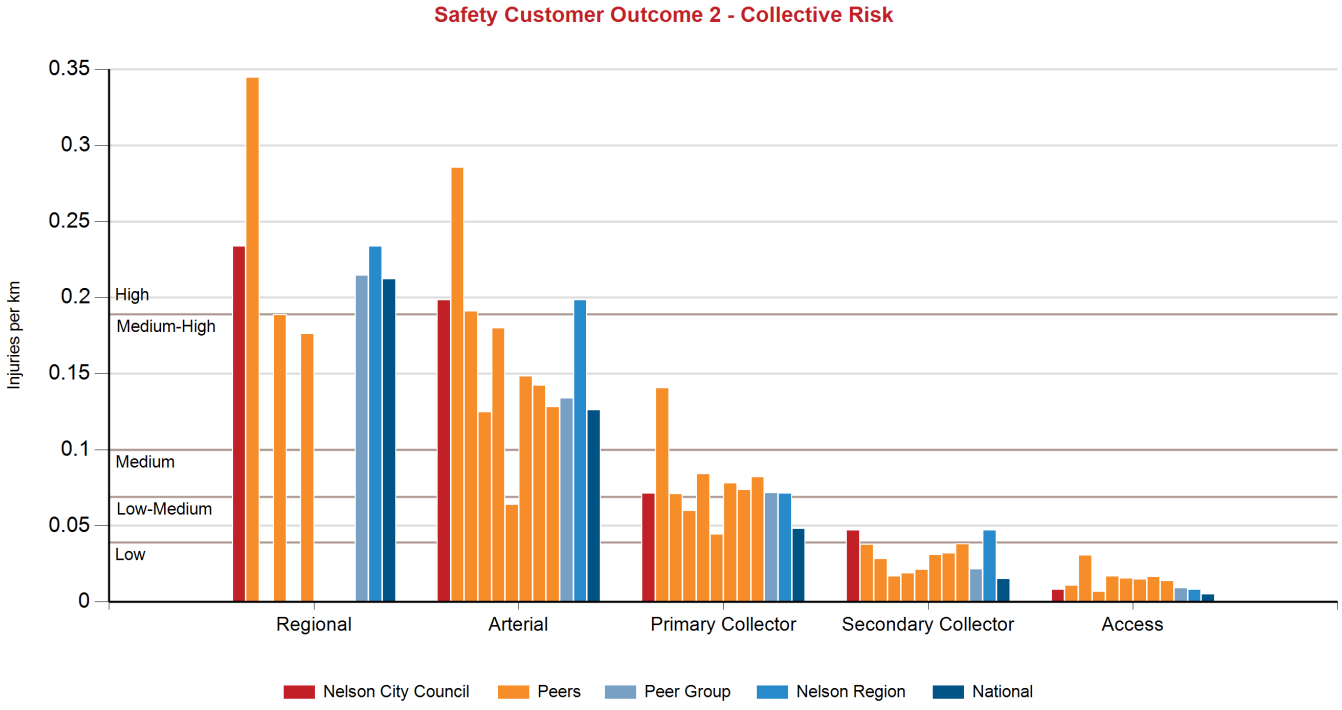
Collective Risk = (Fatal crashes + serious injury crashes) / number of years of data

Length of road section

Collective Risk highlights which road links or classifications have a high number of fatal and serious crashes on them which can be used to help determine where the greatest road safety gains can be made from investment in mitigation activities.

Because Collective Risk is measured in terms of the number of crashes per kilometre, you generally expect that those with higher traffic volumes would have a higher Collective Risk. The graph below shows Nelson's performance against this measure in comparison to our ONRC peers.

Graph 2 – 17: Collective Risk ONRC Peer Group Comparison



Personal Risk (or Crash Rate)

Personal Risk is a measure of the danger to each individual using the road, as described in the equation below:

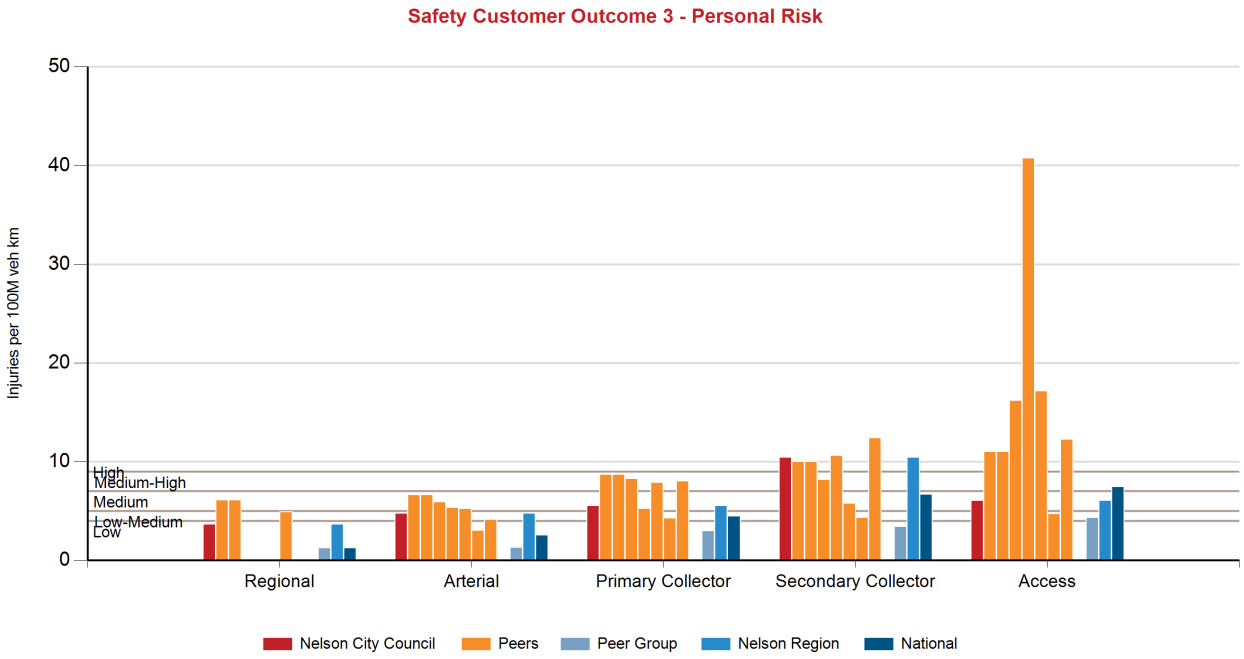
Personal Risk = (Fatal crashes + serious injury crashes) / number of years of data

Distance travelled / number of years of data

Unlike Collective Risk, Personal Risk takes into account the traffic volumes on each section of road. Personal Risk shows the likelihood of a driver or rider, on average, being involved in a fatal or serious road crash on a particular stretch of road. Personal Risk is of most interest to the public, as it shows the risk to road users, as individuals. Personal Risk is typically higher in more difficult terrain where traffic

volumes and road standards are often lower. The graph below shows Nelson's performance against this measure in comparison to our ONRC peers.

Graph 2 – 18: Personal Risk ONRC Peer Group Comparison



Walk and Cycle Related Crashes

Nelson walkers and cyclists initially appear to be over represented in casualty data compared to other peer group locations. This measure of over representation has traditionally been the number of walkers or cycle crashes as a proportion of total crashes. This does not provide a reliable measure of performance as the number of people walking and cycling on the network is not taken into account. Instead it is important that Nelson City strives to provide continued improvement to its walk and cycle network to reduce the vulnerability of cyclists regardless of what other regions in New Zealand are achieving.

With the intention to continue to provide infrastructure and promote cycling in Nelson City it is important that any development of cycling infrastructure be done in a sustainable safe manner. As a result the indicator for walk and cycle crashes recognises the likelihood of increased use and sets a flat performance target for both walking and cycling related crashes.

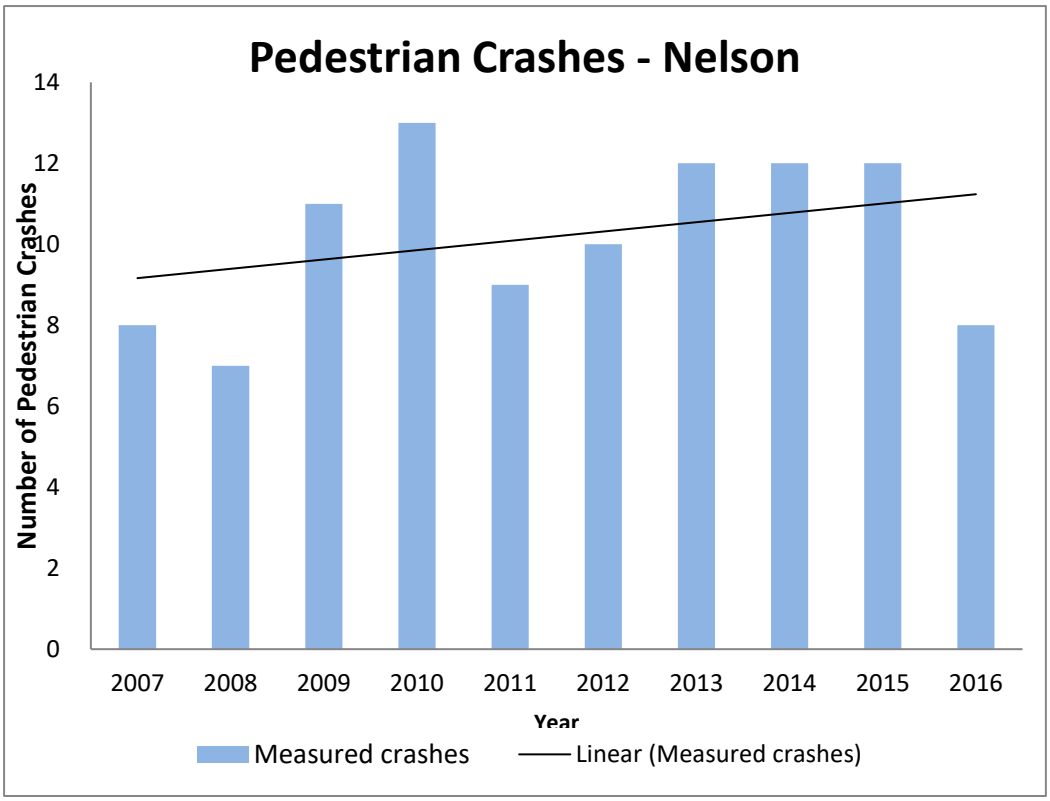
Table 2 - 15: Level of Service - Walk and Cycle Related Crashes

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target			
				2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our urban and rural environments are people-friendly, well planned and sustainably managed	Road Safety – a safe transport network^	Number of crashes involving cyclists.	Ten year average 22 cycle crashes/yr. 2014 – 13 cycle crashes 2015 – 16 cycle crashes 2016 – 19 cycle crashes	Number of cycle crashes less than 22	Number of cycle crashes less than 22	Number of cycle crashes less than 22	Number of cycle crashes less than 22
Our urban and rural environments are people-friendly, well planned and sustainably managed	Road Safety – a safe transport network^	Number of crashes involving pedestrians	Ten year average 10 pedestrian crashes/yr. The number of crashes involving pedestrians in 2015 was 12, over 100% more than the target maximum of 5. The number of crashes involving pedestrians in 2014 and 2013 was also 12.	Number of pedestrian crashes less than 10	Number of pedestrian crashes less than 10	Number of pedestrian crashes less than 10	Number of pedestrian crashes less than 10

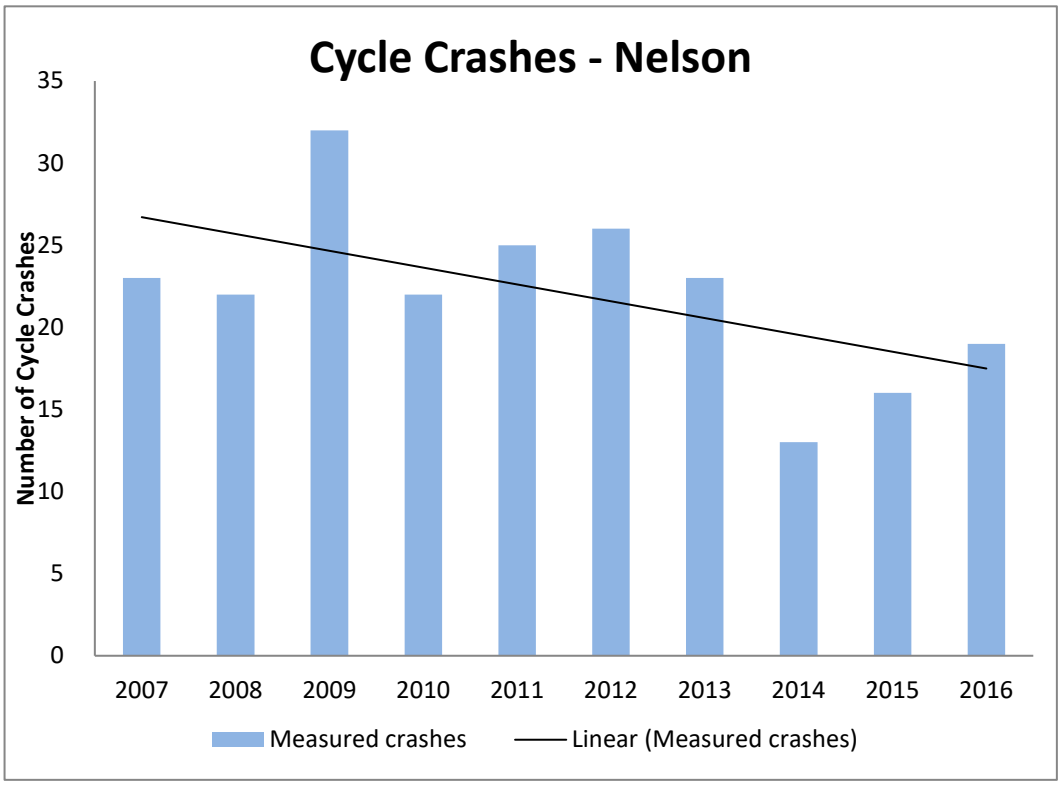
^L.O.S. included in LTP

The historical performance of walking and cycling related crashes is shown in the two graphs below. The black line shows the overall long term trend. For walking this is trending up, and for cycling it is trending down.

Graph 2 – 19: Pedestrian crash performance



Graph 2 – 20: Cycle crash performance



Significant negative effects

It is a requirement of the Local Government Act 2002 Amendment Act 2010 (2(1)(c)) to outline any significant negative effects that any activity within a group of activities may have on the social, economic, environmental, or cultural well-being of the local community.

Table 2 - 16 below identifies the negative effects for the Nelson city community that the transport activity may have. It indicates the existing approach or proposed action to address these in future.

Table 2 - 16: Negative Effects

Effect	Status of Effect		Type of Effect		Impact on Well-Being				Existing Approach or Proposed Action to Address
	Existing	Potential	Negative	Significantly Negative	Social	Economic	Environmental	Cultural	
Roads									
Noise	Static	Static	√		Minor	Nil	Minor	Nil	Use asphalt road surface on high volume roads.
Use of chemical sprays	Static	Static	√		Mod	Nil	Minor	Mod	Compliance with MFE and industry best practice methods.
Pest weeds	Static	Static	√		Mod	Nil	Minor	Mod	Compliance with the Tasman-Nelson Pest Management Strategy.
Flooding	Static	Increasing due to increasing storm frequency & intensity.	√		Mod	Mod	Minor	Nil	Work with utilities team to upgrade road crossings in coordination with streams and rivers to appropriate capacity on a risk based approach.
Discharge of contaminated stormwater into waterways without treatment	Reducing	Reducing due to improvements in fuel economy and reductions in particulates	√		Minor	Nil	Mod	Mod	Street sweeping and sump cleaning programme to remove contaminates prior to them entering stormwater system.

Effect	Status of Effect		Type of Effect		Impact on Well-Being				Existing Approach or Proposed Action to Address
	Existing	Potential	Negative	Significantly Negative	Social	Economic	Environmental	Cultural	
		produced by vehicle fleet.							
Community severance due to arterial road congestion	Static	Static	√		Minor	Minor	Nil	Nil	Construct refuges and controlled crossings to minimise impact.
Slope Stability	Static	Increasing due to increasing storm frequency & intensity.	√		Minor	Minor	Minor	Nil	Retaining wall inspection and renewal programme increased in the 2018 Plan.
Visual impact on landscape	Static	Increasing with increasing development of green field areas	√		Nil	Nil	Minor	Nil	NRMP planning rules mitigate impact.
Amenity loss due to rerouting of arterial traffic on local roads due to congestion	Static	Increasing	√		Minor	Minor	Minor	Nil	Travel Demand Management Programme (encouragement of carpooling, use of active modes and public transport) and optimisation of existing arterial network to make best use out of existing arterial capacity.
Artificial Lighting Spill	Reducing	Reducing	√		Minor	Minor	Minor	Nil	Renewal of lighting asset with zero upward light luminaries is reducing light spill over time.
Dust	Static	Static	√		Minor	Nil	Minor	Nil	NRMP/Nelson Plan rules that require all new roads vested in Council as a result of development to be unsealed.

Effect	Status of Effect		Type of Effect		Impact on Well-Being				Existing Approach or Proposed Action to Address
	Existing	Potential	Negative	Significantly Negative	Social	Economic	Environmental	Cultural	
Road Roughness on Vehicle operating costs	Static	Static	√		Nil	Minor	Nil	Nil	Target sealed road smoothing to higher order ONRC classifications and manage lower order road roughness to ONRC limits identified in section 2.4.1.
Energy Efficiency	Reducing	Reducing	√		Nil	Moderate	Moderate	Nil	Reducing due to improvements in fuel economy by vehicle fleet and travel demand management programme. (encouragement of carpooling, use of active modes and public transport)
Footpath accessibility	Reducing	Reducing	√						

2.5 Desired level of service

2.5.1 Resilience

In order to reflect the emerging issue of resilience as a result of the increasing occurrence of natural hazards two level of service measures have been added to track performance in this 2018 plan. Both performance measures are consistent with the ONRC guidelines and thus over time it is expected that other road controlling authorise will also collect and report the same information and national comparisons will be able to be made.

Table 2 - 17: Resilience

Community Outcomes	Level of service	Performance measure	Previous and current performance		Performance Target			
					2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our infrastructure is efficient, cost effective and meets current and future needs	Resilience – The impact of unplanned events on journeys	The number of vehicles affected by closures annually. ONRC Resilience Customer Outcome 1.[25]	**ONRC**	**15/16 vehicles impeded**	**ONRC**		**vehicles impeded/year**	
			Regional	1450	Regional		3000	
			Arterial	298	Arterial		3000	
			Primary Collector	1073	Primary Collector		1500	
			Secondary Collector	467	Secondary Collector		2000	
			Access	845	Access		2000	
			Low volume	0	Low volume		2000	
Our infrastructure is efficient, cost effective and meets current and future needs	Resilience - Access to properties is available whenever practicable.	The number of vehicles affected by closures when there was no viable detour. ONRC Resilience Customer Outcome 2.[26]	**ONRC**	**15/16 Journeys not made**	**ONRC**		**Journeys not made/year**	
			Regional	0	Regional		0	
			Arterial	0	Arterial		0	
			Primary Collector	0	Primary Collector		0	
			Secondary Collector	0	Secondary Collector		2000	
			Access	0	Access		3000	
			Low volume	0	Low Volume		3000	

25 RAMM Data Base

26 RAMM Data Base

Table 2 - 18: Fresh Water Quality

Community Outcomes	Level of service	Performance measure	Previous and current performance	Performance Target			
				2018/19 (Year 1)	2019/20 (Year 2)	2020/21 (Year 3)	2021/22 - 2027/28 (Year 4-10)
Our unique natural environment is healthy and protected	Environmental Sustainability – Stormwater runoff from our roads is clean^	Investigation work to inform a level of service measure for the 2021 AMP is developed	New measure. No previous performance	Testing regime developed to determine current performance	Street sweeping and sump cleaning frequencies tested to determine optimum balance between amenity/cost/water quality		To be determined

Under the National Policy Statement for Freshwater Management Amendment 2017 Council is required to have a Progressive Implementation Programme to maintain or improve fresh water quality. Whilst no recent data or analysis into the quality of the water from road runoff has been undertaken the level of service sets targets for that to happen to inform the 2021 Asset Management Plan.

3. Future Demand

3.1 Demand drivers

There are several demand drivers that need to be taken into account when considering the future delivery of transport assets and activities. The development of a number of strategic documents, studies and models has enabled access to a vast amount of knowledge on several of the key demand drivers in Nelson and it is not intended to repeat the data contained within those documents in this plan. The demand drivers, document names, source reference and relevant notes are provided in Appendix C. Within these documents data on population, traffic, heavy commercial vehicles, port cargo, airport use, walking, cycling, passenger transport, travel demand management, fuel price rises, sea level rise and funding are provided.

3.2 Demand forecasts

An overview of the documents in Appendix C indicates the following key trends, although it needs to be emphasised that future environmental, economic and social shocks have the potential to significantly alter these trends:

3.2.1 Population

Nelson Population and Household Projections: 2018-2048

The following information on Nelson's population projections for the next 10 years is calculated using the Statistics NZ high series projections. Projections are not predictions and should be used as an indication of the overall trend, rather than as exact forecasts.

Figure 3 - 1: Population and household projections (high series), 2018-2048, Nelson

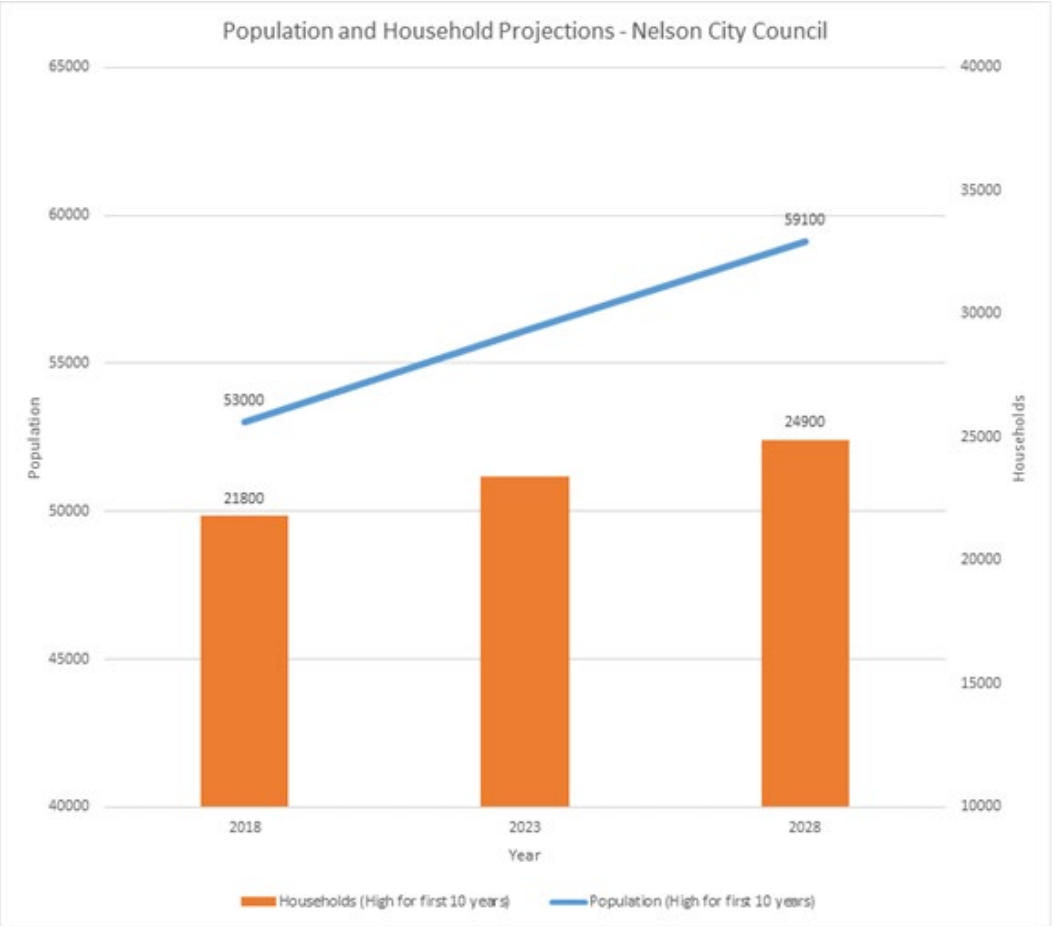
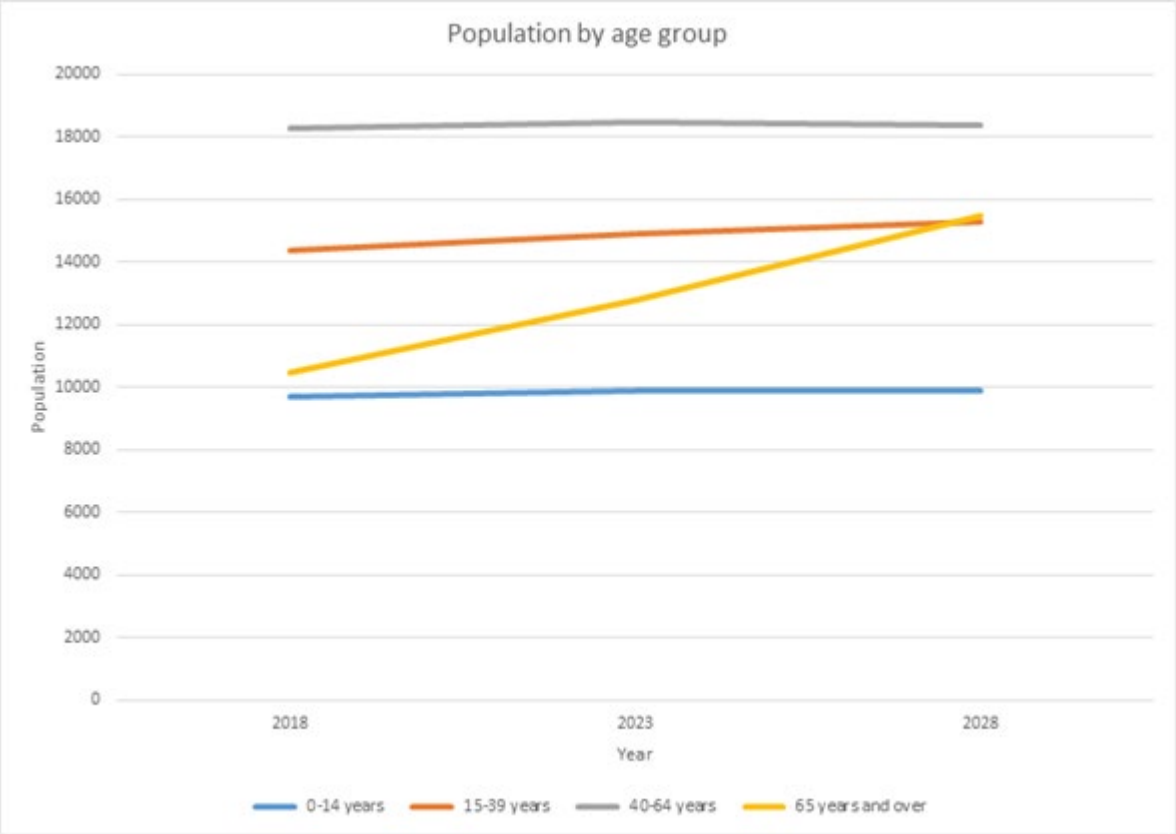


Figure 3-1 shows that, under the high growth scenario, population is projected to increase by 6,100 residents between 2018 and 2028 and the number of households in Nelson will increase by 3,100 households between 2018 and 2028.

One of the key issues facing Nelson is the aging of its population. An aging in the population has a significant impact on what sort of services Council will be required to provide and the ability of future residents to pay rates.

Overall there is expected to be a trend towards smaller households with nearly all the growth being one-person households and couple-without-children households.

Figure 3 - 2: Population projections by age groups (high series), 2018-2048, Nelson



The proportion of the population aged under 15 years is expected to decrease from 18% in 2018, to 16% in 2028 and to 14% by 2048.

Nelson - households

- The number of households in Nelson is projected to increase by 3,100 in the ten years between 2018 and 2028, to 24,900.
- Overall there is a trend towards smaller households with nearly all the growth being one-person households and couple-without-children households.

Table 3 - 1: Population and household projections (high series), 2018-2048, Nelson

	2018	2028
Population	52,900	59,100
Households	21,800	24,900
Median age	44	47
Aged 65 years and over	10,500 20%	15,500 27%
Aged 40-64	18,300 35%	18,400 31%
Aged 15-39	14,400 27%	15,300 26%
Aged under 15 years	9,700 18%	9,900 16%

Nelson – projections by area

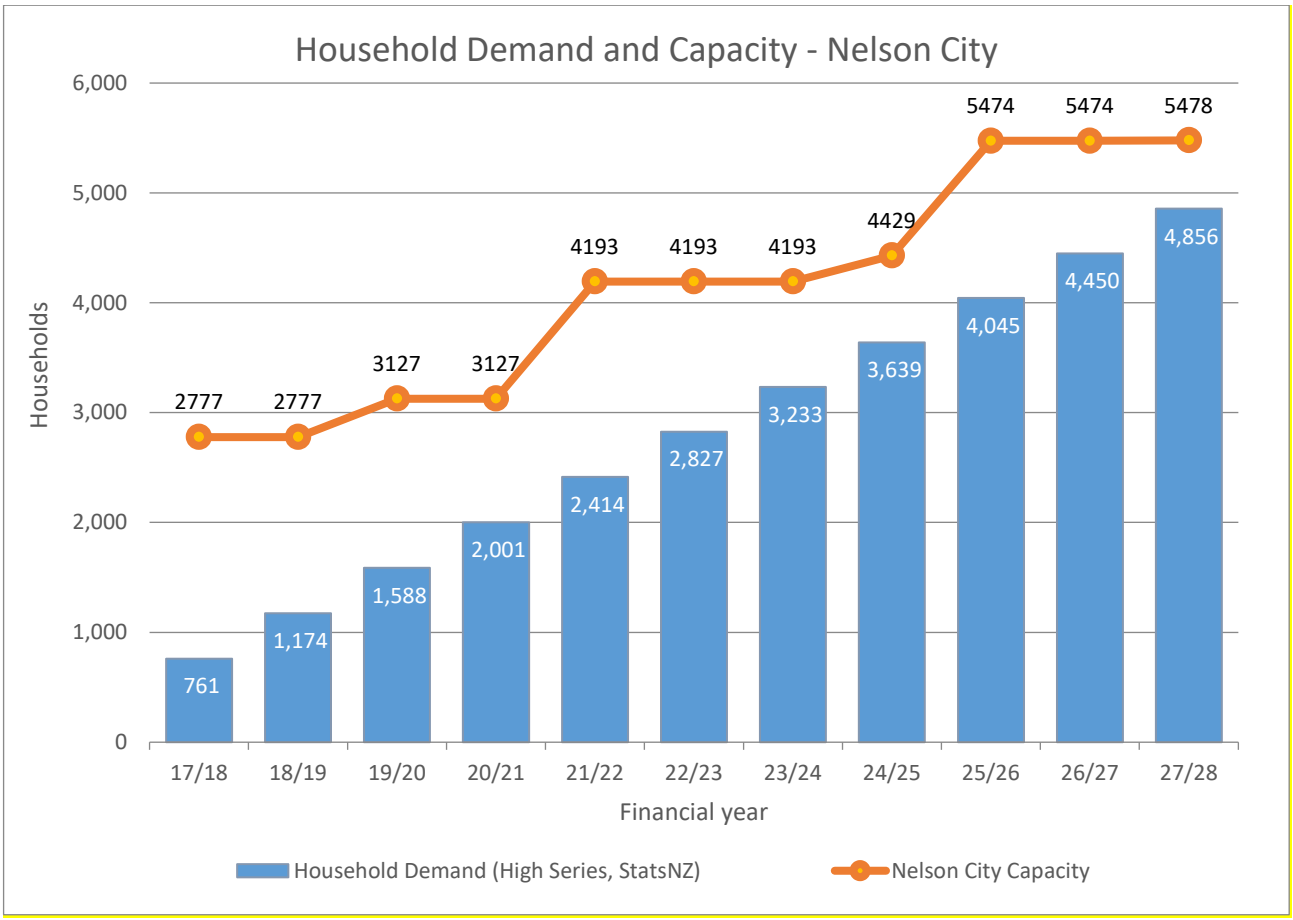
Statistics New Zealand provide projections by Census area units which give an indication of where growth is likely to occur across different parts of Nelson. This is based on demographics in each area (age, household types) and past migration trends.

Table 3 - 2: Stoke Projections

	2018	2028
Population	20,050	21,580
Population change		+1,530
Number of households	8,717	9,383
Housing change		+666

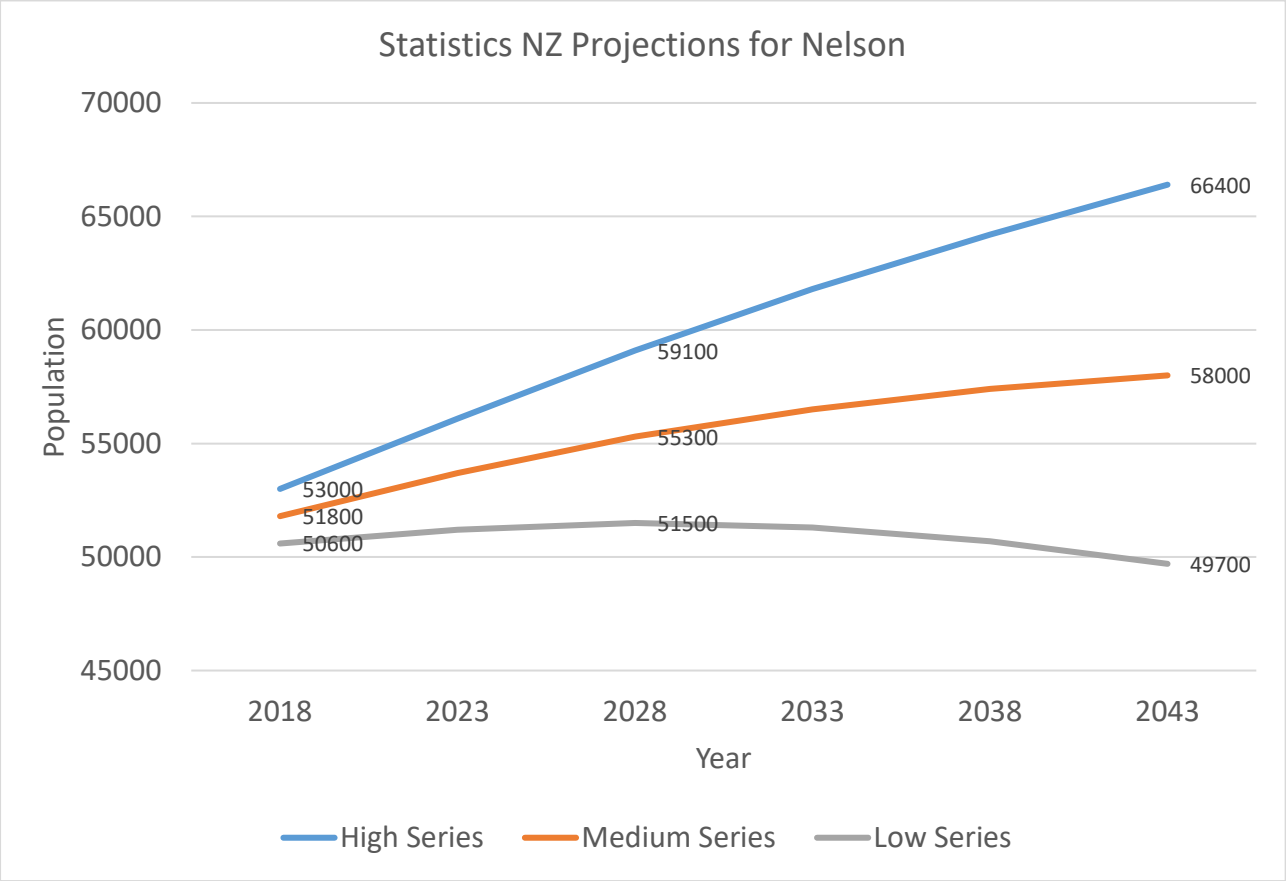
The Stoke population projections above have been derived from Statistics NZ's 2016 updated population projections for Nelson, using the 2015 area unit population projection proportions. Official area population projections will be updated by Statistics New Zealand later in 2017.

Table 3 - 3: Projected household demand (high) and residential capacity, 2018-2048, Nelson[1]



The following graph illustrates trends for the low, medium, medium plus adjusted net migration, and high growth scenarios.

Figure 3 - 3: Population estimates, 2018-2043, and projections (low, medium, medium-plus, high), 2013-2048, Nelson



Projected demand for urban development capacity

The National Policy Statement for Urban Development Capacity (NPS-UDC) requires local authorities to ensure there is sufficient development capacity to meet demand plus an additional margin (Nelson is a medium/high growth urban area):

- in the short term (within 3 years) + minimum 20%
- medium term (3-10 years) + minimum 20%
- long term (10-30 years) + minimum 15%

The location of actual growth will depend on where there is capacity for residential growth (residential zoning and infrastructure servicing) and where development is feasible. Residential growth areas and the sequencing of urban development capacity in the short, medium and long term is outlined in Appendix J.

Analysis[28] suggests there is sufficient residential capacity for the projected demand of households in different parts of Nelson. However further work with developers is required to assess the feasibility of different locations to inform decisions by Council on infrastructure provision (Long Term Plan and Infrastructure Strategy) and on zoning (Nelson Plan). There is sufficient capacity within existing serviced industrial and commercial zones for business growth over the next 30 years.

3.2.2 Aged Population

Section iii of this executive summary discussed the third key issue of the '***Changing population demographic requires different transport services***.' The section below summarises the future demand on the network in relation to this issue.

Census data shows an aging population trend over recent years and this combined with Statistics NZ forecasts into the future indicate that 34 per cent of the Nelson population will be aged over 65 in 2043 compared with 20 per cent in 2018. This is significantly greater than the NZ average of 23 per cent over 65 in 2043.

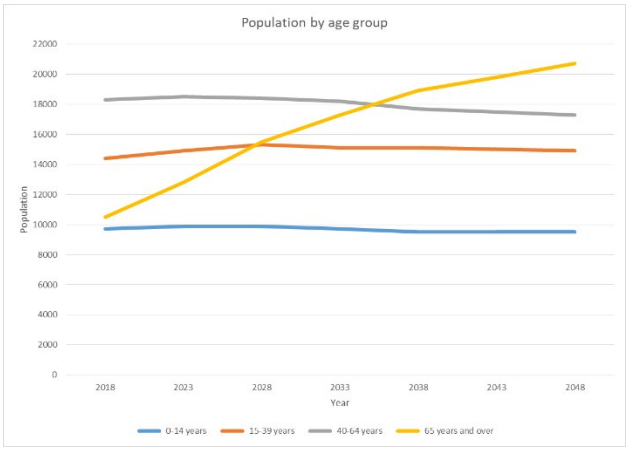
The age profile forecasts for Nelson and the whole of New Zealand are shown in the two graphs below:

28 These estimates for residential capacity assume the following:

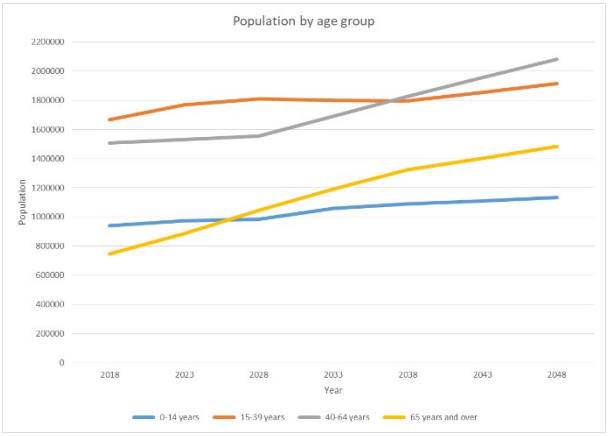
- Consented subdivisions and developments will be completed by 2028
- Residential land which is currently serviced will be developed by 2028
- Further intensification will occur at average annual rates of 10 units in the central city, 5 in Victory, and 8 units in Stoke and Victory
- Backyard infill will occur at a rate of 15 lots per year
- Residential land is serviced based on projects in the 2015 Long Term Plan – these will be revised as the 2018 Long Term Plan is developed.

These assumptions will be tested and informed by further technical work, consultation with the property and housing development sector, and final 2018 Long Term Plan decisions.

Graph 3 – 1: Nelson Age Projections Projections



Graph 3 - 2: New Zealand Age



Mobility declines with increasing age, reflecting the onset of physical or mental infirmity, affordability of travel for those on retirement incomes, and the often poor design of the transport infrastructure and operational arrangements not suiting the aged cohort.

NZTA research in 2010 [29] showed public transport is expected to continue to be a minor mode for older people unless planning and public transport policy changes substantially, with the present reliance on the car, either as driver or passenger expected to continue. However, the absolute size of public and special transport activities will need to increase to cater for the greater older population, if only to keep pace with growth.

3.2.3 Heavy Commercial Vehicles

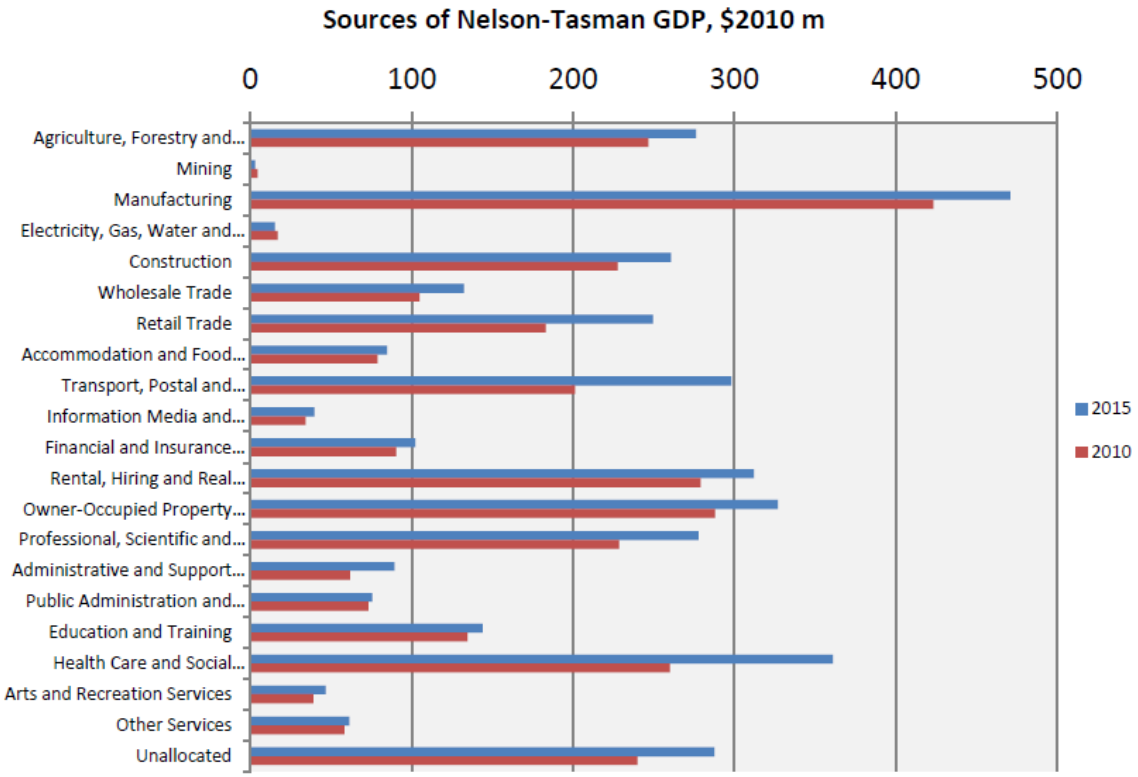
Road transport is the only means of getting export products to the port or airport as there is no regional rail network. Nelson City and Tasman District have one of the highest export road freight levels in NZ per capita coupled

29 http://www.nzta.govt.nz/assets/resources/research/reports/481/docs/481.pdf

with strong growth in gross domestic product earnings across all industries in the Nelson Tasman region. This is shown graphically below:

Recent changes to the vehicle dimension and mass rules and the introduction of High Productivity Motor Vehicles (HPMV) combined with the commercial and industry growth are placing our pavements in certain areas under increased stress.

Graph 3 - 3: Gross Domestic Product Growth – Nelson Tasman Region



3.2.4 Natural Hazards

Floods are the most commonly occurring major natural hazard in Nelson that impacts on the transport network. They occur across the entire region and is the natural hazard that has caused the most damage in recent times especially to the bridge, retaining wall and drainage assets. Flooding can range from widespread overland flood flows from the regions' principal rivers affecting much of their flood plains to more localised and isolated flooding in smaller catchments.

Service disruptions to the transport network associated with severe weather are typically due to flooding from under capacity / overwhelmed drainage and bridge structures, the road acting as the secondary flow path, slope and retaining wall failures blocking roads and fallen trees due to the typical occurrence of strong winds that are often associated with major storm events.

The close proximity to the Flaxmore & Alpine faults systems present considerable risk to the transport network especially in the areas of reclaimed coastal margin and the steep hillside suburbs. The transport assets most at risk are the bridge and retaining wall stock.

Climate change and the resulting sea level rise are leading to more frequent and more significant service disruptions. There has been an increasing occurrence of erosion in the coastal margin areas that will increase with increasing sea level and northerly storm intensity.

Recently the Nelson Tasman Civil Defence Emergency Management Group completed a Nelson Tasman Lifelines Project[30]. One of the key findings that came from this piece of work is that the transport asset of roads bridges and retaining structures is vitally important to allow reinstatement of other services and the community to rebound from natural hazard events. The road network gives access to the water supply, sewer and storm water networks as well as the private but critical communication and power reticulation. It also provides the means for food and fuel to be moved around the region, all critical elements to enable the community to respond and recover. The transport network has resilience to be able to respond and recover to these demands.

3.2.5 Nelson and Stoke Centres Demand

Data collected on the retail, employment and economic dynamics in the central city show solid growth in recent times. The period ending June 2017 the market view report[31] that looks at the spend within the centres showed the fastest growing store type to be the food and beverage sector up 11.6% over the same quarter in the 2016 year. Overall spending was up 1.9% with double digit growth in transaction value by international cardholders in the last three quarters.

Half of Nelson's population growth is expected to occur in Stoke primarily in Marsden Valley and Ngawhatu Valley with further potential at Saxton. It is also clear from community engagement activities that the existing residents feel the Stoke centre has been neglected over recent years with the severance created by Main Road Stoke, lack of easy to use carparks and poor amenity being the principal complaints.

3.2.6 Public Transport Demand

Modelling undertaken for the Arterial Traffic Study indicated low public transport patronage uptake unless there is a significant increase in vehicle use costs (i.e. fuel prices and/or parking charges). There has been growth in

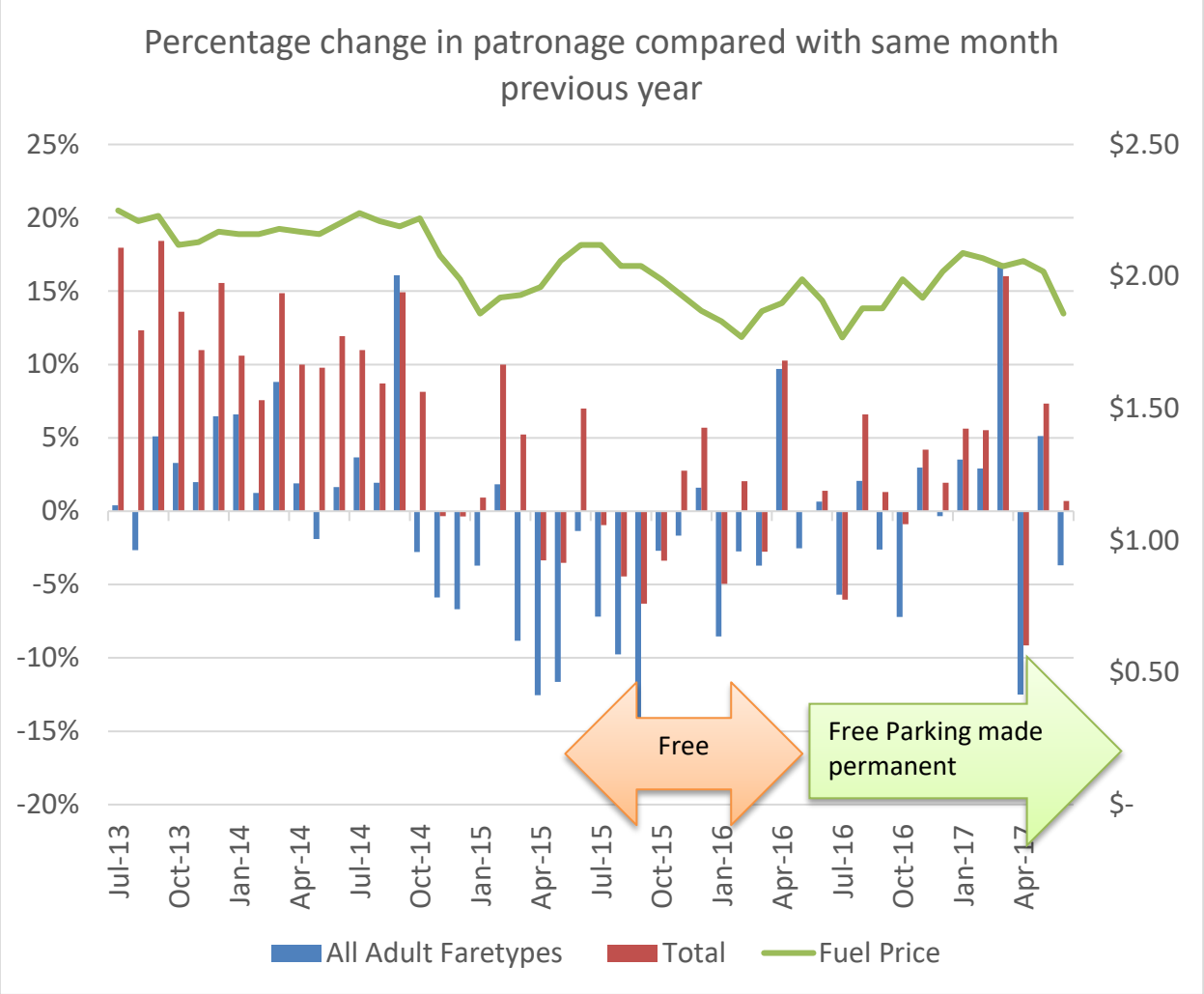
30 Refer A1641558

31 Refer A1794405 for the June 2017 Quarter, A1746710 for the March 2017 Quarter and A1701913 for the December 2016 Quarter Market View reports.

demand of 4% as detailed in section 2.4.4 for public transport over the last four years since the introduction of the NBus service.

The graph below 3-4 shows the public transport patronage percentage change for adult fares and all fares over time. It shows month on month patronage growth in 2013 and 2014 which then was reversed in early 2015 at a similar time to the introduction of free parking and an increase in the cost of petrol from $1.86 to in excess of $2. More recently, from October 2016 the patronage data has showed signs of upward growth that does not appear linked to the cost of fuel or parking.

Graph 3 - 4: Percentage Change in public transport patronage compared with same month previous year



The resident's survey results are detailed in section 2.1. In summary about a third of residents are happy with the city's public transport. Of those that are dissatisfied with public transport the reasons given include that it is not extensive enough or the area needs more buses (79%), it's too expensive or needs an alternative fare system (13%) and it is underutilised or needs incentives to use public transport (8%).

3.2.7 Fresh Water

Under the National Policy Statement for Freshwater Management 2014 Council is required to have a Progressive Implementation Programme to maintain or improve fresh water quality. Council already has a significant programme of street sweeping and sump cleaning which mitigates the quantity of contaminants from the transport system entering the stormwater network however the effectiveness of this programme has not been tested. A demand exists from the legislation that requires Council to better understand the effectiveness of its intervention and amend the programme if it is found necessary. It will be important to consider the future vehicle fleet in this assessment as it will pollute significantly less than it does now due to the transitions to more fuel efficient and electric vehicles. The tail pipe emissions of noxious gas is diminishing over time and the transition to electric vehicles with regenerative braking will reduce the brake contaminates.

3.3 Demand impacts on assets

For most of the transport assets and activities the demand for each asset group is documented in the Focus Areas section 6.

3.3.1 Building for Growth

Council is concentrating on providing services to areas that are zoned for development but are covered by the Services Overlay because one or more servicing constraints have been identified as needing to be addressed prior to the development of that property / area. Projects to facilitate future growth are identified in this AMP and only consist of works required to eliminate servicing constraints on sites zoned for development and these have been prioritised in accordance with Council's strategic planning process.

Refer to Appendix J for the map showing areas proposed for servicing and the associated timing.

3.3.2 Regional & Arterial Traffic

Section iii of the executive summary discussed the first key issue of the '***The arterial transport network is constrained during the morning and evening peak periods and is unable to respond to strong regional population, tourism and business growth resulting in congestion.***' The section below summarises the future demand on the network in relation to this issue.

The Nelson Southern Link Investigation updated the Regional Transport Model in order to understand future Regional and Arterial traffic demand[32]. The findings of that model update are summarised below.

32 https://www.nzta.govt.nz/assets/projects/nelson-southern-link/Nelson-Southern-Link-Investigation-Future-Forecasting-FINAL.pdf

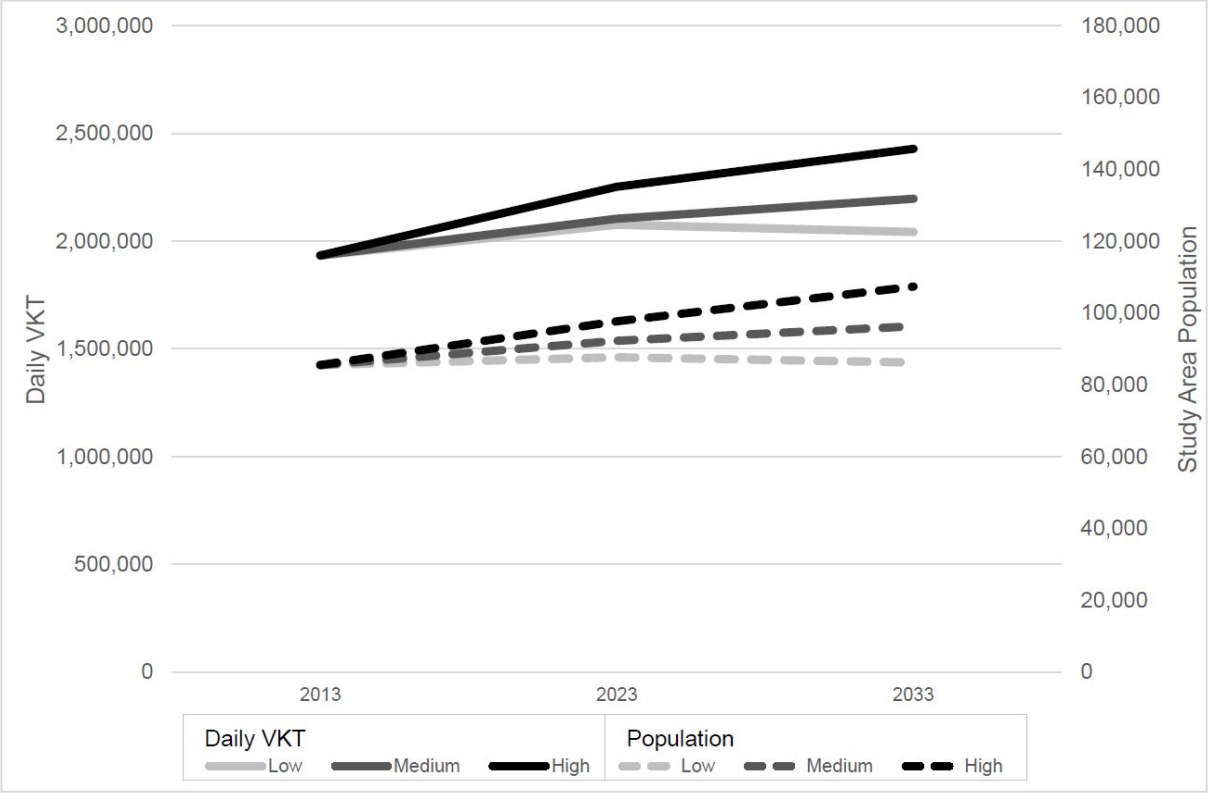
The rate of growth in the study area that eventuates over the next 20 years will be sensitive to a number of internal and external influences, including investment in future infrastructure projects to facilitate growth (e.g. the enabling effect of the proposed Waimea Dam on economic and land use growth in the Tasman District), sensitivity tests have been undertaken to consider low and high land use growth scenarios.

The future baseline 2023 and 2033 models demonstrate modest growth in travel demand between 2013 and 2023 and relatively flat growth between 2023 and 2033. The growth in traffic volumes on the Rocks Road and Waimea Road corridors increases by between 5% and 10% in all periods and in both directions between 2013 and 2023. These results are in line with land use development growth rates. The growth tapers off significantly post-2023 with flows between Stoke and Nelson flattening out or decreasing, especially flows in the peak periods. Similar trends are observed on Main Road Stoke and Stoke Bypass although there is a consistent yet modest increase in traffic volumes in both direction post 2023.

Travel times and intersection delay do not significantly deteriorate on the Stoke Bypass or Rocks Road corridors. However, intersection delay increases by 30-40% in the northbound direction, and 10-15% in the southbound direction between 2013 and 2023 on the Main Road Stoke and Waimea Road corridors. Delays only increase marginally post-2023, which is consistent with the flat demographic growth and travel demand. Under the revised medium growth scenario, the increase in traffic demand resulting from revisiting the household occupancy, workforce participation, commercial vehicle and airport growth assumptions, equated to 2-4% more vehicle kilometres travelled on the network compared to the baseline. The impacts of the changes in assumptions are noticeable with traffic volumes on Rocks Road and Waimea Road corridors increasing by up to 4% in the future year models.

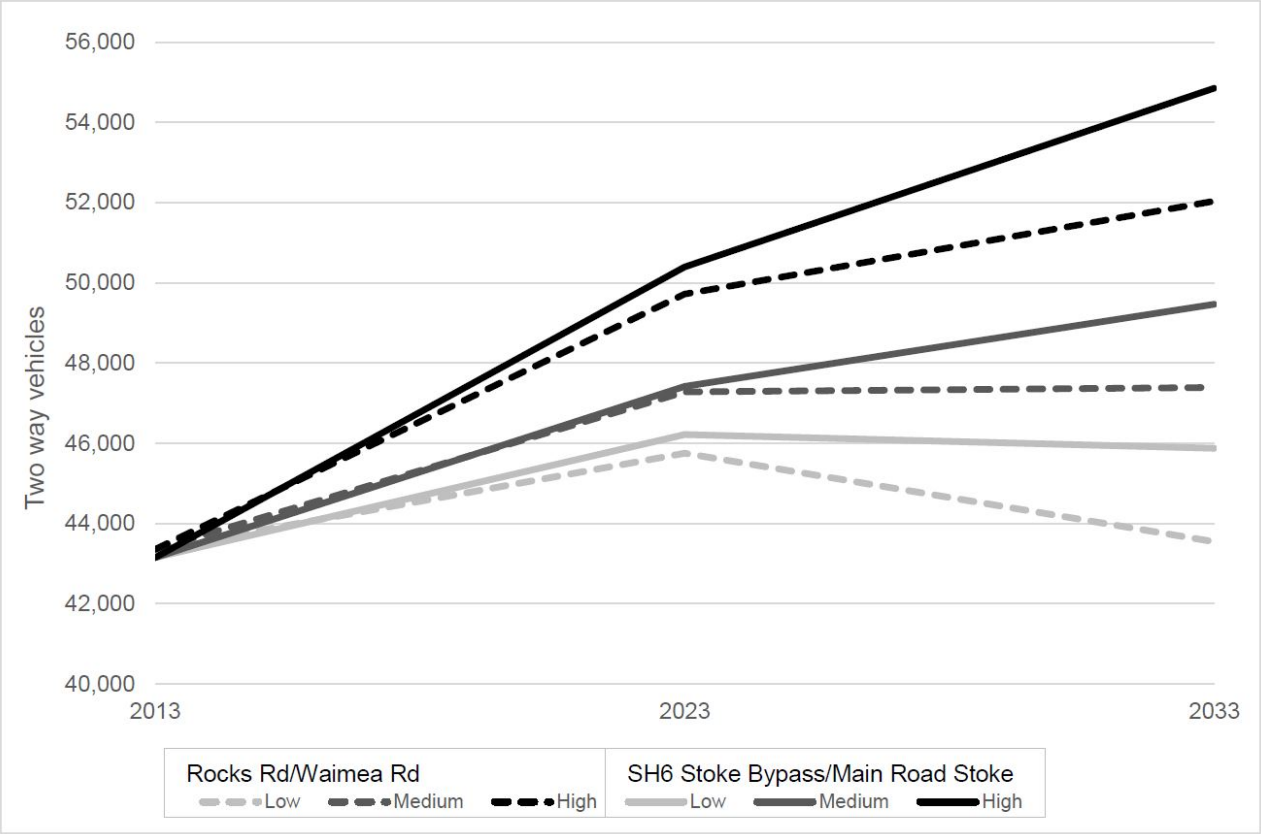
The network wide daily vehicle kilometres travelled (VKT) is shown below alongside population forecasts for the low, medium and high scenarios. The graph shows how these indicators are closely correlated as they exhibit very similar growth patterns over time.

Graph 3 - 5: Comparison of Daily VKT and Nelson Southern link Study Area Population



The growth in traffic volumes over the next 20 years in Stoke (combining Main Road Stoke plus Stoke Bypass flows) and Nelson (combining Rocks Road plus Waimea Road flows) is plotted below 3-6. The results demonstrate higher growth between 2013 and 2023, relative to growth post-2023, under all growth scenarios. Traffic volumes decrease from 2023 under a low growth scenario and the high growth scenario clearly results in a consistently accelerated rate of traffic growth compared to the more conservative scenarios. In all scenarios the growth across both screen lines occurs at a similar rate up to 2023 with very similar flows in Nelson and Stoke, but there is comparatively more growth on the Stoke screen line by 2033. This suggests that there is more traffic interaction occurring between Richmond and Stoke post-2023 compared to between Stoke and Nelson as a result of changing land use patterns in the Stoke Foothills and Richmond over time.

Graph 3 - 6: Comparison of Daily Traffic on Screen Lines

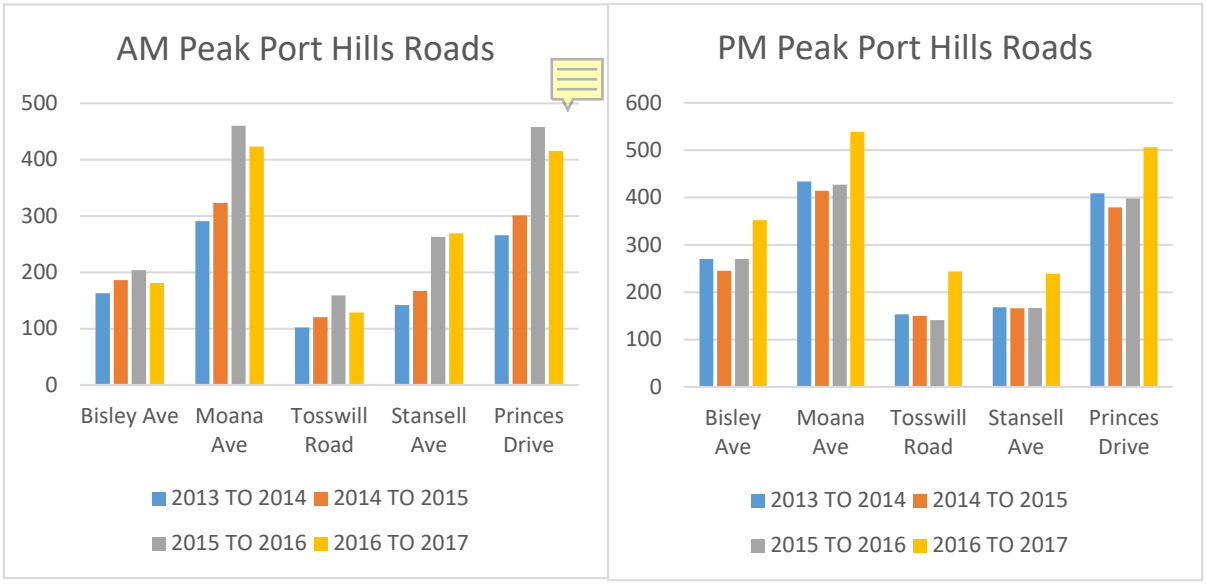


Traffic Volumes on Alternatives to Arterial Roads

There has been significant growth in complaints as well as traffic volume during the am and pm peak on the routes that provide an alternative to the arterials of SH6, Waimea Road and Main Road Stoke. A snap shot of a selection of roads in the Port Hills that provide an alternative to SH6 Rocks Road is presented below in graph 3-7. It must be noted however that this is not confined to this evidence snapshot as there are several other routes across the city that are also experiencing increases in traffic volumes as a result of the increase in arterial road demand.

The customer complaints often express a concern for safety due to the rat running traffic usually travelling fast as well as a loss of amenity as a result of increased traffic noise.

Graph 3 - 7: Rat Run Traffic Volumes on Port Hills



To summarise the arterial traffic demand, whilst Nelson leads the country in the number of people riding to work, and has a higher than average proportion of the number of workers walking, working from home and catching the bus these modes have not been able to absorb the significant increase in travel demand as a result of population, commercial and tourism growth that Nelson has experienced since 2014. This is reflected in increasing volumes on the two key arterials into and out of Nelson centre, increases in peak hour travel time, and significant increases in the volume of vehicles using alternative low hierarchy roads as alternatives (Rat running) to the arterial network. The regional transport model forecasts the travel demand to continue in the short to medium term with a flattening of demand from 2023.

3.3.3 Renewal Backlog

Retaining Walls and Structures – Future Demand

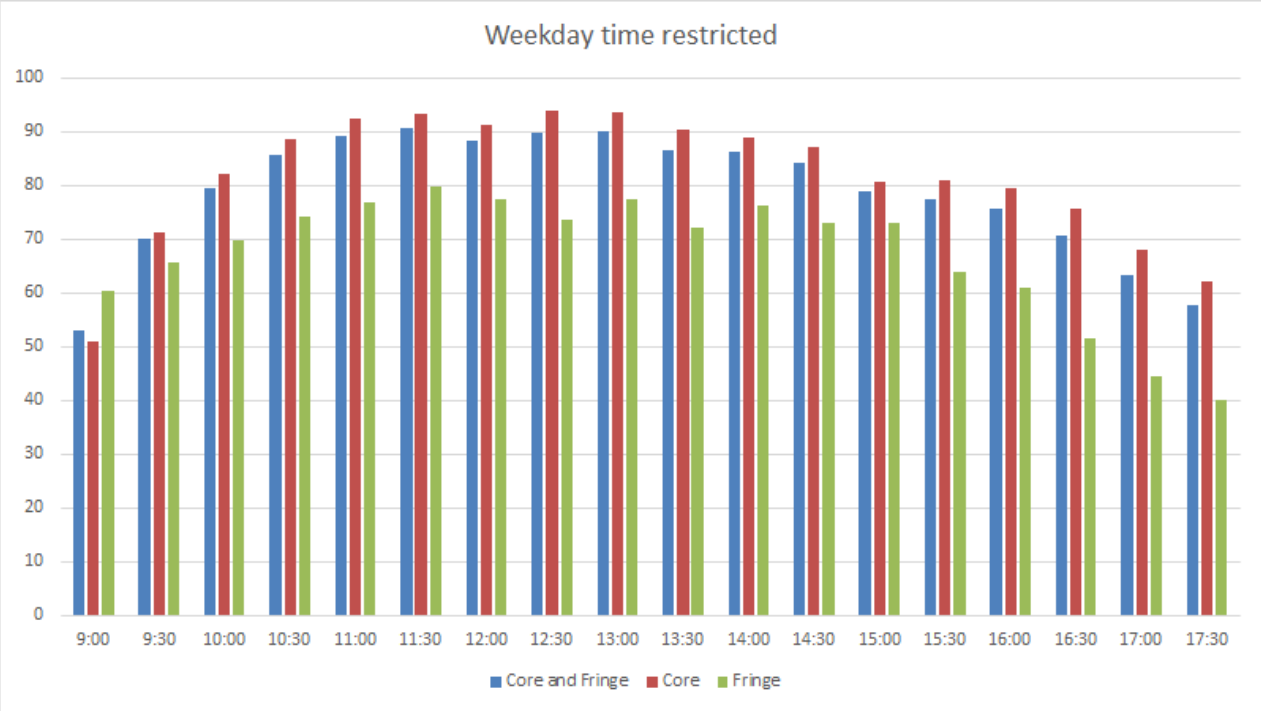
Nelsons hilly topography results in many high value retaining walls and structures being required to support the transport network when compared to its ONRC peers on flatter ground. Recent interrogation of the retaining wall asset has highlighted a significant gap between the previous valuation and the actual replacement value. This impact coupled with the increasing severity and frequency of natural hazard events places a high demand and focus on this on this asset group.

3.3.4 Parking - Demand

Survey data collected in 2005, 2008, 2012 and 2015 showed there was an appropriate supply of parking, however the most recent survey data in 2016 as displayed in the graph below shows demand exceeding 85% which is regarded as the practical maximum occupancy before circulating traffic looking for a car park congests the transport network and become frustrated.

With ongoing positive economic growth and increasing tourism forecast it is likely that parking demand in the city centre will increase unless there is a significant increase in vehicle use costs (i.e. fuel prices and/or parking charges).

Graph 3 - 8: Weekday time restricted parking occupancy



3.4 Demand management plan

3.4.1 A Balanced approach to transport strategy

The 2012 Transport Asset Management Plan adopted a "balanced approach" towards transport in Nelson and that approach has been continued through to this Plan.

Nationally and internationally, current transport planning has supported the encouragement of sustainable and alternative forms of transport for many years now, and Nelson has been at the forefront of actively supporting these forms of transport for over 15 years. Nelson has adopted a strategic momentum towards providing greater quality transport choices through the Asset Management Plans, the Regional Land Transport Plan, Plan Changes and Council's strategic sustainability policies. This has been effective in improving the walking and cycling networks in Nelson, and has supported the development of improved reliable public transport that offer viable options to residents. Nelson has developed a distinct travel choice culture.

This approach is fundamental to this AMP and to the continued integrated delivery of projects by NCC over coming years. This will result in lower cost local road upgrades which are fit for purpose, provide opportunities for travel

choices optimised whenever any project permits, and the travel needs of all road users recognised and catered for as feasible. In doing so Council:

- Recognises the importance of well located, strong transport corridors that offer the potential for the efficient and safe flow of people and freight to assist the economic vitality of our region, and;
- Acknowledges that more integrated approaches to traffic flow (the importance of slower speeds and placing a greater emphasis on walking, cycling and a sense of place) are necessary on our local roads and residential streets to promote social and community networks, supportive neighbourhoods, urban centres and safe streets.

3.5 Asset programmes to meet demand

3.5.1 NZ Transport Agency Subsidised Network Operations, Maintenance and Renewal Programme

Details of the NZ Transport Agency Subsidised Network Operations, Maintenance and Renewal Programme included a detailed programme business case by NZ Transport Agency funding category can be found in the focus area section 6.

3.5.2 Low Risk Low Cost Capital Improvements Programme

In the 2015-2025 AMP the funding regime for Minor Improvement projects allowed an individual project up to a value of $300,000 without robust economic justification. The Minor Improvement funding category for the 2018-2021 NLTP has been changed and is now called Low Risk Low Cost with a cap of $1.0M for each individual project within the programme. Details of the principles and process governing decision making and project prioritisation are described in section 4.4.

3.5.3 Parking Meter Renewal Programme

Refer parking focus area section 6.9 for details on the parking meter replacement programme.

3.5.4 Centres Improvement Programme

Refer city centre focus area section 6.10 for details on the increase in renewal activities to better reflect the asset depreciation level and the improvement programme to improve the centre vitality.

3.5.5 New Footpath and Footpath Renewal Programme

Refer footpaths and walkways focus area section 6.12 for details on the new and renewal footpath programme.

3.5.6 Saxton Growth Area Transport projects

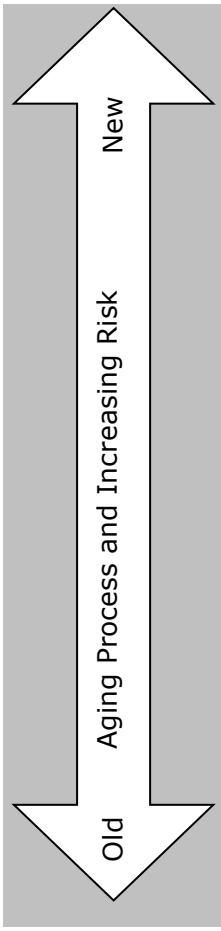
The Saxton Growth area projects are yet to be clearly defined.

4. Lifecycle management

This section and its references to the focus areas in section 6 detail the broad strategies and work programmes required to meet the levels of services as outlined within section 2 while optimising lifecycle costs.

Assets have a lifecycle as they move from initial concept to final disposal. Depending on the type of asset, its lifecycle varies from 1 year to over 100 years. Key stages in the asset lifecycle are described in Table 4.1.

Table 4 – 1: Key Stages in the Asset Lifecycle



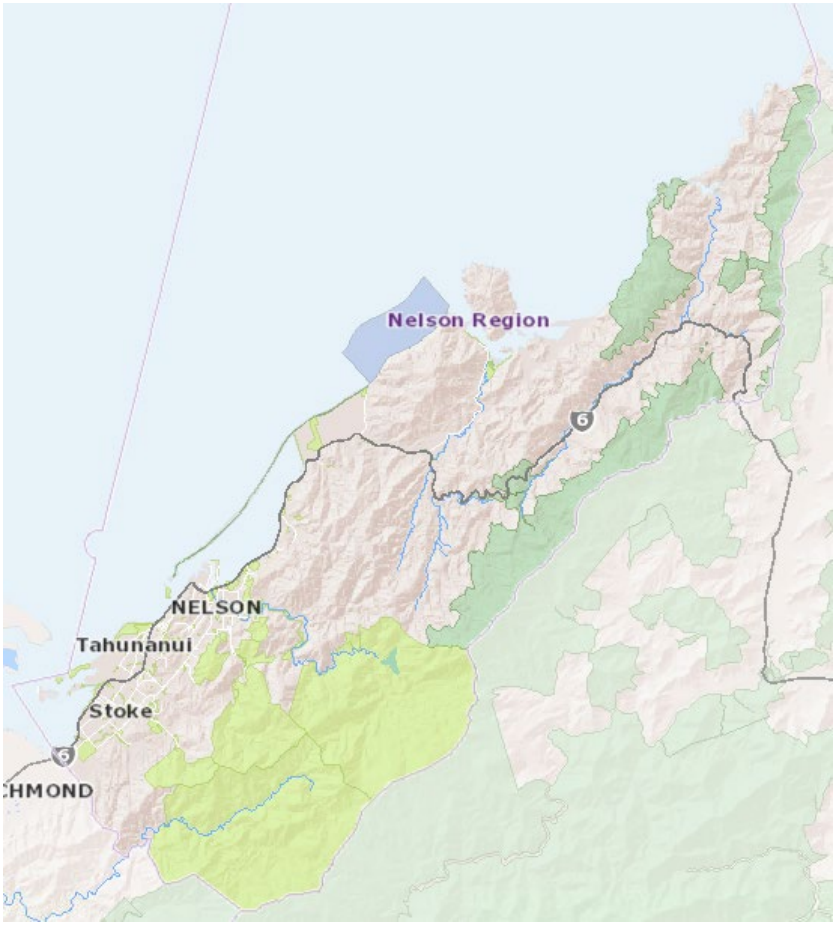
Asset planning	1. Strategic Business Case to identify need. 2. The new asset is designed - decisions made at this time influence the cost of operating the asset and the lifespan of the asset. Other, non-asset solutions, must also be considered
Asset creation or acquisition	3. The asset is purchased - constructed or vested to Council. Capital cost, design and construction standards, commissioning the asset, and guarantees by suppliers influence the cost of operating the asset and the lifespan of the asset
Asset operations and maintenance	4. The asset is operated and maintained - operation relates to a number of elements including efficiency, power costs and throughput. Maintenance relates to preventative maintenance where minor work is carried out to prevent more expensive work in the future and reactive maintenance where a failure is fixed
Asset condition and performance monitoring	5. The asset is examined and checked to ascertain the remaining life of the asset - what corrective action is required including maintenance, rehabilitation or renewal and within what timescale
Asset rehabilitation and renewal	6. The asset is restored or replaced to ensure that the required level of service can continue to be delivered
Asset disposal and rationalisation	7. A failed or redundant asset is sold off, put to another use, or abandoned

4.1 Background data

4.1.1 Physical parameters

The Nelson Transport network is bounded by Champion Road to the south, the Bryant hill range to the east and Cape Soucis and Tasman Bay to the north, however the vast majority of assets and transport activity occur in close proximity to Nelson City. The network extents are shown in the map below.

Figure 4 – 1: Network Map



The Transport services and assets associated with this activity are summarised in section 1.1.3 and in detail in section 6.

4.1.2 Asset capacity/performance

The performance of key assets and activities is summarised in section 2 levels of service and more detail on specific asset classes is provided in section 6.

Figure 4 – 2: High speed data collection vehicle

4.1.3 Asset condition

Every formed Council owned road is recorded in the Road Asset Maintenance Management (RAMM) database. This database records pavement and surfacing construction, and maintenance history, inspection data, structures, streetlights signs and traffic volumes.

4.1.4 Condition Assessment

Historically asset monitoring to determine condition has been subjective, based on visual observations, local knowledge and experience with the exception of the collection of pavement high speed data.

The cost of undertaking condition assessment can be relatively expensive and is unlikely to provide a degradation curve that can be statistically supported without significant investment and data capture. The inspection of assets with high value or long economic lives will in the future be based on consequence of failure (criticality using the ONRC), remaining life and asset performance (failure modes) to assist in decision making.

Asset condition is provided in detail in section 6.

4.1.5 Asset Valuations

The replacement costs of the transport assets are $758.3M at June 2016 as detailed in Table 4.2 below.

Table 4 – 2: Transport Asset Valuation

Asset Category	June 2016				
	Quantity	Units	RV ($)	DRV ($)	Depr ($)
Pavement Layers					
Formation	**3,096,925**	m^3	**111,489,301**	**111,489,301**	
Sub-base	**394,229**	m^3	**41,788,323**	**41,788,323**	
Basecourse	**2,328,037**	m^2	**25,560,960**	**7,259,714**	**364,819**
Surfacing	**2,128,738**	m^2	**24,142,963**	**13,334,314**	**1,102,736**
Drainage					
Intakes	**59**	units	**302,065**	**217,217**	**3,776**
Outfalls	**39**	units	**148,687**	**94,369**	**2,115**
Sumps	**6,315**	units	**14,591,121**	**9,450,995**	**162,022**
Stormwater pipes	**69,191**	m	**30,831,212**	**17,382,103**	**345,511**
Culverts	**3,578**	m	**3,253,733**	**1,498,896**	**36,586**
Kerb and Channel	**380,252**	m	**29,216,731**	**13,880,623**	**392,264**
Regulatory					
Signs	**2,882**	units	**2,066,394**	**1,033,197**	**137,760**
Posts	**1,758**	units	**154,704**	**77,352**	**10,314**
Electronic Signs	**28**	units	**245,392**	**178,726**	**20,444**

Asset Category	June 2016				
	Quantity	Units	RV ($)	DRV ($)	Depr ($)
Handrails/Sight Rails	6,443	m	854,302	427,151	28,477
Guardrails	1,219	m	915,469	457,735	18,309
Edge Marker Posts	441	units	10,143	5,072	2,029
Speed Tables	36	units	936,000	586,300	23,400
Road Humps	20	units	29,640	14,820	1,186
Raised Pavement Markers	1,531	units	27,558	13,779	2,297
Road Markings			120,000	120,000	
Traffic Signals	13	intersections	7,048,176	3,759,799	210,205
Roundabouts	22	units	8,100,000	5,101,000	162,000
Streetlights					
Streetlights	4,538	units	32,580,340	16,353,341	720,330
Structures					
Bridges[33]	44	units	27,198,754	17,070,939	288,937
Retaining Walls	32,365	m^2	88,327,133	64,991,194	989,031
Fords	3	units	84,795	56,112	848
Footbridges	28	units	1,250,360	837,310	12,504
Other					
Land for Legal Road			258,991,600	258,991,600	
Footpaths	502,649	m^2	34,092,538	13,849,222	874,992
Walkways	23,067	m^2	3,942,446	2,529,745	51,749
Cycle ways	83,894	m^2	5,330,771	3,258,002	199,098
Carparks	38,250	m^2	2,741,101	545,154	38,719
CCTV	19	units	106,875	38,861	18,650
Stock Effluent Facility	1	units	321,733	315,298	6,435
Misc. Street Furniture	669	units	1,532,609	610,980	52,138
		Total	**758,333,928**	**607,618,543**	**6,279,678**

There has been a significant increase in the valuation of traffic signals, retaining walls, footpaths, and cycle ways since the last 2014 valuation due

33 This valuation excludes stormwater assets under roads that exceed 3.4m2 end area that are to be transferred across to transport

to increased understating of the condition, remaining life and size of the assets.

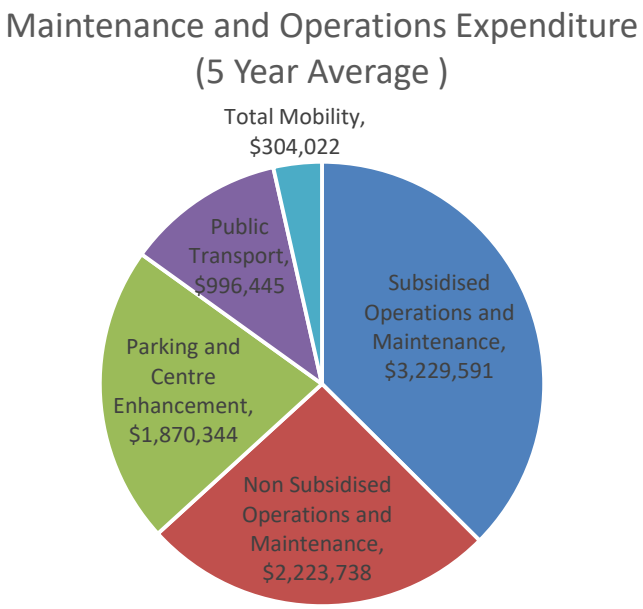
The 2016 valuation above does not include the bridges and culverts that exceed 3.4m^2 end area that were classed as stormwater assets at that time but are a NZTA subsidised activity. There are 133 structures, totally 3443m in length under roads that are being transferred across to transport.

The expected life and valuation calculations can be found at A1807391.

4.1.6 Historical Data

The following graph presents historical expenditure in operations and maintenance by funding category averaged over the last 5 years. It shows that the biggest expenditure is in the subsidised transport category which is for the maintenance for all roads, cycle infrastructure, structures, signs and streetlights in NZTA activity class 'local road maintenance'[34]. The non-subsidised funding category includes maintenance of footpaths and green space and amenity such as street sweeping. The parking and centre enhancement expenditure is significant given the size of the asset, and this is due in part to the cost of rates on all off street carparks and leasing central carpark space in Montgomery Square.

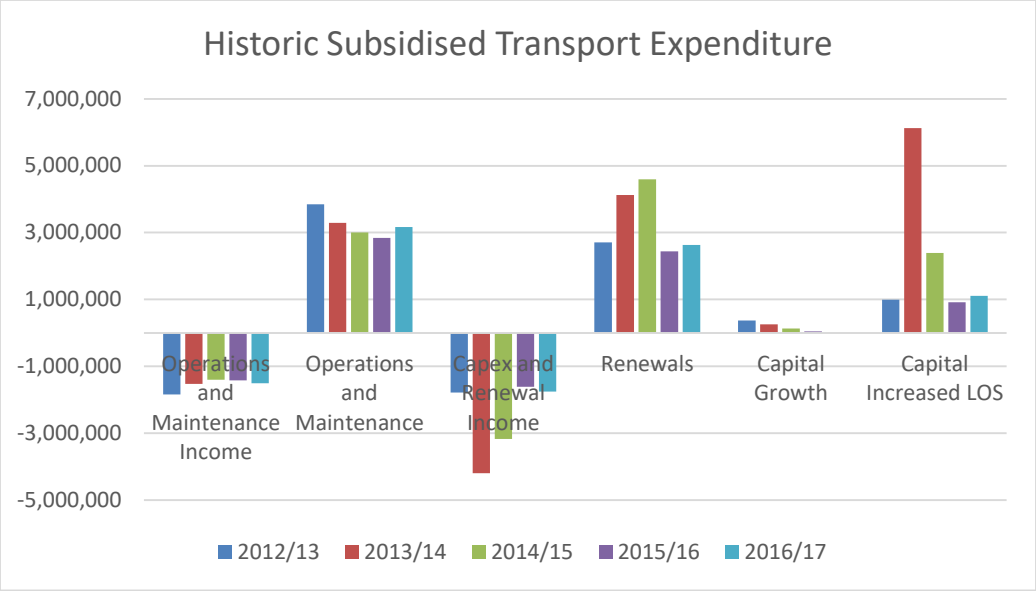
Graph 4 – 1: Maintenance and operations expenditure - 5 year average by funding category



The following graphs present past financial expenditure by funding category.

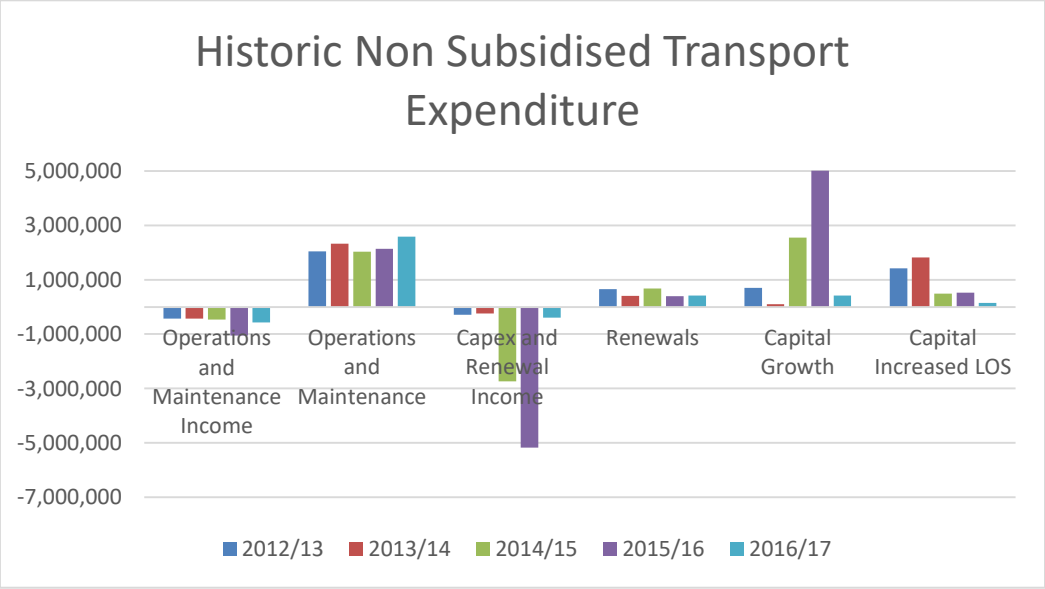
34 https://www.pikb.co.nz/activity-classes-for-2015-18

Graph 4 – 2: Historic Subsidised Transport Expenditure

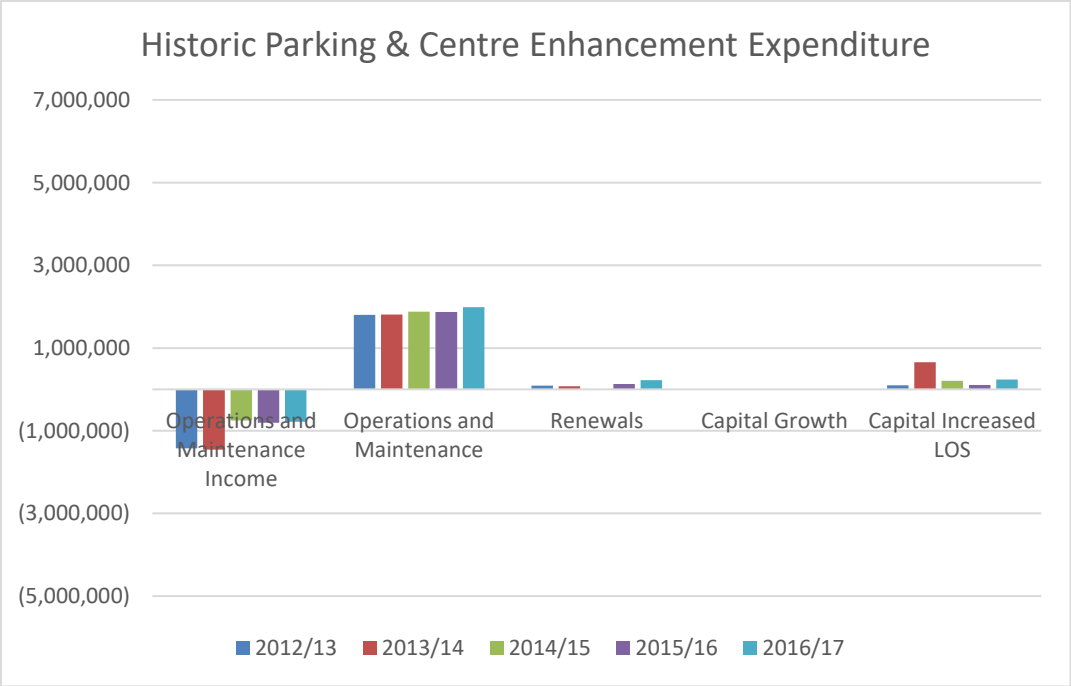


The historic non-subsidised transport expenditure graph below shows an outlier in the 2015/16 year (purple) in capex income and capital growth. This was due to a number of subdivision assets vested in that year.

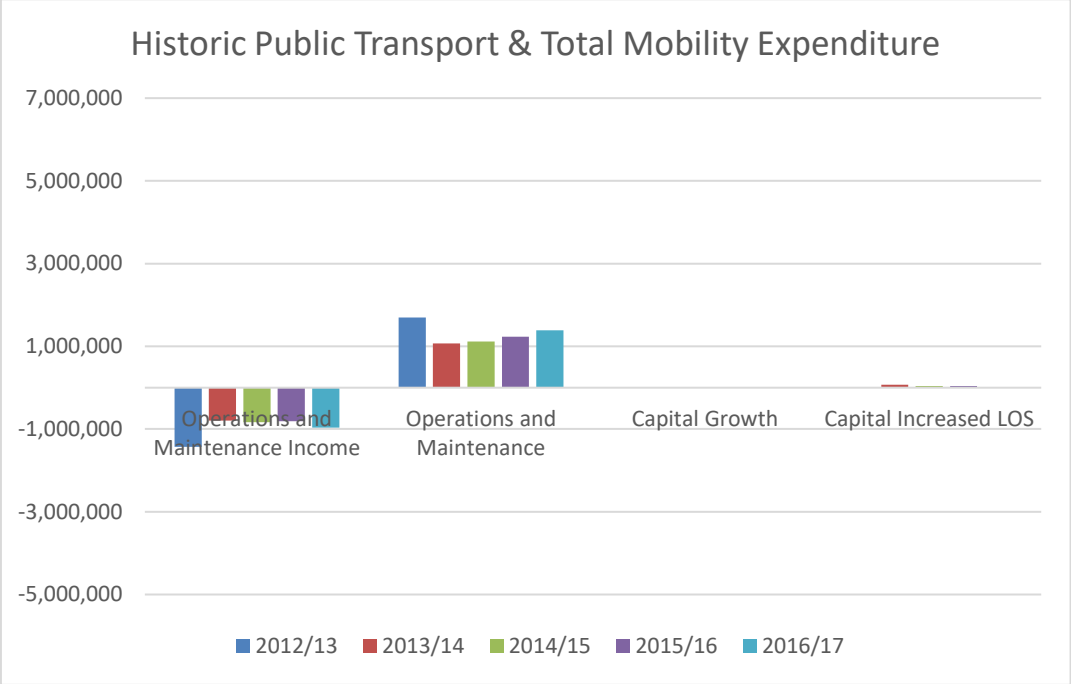
Graph 4 – 3: Historic Non Subsidised Transport Expenditure



Graph 4 – 4: Historic Parking and Centre Enhancement Expenditure



Graph 4 – 5: Historic Public Transport and Total Mobility Expenditure



Historically transport development in Nelson has pursued infrastructure improvements that have primarily focussed on catering for predicted future traffic volumes. The greatest contributor to the city's roading network has been through residential and industrial growth. The progressive standardisation of street design in new subdivisions and industrial estates,

determined by varying versions of the Engineering Standards, can be seen throughout the city.

With expansion into the hillsides as flat land become scarce; the impact of the standards on development costs and the environment has led to a demand for less onerous standards which reduce the impact on the environment. At the same time the costs of Council's own roading improvements, fundamentally based on providing footpaths in the older subdivisions where they were not built at the time of the original development, has increased dramatically as the flatter streets are completed and the costlier hillside streets are prioritised. Indications also showed that the public were particularly concerned about vehicle speeds in residential streets. Questions started to be asked about the necessity for footpaths in every street (however narrow or hilly) as being the key driver for a large proportion of transport expenditure.

The Land Development Manual 2010 addressed many of these issues providing a more holistic approach to the transport network and set down the fundamental importance of sustainable road design, road hierarchy and accessibility. This change was reflected by Council planners by prioritising plan changes.

So historically, street upgrades that have been driven by a footpath prioritisation programme have been using most of Council's capital expenditure programme, including renewals and reseals funding which could have been spent on maintaining the existing transport infrastructure.

4.2 Operations and maintenance plan

Operations and Maintenance strategies set out how the transport activity will be operated and maintained on a day-to-day basis to consistently achieve the optimum use of assets and meet levels of service. Operations and Maintenance activities fall into the following categories, each having distinct objectives and triggering mechanisms:

Operations - Activities designed to ensure efficient utilisation of the assets, and therefore that the assets achieve their service potential and the network is capable of meeting required levels of service. Operational strategies cover activities such as public transport, energy usage, control of mechanical and electrical plant, inspections and service management.

Maintenance - Maintenance strategies are designed to enable existing assets to operate to their service potential over their useful life. This is necessary to meet levels of service, achieve target standards and prevent premature asset failure or deterioration. There are two types of maintenance:

- Programmed - A base level of maintenance carried out to a predetermined schedule. Maintenance is actioned as a result of condition or performance evaluations of individual components of the transport system.

- Reactive Maintenance - Maintenance carried out in response to reported problems or system defects. Its objective is to maintain day-to-day levels of service. Its objective is to maintain the service potential of the asset system.

4.2.1 Operations and maintenance plan

Maintenance Planning

Currently the asset maintenance is a mix of programmed and reactive. Further work moving towards advanced asset management planning techniques for critical routes and components is considered appropriate to apply programmed maintenance programmes to the widest area to ensure the safe and efficient and resilient operation of the network. This approach would allow for maximising the useful life of an asset while minimising the consequences of unforeseen failures.

Method of Delivery

The operation and maintenance of the Nelson City Council transport activity is carried out using a combination of Nelson City Council staff and external contractors consisting of: (as at Dec 2017)

- Infrastructure internal business unit (Nelson City Council) for asset management, operations and maintenance professional services and some components of the management, design and construction monitoring of the capital works programme. Refer A259606 for the organisational chart.
- NELMAC Limited for all vegetation operations and maintenance and street litter collection.
- Downer NZ Limited for pavement and footpath maintenance, street sweeping, resurfacing, pavement and footpath rehabilitation, road marking and sign maintenance
- Powertech Limited for streetlight, traffic signal and parking meter maintenance
- L&M Traffic Data Limited for traffic and parking counting services
- Suburban Bus Lines Group Limited for operation of the NBus service
- External contractors for specialist activities such as closed circuit television, parking meter coin collection and provision of total mobility services.

For a full list of contracts, their term and expiry dates refer A1223726.

4.1.1 Operations and maintenance strategies

Day to day operation and maintenance of the network is carried out by contractors with specific requirements set out in the relevant contract.

Level of Service Implications

For the transport network to deliver the levels of service it must be safe, trafficable and functioning. Reactive maintenance must be carried out promptly. Programmed maintenance must be carried out before it becomes reactive.

Demand Implications

With increasing demand there will be an increase in total variable costs particularly as more transport assets are vested.

Risk Implications

The high order ONRC routes must all be maintained, kept safe and protected from natural hazards so that they can continue to function through an emergency albeit at a reduced level of service. This needs to be balanced against the risk of increasing frequency of emergency events with the potential reduction in NZ Transport Agency co-investment for the recovery and re-instatement costs.

The quality of road reinstatement work by utility operators.

Lifecycle Implications

Operations and maintenance is the longest period of the asset lifecycle and ongoing maintenance is necessary to ensure that the design life of the asset is achieved.

The following table sets out the operations and maintenance strategies:

Table 4 - 3: Operations and Maintenance Strategies

Strategy	Objective/ Description
Maintenance	
Preventative Maintenance	Preventative Maintenance will be carried out in terms of defined routine maintenance items and triggers for these activities to be carried out. The triggers are typically listed in the contract document for that activity. **Pavement maintenance** Refer Focus Area 6.2 **Structures maintenance** Refer Focus Area 6.5 **Footpath and walkway maintenance** Refer Focus Area 6.12 **Cycle facility maintenance** Refer Focus Area 6.11 **Parking maintenance** Refer Focus Area 6.9 **Central City maintenance** Refer Focus Area 6.10 **Traffic Control** Refer Focus Area 6.7 **Streetlight maintenance**

Strategy	Objective/ Description
	Streetlights are inspected visually four times per year, HPS lanterns replaced every 3.5 years, LED cleaned once every 7 years and an electrical safety check every 7 years. Refer the Maintenance Contract A1715607 for details. **Vegetation and street tree maintenance** Vegetation is cleared to provide safe and unimpeded passage for all road users including pedestrians on footpaths. Sight lines are maintained at intersections, and trees are trimmed to maintain overhead clearance for vehicles. Vegetation and tree maintenance also includes removal of dead and diseased wood to improve the longevity and health of the plant. **Road sweeping and sump cleaning:** City street cleaning and sump cleaning for amenity and water quality is carried out under Council's road maintenance contract refer A1727357 for sweeping intervals. **Stock Effluent Facility** Refer Asset management Manual, A1700736, A1700737 and Operation and Maintenance Manual A1700738
Reactive Maintenance	Remedial maintenance will be undertaken as quickly as practically possible to restore an asset to a satisfactory condition after a failure or other unsatisfactory condition has been detected.
Operations	
Operations	Operational activities will be undertaken via the following contract unless specialised advice is required. Staff will be responsible for the determination and optimisation of planned and unplanned works, work methods and maintenance scheduling to achieve the target service standards. Traffic signals – NZTA Wellington Traffic (WTOC) with backup from NCC officers Operations Centre. Bus Service – Suburban Bus Lines Group Total Mobility – Various providers – refer A1223726 Parking Meters – Physical operation by Powertech Limited with cash collection by Armourguard
Physical Works Monitoring	Audits of work will be carried out to verify compliance with contracts and best practice national standards.
Incident management	Effectively respond to and manage incidents to ensure transport system availability and service continuity, and mitigate adverse effects. Maintenance staff and contractors are expected to effectively manage minor incidents. Nelson City Council staff will become involved in serious incidents in coordination with Civil Defence, NZTA and Tasman District Council to minimise the number of impacted journeys.
SCATS	Nelson's traffic signals use the Sydney Coordinated Adaptive Traffic System, abbreviated SCATS. It is an intelligent transportation system that manages the dynamic (on-line, real-time) timing of signal phases at traffic signals, meaning that it tries to find the best phasing (i.e. cycle times, phase splits and offsets) for a traffic situation (for individual intersections as well as for the whole network). SCATS is based on the automatic plan selection from a library in response to the data derived from loop detectors or other road traffic sensors.

4.2.2 Summary of future costs

Refer section 7.1 for financial summaries.

4.3 Renewal/Replacement plan

Capital Renewal /Replacement

Renewal is major work that does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing component. This includes works that do not increase the capacity of the asset but restores them to their original size, condition capacity, etc;

Work over and above restoring an asset to original capacity is creation/acquisition/ augmentation expenditure.

A description of the renewal categories under NZTA subsidised works can be found at https://www.pikb.co.nz/activity-classes-for-2015-18/local-road-and-state-highway-maintenance/road-maintenance-programmes-activity-classes-guidance/

4.3.1 Renewal identification and strategies

Assets can fail from various modes other than the normally recognised physical, failure or breakage.

Condition assessment is a typical failure mode assessment activity.

To evaluate cost and obsolescence at failure it is necessary to capture the asset's operating and maintenance cost information, and to compare this with the lifecycle cost expectations.

As condition assessment and maintenance histories are built up, these will be used in determining renewal priorities.

Level of Service Implications

It is necessary to renew assets before they impact on levels of service.

Demand Implications

At the time of renewals an assessment of the future demand of the asset is made and the asset resized or reconfigured to match current standards or capacity demands as appropriate. For subsidised activities any increase in demand will typically be funded from an improvement activity like Work Category 341 Low Cost Low Risk Improvements. For non-subsidised activities any improvement will be funded from renewals if it is less than a 10% increase in capacity and for greater than 10% then the difference will be funded from capital.

Risk Implications

There is a risk to life, safety, property and business' financial income by not undertaking renewals.

Lifecycle Implications

Assets must be renewed before maintenance costs become excessive. Decisions made at the time of renewal have impact on the whole lifecycle costs of the asset.

The asset renewal programmes are summarised in section 6 under each asset class. Table 4 - 4 below summarises the general approach taken.

Table 4 - 4: Renewal Strategy General Approach

Strategy	Objective/ Description
Identification of Renewal Needs	Issues identified with asset by location and or materials through condition reports, maintenance records (asset failure and expenditure history), request for service (RFS) records, and observations of public, staff and contractors with a focus on: 1) Critical assets just before they fail prioritised by ONRC and risk. 2) When the level of service is no longer met owing to diminished capacity or excessive damage. 4) Alignment with other utility renewals or upgrades where excavation to renew a utility asset in a new surface would be undesirable.
Project options	Decision Criteria (see Appendices) are weighed. Then Business Options which consider benefits (aligned with the Decision Criteria), dis-benefits, cost, timescale and risks are compared to determine whether to proceed with a renewal or which renewal option to take. For subsidised activities a benefit and cost appraisals of the individual projects must be made and the evaluations made available as requested by NZTA. A simplified procedure is provided for in the NZTA Economic Evaluation Manual.
Prioritisation of Renewal Projects	Decisions on renewal works consider the short and long-term effects on the transport network.
Design	Renewal works constructed each year are generally designed in advance to maintain level of service. Renewal works are designed and undertaken in accordance with the general guidance of the Nelson City Council Land Development Manual
Deferred Renewals	The quantity and impact of deferred renewals (if any) is tracked The Council recognises that although the deferral of some items will not impede the operation of many assets in the short term, repeated deferral will create a future Council liability. As Council currently funds asset renewals from depreciation deferred renewals are not expected.

4.3.2 Summary of future costs

Refer section 7.1 for financial summaries.

4.4 Creation/Acquisition/Augmentation plan

Creation/Acquisition/Augmentation works create a new asset that previously did not exist, or upgrade or improve an existing asset. They may result from growth, social or environmental needs, levels of service. This includes:

- Expenditure which purchases or creates a new asset (not a replacement) or in any way improves an asset beyond its original design capacity.
- Upgrading works which increase the capacity of the asset e.g. for future growth demand.
- Construction works designed to produce an improvement in the standard and operation of the asset beyond its present capacity.

Asset development and asset renewal can occur simultaneously. The purpose of asset renewal is to prevent a decline in the service potential of the assets whereas asset development is concerned with the service improvements, measured by asset performance.

4.4.1 Selection criteria

Level of Service Implication on Capital

Capital works for transport network construction are to address documented problems to the levels of service required.

Demand Implications on Capital

The significant capital works proposed will address the need to move more people and goods to meet growth requirements and the shift in demographic as aligned with the key problem statements identified in the executive summary and the increasing demand documented in section 3 of this plan. Failure to meet growth requirements will then impact on Levels of Service.

Risk Implications on Capital

The capital works proposed address the need for increased capacity in response to growth.

Lifecycle Implications on Capital

Decisions made to construct a capital project will have implications for the life of the asset, as will subsequent design decisions. Optimised decision making and robust business case assessment will therefore be used to identify and prioritise all potential solutions for transport projects.

Selection Strategy

Table 4 - 5: Selection Strategy

Criteria	Objective / Description
Identification of Upgrade Needs	Asset upgrade needs are identified from analysis of: Demand forecasts, e.g. modelling System performance monitoring Network modelling Risk assessments (Risk Management Plan), and Customer service requests.

Criteria	Objective / Description
	A provisional forward capital works programme is maintained and updated at least annually.
Upgrade Project Categorisation	Upgrade Projects will be separated into projects to close service gaps and projects required to accommodate growth. Upgrade projects to close service gaps are generally funded entirely by Nelson City Council and the NZTA. Upgrade projects to accommodate growth may be partly or wholly funded through Development Contributions.
Prioritisation of Upgrade Projects	The Council recognises that it has obligations to seek the views of the local community on issues, plans and strategies that may directly or indirectly affect residents. It also wants to encourage best practice by engaging public involvement for transport schemes in order to create a sense of ownership by local residents and to ensure that residents, businesses and stakeholders have the opportunity to provide valuable input. Projects identified for funding in the Regional Land Transport Plan are subject to prioritisation through the Regional Land Transport Plan development process. This relies on the NZTA Investment Assessment Framework. In addition to the above upgrade projects are justified and prioritised using a multi criteria analysis that includes risk. Decisions on upgrade works consider the short and long-term effects on the transport system. Decisions on priorities for new works and renewal of assets for the transport system are based on the following: • Known problem areas with congestion or safety issues • New growth areas • Missing links • Criticality of proposed works • Multiple network project (e.g. incorporating sewer, stormwater and or water assets)
Project Approval	A long-term upgrade programme is prepared from projects meeting the assessment criteria, and all projects are approved through the Long Term Plan process. The actual timing of asset upgrade works will reflect the community's ability to meet the cost, as determined through the Long Term Plan process.

4.4.2 Capital investment strategies

The table below sets out the strategies used for developing capital works programmes for the transport network. These strategies are intended to progressively close gaps between target service standards (taking account of demographic and economic growth projections) and the current service capability of the asset system.

Table 4 - 6: Creation/Acquisition/Augmentation Strategies

Strategy	Objective / Description
Project Design	All feasible options, including non-asset demand management options are considered. All asset upgrade works will be designed and constructed in accordance with the Nelson Land Development Manual and applicable NZTA and NZS design standards. In determining capital or asset upgrade work requirements the short and long term effects on the operating and structural integrity of the network are considered, together with the demands of any forecast increase in demand upon the system.
Future Development	Identifies sufficient, feasible capacity in short, medium and long term and the location, timing and sequencing of infrastructure to support it.
Funding Strategies	Nelson City Council will review annually funding requirements and strategies to achieve equitable funding of upgrade works through NZTA subsidy, targeted rates, development and general ratepayer contributions.
Vested Assets	The risk, cost and benefits of accepting any new privately funded assets constructed in association with property development will be considered on a case by case basis in approval decisions. Such assets will be accepted into public ownership when satisfactorily completed in accordance with approvals given. Council will not contribute to the cost of such work unless there are exceptional service standard or equity issues.

4.4.3 Low Cost Low Risk Programme

NZTA facilitates low cost low risk capital works through work category 341. This work category provides for the construction/implementation of low cost / low risk improvements to the transport system to a maximum total cost of $1M. Details of the funding category, its rules and examples of qualifying activities can be found on NZTA website.[35.]

The priority matrix considers the following factors in a multi criteria analysis in order to rank potential projects into a prioritised programme.

- Alignment with key strategic issues documented in executive summary section iii;
- Alignment with GPS and IAF key themes;
- Value for Money;
- Resilience.

35 http://www.nzta.govt.nz/planning-and-investment/planning-and-investment-knowledge-base/activity-classes-and-work-categories/road-improvements-activity-classes-including-regional-improvements/wc-341-low-cost-low-risk-roading-improvements/

The priority matrix can be found in Appendix M.

A simplified business case approach is then used to further define qualifying projects from the priority matrix. The business case approach is a structured process that integrates best practice decision-making, programme management and investment assurance tools.

It progressively builds an investment case by:

- identifying the core problem
- identifying the consequences of not addressing it
- identifying the benefits to be gained by investing in its solution.
- considering all available options to address a problem

The approach breaks the activity development process into phases that have decision gateways. This ensures funding is not wasted by developing low priority activities that poorly achieve, or have diverged from targeted outcomes.

4.4.4 Summary of future costs

Refer section 7.1 for financial summaries.

4.5 Disposal plan

The disposal plan recognises that there can be activities and costs associated with the decommissioning and disposal of assets which are no longer required as part of the transport network. In rare situations there can be revenue resulting from asset disposal.

Table 4 - 7: Disposal Strategies

Strategy	Objective/ Description
Asset Disposal	Assess each proposal to dispose of surplus or redundant assets on an individual basis, subject to the requirements of the relevant legislation.
Residual Use	Equipment that has been replaced will be reused for parts or sold as scrap metal unless it is considered to have genuine resale value. In this case, the piece of surplus equipment will be sold with income directed to the Nelson City Council account.
Residual Value	The residual value (if any) of assets, which are planned to be disposed of, will be identified and provided for in financial projections.
Record of Abandonment	When an asset is abandoned or replaced RAMM and/or the Geographic Information System and fixed asset register are updated. A system of job number creation and asset identification is used to document this process.

5. Risk management plan (Dealing with uncertainty)

This section looks at the risk management procedures used in the Transport activity.

Applying risk management procedures enables decisions to be made about the best use of limited resources to achieve as much as possible of the Council's objectives from the maintenance and development of the transport assets and activities.

Threats and opportunities are assessed against the transport objectives and levels of service.

Risk management is not simply about uncertain events with a downside (such as financial loss or legal proceedings). The process can also be used to identify and decide on the merits of uncertain opportunities for the Council to do things more innovatively, sustainably and effectively.

5.1 Critical assets

5.1.1 How critical assets are identified and managed

For practical purposes it is helpful to separately identify critical assets to the delivery of the transport activity.

The asset manager applies professional judgement based on experience, considering risk of failure and lifelines evaluation to identify critical assets. Generally critical assets are considered to be those assets for which the consequence of failure is unacceptable given the difficulty of repair and/or the strategic role they play, and would result in a major disruption or failure in meeting one or more levels of service.

A more robust framework for identification of critical assets is noted in the improvement programme.

Assets that are considered critical within the Nelson City Council transport activity are:

- Life Line, Regional and Arterial routes, including bridges and structures on these routes
- All Bridges and large culverts (>3.4m^2 end area)and retaining walls that serve non-lifeline, regional or arterial routes but do not have alternative access options
- Key freight routes

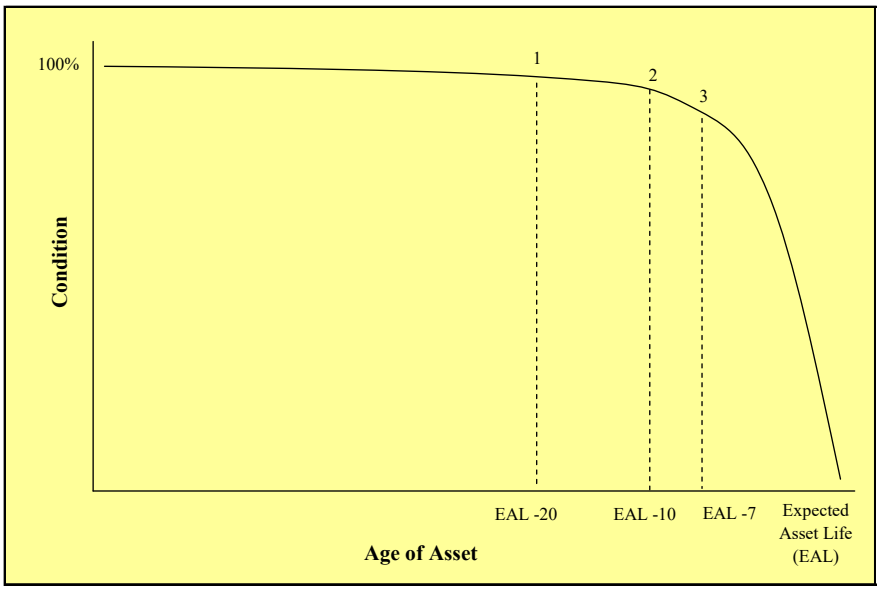
By contrast non-critical assets are relatively quickly and easily repaired or replaced and their failure do not disrupt a significant number of customers.

Monitoring and intervention strategies are therefore quite different for both categories of asset. Critical assets attract a greater level of monitoring and ongoing condition assessment, with physical investigations taking place at a

much earlier stage. Conversely non-critical assets can be expected to undergo a higher level of repair before complete replacement is considered.

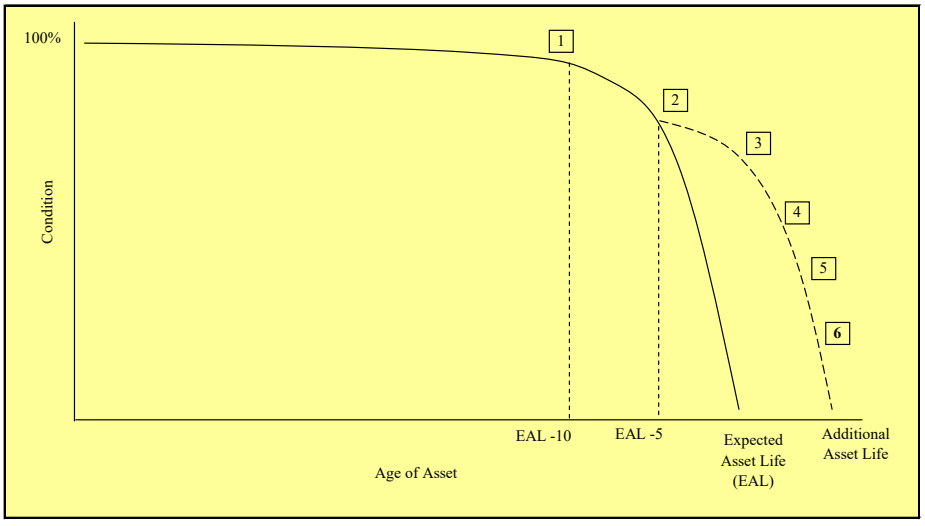
The following shows the nature and timing of interventions for both critical and non-critical assets.

Figure 5 - 1: Interventions for Critical Assets



Intervention: 1 Desktop review of asset and performance supported by Engineers inspection, 2 Physical inspection and testing of asset and performance review by specialist Structural or Pavement Engineer. 3 Replacement initiated.

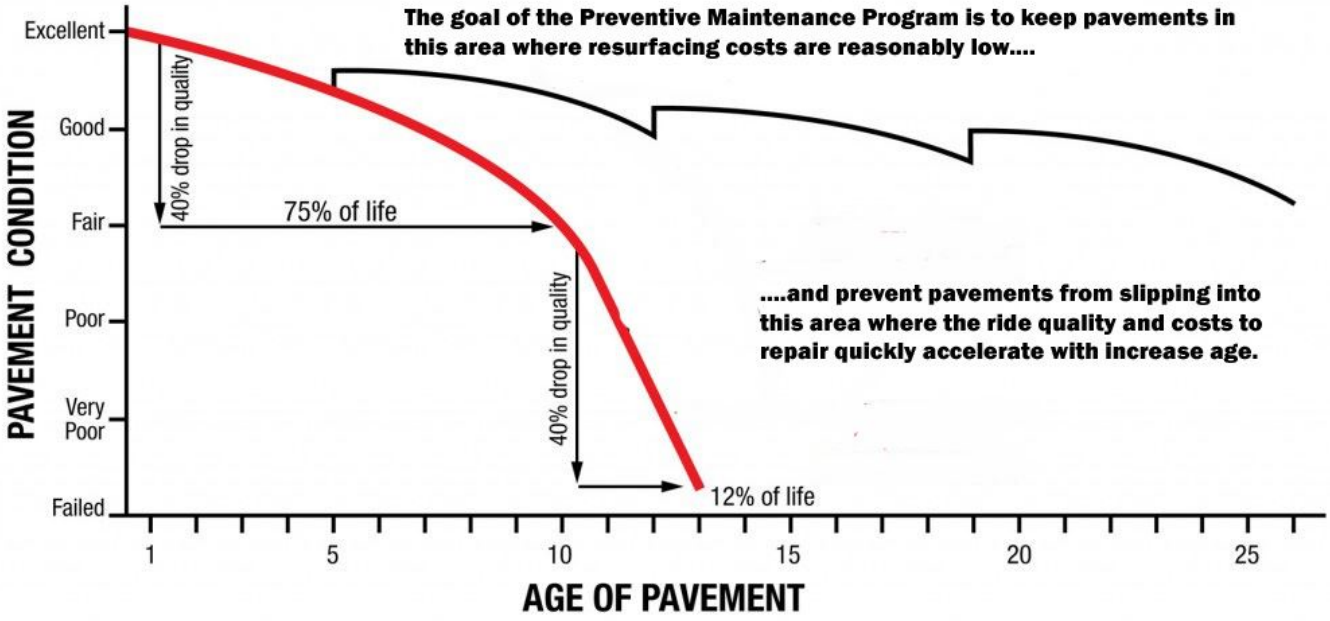
Figure 5 - 2: Interventions for Non-Critical Assets



Intervention: 1 Desktop review of asset and performance, 2 Physical inspection of asset and decision made on extending expected asset life, 3 Repair, 4 Repair, 5 Repair. 6 Replace asset.

The exception to the above interventions is the pavement asset that is actively resurfaced and maintained to maintain condition even on critical routes. This is shown in figure 5-3 below.

Figure 5 - 3: Interventions for Non-Critical Assets



The effect of criticality on an asset is highlighted in the following areas:

- Operation and maintenance planning
- Proactive or scheduled maintenance
- Priorities for collecting and determining the required level of reliability of data for Asset Management systems
- Priorities for undertaking condition assessments
- Adjusting economic lives with respect to renewal profiles
- Prioritising/Deferring renewals
- Prioritising expenditure
- Prioritising levels of service reviews

A methodology for determining asset criticality linked to the ONRC, along with options will be determined to integrate criticality into the ongoing operation, maintenance, renewals and capital programme for the transport activity.

5.2 Risk assessment

5.2.1 Approach for assessing risks

The Council's risk management policy provides for assessing risk by:

- Clearly identifying the objectives for which achievement may be uncertain
- Identifying events which could make the achievement of one or more objectives uncertain
- For each event, using best available information (including considering the quality of that information and the controls already in place to manage the risk) to estimate the scale of consequence for an objective if the event happened and estimating a corresponding likelihood. Consequences and likelihoods are estimated using the Council's agreed risk criteria. See Appendix E.
- Selecting the likelihood consequence combination from the council's criteria giving the largest risk for the event.

As this Asset management plan is developed it will progressively apply the criteria required by the Council's updated risk management policy (formally adopted in August 2017) to managing risks. These criteria follow principle (g) of the international standard codifying good risk management practice (ISO 31000:2009) and tailor this generic process to the Council's specific circumstances. It is the organisation's intention to progressively align the risk management practices used in asset management with Council's Policy and Criteria and to apply generally accepted good practice.

Alignment with the new framework is in progress. The identified and assessed risks are not all derived by this process. Some are historical and may be based on a different framework and may have been ranked using criteria other than those adopted by the Council in August 2017. It is our intention to review and update the risks set out in the risk register Appendix E. so that the information is all on a consistent basis.

5.2.2 Top risks and how these will be managed

The level of risk established from the assessment process (formally called residual risk) is compared with the Council's residual risk tolerance as set out in Table E - 3 of the Council's risk criteria contained within appendix E.

The table sets out priorities for action and at what level of Council decisions should be taken to either accept (tolerate) the risk or take further actions to manage the risk to achieve a more acceptable risk level.

In many cases risks have already been acted on by officers in the course of the normal work of managing the transport activity and no further action is required.

In other cases specific decisions may be required to either accept the current level of risk or place actions in this plan to reduce the level of risk.

The following table provides an indication of areas of high residual risk and some information about how these could be further treated (i.e. further controls implemented or choices made to reduce risk levels).

A summary of transport risks and the proposed mitigation actions has been provided in Table 5.1 below. A comprehensive list is given in Appendix E.4.

Table 5 - 1: Transport Risk Register

Identification			Analysis: Residual Risk					
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**	**Response e.g. Accept, Reduce, Share**	**Treatments**
	High level policies, procedures and controls							
Inaccurate growth information/ assumptions		Inappropriate decision made about future infrastructure and services	Growth monitoring to be frequent and trends related to national/international data where possible	Major (4)	Possible (3)	High (12)	Reduce	Regular monitoring regime
Increasing standards		Public expectations of Transport safety, quality and environmental standards are increasing	Mitigation strategies vary depending on the outcomes required.	Moderate (3)	Likely (4)	High (12)	Share	The implications of increased levels of service, resulting in increased expenditure are fully recognised by Councillors
	Financials							
Poor financial forecasting		Reflects on Council as poor planning	Ensure assumption to project cost estimates are fully understood and refine estimates before each Annual Plan and Transport Investment On Line entries.	Major (4)	Possible (3)	High (12)	Reduce	Ensure robust asset management and project management practices are followed

Identification			Analysis: Residual Risk					
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**	**Response e.g. Accept, Reduce, Share**	**Treatments**
Desired NZ Transport Agency funding not obtained		Additional costs to Council or implementation of projects delayed, maintenance deferred or projects removed from programme	Monitor NZ Transport Agency funding procedures and manuals and submit application in a timely manner	Major (4)	Possible (3)	High (12)	Share	Follow NZTA application Guidelines and ensure politicians are fully informed
Non-compliance with NZ Transport Agency funding agreement		Reduction or refund of NZ Transport Agency contributions	Annually report on compliance requirements	Major (4)	Possible (3)	High (12)	Reduce	Implement measures to address any non-compliance
Insurance		Unplanned expenses following a natural event or disaster.	Insurance for unsubsidised structures, and funding through NZTA.	Moderate (3)	Almost certain (5)	High (15)	Accept	There is a residual risk where an event is not planned or covered by Insurance or NZTA. A lower LOS needs to be accepted and programme for remediation over a time frame that is acceptable to the stakeholders.
	Organisation Management							
Failure to act on identified risk		Potential legal action against Council	Robust risk analysis process in places and reviewed quarterly	Major (4)	Possible (3)	High (12)	Reduce	Identified risk improvements implemented
	Health and Safety							

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
Road Safety		Safety levels of service perceived not to have been achieved (although in reality works being undertaken to address)	Training and increased awareness of Safe Systems approach, adequate budgets and road safety auditing	Major (4)	Possible (3)	High (12)	Reduce	Continue to monitor crash rates and set interventions via the TAMP
	Transport Asset Management							
Noncompliance with Land Development Manual for constructed /adopted assets		Substandard works requiring greater maintenance or earlier renewals	Project Scope and plan and site check procedures to be sufficiently resourced and implemented	Major (4)	Possible (3)	High (12)	Reduce	Project Scope and plan and site check procedures to be sufficiently resourced and implemented
Significant Natural Event		Resources reapportioned as necessary which might compromise Asset Management Plan implementation and agreed LOS. Potential public claims from a lack of understanding of the risks	Delay implementation of this plan and modify as necessary when resources re-established	Extreme (5)	Possible (3)	High (15)	Reduce	Preliminary risk maps of areas particular susceptible to flooding, liquefaction, tsunami, slips and fault lines to be mapped and published Continue to work with utility asset managers for a comprehensive approach .
	Use of Transport Asset							
Changed use requires different infrastructure		Poor level of service for changed user expectations of network	Consider aged population, technology and mode share considerations in all	Major (4)	Possible (3)	High (12)	Reduce	Consider aged population, technology and mode share considerations in all

Identification			Analysis: Residual Risk					
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**	**Response e.g. Accept, Reduce, Share**	**Treatments**
			asset management decisions					asset management decisions
Changed use results in poor safety outcomes		Crash risk associated with change of use layout or design	Awareness of Safe Systems Approach in all aspects the transport system	Extreme (5)	Likely (4)	Very High (20)	Reduce	Staff training in Safe Systems Approach to increase awareness
Uncertain future demand for central long stay parking from increased central city living		Parking demand exceeds supply and results in conflict with inner city retail parking	Investigate future demand and develop/review parking policy for supply of long stay parking with inner city redevelopment	Moderate (3)	Likely (4)	High (12)	Reduce	Investigation and policy development/review
	Road pavements (including footpaths, cycleways and car parks)							
Structural failure/blockage due to earthquake or landslide		Pavement failure and road closure	Maintenance contractor has 24 hour call out facility. Emergency procedures priorities depending on ONRC hierarchy and identification of critical assets	Major (4)	Possible (3)	High (12)	Reduce	Emergency Procedures Manual

Identification			Analysis: Residual Risk					
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**	**Response e.g. Accept, Reduce, Share**	**Treatments**
Inadequate road width to accommodate all desired transport mode facilities (footpaths/ cycleways/traffic lanes and parking)		One mode or user will need to change	Consultation and use of multi-criteria analysis for business cases	Moderate (3)	Likely (4)	High (12)	Reduce	Consultation
	Road bridges (including footbridges and cycleway underpasses)							
Overweight permit policy is out of date		Poor control of overweight vehicle journeys across network, and unintended risk to structures	Overweight permit process is being managed by bridge inspection consultants	Extreme (5)	Possible (3)	High (15)	Reduce	Update Overweight permit Policy, process and documentation, with urgency. Staff training on overweight permit processes and officer assigned to manage overweight permit process
Increased traffic loadings		Increasing vehicle loading limits put additional stresses on bridges and culverts	Desktop structural assessment when loading rules are changed, and posting of bridges that do not accommodate new loadings. Transfer SW culverts to roading	Extreme (5)	Possible (3)	High (15)	Reduce	Include loading data and demand into structural maintenance and renewal programme, so under capacity bridges and culverts are identified and monitored

Identification			Analysis: Residual Risk					
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**	**Response e.g. Accept, Reduce, Share**	**Treatments**
			assets and do loading assessments					
Premature failure		Catastrophic damage to bridge structure. Prolonged road closure	Inspect in accordance with NZTA S/6:2015 Bridge and other significant highway structures inspection policy.	Extreme (5)	Possible (3)	High (15)	Reduce	Principal inspections on all structures and ongoing inspection programme
Structures approaching end of useful life		High inspection and maintenance costs and risk of premature/seismic failure	Inspect in accordance with NZTA S/6:2015 Bridge and other significant highway structures inspection policy.	Extreme (5)	Possible (3)	High (15)	Reduce	Principal inspections on all structures and ongoing inspection programme
Structural failure due to earthquake or landslide		Damage to retaining structure(s) and journeys impacted	Inspection maintenance and renewal programme	Extreme (5)	Possible (3)	High (15)	Reduce	Implement a prioritised maintenance and renewal programme to meet and mitigate structure risks
Inadequate design		Damage to retaining wall	Design to comply with Building Control Act requirements	Major (4)	Possible (3)	High (12)	Reduce	Adequate design and budget to comply with Building Act requirements and site constraints
	Road retaining walls							

Identification			Analysis: Residual Risk					
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**	**Response e.g. Accept, Reduce, Share**	**Treatments**
Ownership of retaining walls		Unknown liability where a wall is not registered as a roading asset, and legal issues where a resident is unaware that they have responsibility	Current programme to identify all road retaining walls and undertake condition assessments	Major (4)	Possible (3)	High (12)	Share	Principal inspections on all structures and ongoing inspection programme and improvement programme to confirm private ownership responsibilities for walls on road reserve that are not road assets
Structural failure due to earthquake or landslide		Catastrophic damage to several retaining walls. Road closure	Inspection maintenance and renewal programme	Extreme (5)	Possible (3)	High (15)	Reduce	Implement a prioritised maintenance and renewal programme to meet and mitigate structure risks
Inadequate design		Damage to retaining wall	Design to comply with Building Control Act requirements	Major (4)	Possible (3)	High (12)	Reduce	Adequate design and budget to comply with Building Act requirements and site constraints
	Roading drainage (sub soil drains, sumps, pipework and culverts)							
Inadequate road drainage		Downstream flooding, pavement damage and increased maintenance costs	Upgrade road drainage where secondary flow paths are inadequate and historically private property flooding occurs	Moderate (3)	Likely (4)	High (12)	Reduce	Prioritise drainage improvements to minimise consequences

Identification			Analysis: Residual Risk					
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**	**Response e.g. Accept, Reduce, Share**	**Treatments**
Inadequate design or no kerb, channels and sumps		Downstream flooding, pavement damage increased maintenance costs	All road upgrades include drainage in accordance with Land Development Manual	Moderate (3)	Likely (4)	High (12)	Reduce	Coordination with Stormwater improvement projects for complementary road drainage improvements
	Streetlights							
Inadequate streetlights that do not comply with Land Development Manual		Poor lighting contributing to low levels of perceived night time safety and rate of night time crashes	Streetlight improvement programme	Moderate (3)	Likely (4)	High (12)	Reduce	Deliver implementation programme
	Safety Barriers							
Inadequate barriers not complying with Land Development Manual or Building Code for structural elements		Personal injury.	Include safety barriers and handrails as structural items and inspect in accordance with NZTA S/6:2015 Bridge and other significant highway structures inspection policy.	Major (4)	Possible (3)	High (12)	Reduce	Inspection and inventory and ongoing monitoring and maintenance programme

5.3 Infrastructure Resilience Approach

5.3.1 Climate Change

Climate change is expected to bring with it more extreme weather in the form of higher intensity and duration rain events (with associated flood damage or impact on traffic) and drought periods. The issue will be monitored and future asset management plans will be adjusted to address impacts as they become better understood.

Recent extreme events in excess of Q_{50} have led to the need to review the minimum design standard and consider whether this should be increased to Q_{100} (1% probability of occurrence in any year). The stormwater LTP 2015/25 signalled that Council will review the risk profile of streams and rivers on a case by case basis before deciding on the appropriate response to flooding. This has an impact on the design and strategy of bridge and large culvert maintenance and renewals.

5.3.2 Natural Hazards

Recent work by Council has focussed on natural hazards that might impact on the city, in particular:

- Direct damage from Earthquake shaking
- Damage from liquefaction in susceptible areas
- Damage from Tsunami
- Damage from Flooding and major storm events
- Impact of potential climate change and sea level rise

Security of the network in light of the Canterbury and Kaikoura Earthquakes and Nelson storm events, including wider network hazards- Earthquake fault line, liquefaction and climate change will influence network upgrades into the future.

Future work will focus on near fault proximity of the network, possible impacts of liquefaction on existing and future infrastructure, impacts of flooding and the long term planning required as a result of climate change.

The Christchurch Earthquakes of 2010 /2011 and Kaikoura in 2016, led to significant damage to infrastructure in those areas. While the road network suffered damage the repair of the underlying utilities infrastructure has a secondary impact on the transport network. Recognising this and the results of other natural hazard investigation post the Nelson storm events of December 2011 and April 2013, Nelson City Council is reassessing the risk to the network from earthquakes (including liquefaction, tsunami and direct shaking), flooding, storms and sea level rise.

Further detail of the work Nelson City Council is doing to assess the risks, including lists of studied and reports available is included in the Stormwater Asset Management Plan.

5.4 Infrastructure resilience approach

5.4.1 Unforeseen Events Affecting Transport Assets

Nelson City Council operates in partnership with NZTA to respond to unforeseen events affecting the roading assets. Criteria where claims may qualify for NZTA Emergency works funding are listed in the NZTA Planning and Investment Knowledge Base, WC140 Minor Events and WC141 Emergency works.

5.4.2 Insurance

Nelson City Council has insurance cover for items in the CBD, and items that do not meet NZTA funding requirements only.

5.4.3 Emergency Management

Civil Defence and Emergency Response Plans

The following documents are available for guidance in the Civil Defence and Emergency Management:

- Civil Defence Emergency Management Plan.
- Nelson City Council Emergency Procedures Manual - exercises are carried out on a six monthly basis to ensure all staff are familiar with the procedures.

Section 64 of the Civil Defence Emergency Management Act 2002 requires Local Authorities to:

64 Duties of local authorities

(1) A local authority must plan and provide for civil defence emergency management within its district.

(2) A local authority must ensure that it is able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency"

Local Civil Defence Emergency Management Arrangements

Nelson-Tasman Civil Defence Emergency Management Group is a joint committee of both Nelson City Council and Tasman District Council.

The Nelson Tasman Civil Defence Emergency Management Group Plan provides for an 'all hazards' approach to emergency management planning and activity within the Civil Defence Emergency Management Group area for Nelson City and Tasman District. The Civil Defence Emergency Management Group Plan states the civil defence emergency management structure and systems necessary to manage those hazards, including the arrangements for declaring a state of emergency in the Group's area. The Group Plan is the primary instrument whereby the community identifies and assesses its hazards and risks, and decides on the acceptable level of risk to be managed and how it is to be managed.

Lifelines Responsibility

Section 60 of the Civil Defence Emergency Management (CDEM) Act 2002 requires Local Authorities as a lifeline utility to:

- ensure that it is able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency

Nelson City Council participated in the Nelson-Tasman Engineering Lifelines project as a life line utility.

The following table indicates the status of the transport activities in the areas of Risk Reduction, Readiness, Response and Recovery.

Table 5 - 4: Risk Reduction, Readiness, Response and Recovery Status

Activities Required	Description	Transport Contribution
Risk Reduction	Identifying hazards, describing risks, and taking actions to reduce the probability or consequences of potential events.	Asset Management Plan
Readiness	Planning and preparation required to equip agencies and communities to respond and recover.	Emergency procedures manual and exercises.
Response	Addressing immediate problems after an emergency.	Maintenance contract provisions for emergency works
Recovery	Addressing the long-term rehabilitation of the community.	Nelson-Tasman Civil Defence Emergency Management Group and future AMP capital works programmes

5.4.4 Electricity Supply

The electricity lines suppliers are Network Tasman Ltd and Nelson Electricity Ltd.

Energy supply is currently via a contract with Trustpower.

There is no provision in the transport response plan for generators to supply power in event of a major power outage. This will affect streetlights, traffic signals, CCTV, Traffic Cameras, Parking meters, office services.

5.4.5 Telecommunications Supply

The telecommunications supply is through the local phone network. Telecommunication monitoring agencies are located within and outside Nelson.

There is no provision in the transport response plan for emergency telecommunication connections. This will affect traffic signals, school speed signs, CCTV and Traffic Cameras. Monitoring services could also be affected

by outage or civil emergency in a remove city, e.g. Wellington where Sydney Coordinated Adaptive Traffic System (SCATS®) is housed.

5.4.6 Interconnectivity Effects

Interconnectivity or interdependence between different utilities during and after a disaster is of utmost importance. In the event of failure, access is necessary to visit a site and provide power for recovery or removal of debris. To enable effective and efficient recovery of lifelines from an event which disrupts their service, dependencies on other lifelines must be understood and where necessary, mitigated against.

Figures 5 - 4 and 5 – 5 summarises interdependencies between lifelines sectors during business-as-usual and major disaster events where disruption is expected to roads and electricity networks. The ratings presented in this section are illustrative only – obviously the extent of dependence in a response and recovery situation will depend on the specific scenario. The total dependency scores clearly illustrate the importance of electricity, roads, fuel and telecommunications to the other sectors, with air transport, VHF and broadcasting becoming more important in a major disaster event.

Figure 5 - 4: Interdependency Matrix – Business As Usual

The degree to which the utilities listed to the right are dependent on the utilities listed below	Roads	Rail	Sea Transport	Air Transport	Water Supply	Wastewater	Stormwater	Electricity	Gas	Fuel Supply	Broadcasting	VHF Radio	Telecomms	Total Dependency
Electricity	1	2	3	3	3	3	2		2	2	3	3	3	30
Roads		3	3	3	2	2	2	2	2	3	2	2	2	28
Fuel	2	3	3	3	2	2	2	2	2		2	2	2	27
Tele-comms	2	2	2	2	2	2	2	2	2	2	2	3		25
Water Supply	1	1	1	2		3	1	1	1	1	1	1	2	16
VHF Radio	2	2	2	2	1	1	1	1	1	1	1		1	16
Stormwater	2	1	1	2	1	1		1	1	1	1	1	1	14
Wastewater	1	1	1	2	1		1	1	1	1	1	1	1	13
Rail	1		1	1	1	1	1	1	1	1	1	1	1	12
Sea Transport	1	1		1	1	1	1	1	1	1	1	1	1	12
Air Transport	1	1	1		1	1	1	1	1	1	1	1	1	12
Gas	1	1	1	1	1	1	1	1		1	1	1	1	12
Broadcasting	1	1	1	1	1	1	1	1	1	1		1	1	12

Figure 5 - 5: Interdependency Matrix – During / Post Disaster Event

The degree to which the utilities listed to the right are dependent on the utilities listed below	Roads	Rail	Sea Transport	Air Transport	Water Supply	Wastewater	Stormwater	Electricity	Gas	Fuel Supply	Broadcasting	VHF Radio	Telecomms	Total Dependency
Fuel	3	3	3	3	3	3	3	3	3		3	3	3	36
Roads		3	3	3	3	3	3	3	3	3	2	2	3	34
Tele-comms	3	2	2	2	3	3	3	3	3	2	2	3		31
Electricity	1	2	3	3	3	3	2		2	2	3	3	3	30
VHF Radio	2	2	3	3	2	2	2	2	2	2	2		2	26
Broadcasting	2	2	2	2	2	2	2	2	2	2		2	2	24
Air Transport	2	1	1		2	2	2	2	2	2	2	2	2	22
Water Supply	1	1	1	2		3	1	1	1	1	1	1	2	16
Stormwater	2	1	1	2	1	1		1	1	1	1	1	1	14
Wastewater	1	1	1	2	1		1	1	1	1	1	1	1	13
Rail	1		1	1	1	1	1	1	1	1	1	1	1	12
Sea Transport	1	1		1	1	1	1	1	1	1	1	1	1	12
Gas	1	1	1	1	1	1	1	1		1	1	1	1	12

3: Required for Service to Function, 2: Important but can partially function and/or has full backup, 1: Minimal requirement for service to function.

5.4.7 Succession Planning

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

Currently succession planning is largely by way of multiple staff members involved in cross collaboration of administering the activity and detailing strategies for the future in asset management plans. In order to ensure greater effectiveness there is a need to formalise this approach.

6. Focus Areas

6.1 Arterial Traffic

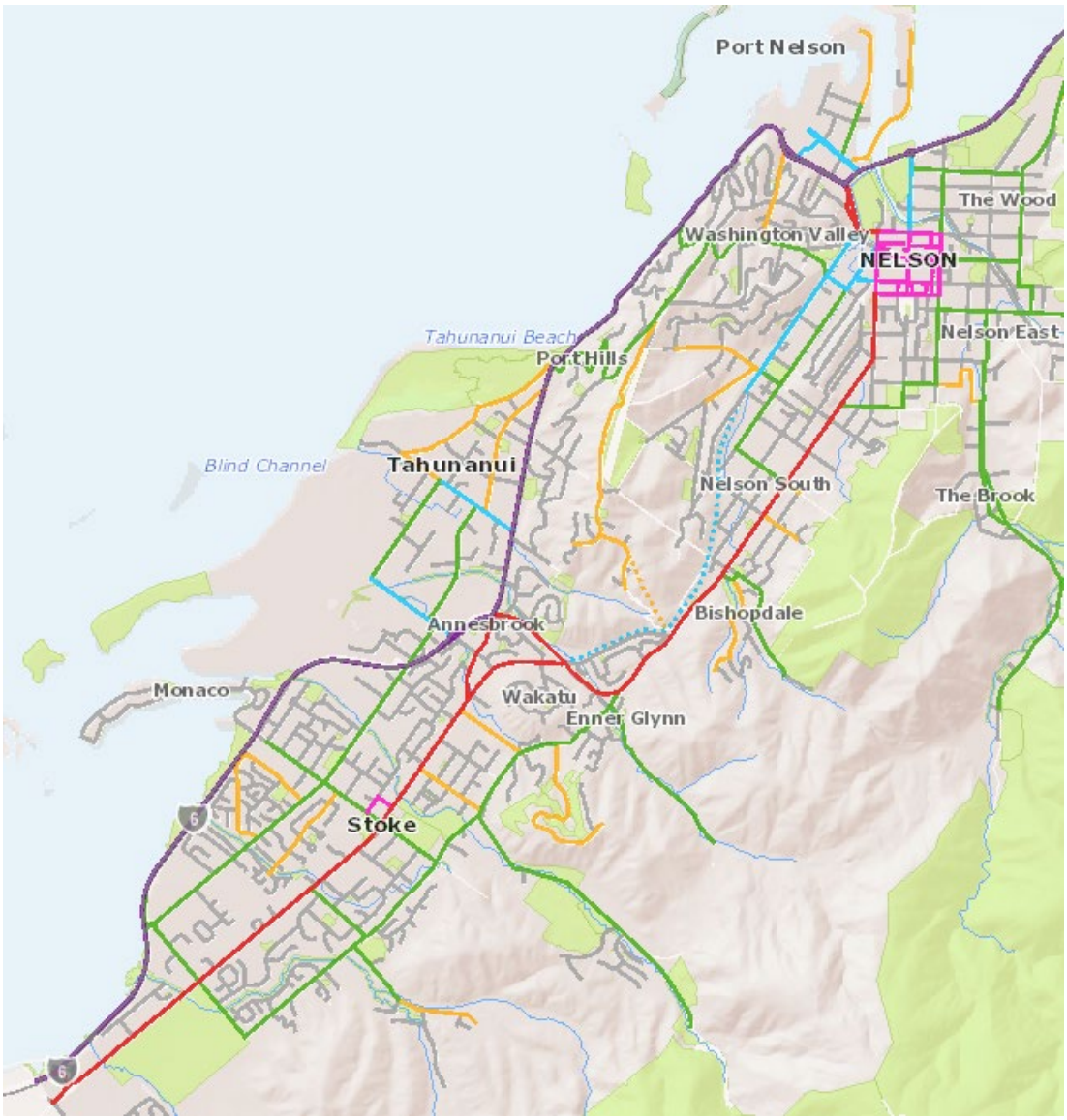
6.1.1 Arterial Traffic Introduction

The arterial road network is shown in red on the map in figure 6-1 below and consists of:

- a 5.9km section of Rutherford Street and Waimea Road classed as a Regional ONRC road;
- and 9.5km of Arterial ONRC road comprising Main Road Stoke, Annesbrook Drive and Haven Road.

The traffic volumes at key locations on the arterial network are shown graphically in the Executive Summary figure 1.1 in section v.

Figure 6 – 1: Arterial Road Hierarchy



The development of the city's State Highway and arterial network has been a fraught process over recent years. A 1967 study originally mooted a highway between Nelson city and Richmond to relieve forecast traffic growth along Main Road Stoke, Annesbrook, Tahunanui, Rocks Road and Waimea Road, bypassing Stoke on the seaward side and heading over the Bishopdale hill down the railway reserve where the railway lines were lifted in 1955.

In 2001 the first half of this highway, bypassing Stoke, was completed by Transit New Zealand and named Whakatu Drive. The second part, known most notably as the Southern Link, was rejected by the Environment Court in 2004 and led to the commissioning of the joint NZ Transport Agency, Nelson City Council and Tasman District Council study of the wider Nelson – Richmond transport issues, known as the North Nelson to Brightwater Strategic Study in 2008.

This culminated in a long term vision to 2026, including a combination of public transport, cycling, traffic management and travel demand management measures to support road improvements. No final decision was made on this strategy; consequently in 2009 the Nelson Regional Transport Committee completed the draft Regional Land Transport Strategy which acknowledged a need for additional road capacity as well as a significant improvement in public transport services in the region. The railway reserve was acknowledged as a logical potential transport corridor if ever required.

In 2009 - 2010 NCC undertook the Arterial Traffic Study to determine the best transport option between Annesbrook and QEII/Haven Rd roundabouts that would improve the City as a whole.

The Arterial Traffic Study (ATS) was a significant piece of work completed in 2011 to enable a better understanding of short to medium term demand issues as they relate directly to Nelson. Essentially the Arterial Traffic Study, in agreement with the NZ Transport Agency, determined that:

- There is not a significant traffic problem in Nelson, nor is one forecast to develop over the modelled time period of the study – the next 25 years.
- Of the four options that were assessed in the study Option A - Peak Hour Clearways and Option B – Southern Arterial both offered positives but also had negatives.
- Elements of Option A can be done in stages to provide additional capacity when needed, for example – the study recommended progressing the walk/cycleway around the waterfront in the short term.
- Option B – the Southern Arterial route should be protected as a long-term future dedicated transport corridor should things change.

The final report recommended not to progress a preferred option because the high cost of providing additional roading capacity was found to deliver only marginal transportation benefits while impacting significantly on the urban form of adjacent land use. In considering the 2011 ATS' recommendations Nelson City Council weighed up a number of issues. These included the

impact on the community of ongoing uncertainty over the route, the future security of State Highway 6 from climate change and storm surge, and the limits that might be placed on enhancing the waterfront. Council's subsequent resolution differed from the ATS recommendations; it resolved to retain only the Southern Arterial Corridor option.

Following the National Election in 2014 the Government announced that they would investigate the Nelson Southern Link using their Future Investment Fund for state highway projects. The Nelson Southern Link Investigation is being delivered by NZTA on the Government's behalf and is considering options to improve Nelson's arterial transport network between the Annesbrook Drive and Haven Road roundabouts. At the end of August 2017 NZTA have completed the following items of that investigation:

- **Strategic business case** - The Strategic Case for the Nelson Southern Link investigation identified two key problems for Nelson's arterial routes - congestion and accessibility. The Strategic Case has been completed and confirmed the project should progress to the next phase, the Programme Business Case. You can view a copy of the strategic business case at the following link. https://www.nzta.govt.nz/assets/projects/nelson-southern-link/Nelson-Southern-Link-Investigation-Strategic-Case-Part-A-FINAL.pdf
- **Programme business case -** The development of the programme business case for the Nelson Southern Link included public consultation on a range of potential options and combinations of options to improve Nelson's transport system, including a new route for the state highway, broadly along the previous Southern Link alignment, as well as options incorporating the results of the Rocks Road walking and cycling investigation. It recommends that a range of short-term improvements should be progressed by 2020, including intersection improvements, the addition of clearways on critical sections of Waimea Road and SH6 (Tahunanui Drive and Annesbrook Drive), improvements to public transport and improved accessibility for pedestrians and cyclists. It must be noted that Council is yet to reach a position on the programme business case however it is noted that the investigation was based on modelling under a medium growth scenario and the point of intervention may need to be amended to reflect the high growth that has recently been experienced. You can view a copy of the programme business case at the following link. http://www.nzta.govt.nz/assets/projects/nelson-southern-link/NSLI-programme-business-case.pdf

6.1.2 Arterial Level of Service

Refer section 2.6.4.4

6.1.3 Arterial Traffic Demand

Refer section 3.2

6.1.4 Arterial Traffic Lifecycle Management

Refer sections 3.5, 6.2.4

6.1.5 Arterial Traffic Risks

The following risks have been identified in relation to the Road Pavement and Surface.

- Inaccurate growth information/assumptions used to inform arterial transport model resulting in forecast demand assumptions being too great or too little;
- Actions on the State Highway network impact on the local arterial road network. Close coordination of all activities required to mitigate;
- Unplanned closures (e.g. from natural hazards) have significant financial and social impact on the region. The region heavily relies on the arterial road network for the vitality of the region and as lifeline routes.

6.2 Sealed Pavement and Surface

This key issue section covers the sealed pavement structure and surface. These components of the road represent a significant proportion of the programmed maintenance and renewal expenditure with a historical spend in the order of $1.5M to $2.0M per annum. This section covers the following NZTA work categories:

- WC 111 Sealed Pavement Maintenance
- WC 212 Sealed Road Resurfacing
- WC 214 Sealed Road Pavement Rehabilitation

6.2.1 Road Pavement and Surface Introduction

The key strategic case problem statement and cause and consequences that links to the sealed pavement and surface work categories as discussed in the executive summary section 1.3 is ***'Problem 2 - A backlog of renewals is contributing to an increase in maintenance costs and poor network resilience.'***

Cause	Consequence
Recent increases in investment have reduced the risk of the sealed surface failures however a backlog still exists as a result of underinvested in previous decades. The underinvestment is resulting in a backlog of sites that have degraded under UV and the action of traffic.	Loss of integrity of the base layers due to water ingress or increased maintenance costs to maintain the LoS resulting in high long-term maintenance and renewal costs. Refer graph 1-6. The measure of rutting and shoving has increased 2007 to 2014. The 2015 AMP targeted the sealed surface backlog and has reversed trend although results remain high.

Cause	Consequence
The retaining wall asset and associated handrails has been recently revalued up from $51M to $95M which has shown a significant gap between the current renewal investment level and the annual depreciation. The condition of 130 of the total 419 walls is not well understood.	High forecast maintenance and renewal costs and risk of poor network resilience in seismic or heavy rainfall events.
28 bridges and large culverts have transferred from stormwater to transport to receive NZTA co-investment.	Additional maintenance and renewal investment in the transport account, with a reduction in the stormwater account.
A recent sign inventory and condition assessment has highlighted significantly more assets than were previously estimated. The survey counted 6163 signs compared with the previous valuations of 2910. 4292 (70%) are of poor, very poor or unknown condition.	Increased costs to renew signs as they reach the end of their useful life. Potential for increase crashes/poor network safety performance due to signs not adequately providing the regulatory and warning functions.
Traffic loading has increased through the introduction of HPMV traffic, business and industry growth and increases in permitted axle loading from rule changes. There has been 35% growth in HPMV traffic on key freight routes over the last 5 years against average growth of 16% across all freight classes.	More pavement failures resulting in increased maintenance costs and rougher ride. Starting to identify load restrictions for large culverts that were not designed for this traffic.
Climate change (increased storm intensity), urban intensification and local geology are increasing stresses on the structural and drainage assets leading to more frequent failures.	Unplanned road closures often when other utility providers need the road network to restore their services following an event and restrictions to heavy vehicle access.

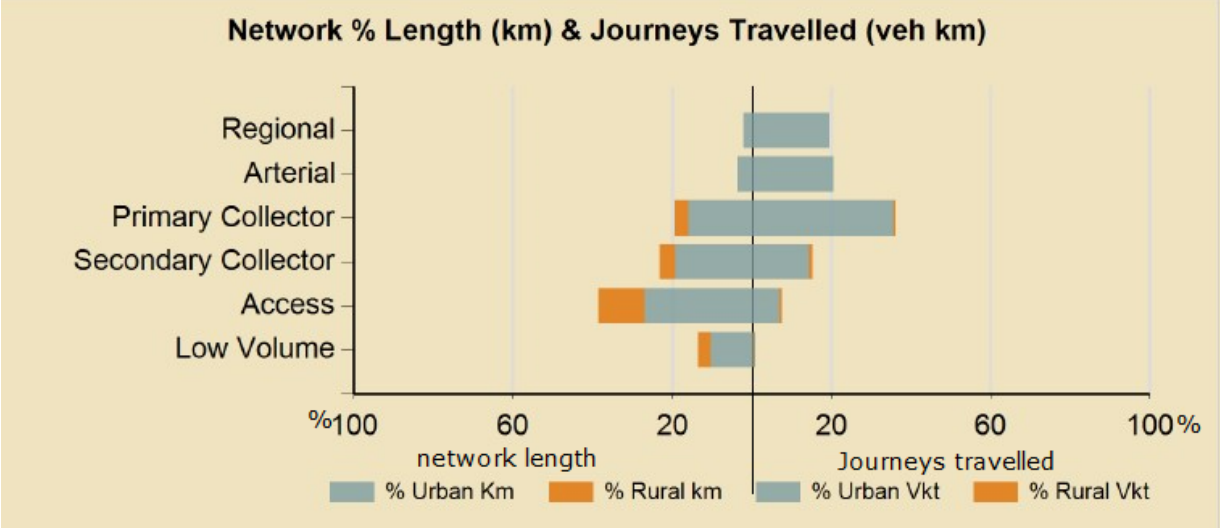
The sealed road network is summarised in the table below:

Table 6 - 1: Sealed Network Summary

ONRC Category	Urban (Km)	Rural (Km)	TOTAL LENGTH (Km)	Urban Journeys	Rural Journeys	ANNUAL TOTAL JOURNEYS TRAVELLED (M Veh Km)
Regional	6		6	38		38
Arterial	10		10	39		39
Primary Collector	45	10	55	69	1	70
Secondary Collector	54	11	65	28	2	30
Access	76	33	108	14	1	15
Low Volume	29	9	38	1		2
TOTAL NETWORK	**219**	**63**	**281**	**189**	**4**	**193**

Table 1: Network Statistics for network length (km) and journeys travelled (Million vehicle km) by ONRC Class - Sourced from ONRC performance measures reporting tool

Table 6 - 2: Total Network Journeys



The data following two tables present the assessment of data reliability in relation to the sealed surface and pavement structure.

Table 6 – 3: Sealed Surface Data Reliability Assessment

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Table 6 – 4: Pavement Structure Data Reliability Assessment

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

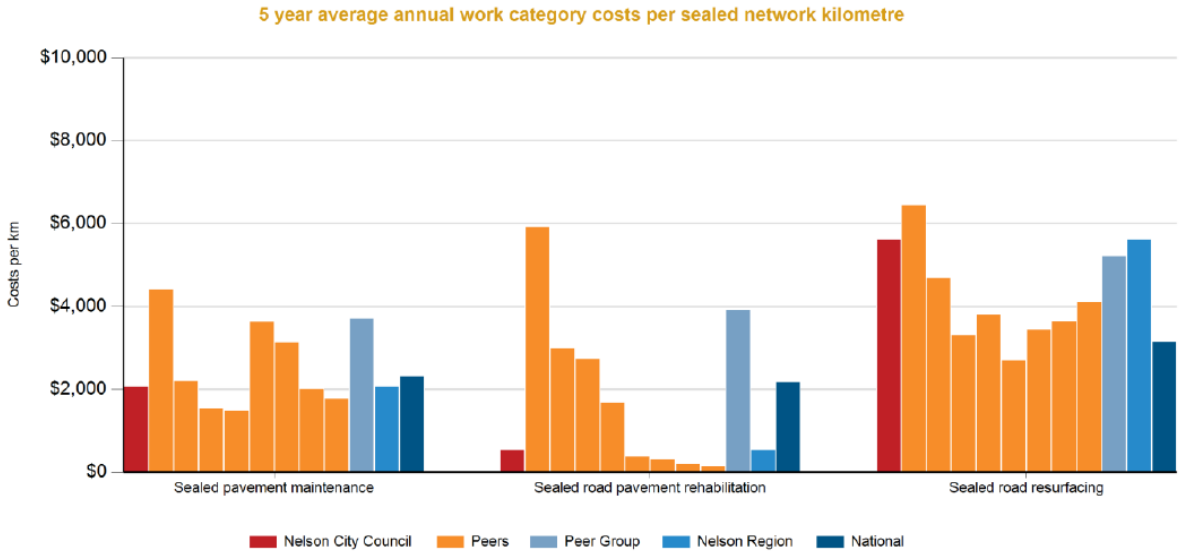
6.2.2 Road Pavement and Surface Level of Service & Current Performance

Section 2.4 presents level of service measures for sealed pavement and surface in relation to smooth travel exposure (STE) by ONRC in comparison to our peers and the quantity of resurfacing each year.

The peer comparison graphs for STE in section 2.4 suggests the network is smoother than our urban peers. In the higher order ONRC categories however it must be noted that in both the region and arterial categories that the amount of network has relatively recently been resurfaced resulting in a smooth ride. As the surfaces deteriorates over time before the next resurface renewal we can expect the peer comparison will go from being significantly better to rougher than average. In the lower order ONRC categories to gap between NCC STE and the peer average is small. Suggesting the current LoS is appropriate.

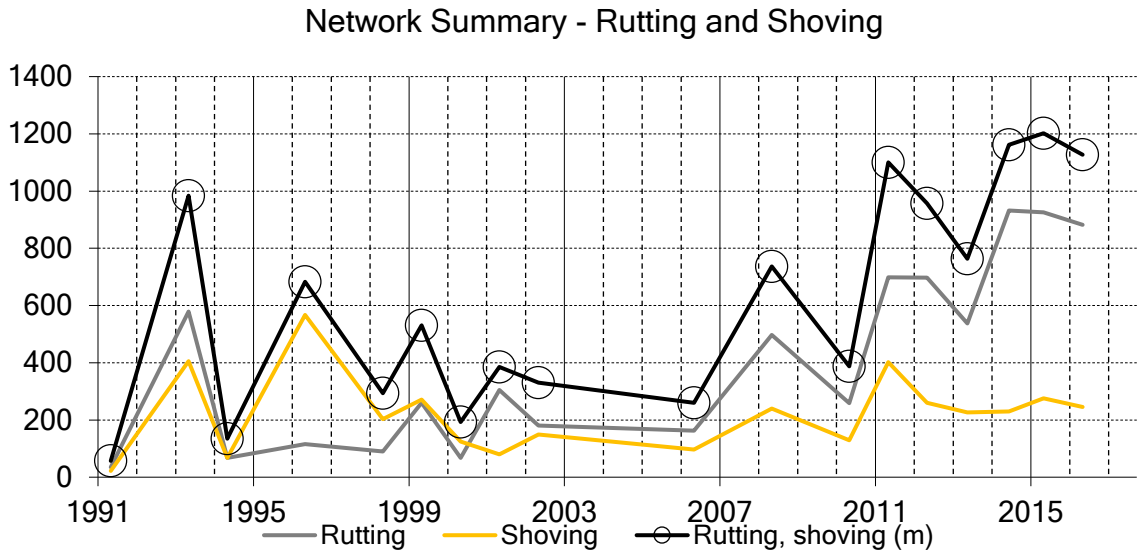
In comparison with Nelson's ONRC peer group the cost per kilometre for sealed pavement maintenance, and sealed pavement rehabilitation and sealed road resurfacing is below the peer group average, with the cost for sealing being just above. This is expected as the Nelson market compared with its peers is neither expensive due to high temporary traffic management or material costs, nor cheap due to significant market competition. The peer comparison is shown in the graph below.

Graph 6 – 3: Five Year Annual Sealed Pavement Cost Comparison



Road condition assessments show that the rutting and shoving which is generally associated with deformation of the subgrade materials and failure of the basecourse due to heavy truck loading has been increasing since the mid 2000 as shown by the graph below:

Graph 6 – 4: Network Rutting and Shoving

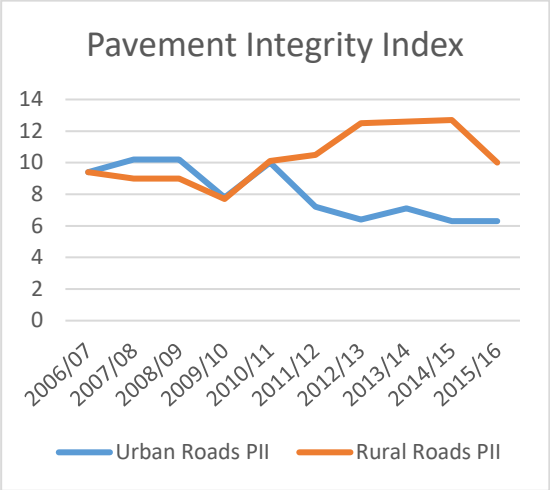


The Pavement Integrity Index (PII) and surface condition index (SCI) are presented in graphs 12 and 13 below.

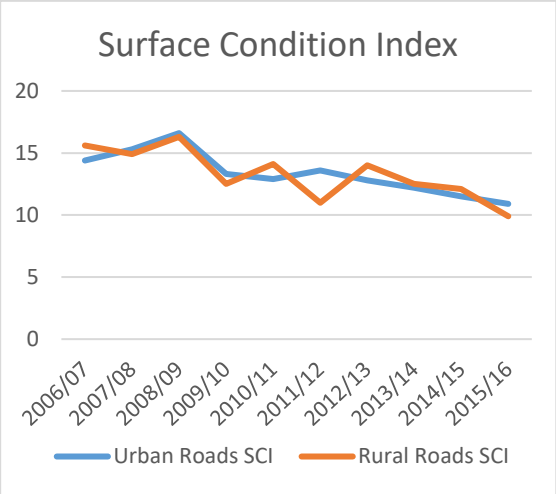
The top sealed surface in Nelson is aged and over the last five years Council has stepped up its resurfacing programme to replace oxidised and cracked surfaces that were past the end of their useful lives and beginning to let water through into the structural pavement layers. This response is shown in graph 6 - 6 below that shows an improving surface condition index (SCI), however a SCI of 11 is still regarded as poor condition with good being between 2 and 5, and fair between 5 and 10.

Nelsons Pavement Integrity Index (PII) is shown in graph 6 - 5 below. Urban roads which make up the majority of the network are improving again as a result of the recent focus on improving the waterproofness of the surface and are rated with an index of 6 indicating fair overall condition.

Graph 6 – 5: Pavement Integrity Index



Graph 6 – 6: Surface Condition Index

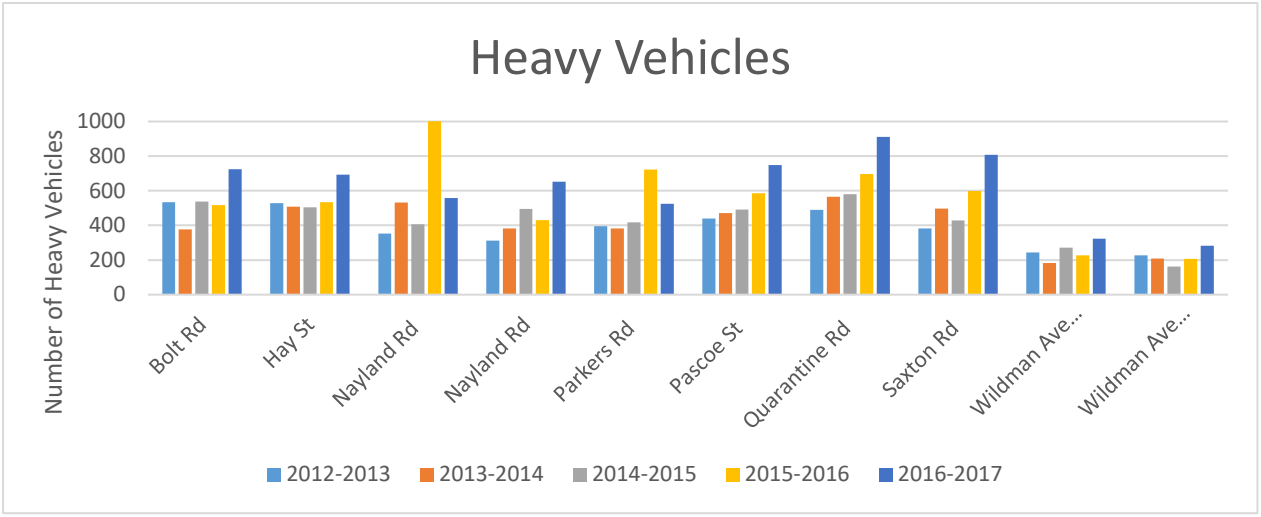


6.2.3 Road Pavement and Surface Demand

Road pavement asset consumption or damage caused by heavy commercial vehicles (HCV) is orders of magnitude greater than that caused by light vehicles. In order to understand future pavement structural demand the focus must be on heavy commercial freight vehicles. As discussed in section 3.2.3 road transport is the only means of getting export products to the port or airport as there is no regional rail network. Nelson City and Tasman District have one of the highest export road freight levels in NZ per capita coupled with strong growth in gross domestic product earnings across all industries in the Nelson Tasman region. This is shown graphically in section 3.2.3, graph 3.3 Gross Domestic Product Growth – Nelson Tasman Region.

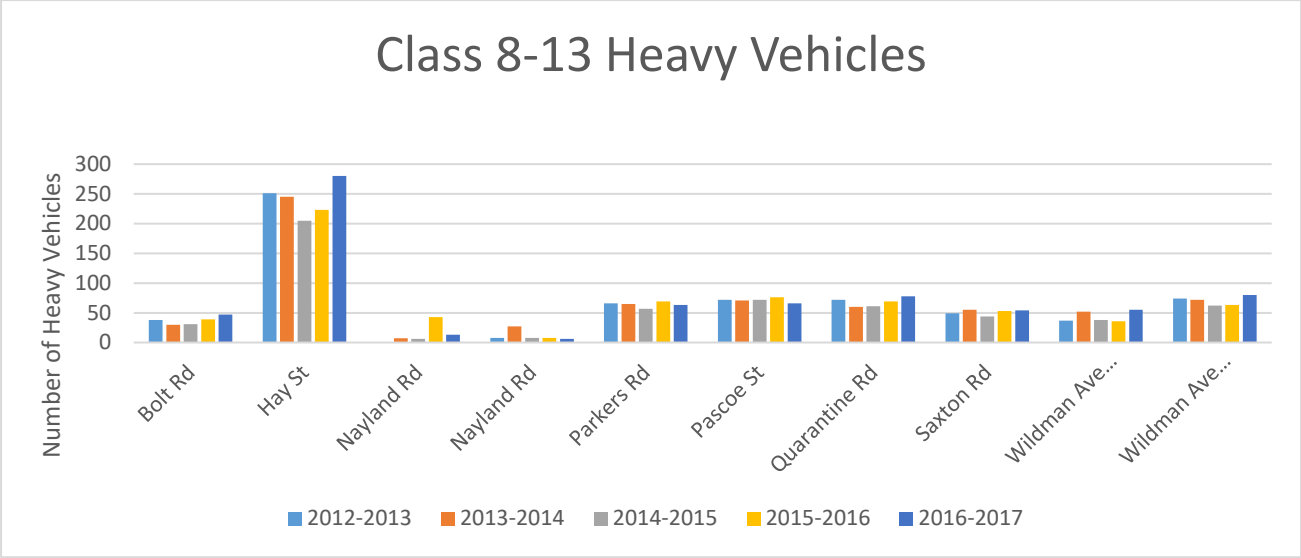
Heavy vehicle traffic (all vehicles over 3.5 tonnes) on Nelson's key freight routes has also been increasing overtime. The increase associated with all heavy commercial vehicles is regularly measured through an ongoing programme of traffic counts which are shown below.

Graph 6 - 7: Increasing HCV traffic over time on key freight routes in Nelson



The increase in large commercial vehicles has also increased overtime. High Productivity Motor Vehicles (HPMV) were introduced in order move more freight on fewer vehicles acknowledging that nationally the freight task was increasing. Nelson has permitted 50Max HPMV vehicles across the vast majority of the network and larger HPMV vehicles on key selected freight routes however even with this network optimisation for moving freight the number of large (class 8-13[36]) HCVs has still increased on most of the key freight routes that we monitor over the last five years as shown in the graph below. More recently the vehicle mass and dimension rule change in 2017 increased axle loadings.

Graph 6 - 8: Increasing Class 8-13 (large) HCV traffic over time on key freight routes in Nelson



The National Freight Demand Study 201437 predicts growth in freight movements from 18.6 million tonnes in 2012 to 28.04 million tonnes in 2042 for the Nelson/Marlborough/Tasman region. This corresponds to an average annual growth rate of around 2%. That Freight Demand Study also highlighted a peak log harvest for the Nelson Marlborough Tasman area in the 2020 – 2025 period of double the current tonnage. More recently the South Island Regional Transport Committee Chairs group has freight as one of its key areas of focus and is seeking to understand the short, medium and long term freight demands for the South Island and if the road network or other modes such as air and sea are better placed to meet the future freight demand.

36 Refer Traffic Monitoring for State Highways - Appendix A for classification descriptions (https://www.nzta.govt.nz/assets/resources/traffic-monitoring-state-hways/docs/traffic-monitoring-state-highways.pdf)

37 http://www.transport.govt.nz/research/NationalFreightDemandsStudy/

6.2.4 Road Pavement and Surface Lifecycle Management

Programme Business Case

Options for achieving the outcomes, levels of service and responding to the demands on the sealed pavement and surface were developed and tested using a multi criteria analysis (MCA). The MCA considered the problem statements introduced in the key issues section 1.3, the NZTA Investment Assessment Framework and GPS, and other factor such as the feasibility, contribution to network resilience and stakeholder acceptability. The Multi criteria analysis can be found in Appendix D.

The three options as considered for the sealed pavement and surface assets were:

1. Maintain investment level plus allowance for network growth.
2. Reduce investment level by increasing forecast useful life on chipseal surfaces by two years but allocate funds to improve pavement data, undertake deterioration testing and analysis to improve understanding of forward works through increased N&AM budget.
3. Increase investment level to include allowance for network growth plus additional rehabilitation amounts to better reflect increasing HCV loadings and pavement failures observed in isolated areas.

Option two was chosen as it allows additional data collection and modelling to enable greater knowledge to be gained in relation to the long run spend requirement and reflects the ability to allow the asset to be slightly run down as it is smoother than the ONRC Peer averages as discussed in more detail below.

Pavement Surface

Measuring and quantifying the impact of reducing or not investing in the renewal of the top surface via a resurface programme and the road structure via a pavement rehabilitation programme is not able to be accurately estimated or quantified at present as Council does not run a detailed pavement model such as dTIMS. However experience tells us that not keeping the water proof seal layer intact will increase the occurrence of pavement failures and an increase in road roughness. Over time this would result in either an increase in reactive maintenance or a reduction in the assets life before rehabilitation is necessary.

It is now proposed to run a pavement and surface analysis model like dTIMS to determine the most appropriate risk based expenditure level and this is included in the improvement plan. In the absence of a detailed model the following analysis has been undertaken to estimate the most appropriate expenditure level.

Up until the last ten years, NZTA supported the use of theoretical seal lives that had been previously published by their predecessor, Transit NZ in 2005. Since then, Councils have been encouraged to extend the life of all of the

pavement surfaces that they maintain until all of their practical life has been utilised. In order to provide some assessment of the likely future costs associated with maintaining Nelsons roads, a revised seal life table has been developed that more accurately reflects the practical life of the sealed surfaces in Nelson. These seal lives have been based on the following factors:

- The current age of the existing surfaces;
- The age of the surfaces programmed for renewal after visual inspection (i.e. visually confirmed they have reached the end of their useful life);
- The experience of Council's road maintenance staff.
- Feedback from NZTA operation audit and inspections has made a significant change to the practical seal life following an audit of the Nelson network in 2017 by extending the life of all reseals by 2 years compared with the life used in the 2015 AMP.

The practical seal lives are shown in Table 4.5 with each entry colour coded according to the confidence that Council officers have for each particular entry. Green represents areas of very high confidence, orange represents moderate to high confidence and red represents low confidence.

Table 6 – 5: Practical seal lives in Nelson

Surfacing type		Traffic volume						
		<100vpd	100-500vpd	500-2000vpd	2000-4000vpd	4000-10000vpd	10000-20000vp	>20000vpd
VFILL	6	8	7	6	5	4	3	3
	5	11	10	9	8	7	6	5
	4	15	13	11	10	9	8	7
	3	17	15	13	12	11	10	9
1	5	1	1	1	1	1	1	1
	4	4	4	2	2	1	1	1
	3	4	4	2	1	1	1	1
	4/6	7	7	7	5	4	3	1
	3/5	8	8	8	6	5	4	2
	2/4	Not used						
R	5	22	22	14	12	10	8	6
	4	20	20	20	17	12	7	6
	3	18	18	18	14	10	9	8
	2	Not used						
	4/6	18	18	18	16	12	8	6
	3/5	18	18	18	18	15	12	10
	2/4	20	18	16	15	14	12	11
AC	10	30	30	29	28	26	21	10
	16	25	25	24	24	23	20	15
OGEM		Not used						
OGPA		No longer considered						

While the table above seems to illustrate a high level of uncertainty overall, the areas shown in red do not represent a very high proportion of the sealed area in the Nelson road network. The proportion of each surface type and corresponding traffic volume range is shown in Table 6 - 6.

Table 6 – 6: Proportion of Road Surface in Nelson by Type and Traffic Volume

Surfacing type		Traffic volume						
		<100vpd	100-500vpd	500-2000vpd	2000-4000vpd	4000-10000vpd	10000-20000vpd	>20000vpd
VFILL	6			0.4%				
	5	0.0%	0.1%	0.1%	0.0%			
	4							
	3							
1	5	0.0%						
	4	0.1%	0.1%	0.1%				
	3		0.1%	0.0%				
	4/6	0.1%	0.8%	0.4%	0.4%	0.2%		
	3/5	0.6%	2.9%	1.6%	0.0%	0.3%		
	2/4							
R	5	0.3%	0.4%	0.3%	0.1%			
	4	0.5%	4.2%	5.1%	1.8%	1.2%	0.4%	
	3	1.2%	3.7%	1.0%	0.1%	0.4%		
	2							
	4/6	0.7%	7.2%	7.1%	2.9%	1.6%	1.2%	
	3/5	1.4%	3.2%	5.9%	2.3%	1.8%		0.1%
	2/4		1.0%	0.6%	0.2%			
AC	10	1.9%	7.4%	6.6%	4.6%	5.7%	1.7%	0.1%
	16	0.0%	0.0%	0.1%	0.1%	1.9%	2.1%	1.4%
OGEM								
OGPA								

Table 6.6 shows that almost all of the road network (approximately 93%), by area, is of a type that there is high confidence in the practical surface life. The revised surface life table is therefore considered to be fit for purpose in assessing the likely forward renewal cost of the sealed surface.

It is noted that the practical surface life table above details lives for each surface type in a location that is appropriate. For example, AC16 will almost always last a lot longer if used in the same location as AC10. In practice though, AC16 is never used in the same location and is instead reserved for use in much higher stress situations.

Currently there is a change in seal technology towards more environmentally sound and safer to use products. Further effect on the seal lives are driven by the changes in the New Zealand vehicles fleet to front wheel power steering cars in particular. These newer vehicles put the road surface under additional stress.

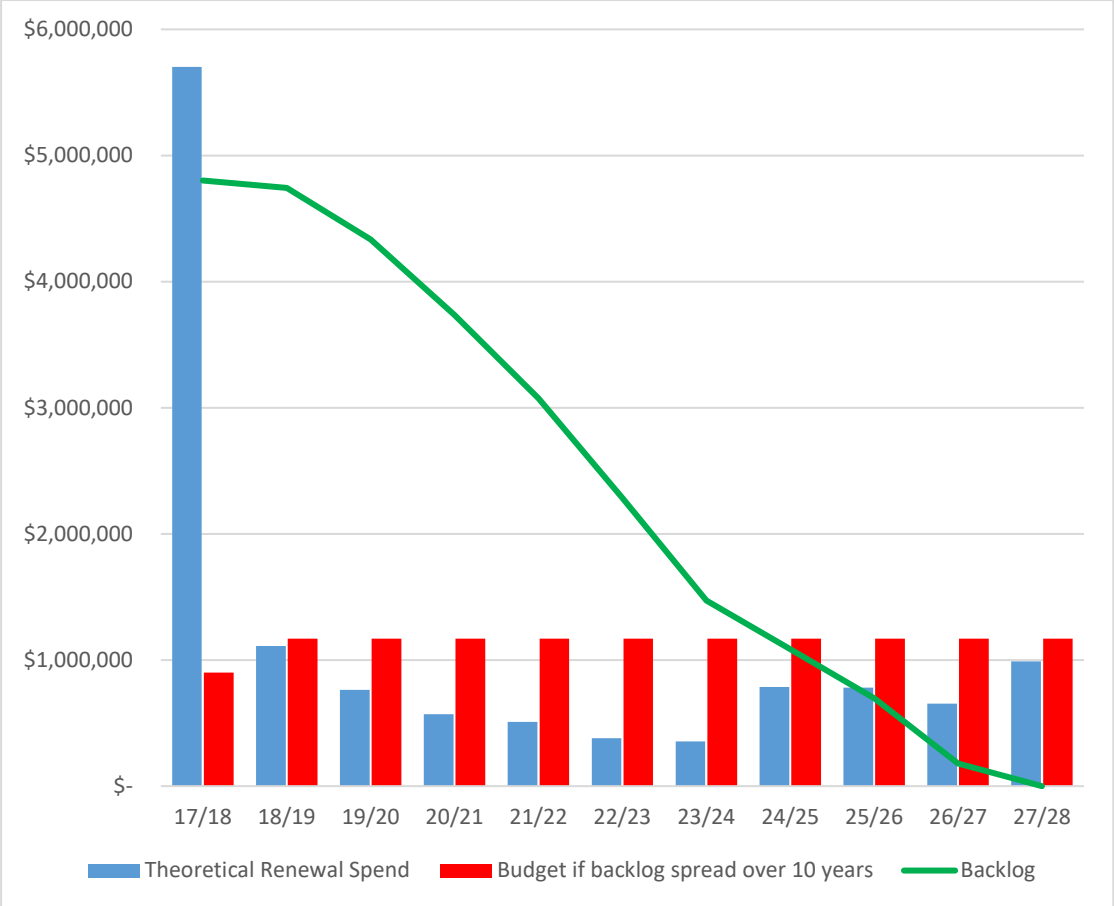
With these changes comes uncertainly around the life of the surfaces. As a result the surface life table will need to remain a live document that is revised regularly to reflect the latest information that Council has about its road surfaces. The table will be updated at least every three years after the major inspection and programming of critical surfaces for resurfacing that takes place in order to inform both the next Transport AMP and RLTP.

The practical seal life table allows an assessment of the whole network how much of it is due for reseal in each year. To follow this, a likely cost can be calculated. (Refer A1812267) The following assumptions were made in undertaking this assessment.

- All asphalted surfaces will be replaced with asphalt at an average cost of $35/m^2$
- All non-asphalt surfaces will be replaced with a two coat grade 3/5 chipseal or similar at an average cost of $7.00/m^2$
- Council staff time programming and managing the reseals is 4% of the total cost
- Lifting services and remarking is 5% of the total cost

Figure 6 - 2 shows the theoretical renewal spend in blue, budget if the backlog or liability is spread over 10years in red.

Figure 6 – 2: Expected Future Resurfacing Costs/Liability



In summary Figure 6 - 2 shows the following:

- There is a very large backlog of surfaces that have exceeded their practical lives and need to be replaced. This is supported by Council staff observations that have shown that they have been unable to reseal all of the critical surfaces in the 2017/18 financial year and as a result will need to undertake more repair work.
- If Council was to catch up and keep up with the reseals that are needed, when they are needed then around $4.7M would need to be spent in the 2018/19 financial year followed by $0.7M and $0.6M for the two years following.
- It is proposed to spread the backlog over the next 10 years as shown by the red bars. This results in a budgeted expenditure of $1.17M each year for the 2018/19 to 2027/28 financial years. The budgeted in each year includes a proportion of the backlog plus the area due for replacement in that particular year with the backlog likely to be prioritised first.

Of note is the fact that the presence of this backlog will result in a future 'hump' that will occur approximately every 17-19 years requiring an annual investment of around $3.0M at peak. This does not show in the ten year period covered by this Transport AMP but first begins to appear again in around 2032/33.

The treatment selection for the individual reseal sites is guided by the ONRC hierarchy and the technical assessment by roading professionals. A resurface flow chart has been developed to assist in this process. The flow chart is located in Appendix G.

Pavement Renewals

For pavement renewals Council utilises field measurements, maintenance history and engineering judgement to programme works. A schedule of sites that are being monitored for consideration in future programmes is located in A1761635. The NZTA require a NPV analysis to demonstrate that rehabilitation of the renewal of the pavement structure is the least cost whole of life treatment.

The following provision programme (subject to individual NPV analysis) is planned for the first three years of the plan.

Table 6 – 7: Pavement Renewal 3 Year Programme[38]

Pavement Rehabilitiation							
Tardis A1761635 - A777631							
ONRC -refer A1712199	Location	Start	finish	2017/18	2018/19	2019/20	2020/21
				$ 164,526	$ 350,000	$ 337,500	$ 362,500
Primary Collector	Glouchester Street	Vanguard Street	St Vincent Street	$ -			
Arterial	Saxton Road West	Main Road Stoke	Nayland Road	$ 122,276			
Primary Collector	Wildman/Vickerman rotary	Wildman Avenue	Vickerman Street		**$ 150,000**		
Access	New Street	Trafalgar Street	Collingwood Street		**$ 200,000**		
Primary Collector	Richardson Street	Fifeshire Crescent	Whitby Road	$ -			
Secondary Collector	Arapiki Road	Main Road Stoke	The Ridgeway				
Secondary Collector	Maple Street	Annesbrook Drive	Bledisloe Avenue	$ 42,250			
Access	Beachville Crescent	Stanley Crescent	Moari Road		**$ -**		
Secondary Collector	Suffolk Road	no.440	Saxton Road			**$ -**	
Secondary Collector	Dodson Valley Road	no.32	no.48			**$ 75,000**	
Secondary Collector	Russel Street	Queens Road	Stanley Crescent				
Secondary Collector	Songer Street	Main Road Stoke	no.240			**$ 112,500**	
Primary Collector	Wildman Ave	Vickerman Street	Hay Street				**$ 362,500**
Primary Collector	Trafalgar Street South	Brougham Street	Van Diemen Street			**$ 150,000**	

6.2.5 Road Pavement and Surface Risks

The following risks have been identified in relation to the Road Pavement and Surface.

- Poor understanding of remaining life/deterioration rate of subsurface pavement layers. In order to mitigate against this risk DTIMS modelling is planned to inform the next asset management plan in 2021;
- Poor quality of road reinstatement work by utility operators such as trench edges in high stress areas such as wheel paths or close to kerbs, trench settlement and cracking allowing water to enter the pavement layers below. The conditions and bond associated with the road opening permit minimise this risk;
- Large trenches with high quality back fill in poor subgrades where differential settlement can then occur. The conditions and bond associated with the road opening permit minimise this risk;
- Historically resurfacing has occurred without major dig outs to fix road base issues. In order to mitigate against this risk dTIMS modelling is planned to inform the next asset management plan in 2021;
- Precedence of AC subdivision roads setting customer expectations. A resurface flow chart has been developed to guide treatment selection decisions and the communications to all adjacent residents will clearly detail the reasons behind the treatment selection decision.

38 Refer A1761635 and A777631 for pavement rehabilitation priority decision matrix.

6.3 Unsealed Pavements

This key issue section covers the unsealed pavements. These components of the road represent a small portion of the programmed with a historical spend in the order of $100,000 per annum. This section covers the following NZTA work categories:

- WC 112 Unsealed Pavement Maintenance
- WC 212 Unsealed Road Metalling

6.3.1 Introduction

The Council maintains 17km of unsealed roads.

There is no direct link to the strategic business case AMP problem statements for the unsealed road network.

6.3.2 Level of Service

The Council does not collect specific level of service or condition data for unsealed roads. These roads tend to be very dynamic with the conditions changing rapidly based on climatic effects and maintenance activities such as grading.

6.3.3 Demand

Generally the Council's unsealed road network carries low traffic volumes however the unsealed roads provide access to some critical facilities:

- Maitai Dam
- Wakapuaka sewer treatment plant
- Forestry harvesting
- These roads are reflected with higher ONRC classification than just the traffic volume would dictate due to their critical lifeline or freight function.

6.3.4 Lifecycle Management

Unsealed road inventory data is held in the Council's RAMM database.

Historically pavement material and depth data has not been recorded for unsealed roads. Since 2012/13 the Council has been recording new pavement layers in RAMM when completing structural overlay activities. Routine maintenance metalling is not recorded in the RAMM inventory table but the costs associated with the work are captured in RAMM under the Maintenance Cost table.

Programme Business Case

Options for achieving the outcomes, levels of service and responding to the demands on the unsealed pavements were developed and tested using a multi criteria analysis (MCA). The MCA considered the problem statements introduced in the key issues section 1.3, the NZTA Investment Assessment

Framework and GPS, and other factor such as the feasibility, contribution to network resilience and stakeholder acceptability. The Multi criteria analysis can be found in Appendix D.

The four options as considered for the sealed pavement and surface assets were:

1. Reduce investment - renew 15mm gravel rather than 25mm previously scheduled plus maintain existing grading frequency, likely to result in rougher ride and less potential to respond to changing harvesting plans from forestry users
2. Maintain as existing
3. Seal all unsealed roads
4. Divest roads that serve only 1 user to that user, and maintain remainder as existing

Option two was chosen because there is no evidence or demand to support a wholesale change to any other options at this time. Unsealed pavements are a small component of the Nelson road network so this decision does not make a big impact to overall budgets but will be continued to be monitored for overall lifecycle, cost and user demands.

6.3.5 Risks

The following risks have been identified in relation to the Unsealed Pavements.

- Ex city residents that move to the country without realising the impact of unsealed roads – unrealistic LOS expectations that need managing.
- Forestry harvest vehicle cycles can damage low strength unsealed roads in a very short space of time. Council engages with forestry and haulage operators regularly to understand the forecast upcoming harvest routes so pre harvest drainage and pavement inspection and maintenance can be carried out to minimise the impact.
- Several NCC, power and telephone lifeline utility assets are accessed from the unsealed network. This is for accessing critical facilities so there are LOS risks associated with demand, Life Line Links
- Crash risk associated with unfamiliar drivers/tourism and recreational users e.g. accessing walk and mountain bike tracks.

6.4 Drainage

This key issue section covers drainage, including pipes under 3.4m^2 in end area, sumps, kerb and channel and dish and earth channels. These components of the road play a vital role in keeping the pavement structure dry and capturing larger contaminants before they enter natural water courses or bodies. The drainage work categories below have a historical

spend in the order of $284K per annum. This section covers the following NZTA work categories:

- WC 113 Routine Drainage maintenance
- WC 213 Drainage Renewals

6.4.1 Introduction

The Council maintains 59 intakes, 39 outfalls, 6315 sumps, 72,769m of culvert pipes and 380,252m of kerb and channel.

The key strategic case problem statement and cause and consequences that links to the sealed pavement and surface work categories as discussed in the executive summary section 1.3 is ***'Problem 2 - A backlog of renewals is contributing to an increase in maintenance costs and poor network resilience'.***

Cause	Consequence
28 bridges and large culverts have transferred from stormwater to transport to receive NZTA co-investment.	Additional maintenance and renewal investment in the transport account, with a reduction in the stormwater account.
Traffic loading has increased through the introduction of HPMV traffic, business and industry growth and increases in permitted axle loading from rule changes. There has been 35% growth in HPMV traffic on key freight routes over the last 5 years against average growth of 16% across all freight classes.	More pavement failures resulting in increased maintenance costs and rougher ride. Starting to identify load restrictions for large culverts that were not designed for this traffic.
Climate change (increased storm intensity), urban intensification and local geology are increasing stresses on the structural and drainage assets leading to more frequent failures.	Unplanned road closures often when other utility providers need the road network to restore their services following an event and restrictions to heavy vehicle access.

In addition:

- The size of the asset will significantly grow as assets that have historically been maintained under the stormwater account are identified as transport assets transferred and documented in RAMM.
- Many drainage assets are undersize when compared to modern design standards resulting in scour and ponding of water in storm events.

The data following two tables present the assessment of data reliability in relation to the sealed surface and pavement structure.

Table 6 – 8: Drainage Pipes Data Reliability Assessment

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Table 6 – 9: Drainage Intakes, Outfalls and Sumps Data Reliability Assessment

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Table 6 – 10: Drainage Surface Water Channels Data Reliability Assessment

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

6.4.2 Levels of service

This asset management plan proposes a new level of service to enable improvements to water quality to be made in accordance the National Policy Statement for Freshwater Management Amendment 2017. The level of service for the three year period staring 2018 is for 'Investigation work to inform a level of service measure for the 2021 AMP is developed' Refer section 3.6 for details.

An increase in sump cleaning to at least annually has been introduced with the new road maintenance contract commencing 2017/18. Testing for improvement to sediment and contamination loads into the freshwater system will be undertaken in the first two years to optimise the programme and determine appropriate levels of service measures. The National Policy Statement for Freshwater Management Amendment 2017 will be a guiding document.

Road drainage is also intrinsically connected to the overall stormwater and freshwater management practices thus reference to the Asset Management Plan for stormwater Flood Protection for levels of service is also required.

6.4.3 Demand

Increasing storm frequency and intensity is placing increasing demand on the size of the drainage features.

Increasing environmental awareness and legislation is placing increasing demand on the extent that stormwater needs to be treated prior to discharge into receiving environments. This is discussed in more detail in section 3.2.7 Fresh Water.

Increasing traffic loading as discussed in section 6.2.3 is placing a greater emphasis on keeping the pavement structure dry so that it can support the increasing number and loading from HCV's and HPMV's without premature failure. Fully functioning drainage assets especially surface water channels and subsoil drains thus become more important.

6.4.4 Lifecycle management

Drainage inventory data is held in the Council's RAMM database and reflected into GIS. However stormwater inventory data is held in Infor and GIS. Coordinating these systems is critical to understanding the network assets in the urban area and is a planned improvement area over the 2018-2021 period.

A cross discipline programme is currently being investigated to streamline roading and stormwater data recording and management between the databases, RAMM, GIS and Infor. This will enable the extent of the roading asset be identified independently of the other stormwater assets and the correct responsibility identified and associated management programme development.

Historically drainage maintenance and renewal has been reactive. It is proposed that overtime this will be changed to be a combination of programmed and reactive once better asset condition information is gained.

Road sweeping varies between five times a week, in the CBD/high pedestrian and cycle areas to quarterly in residential streets. Council is also responsible for street sweeping the kerb areas of state highway that have an urban speed limit.

Programme Business Case

Options for achieving the outcomes, levels of service and responding to the demands on the drainage assets were developed and tested using a multi criteria analysis (MCA). The MCA considered the problem statements introduced in the key issues section 1.3, the NZTA Investment Assessment Framework and GPS, and other factor such as the feasibility, contribution to network resilience and stakeholder acceptability. The Multi criteria analysis can be found in Appendix D.

Options that have been considered in preparation of this AMP are:

1. Maintain investment level plus allowance for network growth;
2. Existing investment level plus network growth, investigation into reducing contaminant loads discharged and SW asset transfer;
3. Improve drainage condition rating and actual condition/value and demand where drainage improvement can be used as a stand-alone intervention to extend pavement life and reset renewal cost accordingly. Increase in sump and kerb sweeping to improve SW run off quality.

Option 2 has been selected as network growth is occurring, improvements to fresh water are legislated thus action is required, however before action is taken investigating the most cost-effective methods is necessary. The transfer of stormwater assets into the subsidised account and the transport asset data bases allows Council to request subsidy for these critical transport assets from NZTA.

6.4.5 Risk

The following risks have been identified in relation to drainage:

- Costs/practicalities associated with meeting demand for improved road run off water quality and reduced sediment load from the National Policy Statement for Freshwater Management Amendment 2017;
- Pavement failure from water ingress due to poor drainage and/or poor maintenance of drainage assets;
- Poor network resilience in storm events due to surface flooding of the road network;
- Reduced structural integrity of the road, berms, banks and structures due to uncontrolled surface water run-off.

6.5 Structures

This key issue section covers structures, including pipes over 3.4m^2 cross section, critical pipes, bridges and retaining walls. These components of the road play a vital role in providing access through natural features that are otherwise challenging. The structures work categories below have historical spend of $380,203 in 2012-15 and $929,508 in 2015-18. This section covers the following NZTA work categories:

- WC 114 Structures maintenance
- WC 214 Structures component replacement
- WC 151 Network and Asset management – structural inspections

6.5.1 Introduction

The Council maintains:

- 97 bridges, totally 850m road bridges, plus 669m footbridges

- 419 retaining walls with a face area of 32,365m^2.
- 68 culverts over 3.4m^2 end area, totalling 3.443km length of stormwater culverts that transport is taking over to maintain visibility of the structural loading capability.
- Handrails, and safety barriers are managed as structures and are included in the inspection and maintenance programme.

The key strategic case problem statement and cause and consequences that links to the structural assets as discussed in the executive summary is '**Problem 2 - A backlog of renewals is contributing to an increase in maintenance costs and poor network resilience.'**

Cause	Consequence
The retaining wall asset and associated handrails has been recently revalued up from $51M to $95M which has shown a significant gap between the current renewal investment level and the annual depreciation. The condition of 130 of the total 419 walls is not well understood.	High forecast maintenance and renewal costs and risk of poor network resilience in seismic or heavy rainfall events.
28 bridges and large culverts have transferred from stormwater to transport to receive NZTA co-investment.	Additional maintenance and renewal investment in the transport account, with a reduction in the stormwater account.
Traffic loading has increased through the introduction of HPMV traffic, business and industry growth and increases in permitted axle loading from rule changes. There has been 35% growth in HPMV traffic on key freight routes over the last 5 years against average growth of 16% across all freight classes.	More pavement failures resulting in increased maintenance costs and rougher ride. Starting to identify load restrictions for large culverts that were not designed for this traffic.
Climate change (increased storm intensity), urban intensification and local geology are increasing stresses on the structural and drainage assets leading to more frequent failures.	Unplanned road closures often when other utility providers need the road network to restore their services following an event and restrictions to heavy vehicle access.

Table 6 - 13: Bridge Structure Data Reliability Analysis

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Table 6 - 14: Large Culvert Structure Data Reliability Analysis

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Table 6 - 14: Retaining Wall Structure Data Reliability Analysis

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Table 6 - 15: Handrail and Safety Barriers Data Reliability Analysis

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Asset Condition and Performance – Bridges and Culverts

A rolling programme of bridge inspections in accordance with NZTA S: 6 2015 informs the condition assessments of bridges. The survey report details specific defects found during the survey. It also provides a recommendation for maintenance work and a forward work priority programme.

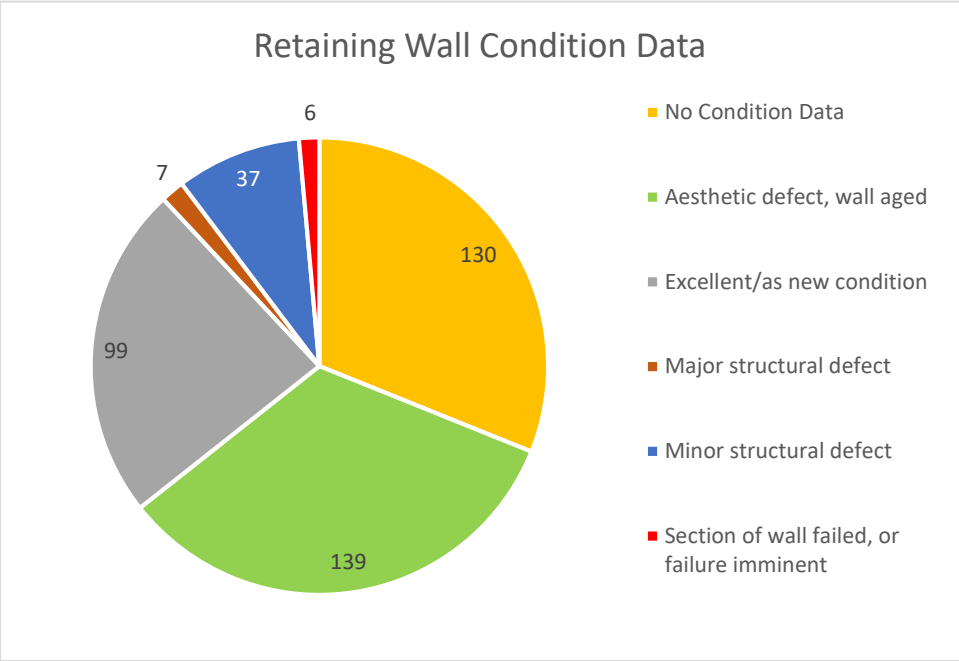
Stormwater culverts larger than 3.4m^2 cross section and critical culverts are being quantified and will have an initial inspection in 2018/19 to determine condition and thereafter will be recorded in the asset database and included in the ongoing rolling programme of inspections.

Retaining Walls – Asset Condition and Performance

The condition of a number of walls is not well understood. The last detailed inspection for this asset was carried out in 2007, however since that piece of work a further 130 walls have been identified and these are yet to have a formal condition assessment. The known condition of the retaining walls as assessed in 2007 is shown in the graph below, with the yellow segment

showing the significant proportion of retaining wall with no condition assessment.

Graph 6 – 9: Retaining Wall Condition Summary



6.5.2 Levels of service

The service level statement for road structures including bridges and retaining walls is: "road structures are considered to be designed and maintained to provide safe access across the network". Level of service measures applicable to structures are ONRC Resilience customer Outcomes 1 and 2, relating to unplanned road closures.

6.5.3 Demand

Refer sections 3.2.3, 3.2.4, and 3.3.3.

Vehicle Dimension And Mass rule change has required assessment of bridge and culverts structures and will result in posting of 3 bridges, and 1 culvert on the Nelson network, before December 2017.

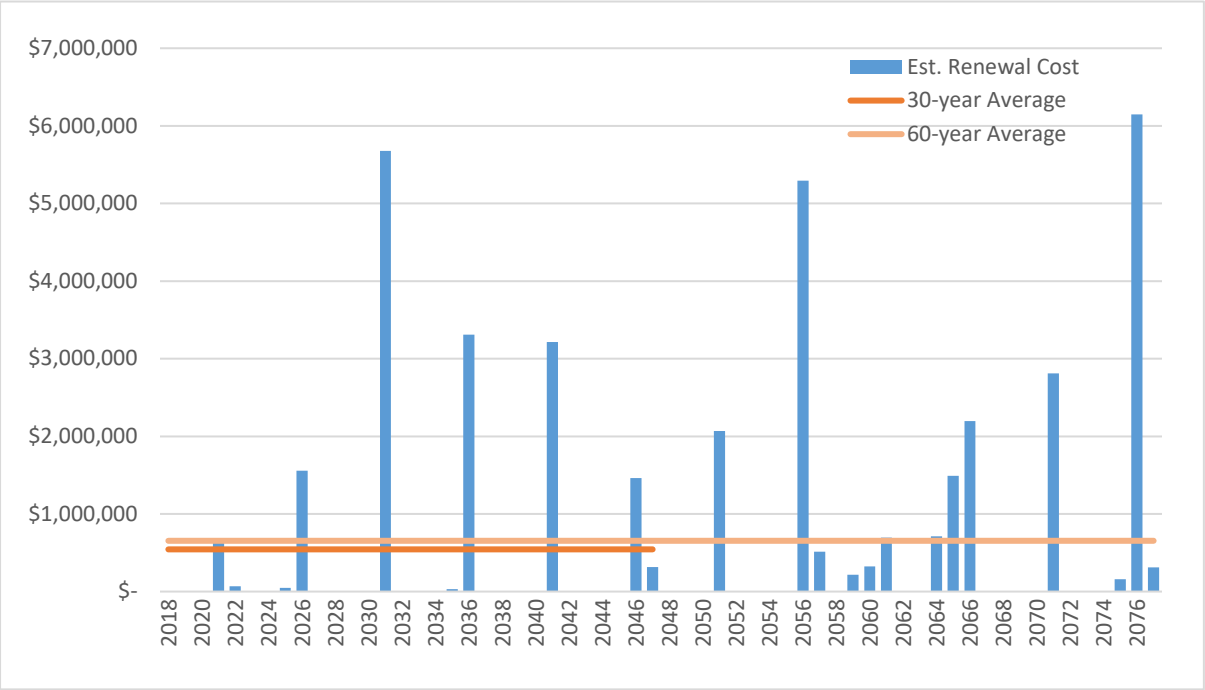
Retaining Walls – Renewal Analysis

The cost of replacement retaining walls has been estimated to be approximately $3,000 per square metre for wall up to 2.2m high then increasing to a maximum of $4,500 per square metre above 2.2m. These rates include all construction, materials, design, consenting, consultation, project management and project supervision and are based on rates from projects Council completed between 2013 and 2016. The spread of remaining asset life for walls is shown in Figure 6 – 3. This data does not include retaining walls that are currently classed as stormwater assets, but hold a road edge, e.g. Brook Street concrete channel, and Saltwater Creek. A

separate assessment is planned to determine the ability of these walls to withstand VDAM, HPMV and 50Max traffic loadings.

Figure 6 – 3: Remaining Asset Life of Retaining Walls

Graph deleted new graph added



In order to assess the appropriate annual replacement cost, an assessment of the remaining life for the walls has been used, along with a projected life for replacement timber retaining walls. It is noted that over time, technology and construction techniques have improved so the practical lives of timber retaining walls is expected to be greater than the 50 year design life. Examples of improvements contributing to an expected improvement in practical lives are:

- Use of H5 treated timber for all timber parts of the wall
- Improved drainage design and construction reducing water contact with timber
- Increased utilisation of specific design which reduces the likelihood of substandard wall strength

As a result, for the purposes of the analysis for this asset management plan, the practical life of a timber retaining wall constructed from around 2010 onwards is assumed to be 70 years. The long run average annual renewal cost has been calculated to be approximately $544,000 over 30 years. This is more than the current annual spend of around $300,000 - $400,000 but is essential to ensure the ongoing health of this significant asset.

Renewal of road structure assets will be implemented to maintain a level of service of an asset by intervening prior to either the end of the useful life of the asset, or the condition of the asset falling below an agreed level.

The renewals programme is developed using the recommendations of the bridge and retaining wall survey reports.

Table 6 – 4: Structure Renewals

Structures Renewals									
Tardis A777631									
Year					17/18	18/19	19/20	20/21	21/22
Total					$297,000	$ 552,000	$ 327,384	$ 471,313	$ 569,456
Structure	**Structure Type**	**Road**	**Location**	**Amount**					
Examiner Street retaining wall	Retaining Wall	Examiner Street	Above bowling club						
Westbrook Bridge	Bridge	Westbrook Terrace		$507,000.00	$50,000	$507,000			
Trafalgar Park Cycle/Footbridge A1781993	Retaining Wall			$247,000.00	$247,000				
Arapiki Road Street No 29	Retaining Wall	Arapiki Road	No 41 to No 43	$64,762.80		$15,000	$64,763		
Arapiki Road Street No's 41 to 43	Retaining Wall	Arapiki Road	No 45 to No 51	$75,180.00		$15,000	$75,180		
Arapiki Road Street No's 45 to 51	Retaining Wall			$82,441.20		$15,000	$82,441		
Mahoe Street No 3	Retaining Wall	Mahoe		$46,123.20			$15,000	$46,123	
Suffolk Road	Retaining Wall	Suffolk Road		$120,000.00				$15,000	$120,000
Wellington Mount Street Retaining Wall	Retaining Wall	Mount Street		$100,800.00				$15,000	$100,800
Coster Street No 40	Retaining Wall			$191,730.00			$20,000	$191,730	
Jenner Road Street Nos 41 to 49. Located immediately above residential footpath and driveway access.	Retaining Wall	Jenner Road	No 41 to No 49	$348,656.40			$50,000		$348,656
Cnr Coster & Calamaras Street	Retaining Wall			$203,460.00			$20,000	$203,460	

6.5.4 Lifecycle management

Nelson City Council has adopted NZTA S6:2015 – Bridges and other significant highway structures inspection policy, in 2016, and is developing a programme to ensure all structures are included in the inspection programme.

Bridges and retaining walls are high cost investment assets. Strategies to maximise lifespan include:

- Regular inspections and maintenance
- Understanding the structural demands. This includes a regular forestry harvesting planning meeting with the Forestry Industry and TDC, liaison with the Heavy Haulage Association, and mapping the 50Max, and HPMV routes and limitations.
- Understanding alternative access route options for heavy transport
- Overweight permit processes
- Posting bridges to limit weight loadings
- Structural component renewal
- Structural renewal including improvements only once all other options are exhausted, or improvement benefits outweigh the existing situation

New structures are built to cater for growth. These are generally built by developers as part of new subdivisions, but can result in a renewal project requiring a capital works investment.

Maintenance Strategy

Repairs and maintenance of structures are identified through the survey inspection reports as detailed in Section 5.4.1 or routine inspections undertaken by the Contractor or Councils contract supervisors. Maintenance is therefore mostly reactionary to defects identified in surveys rather than preventative maintenance.

Vehicle crashes causing damage to handrails, and safety barriers on single lane bridges is one factor that can significantly affect the maintenance costs incurred.

Significant maintenance works planned in the first 3 years includes:

- Repainting of Collingwood Street Bridge

Emergency Works

Structures are susceptible to damage during natural disasters, in particular slips, waterway scouring, waterway gravel and debris build-up, flooding and earthquakes. Recent storm events in the Nelson region highlighted the risk that exists for the area. Failure of or damage to a bridge or retaining wall during one of these events would result in emergency works to initially make the asset useable and also to secure the long term future for the asset.

New retaining walls can be required to repair slips affecting the road network.

The Council can obtain emergency works co-investment funding from NZTA. Refer to the NZTA Planning Investment Knowledge Base for details. http://www.nzta.govt.nz/planning-and-investment/planning-and-investment-knowledge-base/ .

Programme Business Case

Options for achieving the outcomes, levels of service and responding to the demands on the structural assets were developed and tested using a multi criteria analysis (MCA). The MCA considered the problem statements introduced in the key issues section 1.3, the NZTA Investment Assessment Framework and GPS, and other factors such as the feasibility, contribution to network resilience and stakeholder acceptability. The Multi criteria analysis can be found in Appendix D.

The three options as considered for the structural assets were:

1. Maintain existing 3yr investment level of $891,000 for WC114 structures maintenance and $902,697 for renewals but increase allowance under WC151 Network and Asset Management to undertake greater frequency inspections to better understand condition.

2. Reduce investment in component replacement in short term to allow increase in WC151 Network and Asset Management.

3. Increase investment level to match proposed urgent identified work programme in short term and depreciation level in long term with increase allowance under WC151 Network and Asset Management to refine long run expenditure in next AMP cycle.

Option three was chosen because it allows for known and urgent works in the short term, and alongside the inspection programme identified under WC151, further condition assessments to inform a more robust programme in the long term.

6.5.5 Risks

The following risks have been identified in relation to structures:

- Premature failure; potential through natural event, flood, landslide or earthquake, excessive loading, unidentified weakness, or sudden onset of end of life especially where renewal has been delayed or deferred.
- Poor condition knowledge of safety barriers and handrails
- Poor condition knowledge of retaining walls and large stormwater culverts
- Increased traffic loadings on old structures that were assessed in the 1990's for structural loading, but now require reassessment in accordance with the NZTA overweight permit checking system.
- Unknown extent of ageing concrete affecting structural integrity of structures
- Changing heavy traffic routes and demands
- Poor understanding and involvement in the overweight and HPMV permit process.

6.6 Environmental Maintenance

6.6.1 Introduction

This key issue section covers environmental maintenance. These maintenance activities include vegetation control, environmental hazards, litter, graffiti and abandoned vehicle removal, and the maintenance of the Nelson owned stock effluent facility in Richmond at 3 Brothers Corner Appleby. Environmental maintenance represents an annual spend in the order of $350,000.

This section covers the following NZTA work categories:

- WC 121 Environmental maintenance

6.6.2 Level of Service

Vegetation Control

The Council does not collect specific level of service or condition data for vegetation control. Vegetation control is undertaken in accordance with NZTA C/21.

Refer to the councils Parks and Facilities Asset Management Plan for landscape and streetscape levels of service because these are intrinsically connected to the overall landscape management practices where transport road safety and access are not primary concerns.

Environmental Hazards

Ice control is seasonal and preventative at known locations and is connected to the ONRC customer outcomes of temporary hazards. The register of ice prone locations can be found at A1718002, tab 31. The Council does not collect specific level of service or condition data for environmental hazard management.

Debris clearance is reactive and response times are variable with highest order ONRC receiving the most prompt intervention/service.

Litter, Graffiti and Abandoned Vehicles

The Council does not collect specific level of service or condition data for litter, graffiti, or abandoned vehicles. Litter, Graffiti and abandoned vehicle removal are reactive and timely in accordance with NCC reaction times which are based on the offensiveness of the material. There are approximately 40 abandoned vehicles per year.

Stock Effluent Facility

The Council does not collect specific level of service or condition data for the stock effluent facility and it has not been operating long enough to get useful trends. The stock effluent facility is to be maintained clean and operating.

Programme Business Case

Options for achieving the outcomes, levels of service and responding to the demands on the environmental activities were developed and tested using a multi criteria analysis (MCA). The MCA considered the problem statements introduced in the key issues section 1.3, the NZTA Investment Assessment Framework and GPS, and other factors such as the feasibility, contribution to network resilience and stakeholder acceptability. The Multi criteria analysis can be found in Appendix D.

The three options as considered for vegetation control activities were:

1. Maintain existing programme
2. Increased programme to maintain a better appearance of existing assets

3. Minimise maintenance and only respond to urgent arborist works, for safety or loss of service.

Option one was to maintain current investment and manage risks associated with trees on the road network.

6.6.3 Demand

Vegetation Control

Vegetation control can be connected to problem statements 1: '**The arterial transport network is constrained during the morning and evening peak periods and is unable to respond to strong regional population, tourism and business growth resulting in congestion**' and problem statement 3 '**Changing population demographic requires different transport services**' as where shelter and a pleasant aesthetic environment contribute to uptake of alternate transport modes.

Environmental Hazards

Increasing storm frequency and intensity over time is placing increasing demand on the amount of environmental hazard maintenance required. The increasing demand from environmental hazards events is linked to minor slip clean up from heavy rainfall. The amount of frost gritting has stayed static over recent times.

Litter, Graffiti and Abandoned Vehicles

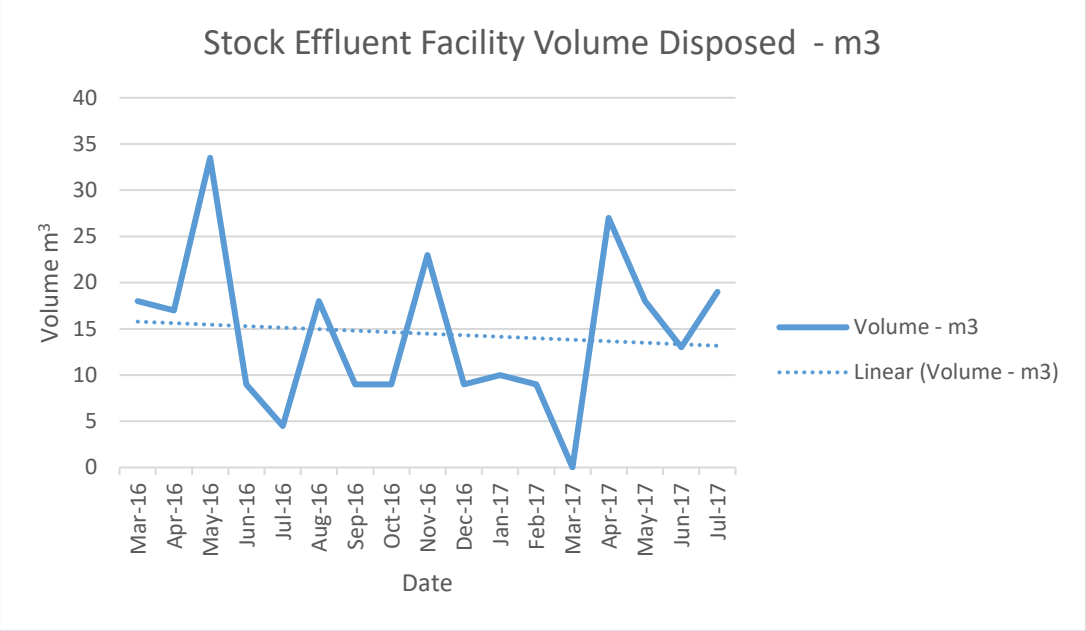
Litter collection on rural roads especially from fly tipping has increased over recent times lined to the increasing cost to properly dispose of rubbish to the transfer station. Graffiti and abandoned vehicle collection has not significantly changed over recent times.

Stock Effluent Facility

The stock effluent facility caters for Nelson and Tasman stock transport demands.

Monitoring data is recorded A1718002, tab 30, and are graphed below in figure 6 -5.

Figure 6 – 5: Volume of Material Disposed of From Stock Effluent Disposal Facility



6.6.4 Lifecycle Management

Vegetation

Refer to the Parks AMP for vegetation life cycle management.

Environmental Hazards

Council is currently assessing environmental hazards to inform forward planning.

Litter and Graffiti and Abandoned Vehicles

Where appropriate Council undertakes education, enforcement, or cost recovery to reduce costs and demands of litter, graffiti and abandoned vehicles control.

Stock Effluent Facility

The Stock Effluent Facility has its own operating, maintenance and asset management manuals, A1700736, A1700737, A1700738. The facility is recorded in GIS, pavement and surfacing data in RAMM, and electric, pump and telemetry data in Infor. Council Utility supervisor monitors the telemetry outputs, while the roading team manage the overall facility. The facility is still relatively new, so detailed trends are not yet evident. It is however noted that the facility collects wash-down and rain water which could be controlled if evidence demonstrates this is a problem.

6.6.5 Programme Business Case Options

Options for achieving the outcomes, levels of service and responding to the demands on the environmental activities were developed and tested using a

multi criteria analysis (MCA). The MCA considered the problem statements introduced in the key issues section 1.3, the NZTA Investment Assessment Framework and GPS, and other factor such as the feasibility, contribution to network resilience and stakeholder acceptability. The Multi criteria analysis can be found in Appendix D.

The two options considered for the environmental activities were:

1. Maintain investment
2. Maintain investment with decreases to Stock effluent facility only

Option two was chosen to reduce the budget for the stock effluent disposal facility operation to reflect actual demand. Other budgets are responsive so reduction is not practical.

6.6.6 Risks

Vegetation

- Tree trimming works are undertaken by qualified arborists to mitigate risks associated with management of large and old trees.
- Tree trimming and vegetation control are undertaken under suitable TMP to mitigate risks associated with working alongside the live traffic lanes.
- Risks of unplanned road closure from falling trees is managed by undertaking regular maintenance and inspections.

Environmental Hazards

- There are road safety, and network resilience risks associated with poor management of environmental hazards. E.g. crashes associated with poor frost / ice control.

Litter and Graffiti and Abandoned Vehicles

- There are health and safety risks associated with litter, graffiti and abandoned vehicles. Untended these can be a risk for the public, but cleaning these up can be a risk for the contractor due to the nature of the materials involved, e.g. cleaning solvents, bio-waste materials.

Stock Effluent Facility

- The stock effluent facility is remote to Nelson. There are risks to the facility due to this disconnection. It is regularly a site for abandoned vehicles. These risk could be mitigated with CCTV cameras.
- Operation and maintenance of the stock effluent facility has associated risks, e.g. confined spaces, electricity, and bio-waste. These are managed by employment of a suitably qualified contractor. The facility is currently operated as a variation to the Regional Sewerage Scheme Contract.

6.7 Traffic Services

This key issue section covers traffic services. These components of the road represent a significant proportion of the operating, maintenance and renewal expenditure with a historical spend in the order of $1.3M per annum. A significant component of this ($400,000) is the power cost associated with streetlight power. This section covers the following NZTA work categories:

- WC 122 Traffic Services Maintenance
- WC 213 Operational Traffic Management
- WC 222 Traffic Services Renewals

6.7.1 Introduction

The Council maintains 4200 streetlights, 6215 signs, 28 electronic signs, 13 signalised intersections, 2 traffic cameras and pavement markings on 247km of road.

Traffic services directly link to AMP '**Problem Statement 2: A backlog of renewals is contributing to an increase in maintenance costs and poor network resilience**':

Cause	Consequence
A recent sign inventory and condition assessment has highlighted significantly more assets than were previously estimated. The survey counted 6163 signs compared with the previous valuations of 2910. 4292 (70%) are of poor, very poor or unknown condition.	Increased costs to renew signs as they reach the end of their useful life. Potential for increase crashes/poor network safety performance due to signs not adequately providing the regulatory and warning functions.

And **'Problem Statement 3: Changing population demographics required different population services'** because the aging population eyesight and reaction times are slower requiring clear and well maintained traffic service facilities to remain active:

Cause	Consequence
The over 65 population cohort is growing at twice the NZ average growth rate. Census data and Statistics NZ forecasts indicate that Nelson population aged over 65 will change from 17% (2013) to 32% (2043). The NZ average is expected to be 23% (2043).	The transport system will need to respond to the changing demographic. e.g. road environment that accommodates increased reaction times, safe pedestrian facilities (including for mobility scooters) and convenient public transport and total mobility services.
	Uncertain demand for services / potential for social isolation due to the ageing population typically only known car travel as a means of mobility. NZTA research in 2017 indicates that the private car will continue to be the main transport choice for this sector of the

Cause	Consequence
	population. The growth of the health and social service sector is shown in graph 1-9, and is second only to Transport and postal services.

The data following tables present the assessment of data reliability in relation to streetlights, signs and traffic signals.

Table 6 – 14: Streetlights – Luminaires Data Reliability Assessment

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Table 6 – 15: Streetlights – Poles Data Reliability Assessment

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Table 6 – 16: Signs Data Reliability Assessment

	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Table 6 – 17: Traffic Signals Data Reliability Assessment

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

6.7.2 Level of Service

The service level statement for the transport assets in this section are:

- Street lighting is provided and maintained to enable safe and easy night driving on all urban streets and to outdoor public spaces were night time pedestrian and cyclists movements dominate e.g. Central Business District areas.
- Traffic signals are designed and maintained, safe and operating, to optimise traffic and pedestrian flows on the transport network.
- Appropriate signage is maintained to enable regulatory control of intersections and parking.
- Appropriate signage is maintained to enable control over safe and efficient way finding across the transport network.
- Road markings are maintained to provide clear delineation and direction for roads, parking, and cycle lanes at all times.

6.7.3 Demand

Refer to section 1.5 for transportation demands. Traffic services complement all response items and help optimise network use. Traffic services can be a low cost safety intervention when appropriate.

Subdivision and growth demand for street lighting on currently unlit roads, e.g. Marsden Valley Road and Main Road Stoke, south of Saxton Road is likely to occur as residential densities in these areas increase.

6.7.4 Life Cycle Management

Traffic services data is held in the Council's RAMM database.

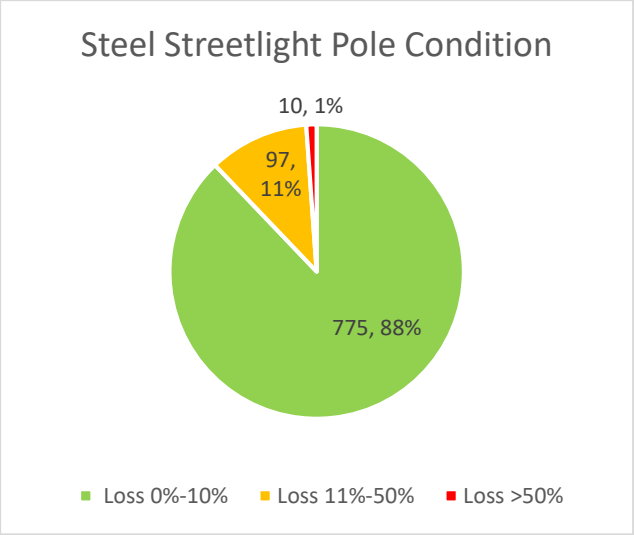
Streetlights

Streetlight lamps are replaced at the end of their useful life when light output falls below 70% of original level, typically a 3.5 year cycle. This will change in 2018 when the LED renewal programme is complete and a 20 year lifetime is expected, but will introduce a requirement for LED cleaning every 7 years to optimise light output. Electrical compliance testing every 6 years was introduced in 2017/18. Night time inspections are undertaken monthly to determine maintenance and renewal programme. Steel streetlight poles have a 25 year minimum life expectancy. Testing is undertaken after 10 years to determine likely remaining life to optimise replacement timing. Testing in 2016 revealed:

- 10 poles were potential unsafe and were scheduled for replacement in 2016/17,
- 97 poles of poor condition, and scheduled for retesting in 19/20
- 755 poles were in good condition and scheduled for retesting in 22/23.

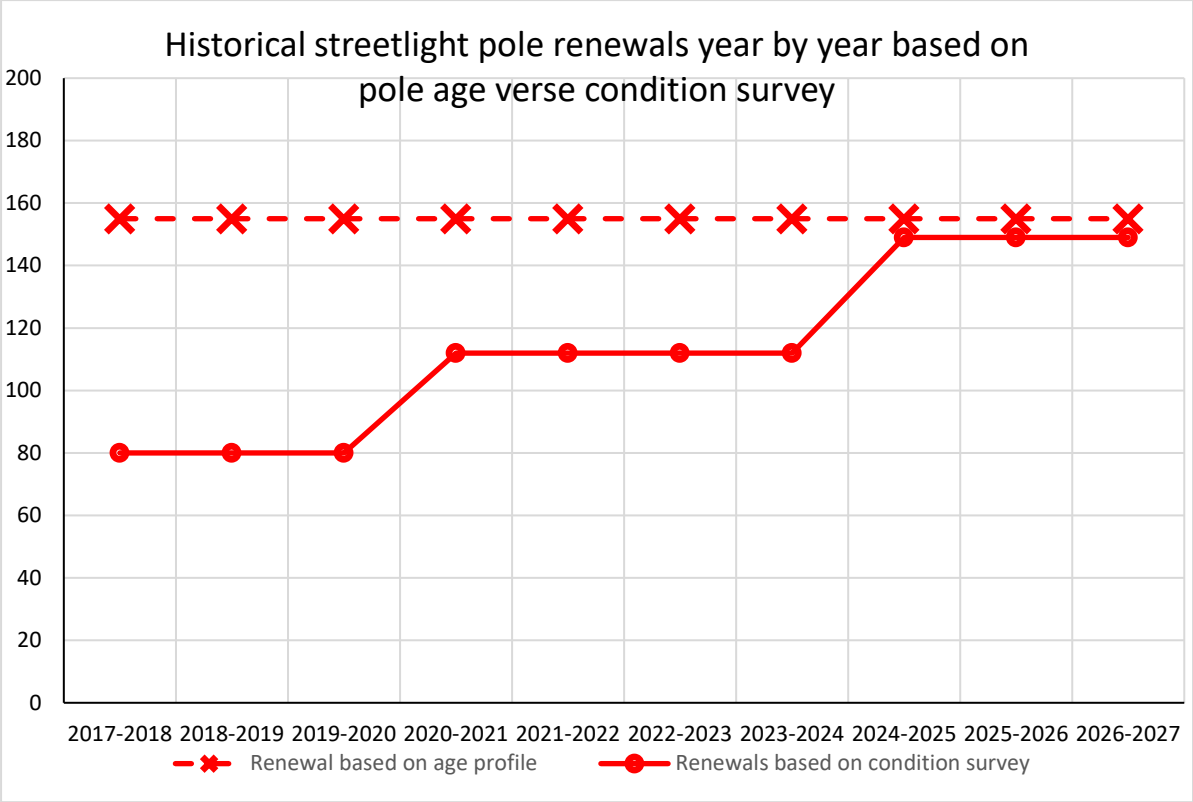
The results are shown in figure 6-6 below. The findings from this condition testing has allowed council to extend the useful lives of its steel street light poles with the model developed from the testing regime recommending replacement quantities as shown in figure 6-7 below. Concrete poles are being phased out with the renewal programme. Refer to document A1224555, and A1761635 for further details.

Figure 6 – 6: Streetlight Pole Condition[39]



39 Steel Streetlight Pole Condition Survey 2016 - All poles older than 10 years tested

Figure 6 - 7: Streetlight Pole Renewal Programme



LED fittings will reduce the power and maintenance costs of providing street lighting. Savings are initially to be directed to improvement programmes to address poor light spacing and upgrades to V category roads.

A pole replacement programme in conjunction with streetlight pole renewal is programmed.

A pole replacement programme in conjunction with streetlight pole renewal is programmed.

Demand for lighting of popular active travel off road routes, e.g. Railway Reserve is regularly requested via annual plan and customer requests. A review of the Railway Reserve was undertaken in 2015 and found that lighting could not be economically justified. Refer Business case A1470231. Other alternative measures for night time pedestrian and cycle journeys may become available as technology advances.

Traffic Signals

The traffic signal LED's are nearing the end of their lifespan and a renewal programme will to start in the next 3 years.

An improvement programme for traffic cameras is programmed for the next 3 years. This will address the monitoring requirements for external observation of signalised intersections, now that SCATS is operated from Wellington.

Traffic cameras can also be accessed by Police to extend the city CCTV coverage.

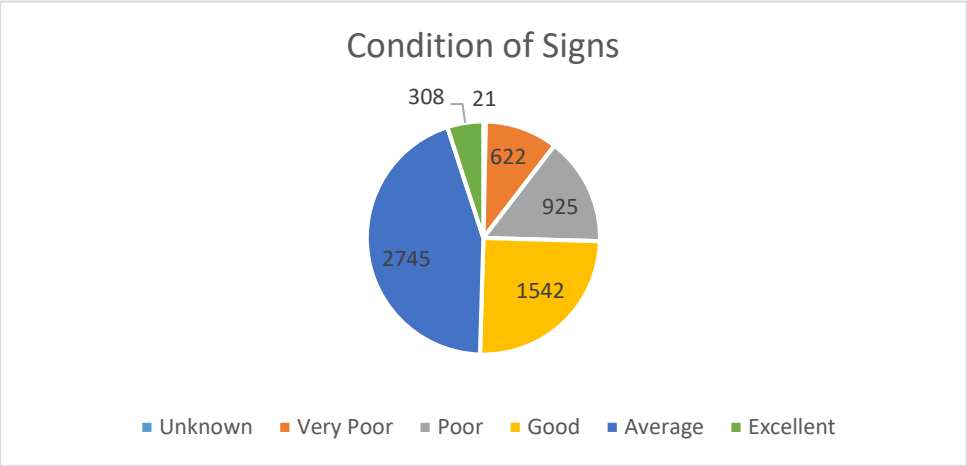
An improvement programme in the next 3 years to wire the traffic cameras independently of the traffic signals to improve monitoring requirements for external observation of signalised intersections in event of traffic signal being out of action is planned. This is driven by the fact that SCATS is operated from Wellington.

A programme of structural inspections of the significant outreach traffic signal poles as noted in section 6.5 is included in the improvement register.

Signs

An initial inventory of signs has been completed and documented in RAMM with contractual arrangements in place to maintain this inventory, including updates as signs are maintained and replaced. The condition of signs is shown below in Figure 6 – 8 below.

Figure 6 – 8: Condition of Signs



Programme Business Case

Options for achieving the outcomes, levels of service and responding to the demands for traffic services were developed and tested using a multi criteria analysis (MCA). The MCA considered the problem statements introduced in the key issues section 1.3, the NZTA Investment Assessment Framework and GPS, and other factor such as the feasibility, contribution to network resilience and stakeholder acceptability. The Multi criteria analysis can be found in Appendix D.

The three options as considered for the sealed pavement and surface assets were:

1. Reduce budget due to maintenance and power cost savings from LED upgrade and maintain other budgets at status quo.

2. Maintain current budget but use power and maintenance cost savings from LED conversion to invest in streetlight pole renewals and road sign renewal to reflect increased number of signs recently identified by survey and renewal analysis.

3. Increase current budget to match needs from sign renewal analysis pole renewal analysis and network growth. This option was discounted because the signs, while freshly identified on an inventory are currently maintained in the network so do not provide a significantly additional cost.

Option 2 has been selected to address the condition of the signs and lighting facilities because these contribute to a safe and accessible transport network for a range of users and transport modes.

6.7.5 Risks

- Night time crashes on poorly lit streets Night time crash rates: A1767467 and A1767377
- Banding following LED renewal programme.(inconsistent light spread)
- There is a risk associated with unknown structural integrity of traffic signal assets. An inspection programme is identified in the improvement register to mitigate the risk.
- There is a risk associated with traffic signal LED approaching end of useful life that unplanned failure could affect signals aspects before replacement parts are in stock. A renewal programme is being developed to mitigate the risk.

6.8 Emergency Works

This key issue section covers emergency works. This component represents a small portion of the programme and can have a spend of $0 some years. This section covers the following NZTA work categories:

- WC140 Minor Events
- WC141 Emergency Works

6.8.1 Introduction

There is a budget allocation of $30k per year for WC 140 Minor Events, to respond to minor, short duration, natural events that reduce service levels on part of the transport network.

WC 141 Emergency Works does not have a budget allocation and is part funded by NZTA 71%. In order to be classed as an Emergency the event needs to be a for the response to a defined, major, short-duration natural event (an agreed qualifying event) that has reduced or will reduce customer levels of transport service significantly below those that existed prior to the event and results in unforeseen, significant expenditure.

The key strategic case problem statement and cause and consequences that link to the emergency response category as discussed in the executive summary is: **Problem 2: A backlog of renewals is contributing to an increase in maintenance costs and poor network resilience:**

Cause	Consequence
Climate change (increased storm intensity), urban intensification and local geology are increasing stresses on the structural and drainage assets leading to more frequent failures.	Unplanned road closures often when other utility providers need the road network to restore their services following an event and restrictions to heavy vehicle access.

6.8.2 Level of Service

The Council does not collect specific level of service or condition data for emergency works. This work is responsive and varies with the conditions presented with each event. However there is a link to the ONRC resilience measures as detailed in section 2.5.

6.8.3 Demand

The demand for Emergency Works is expected to increase with the changing climatic conditions being presented through sea level rise and global warming.

Demand reduction is being pursued by a combination of understanding the structural assets better and intervening with renewals/seismic strengthening/emergency management procedures prior to failure from an emergency event and removing critical assets from vulnerable areas.

6.8.4 Lifecycle Management

Emergency works are rare events. If they became frequent enough lifecycle studies could be used to interrogate preventative measures, response success and outcomes, but this is not expected in the current AMP duration.

6.8.5 Risks

The following risks have been identified in relation to emergency works:

- Health and Safety. Emergency works are responsive to unusual circumstances and have elevated health and safety risks for affected members of the public and contractors.

6.9 Parking

This focus issue section covers the parking activity under the following two cost centres:

- 5505 Parking Regulation;
- 5510 City Centre and Parking.

The main principles adopted to manage the parking asset are:

- Short stay parking should be of sufficient capacity, carefully costed, well-located and accessible;
- Parking charging regime is set to support and encourage activity, vitality and commerce in the city centre over achieving transport travel demand management outcomes;
- Long Stay parking should not compete with short stay capacity, and should align with the wider transport policy.

6.9.1 Parking Introduction

The key strategic case problem statement and cause and consequences that links to the parking activity as discussed in the executive summary section 1.3 is ***'Problem 1 - The arterial transport network is constrained during the morning and evening peak periods and is unable to respond to strong regional population, tourism and business growth resulting in congestion.'***

Cause	Consequence
The parking policy and charging regime of both Council and its near neighbour Tasman District Council is set to encourage activity in the city centre over alternatives modes to car travel resulting in static single occupant vehicle proportion and high inner-city parking demand.	Travel time delay as a result of congestion from single occupant vehicle users. 25% utilisation of short term inner city parking spaces by long staying vehicles for all day low economic use. Poor inner-city amenity from circulating traffic looking for car parks.

The parking activity covers the operation, enforcement and management of all parking in the City Centre, City Fringe and Stoke Centre. Over 1100 off street parking spaces and 3000 City on street parking spaces are enforced on a daily basis. A breakdown of the spaces by location is summarised in Table 6 – 20 below with a more detailed breakdown in the parking survey report A1790341. The City operates and maintains 103 parking machines and 116 street parking meters.

The following table present the assessment of data reliability in relation to the parking equipment and pavement surfaces.

Table 6 – 18: Parking Equipment Reliability Assessment

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Table 6 – 19: Parking Pavement Data Reliability Assessment

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

Table 6 – 20: Off street Car Parking Spaces in Nelson and Stoke

ID	Location	Number of spaces	Parking Type
1	Strawbridge Square (Stoke)	180	time restricted
2	Putaitai Street/Fire Station Car Park (Stoke)	57	time restricted
3	Tahaki Street (Nelson Library)	59	time restricted
4	Millers Acre	92	metered
5	Wakatu Square	173	metered
6	Buxton Square	229	metered
7	Montgomery Square	268	metered
8	Bridge Street Car Park	20	leased to individual users
	Total	**1078**	

Expenditure on carparks is summarised below:

- Carpark maintenance costs $268,000/annum;
- Carpark rent costs $114,000/annum;
- Carpark rate costs $400,000/annum.
- Enforcement costs $398,000/annum

Revenue for the carparks is summarised below:

- In 2016/17 $497,000 was earnt from the on and off street meters.
- Infringement recoveries ($751,000 received in 2016/17) to fund parking regulation enforcement.

6.9.2 Levels of service

The service level statement for parking is "Parking is easy to use, and is rationed fairly and equitably".

There are two parking level of service measures contained within section 2.4, one for short stay parking and one for long stay.

6.9.3 Demand

Parking and mode of transport are intrinsically linked. Changes to the parking charges and the time limits for parking duration can affect aspects of how the parking areas are used. Low parking fees discourage the use of public transport and other forms of active transport and encouraging vehicle use. This requires an interactive response in terms of enforcement or increases in the commercial rates to ensure funds are available to operate, maintain and improve the City Centre. (refer to graph 3-8 and commentary in section 3.3)

In Nelson there are few long term parking spaces within the City Centre and the Council does not plan to add any more long term parking capacity. Along with parking charge rates the Council wish to maintain a central city parking regime that incentivises people to park for all day activities outside of the town centre ring road or use public transport and active modes, so that the maximum number of short term spaces are available to support commercial and retail operators within the centre city.

Survey data collected in 2005, 2008, 2012 and 2015 showed there was an appropriate supply of parking, however the most recent survey data in 2016, as displayed in the graph 3-8 in Section 3.3, shows demand exceeding 85% which is regarded as the practical maximum occupancy before circulating traffic looking for a car park congests the transport network and become frustrated. With ongoing positive economic growth and increasing tourism forecast it is likely that parking demand in the city centre will increase unless there is a significant increase in vehicle use costs (i.e. fuel prices and/or parking charges).

The 2017 Residents Survey indicates only 1% of those dissatisfied with the Transport Activity identified Parking as the reason for the dissatisfaction. (Refer Graph 3, Section 3.1)

The key parking demand indicators identified in the 2016 parking survey[40] were (refer Section 1.5.5):

- the practical maximum short term parking occupancy (LoS) is now being exceeded at peak times with consequent impacts on traffic flows in the City Centre and on the wider road network.
- 815 parks are available in the four Central Business District squares – approximately 25% used by all day commuters;
- There is enough short-stay capacity if the long-stayers stopped using the short stay spaces

6.9.4 Lifecycle management

The off-street car park assets are documented in RAMM.

40 Refer A1790341 for 2016 Parking Survey Report

Regular monitoring of the parking activity is undertaken, with occupancy every two years, duration of stay surveys undertaken every 5 years, and long stay occupancy checks at representative sites done at 4 monthly intervals.

Car parking meters were renewed in 2006 to ensure compliance with the new currency and are coming to their end of life in 2018/19. The maintenance costs for the meters have not increased significantly as their end of life has approached however the availability of spares and replacement parts is now difficult which is expected to compromise the maintenance of the machines and the ability to keep all machines in operation. There is also a public demand to introduce more convenient ways to pay such as remotely via phone apps, and credit and debit cards including Pay Wave which is driving the equipment replacement date.

The current payment methods are out of date with current technologies. Consequently there is a need to renew the pay and display meters with units that enable payment by credit card and integration with smart phone apps to extend the stay, $158,500 is allocated in 2018/19, $518,000 in 2019/20, and $275,000 in 2020/21 to achieve this. As part of this, the existing requirement to "pay and display" will be reviewed to reduce the number of paper tickets required.

This may require a By Law change which could also include a change to more clearly limit the length of time allowed in a parking square per day.

Strategies planned to manage these issues include:

- Optimise time limits to reflect car parking demand.
- Replace parking meters in 2017/18 with a more flexible payment facility which has the potential to also simplify and strengthen electronic enforcement
- Trial different parking regimes in order to determine best fit for the Nelson users.
- Condition monitoring and rating, maintenance and replacement of signage and marking to ensure the effectiveness of parking restriction enforcement

6.9.5 Risks

Maximum Parking occupancy now exceeding the desired level of service at 85% in the surveyed first week of December in the Central Business District core. This has the potential to constrain the commercial vitality and growth of the City Centre.

Long-stay commuters occupy a significant proportion of the short stay inner city parking. This reduces the availability of short stay parking spaces which are essential to the commercial vitality of the City Centre.

Long stay commuters parking in residential streets around the City fringe. The increasing pressure on parking in residential streets reduces the amenity in these areas.

Uncertain future demand for central long stay parking from increased central city living.

Uncertain future demand for central long and short stay parking due to uncertainty around future arterial road from increased central city living.

Uncertain future demand for central long and short stay parking due to uncertainty around future technology advances (e.g. mobility as a service).

6.10 City Centre

6.10.1 City Centre Introduction

The city centre is of critical importance to the wellbeing of the region and their respective economies as it is the main commercial centre in the top of the south with just under 8000 employees, as well as a progressive retail and entertainment centre.

The assets covered by this plan include:

- Street furniture such as bollards, seats, tree guards;
- Decorative streetlight columns;
- Decorate road surfaces such as the paved raised crossing;
- Decorative paving in footways;

6.10.2 City Centre Levels of service

The Council does not collect specific level of service or condition data for the City Centre. Refer section 2.4 for Parking Levels of Services, and relevant base amenity: e.g.: sealed roads, footpaths.

The maintenance contract has specific response times/items for City Centre works as follows:

- Inspections, weekly
- Street sweeping
- Clean asphalt, and brick footpaths, annually usually October/November
- Street furniture (including seats) cleaning and maintenance, daily inspection and seat cleaning
- Remove detritus from under steel kerb plates at outdoor dining areas
- Annual road remark, complete by 30 November each year
- Carparks, and associated walkways
- Parking meter maintenance and renewals

- CCTV
- No work other than street and seat cleaning in months of December and January

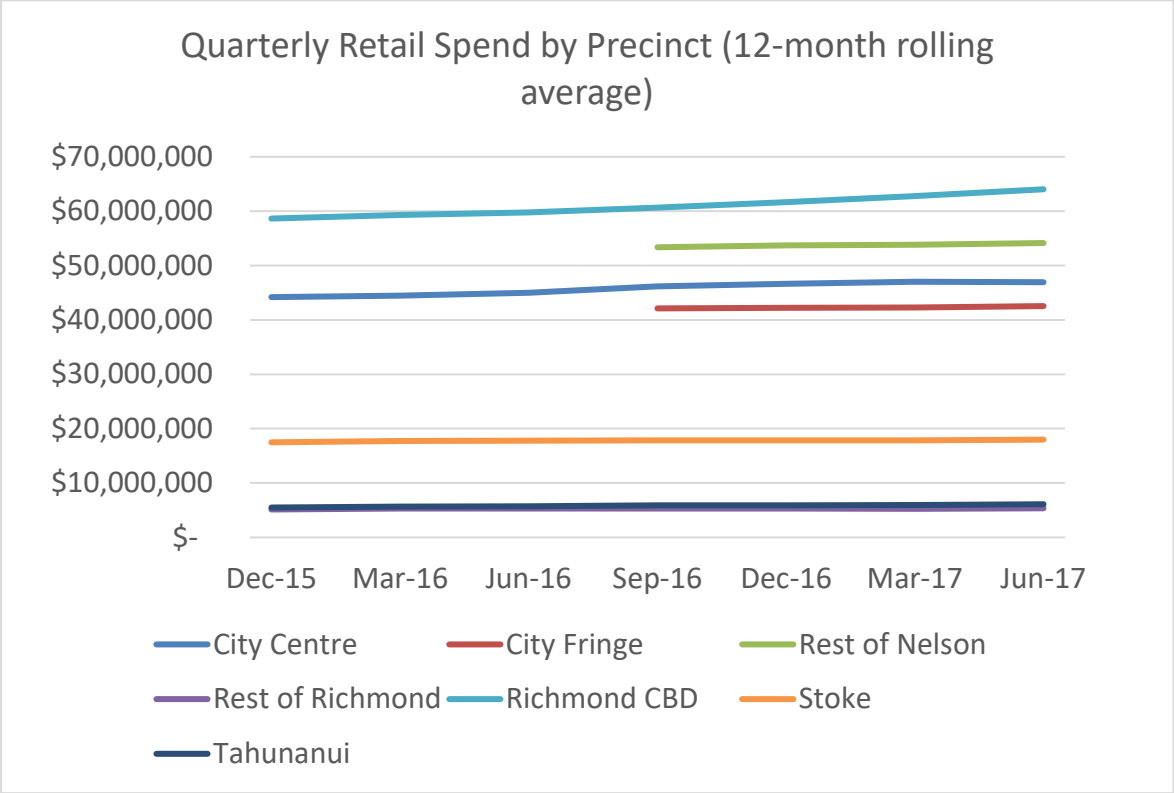
6.10.3 Demand

Spending in Nelson City Centre has generally been increasing (and in Richmond CBD).

Table 6 – 21: Annual Changes in Average Quarterly Retail Spend by Precinct

	City Centre	Stoke	Tahunanui	Richmond CBD
Mar-16	0.7%	1.4%	2.8%	1.1%
Jun-16	1.1%	0.4%	1.1%	0.8%
Sep-16	2.7%	0.1%	3.2%	1.5%
Dec-16	0.9%	0.0%	0.3%	1.7%
Mar-17	0.8%	0.1%	1.2%	1.8%

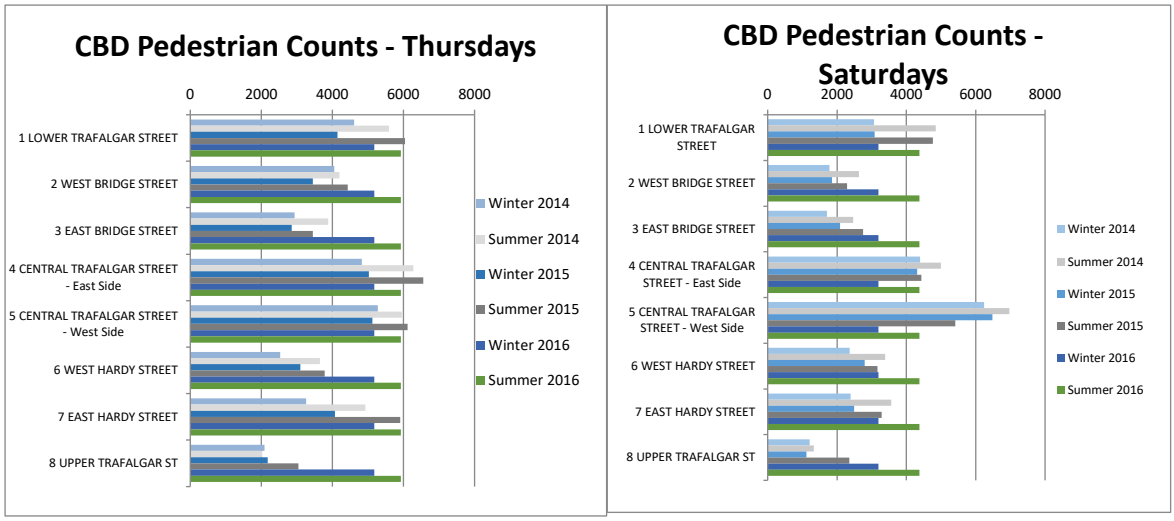
Graph 6 – 10: Quarterly Retail Spend by Precinct



CBD Pedestrian counts were undertaken in summer and winter, on a Thursday and a Saturday, 2014-2016. (A1229141). The counts were not done in 2017.

Results are shown below and generally reflect an increasing trend of pedestrian activity:

Figure 6 – 9: CBD pedestrian counts – Thursday and Saturdays



6.10.4 Lifecycle management

Opex – A $50,000 allowance to support policy, city palette and other miscellaneous studies undertaken by the development team.

Capex - The list of projects shortlisted for potentially drawing from the centres capex allowance included in this plan have been informed by the Mayoral Taskforce on City Futures, the report commissioned from First Retail in 2016/17 on CBD priorities and councillor suggestions through recent annual plans. The list currently includes the Church Street upgrade (underway), better connections between the city and the NMIT campus, improvements to the Montgomery Square Hardy St entrance, lighting improvements and pocket parks.

Future projects may include:

- Collingwood Street near NMIT – Medium long term
- Decorative Lighting 1st year of TAMP
- Montgomery near Church – Short term
- LED upgrade – 1st year TAMP

6.10.5 Risks

City centre vibrancy is impacted by changes to transport policy (e.g. parking).

Changes to the arterial network (future Southern Link) may change the way the city centre ring route operates resulting in higher levels of through traffic reducing amenity.

Online commerce is changing the city centres offerings.

6.11 Cycle network

This key issue section covers the cycle network and facilities. This section covers the following NZTA work categories:

- WC 124 Cycle Path Maintenance
- WC 452 Cycling Facilities

6.11.1 Introduction

There are approximately 20 kilometre of off-road cycleways and 34 kilometres of on-road cycleways. Part of this network is integrated with footpaths and carriageways.

'Cycle lanes' is the term used to describe dedicated marked lanes on roads.

Shared walk/cycleways describe off road routes separated from road traffic by either a kerb or verge, either on road reserve or other Council or NZTA owned land that is identified as a shared utility in the Parking and Vehicle Control Bylaw schedules. Generally shared walk/cycle paths are a minimum of 3 metres wide.

Off-road cycleways are generally defined as those outside of the road reserve and are addressed in the Parks and Reserves Asset Management Plan.

The key strategic case problem statements and cause and consequences that have links to the cycle network as discussed in the executive summary section 1.3 are ***'Problem 1 – The arterial transport network is constrained during the morning and evening peak periods and is unable to respond to strong regional population, tourism and business growth resulting in congestion'*** and ***'Problem 3 – Changing population demographics requires different transport services'***:

Cause	Consequence
The average annual population increase of 0.9%/pa plus tourism and business growth is causing congestion during the peak hours. **Nelson enviable proportion of work trips by walk, cycle and bus for a small metro (18.3% 2013 Census) is not growing at a fast-enough rate to meet the arterial travel demand.**	Arterial road congestion resulting in average 15 minute travel time delays in the peak periods on SH6 (Rocks Road route) ranging between 2 and 4.5 minutes, and between 2 and 12 minutes on Waimea Road. Peak hour volume to capacity ratios on Nelson's two arterials, exceed 80% congestion limit with measures ranging from 83% to 95%. Motorists rerouting via residential streets to avoid arterial road congestion reducing amenity and increasing safety risk in residential areas. Refer graph 1.5 of the AMP.

Cause	Consequence
The over 65 population cohort is growing at twice the NZ average growth rate. Census data and Statistics NZ forecasts indicate that Nelson population aged over 65 will change from 17% (2013) to 32% (2043). The NZ average is expected to be 23% (2043).	The transport system will need to respond to the changing demographic. e.g. road environment that accommodates increased reaction times, safe pedestrian facilities (including for mobility scooters) and convenient public transport and total mobility services. Uncertain demand for services / potential for social isolation due to the ageing population typically only known car travel as a means of mobility. NZTA research in 2017 indicates that the private car will continue to be the main transport choice for this sector of the population. The growth of the health and social service sector is shown in graph 1-9, and is second only to Transport and postal services.

In the key opportunity '**Adoption of emerging technology could reduce congestion, enable our aged population to move about more freely and improve environmental outcomes**' electric bicycles could play an important role as discussed in the opportunity and consequence table below.

Opportunity	Consequence
Encourage use of electric bikes for everyday transport journeys.	Reduced peak hour arterial congestion because electric bikes take up minimal road space compared with a single occupant vehicle. Environmental benefits such as reduced fossil fuel consumption and tailpipe emissions. Improved health outcomes due to uses being active during their journey. Reduced central city parking space demand.

The following table presents the assessment of data reliability in relation to the cycle network.

Table 6 – 22: Cycle Infrastructure Data Reliability Analysis

Data Attribute	Very Uncertain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

6.11.2 Levels of service

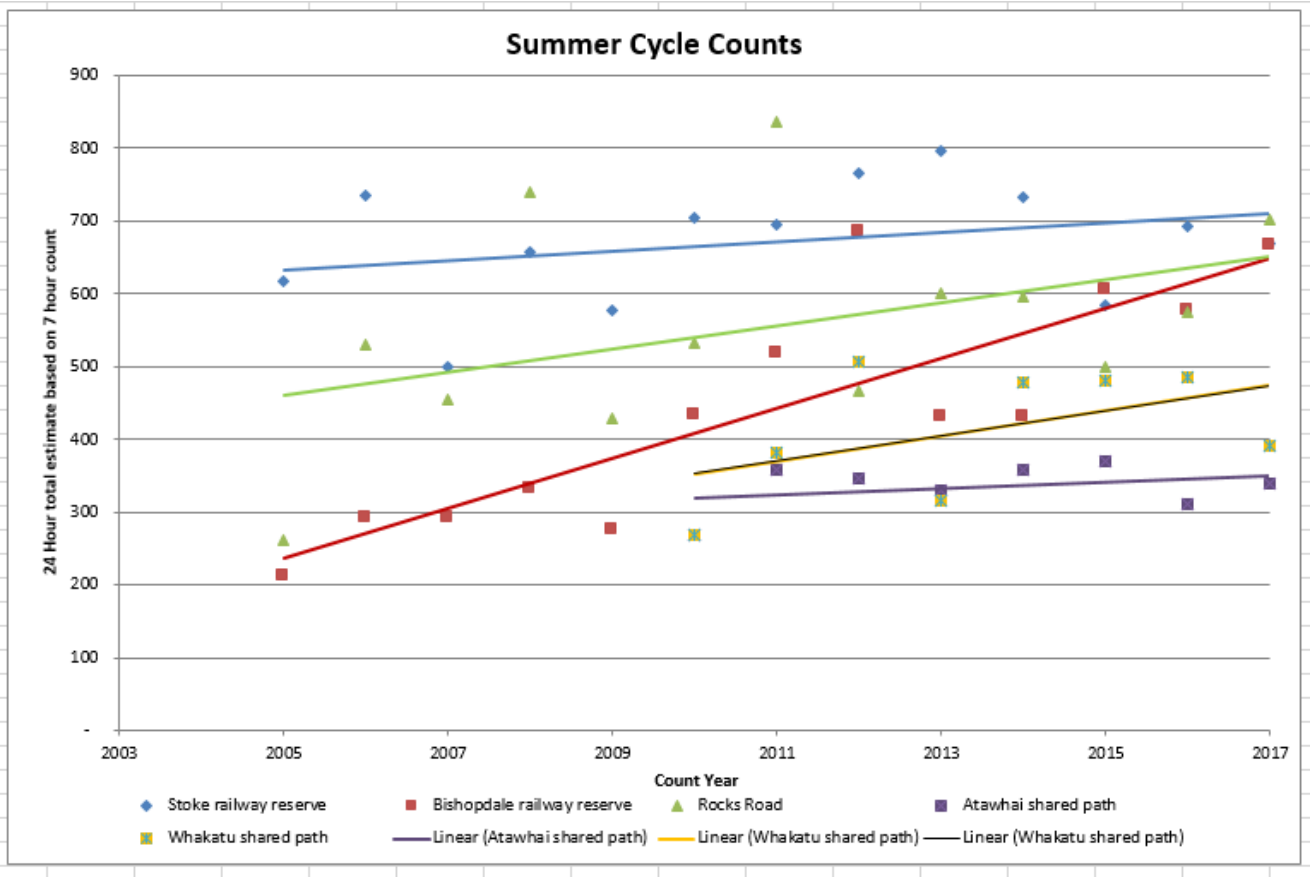
The service level statement for the cycle facilities and assets are detailed in section 2.6.4.3 and summarised below:

- Maximise movement of people via walk and cycle modes. Percentage of the community that travel to work by walking or cycling increases from 20% to 25% over time.
- Maximise movement of people via walk and cycle modes. Numbers of people walking or cycling on the Railway Reserve, Bishopdale shared Path, Whakatu shared path Atawhai shared Paths and Rocks Road has 2% growth over time.
- Road Safety – a safe transport network. Number of reported crashes involving cyclists, is less than 22 per year.

6.11.3 Demand

Cycle facilities directly link to AMP problem statements 1 and 3: because good quality, well maintained cycleways are critical for encouraging this mode of transport, and catering for changing population demographics. Cycle counts are undertaken every 6 months in 5 locations (A861021) throughout the city and comparisons can be made with the 5 year comprehensive survey undertaken in 2010 and 2015. Next count is due in 2020. An interactive data management system is being prepared to store the cycle count data.

Graph 6 -11: Summer Cycle Counts

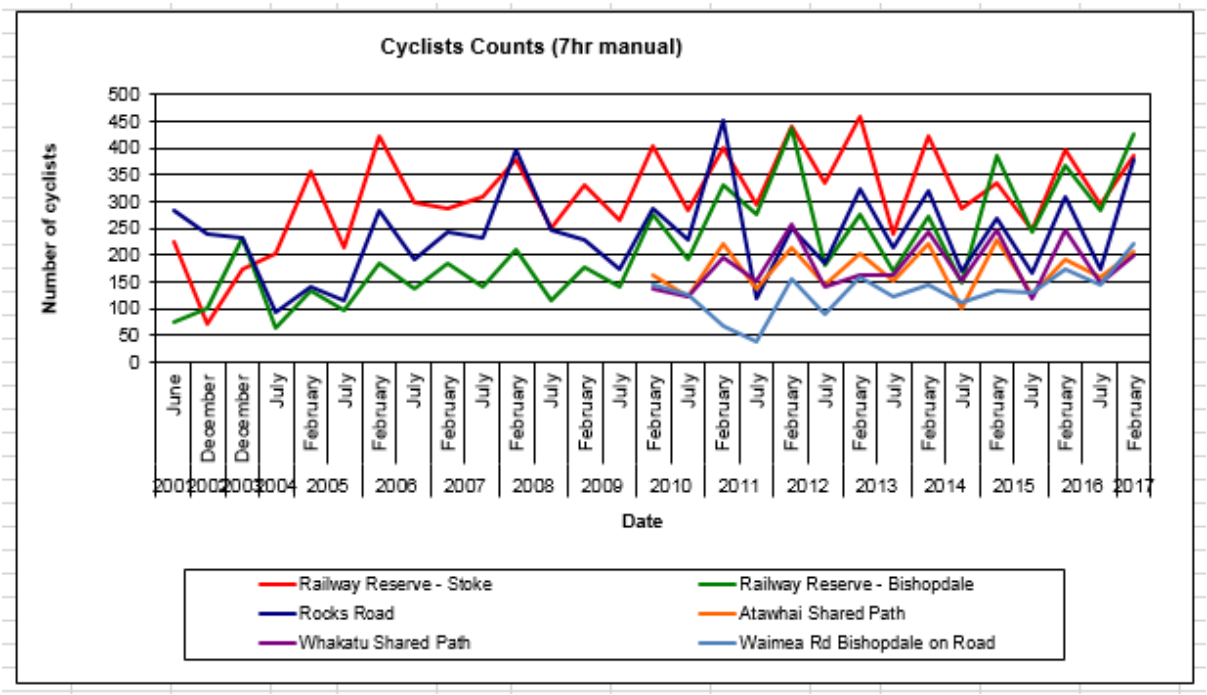


Increasing demand for cycling facilities is shown on graph 6 - 11 above. Summer demand exceeds winter demand, as shown on the graph 6 - 12

below. Rapid increased in patronage on the Bishopdale Route, could be partially attributed to the lack of progress on the Tahunanui and Rocks Road cycleway projects. Once they are implemented the Bishopdale growth may reduce, balanced by an increase in the Rocks Road counts.

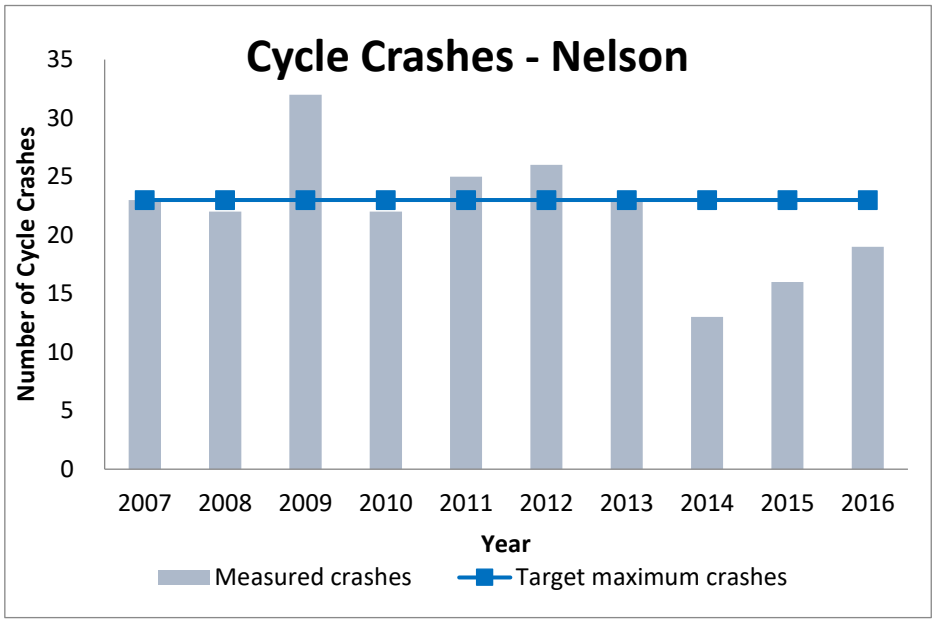
The cycle counts at The Railway Reserve in Stoke were increasing at a rapid rate till 2013 when there were high profile shared path conflict complaints. Cycle counts have since dropped to produce an almost flat growth rate, which may be as much as this route can comfortably cater for without upgrading facilities. Cycle numbers on the Whakatu, shared path are increasing at a greater rate than the Railway Reserve in Stoke, suggesting either longer distance commuters are choosing the route with less local traffic and interruptions or increasing recreation demand for the coastal route.

Graph 6 – 12: Cyclists Counts (7 hr. manual)



Customer satisfaction as detailed in section 2.1 shows that 21% of people dissatisfied with the transport network cited "cycleways need to be improved" as the reason for their dissatisfaction.

Graph 6 – 13: Cycle Crashes - Nelson



Graph 6 - 13 above shows the trend of cycle crashes over time. After long term decline from 2007 to 2014 cycle crash numbers are now increasing, possibly in part due to the increased numbers of cyclists.

Nelson cycle retailers are experiencing increasing demand for electric bikes which enable greater distances to be covered and greater loads to be carried by the average person than non-electric assisted cycles. It is likely that as the cost of this technology reduces and power densities increase from batteries that electric bikes will increase in popularity replacing some household's second car. This will place increasing demands on cycle infrastructure and could result in increased conflict and crashes as a result of inexperienced cyclists able to travel faster.

In summary key demand issues for the cycle network are:

- Demand for new and wider cycle facilities that are separated from vehicle traffic within a limited road reserve allocation. Changing and historic user demands (aging population, electric bikes, scooter), increase the cost and cause time delays to implement upgrade cycle facilities.
- Conflict resulting in crashes cyclists and vehicles and on shared paths between cyclists, pedestrians and dogs affecting the perception of success of cycle facilities to cater for demands.
- Demand for improved lighting and markings on shared paths and cycleways.

6.11.4 Lifecycle management

Refer section 6.2, sealed pavement and surface for lifecycle management for on-road cycle lanes. These are maintained as an integral component of the sealed road. Targeted sweeping or maintenance programmes for cyclelanes on roads are yet to be developed, beyond replacement of sump grates with cycle friendly grates on known cycle routes.

Shared path and off road data is recorded in RAMM to measure lifecycle costs and performance.

Shared paths and off road cycle facilities have a targeted sweeping and maintenance programmes. Cycle path repairs and glass removal are identified through customer notification or routine inspections undertaken by the Contractor or Councils contract supervisors.

Cycleways routine maintenance provides for the normal care and attention of the asset to maintain its integrity and to be fit for purpose. It is a combination of planned maintenance such as sweeping and reactive maintenance such as patching and repairing cycleways when complaints by the public are received.

Considerations which drive the maintenance works include:

- Planned and unplanned work depending upon the urgency of the response required.
- Scheduled improvements planned works.

All the paths are relatively young (less than 16 years) there has been no condition assessments carried out to date, although it is becoming evident that some of the earliest paths will require renewal in the next 10 year. Detailed assessments and a renewal programme will be developed over the next 3 years.

Many older pedestrian and cycle facilities are under width. These are being progressively upgraded in width to cater for the growing number of cyclists. Saltwater Creek Bridge, and Airport Bridge are programmed for replacement in 2018. Main Road Stoke, Saxton Culvert is programmed for 2019.

Programme Business Case

Options for achieving the outcomes, levels of service and responding to the demands for cycle facilities were developed and tested using a multi criteria analysis (MCA). The MCA considered the problem statements introduced in the key issues section 1.3, the NZTA Investment Assessment Framework and GPS, and other factor such as the feasibility, contribution to network resilience and stakeholder acceptability. The Multi criteria analysis can be found in Appendix D.

The two option considered for the cycle facilities were:

1. Maintain as existing

2. Increase budget to reflect increasing asset size

Option two was chosen because well maintained cycle facilities are integral to attracting new users in the mode shift and travel demand aspects of this AMP.

Capital Improvement Programme

A capital improvement programme is proposed for cycle facilities as part of this AMP and is guided by the overarching principles contained within the 'Out and About – Active Travel and Path Based Recreation Policy'[41].

Projects on the improvement programme are listed below. Budget estimates are indicative only and subject to investigation, consultation and detailed design. These projects are on the capital improvement programme to address missing links in the cycle network. These projects link residential areas with business and schools areas to enable commuters to use cycling as a transport choice for regular journeys.

Improved CBD cycle parking can cater for more trips ending at the city centre, at a lower cost and minimal space demand compared to vehicle parking. Parking is also an important factor in the transport mode choice decision for journeys.

Table updated

Proposed Capital Works – Cycle Programme	
Project Name	**Budget**
WC452 Cross Town Links Brook to Central Programme (3212)	$1,745,000
WC341 Main Road Stoke cycleway Saxton Creek to Champion Road (3036)	$480,000
WC341 Stoke East West Cycle Connection – programme (3174)	$900,000
WC341 Maitai Path to Anzac Park (3151)	$610,000
WC 452 Maitai shared path to Nelson east active transport facility (2173)	$1,310,000
WC452 Nile Street cycle facilities (3224)	$300,000
CBD Cycle parking facilities (2537)	$50,000
WC 452C UCP Tahunanui cycle network (3182)	$2,800,000
WC452 Airport Bridge Replacement (3032)	$250,000

41 http://nelson.govt.nz/assets/Our-council/Downloads/Plans-strategies-policies/Out-About-Policy-Document-Nov15.pdf

6.11.5 Risks

Risks specific to operation and maintenance of the cycle facilities are:

- Cycle crash rates exceed the target LOS where the number of crashes involving cyclists does not increase from the base year 2007;
- Shared path conflict issues overshadow the benefits of providing cycle facilities and stall opportunities to improve the cycle network;
- Difficult decisions associated with the appropriate road space allocation stall opportunities to close missing cycle links with the network;
- Cycle facility consultation costs and delays limit opportunities to improve the cycle network.

6.12 Footpaths and walkways

This key issue section covers walking facilities. This section covers the following work categories:

- 500179551525 WC341 Low Cost Low Risk
- 500120418076 WC125 Footpath Maintenance
- 500173751494 WC125 Renewals: Footpaths
- 50022041 Footpath and Street Furniture maintenance
- 500273751494 Renewals – Footpaths
- 500279752798 New Footpath Connections

6.12.1 Introduction

There are approximately 320km of footpath and walkways managed as transport assets. Walkways through reserves are covered under the Parks AMP. There is an additional 20km of shared paths available to pedestrians but classified as cycle facilities for the purposes of asset management.

The pedestrian users include able bodied walkers as well as those using mobility scooters, walkers that are elderly or less able bodied, small children and the vision impaired.

NZTA has introduced a standard Financial Assistance Rate (FAR) to footpath renewals and footpath maintenance. New footpath connections will be added to the Low Cost Low Risk category thereby also benefiting from the standard FAR.

The key strategic case problem statement and cause and consequences that links to the pedestrian network as discussed in the executive summary section 1.3 and ***'Problem 3 – Changing population demographics requires different transport services'*** for the following reasons:

Cause	Consequence
The over 65 population cohort is growing at twice the NZ average growth rate. Census data and Statistics NZ forecasts indicate that Nelson population aged over 65 will change from 17% (2013) to 32% (2043). The NZ average is expected to be 23% (2043).	The transport system will need to respond to the changing demographic. e.g. road environment that accommodates increased reaction times, safe pedestrian facilities (including for mobility scooters) and convenient public transport and total mobility services.
	Uncertain demand for services / potential for social isolation due to the ageing population typically only known car travel as a means of mobility. NZTA research in 2017 indicates that the private car will continue to be the main transport choice for this sector of the population. The growth of the health and social service sector is shown in graph 1-9, and is second only to Transport and postal services.

'***Problem 1 – The arterial transport network is constrained during the morning and evening peak periods and is unable to respond to strong regional population, tourism and business growth resulting in congestion***' affects the walking mode because the traffic volumes and speeds associated with high vehicle demands create an unwelcoming environment for pedestrians and walking network severance issues. This causes community severance and low uptake of the pedestrian mode share where vehicle use is an available choice.

The following table presents the assessment of data reliability in relation to the footpath network.

Table 6 – 23: Footpath Data Reliability Analysis

Data Attribute	Very Certain	Uncertain	Reliable	Highly reliable
Asset quantity				
Asset age				
Condition				
Performance				

6.12.2 Levels of service

The service level statement for the transport assets in this section are discussed in section 3. In summary:

- Percentage of the community that travel to work by walking or cycling increases from 20% to 25% over time;
- Maximise movement of people via walk and cycle modes. Numbers of people walking or cycling on the Railway Reserve, Bishopdale shared

Path, Whakatu shared path Atawhai shared Paths and Rocks Road growth over time with a target of 2% growth;

- Road Safety – a safe transport network. Number of crashes involving pedestrians, is less than 10 per year.
- Footpath Condition. 95% of the network by length has a condition rating >3.

6.12.3 Demand

Pedestrian counts are undertaken every 6 months in 5 locations (A861021) throughout the city and comparisons can be made with the 5 year comprehensive survey undertaken in 2010 and 2015. Next count is due in 2020. An interactive data management system is being prepared to store the pedestrian count data. Reporting on the pedestrian surveys are provided in the Regional Land Transport Plan (RLTP) and RLTP Annual Report. Pedestrian numbers dropped to a low in 2014/15 and been increasing at a rate of 7.5%.

- Walking is an accessible transport choice for those without easy access to a car.
- Mode shift to walking would help reduce the congestion issues on the vehicle network
- Walking can be the only form of mobility to the transport disadvantaged
- Walking is the start and end of every journey
- Walking fits the urban design philosophy where transport should cater for the 8-80 year population group.
- Safety improvements by separating pedestrians from vehicle traffic, or lowering traffic speeds and creating a pedestrian friendly environment where separation is not possible.

Subdivisions can be built with footpaths on one side of the road only. Traffic volumes in older areas of the city and increased awareness of walking as a transport choice are driving demand for footpaths in previously unserved areas, and on roads with a footpath on one side only. The new footpath connection programme caters to these demands.

Figure 6 – 10: Pedestrian Counts (7hr manual counts)

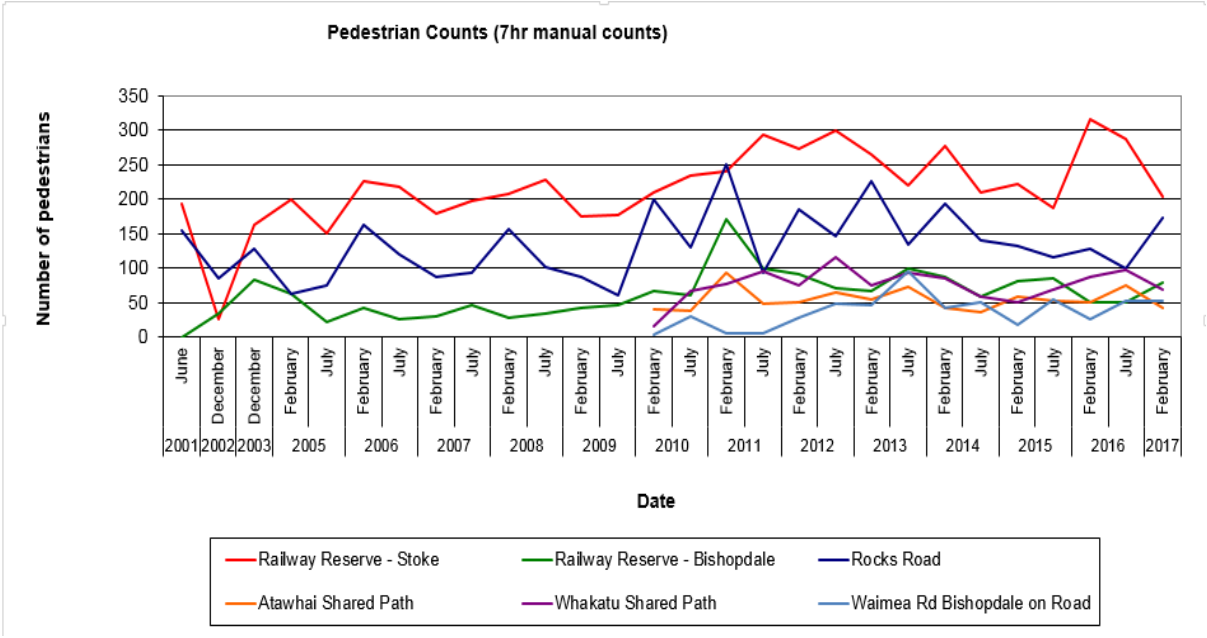
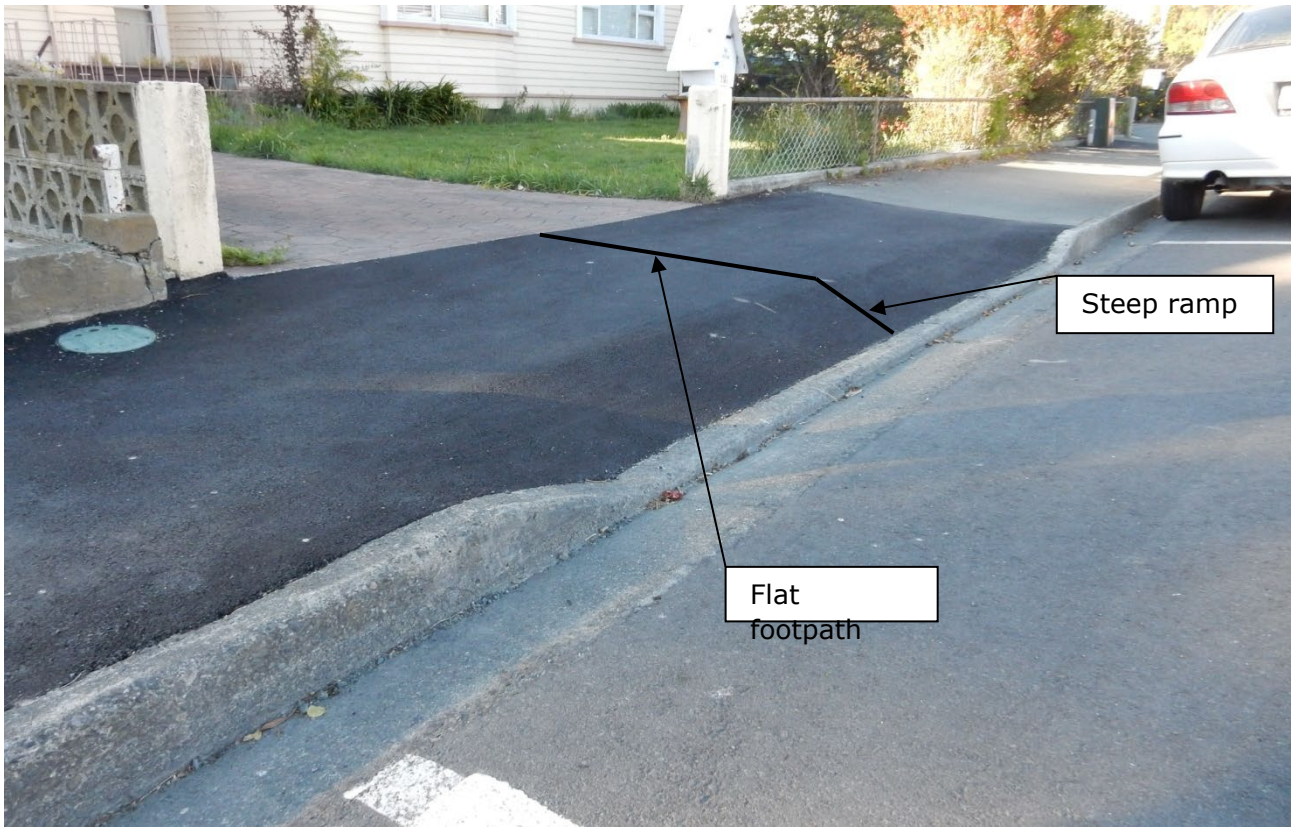


Figure 2.19 in the Level of Service Section shows the trend of pedestrian crashes. Crashes involving pedestrians have exceeded the target LOS since 2008. Interventions including a network wide crash reduction study, road safety messaging and infrastructure improvements are planned. The network wide crash reduction study is required first to target the road safety messaging and infrastructure improvements.

Refer to table 2.2. Providing for walking contributes to community outcomes, of healthy, safe, inclusive and resilient, and contributes to social, and recreational outcomes.

The changing population demographic is driving the demand to reshape of the vehicle crossings between the back of the kerb and the property boundary. Refer A1435841. Historically the shape of the access has been graded to suit the vehicle resulting in steep grades and undulating sections for both pedestrians to walk across and mobility scooters. The recent vehicle crossing profiles, A1435841, that have been constructed met approval with accessibility groups representing users in Nelson, but can be problematic for vehicle access resulting in vehicles scraping the footpath or road surfaces if entry speeds are high. The NZTA Investment auditors did not support the new driveway profile in the June 2017 audit. The current process is to shift the footpath away from the kerb, at additional rehabilitation cost, where a berm can be introduced, and construct the driveways in accordance with the LDM. Where this cannot be achieved the new driveway profiles will continue to be introduced.

Figure 6 - 11: New driveway construction with steeper ramp.



Some hillside road corridor do not have potential to add walking facilities separated from the vehicular traffic. These were first introduced in 2012, but were not as cost effective as anticipated. A new programme of shared zones, as a low cost, speed management intervention will start in 2018, with the Beachville Crescent, Wigzell area and Mayroyd Terrace projects.

6.12.4 Life Cycle Management

Operation and Maintenance

Footpaths are included on regular inspection programmes. Defects identified by the inspection programme that are not immediate maintenance actions are used to determine the condition ratings. Regular maintenance includes sweeping, moss removal, high lip removal on concrete paths, blockwork relevelling, CBD footpath cleaning, crack sealing of asphalt surfaces where water ingress will cause pavement deterioration.

Demand for pedestrian facilities is measured through the 6 monthly, 5 yearly comprehensive and site specific pedestrian counts. The 6 monthly and 5 yearly counts are used to gauge demand over the whole network. Site specific counts focus on identified issues or demands. Pre and post counts are being included in business case measurements for capital project reporting.

A three yearly inspection is undertaken to document the condition of footpaths to inform the forward works programmes for both maintenance and renewal. Over time this will also enable the creation of a deterioration curve so the cost and condition relationship can be developed.

Renewal

A programme of footpath renewals has been developed based on the three yearly city wide footpath condition inspection. The programme prioritises footpaths in higher use areas, close to schools, shops and elderly centres. It seeks to address the condition of the footpaths to improve pedestrian safety, comfort and convenience whilst managing the condition of our footpaths with a timely and economic priority. Opportunities to renew footpaths in conjunction with other utility works is also factored into the final programme. This has been particularly successful with the UFB Broadband roll out through Nelson over the last 3 years.

Capital

New footpaths and walkways are constructed from a priority list of missing footpaths. A decision matrix to assist in determining the highest priority sites is located at A777631. The matrix uses the following factors for prioritisation:

- Proximity to School/Popular bus stop/CBD/Community facility/Aged care
- Existence of a footpath on opposite side of the road
- Traffic Volume
- Value for money

The budget has been increased from $200k to $700k per annum to meet demand and costs of installing paths. The new footpath schedule can be found in Appendix M with the live priority matrix in document A777631.

Footpath facilities are such an important component to the transport network in Nelson, and in addressing problem statements 1 and 3, that the Nelson City Council submission to the Ministry of Transport on the Draft 2018/Government Policy Statement on Land Transport via the south island chairs called for footpath maintenance and renewals to be funded from the National Land Transport Fund.

Programme Business Case

No options were considered as part of the programme business case because walking facilities are maintained and renewed as unsubsidised works. Improvement projects may qualify for NZTA contribution where these qualify under WC341 Low Cost Low Risk programme.

6.12.5 Risks

Risks specific to operation and maintenance of the walking facilities are:

- Crashes involving pedestrians continue to exceed the target LOS;
- Shared path conflict issues overshadow the benefits of providing cycle facilities and stall opportunities to improve the walking network;
- Driveway profile issues associated with the new driveway profile add cost and complexity to footpath renewal projects.

6.13 Public Transport and Total Mobility

This focus issue section covers the Public Transport and Total Mobility services provided by Council, jointly funded with NZTA and TDC

This section covers the following NZTA work categories:

- WC 511 Bus Services
- WC 514 Public Transport Facilities Operations
- WC 517 Total Mobility Operations
- WC 519 Wheelchair Replacement
- WC 521 Wheelchair Hoist
- WC 522 SuperGold Card Concessions
- WC 524 Public Transport Information Supply
- WC 531 Public Transport Minor Improvements

6.6.1 Introduction of activity/asset

The key strategic case problem statement and cause and consequences that links to public transport services, as discussed in the executive summary section 1.3, are ***'Problem 1 – The arterial transport network is constrained during the morning and evening peak periods and is unable to respond to strong regional population, tourism and business growth resulting in congestion.'*** and ***'Problem 3 – Changing population demographics requires different transport services'*** for the following reasons:

Cause	Consequence
The average annual population increase of 0.9%/pa plus tourism and business growth is causing congestion during the peak hours. **Nelson enviable proportion of work trips by walk, cycle and bus for a small metro (18.3% 2013 Census) is not growing at a fast-enough rate to meet the arterial travel demand.**	Arterial road congestion resulting in average 15 minute travel time delays in the peak periods on SH6 (Rocks Road route) ranging between 2 and 4.5 minutes, and between 2 and 12 minutes on Waimea Road. Peak hour volume to capacity ratios on Nelson's two arterials, exceed 80% congestion limit with measures ranging from 83% to 95%. Motorists rerouting via residential streets to avoid arterial road congestion reducing amenity and increasing safety risk in residential areas. Refer graph 1.5 of the AMP.

Cause	Consequence
The over 65 population cohort is growing at twice the NZ average growth rate. Census data and Statistics NZ forecasts indicate that Nelson population aged over 65 will change from 17% (2013) to 32% (2043). The NZ average is expected to be 23% (2043).	The transport system will need to respond to the changing demographic. e.g. road environment that accommodates increased reaction times, safe pedestrian facilities (including for mobility scooters) and convenient public transport and total mobility services.
	Uncertain demand for services / potential for social isolation due to the ageing population typically only known car travel as a means of mobility. NZTA research in 2017 indicates that the private car will continue to be the main transport choice for this sector of the population. The growth of the health and social service sector is shown in graph 1-9, and is second only to the Transport and postal services sector.

Nelson currently operates two public transport services;

- The NBus including The Late Late Bus (subsidised by Council, TDC and NZ Transport Agency);
- The Total Mobility scheme – door to door passenger service for the mobility impaired (subsidised by Council and NZ Transport Agency).

The Council also offers a Super Gold Card scheme for pensioners where they travel free during off peak periods on the NBus. This scheme is bulk funded by central government but due to Nelson's ageing population this cohort has a high influence on the network and services provided.

The contract for the NBus and the Late Late Bus services was awarded in March 2012 to SBL Limited. The contract was for 6 years (expiry April 2018) with two two-year extensions if performance indicators are met. In May 2013, the contract changed from a gross contract price to a net contract with all fare revenue retained by the operator. The current contract also allows for the contract price to be renegotiated if changes in service levels are required.

The current public transport and total mobility service contract is worth in the order of $1.2m per annum. TDC contributes approximately $85,000 towards the bus service and $80,000 towards Total Mobility, the remainder of the cost is subsidised at the current FAR rate by NZTA, with the balance being sourced from NCC rates.

Due to the nature of the activity there is little "asset" involved, as it is a contracted service and Council do not own the asset apart from the bus stops/shelters located on the road network and associated bus stop signage.

Figure 6 - 12: Zone Structure and Bus Routes

Table 6 – 24: Fares as at July 2017

(Changes are proposed from 31 March 2019)

	Zones travelled through			
	1	2	3	4
Adult cash	$2.50	$3.00	$3.50	$4.00
Adult 10 trip (20% discount)	$20.00	$24.00	$28.00	$32.00
Child cash	$1.50	$2.00	$2.50	$3.00
Child 10 trip (10% discount)	$13.50	$18.00	$22.50	$27.00
Student/Community Services Card holder cash	$2.00	$2.50	$3.00	$3.50
Student/Community Services Card holder 10 trip (10% discount)	$18.00	$22.50	$27.00	$31.50
30 trip ticket (30% discount off adult fare)	$52.50	$63.00	$73.50	$84.00
Late Late Bus (flat fare)	$4.00	$4.00	$4.00	$4.00

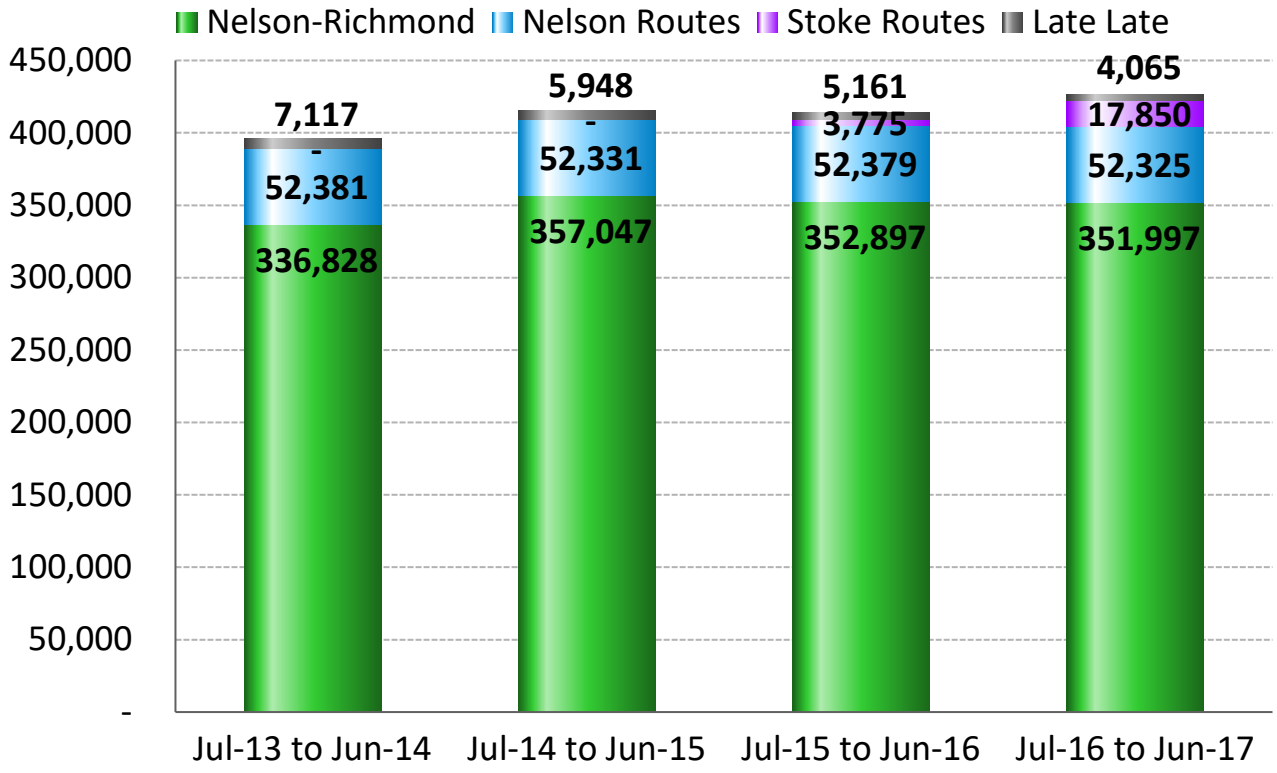
6.13.1 Public Transport Levels of Service

Section 3.4 presents the level of service measures for the farebox recovery and NBus patronage.

6.13.2 Demand

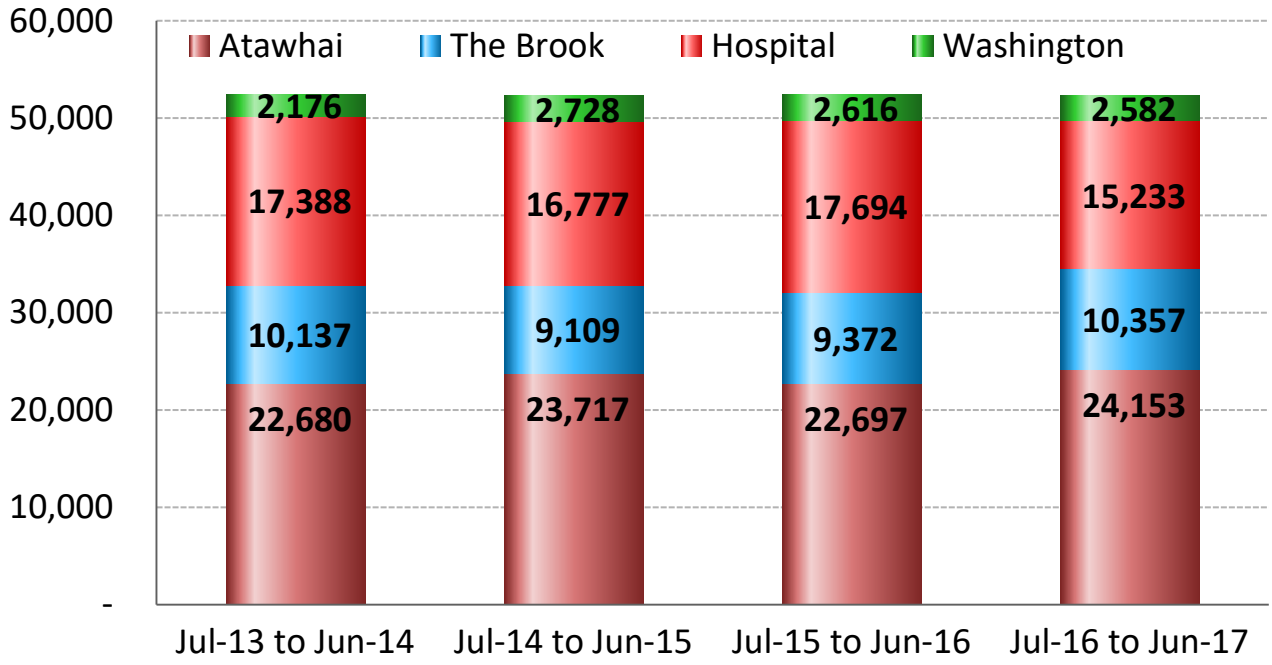
There has been a steady growth in bus patronage since the introduction of a viable public transport service in 2012[42]. Overall patronage is still growing together with the change in behaviour required to make an impact on traffic congestion.

Figure 6 - 13: Overall Bus Patronage 2013-2017



42 Refer A883923 for patronage data

Figure 6 – 14: Patronage on each of the four City routes.



There are continued requests for "a better bus service", in terms of frequency, network coverage and standard of facilities. Specifically:

- Accessibility to local services / facilities / places of employment;
- Frequency of bus services, particularly between Nelson and Richmond; but also extension of service timetable at weekends
- Improved bus services are an integral component of the proposed improved Travel demand management package of this AMP.

Without good patronage forecasts or demonstrated demand for services Council risks running services with uneconomic farebox recovery rates. Lack of growth in the bus service or network in line with population growth will result in Council not providing an appropriate service for the changing demographics of Nelson, nor maximising the opportunity to reduce traffic congestion through higher public transport patronage. Ageing population resulting in increasing demand for the total mobility service, and the community service aspect of a public transport network.

6.6.2 Lifecycle Management

The public transport service is documented in the Nelson Regional Public Transport Plan (A1393798) and is included in the Regional Land Transport Plan as required by the Land Transport Management ACT 2013. This document has a minimum life of 3 years and a maximum life of 10 years. A full service review is scheduled for 2019.

The most significant change to the service planned is the introduction of electronic ticketing in April 2018 which will upgrade the ticketing and data gathering system of the service.

The administration and provision of the Total Mobility Service is currently, and will continue to be sourced externally from Council.

Programme Business Case Options

Options for achieving the outcomes, levels of service and responding to the demands for public transport were developed and tested using a multi criteria analysis (MCA). The MCA considered the problem statements introduced in the key issues section 1.3, the NZTA Investment Assessment Framework and GPS, and other factor such as the feasibility, contribution to network resilience and stakeholder acceptability. The Multi criteria analysis can be found in Appendix D.

Options that have been considered in the preparation of this AMP as part of the bus service review are:

Public Transport Service;

1. Operate as existing with minimal promotion
   Extended weekend services on the Nelson – Richmond services – adopted in this AMP
2. Increase arterial services to 10 minute headway plus minor route changes and more promotion – not adopted
3. City route bus standard upgrade and increased timetable, fare reductions and more promotion – adopted in this AMP
4. Extended City local service timetable, new shorter Stoke Loop service and an alternate service on Nayland Road including link to the airport – adopted in this AMP
5. Investigate with NMIT options for student fare subsidies – adopted in this AMP
6. Improved level of service to the actual bus such as low floor busses.

Public Transport Improvements;

- Maintain as existing – minor works allowance for bus shelters and kerb cutdowns, pads etc.
- Option 1 plus Stoke bus shelters and central City interchange.

Option 1 has been adopted in this AMP.

Total Mobility;

- Maintain as existing
- Increase budget to cover Ridewise and lead assessment agency costs.

Option 2 has been adopted in this AMP.

Wheelchair hoists – maintain as existing.

6.13.3 Risks

The main risks facing the provision of the public transport and total mobility services are:

- Future technology driven service options may make Public Transport uneconomic,
- Continued NZTA funding for service improvements,
- Supergold card funding legislation changes (http://www.transport.govt.nz/news/multi/supergold-card-review-maintains-entitlements/). In 2015/16 the Government reimbursed council for SuperGold trips on a per-trip basis. The Government decided to shift to a bulk funding approach from 2016/17, where the level of funding will be agreed between Council and the NZ Transport Agency. The change will bring SuperGold Card funding into line with the way other public transport funding is allocated, and provide a ceiling on the cost of the scheme to Government, with a transfer of risk on any cost overruns now funded by council.
- Continued TDC funding contribution
- Equitable funding from various sources (fares, rates, NZ Transport Agency, and potentially, Stakeholders).

6.14 Road Safety Action Plan

6.14.1 Introduction

The focus area summarises the activities undertaken under the NZTA work category 432 road safety promotion. This work category provides for the development and implementation of activities including promotion, education and advertising that address the safe use of the land transport network.

The Council has a joint road safety action plan with the Tasman District Council. This plan is a critical component in the delivery of a Road Safety programme across the Nelson/Tasman district. The two councils through resolution have agreed to a cluster arrangement for the purpose of delivering a road safety programme across their respective districts. For management purposes a Joint Road Safety Action Plan Working Group has been appointed with representatives from key stakeholder groups.

Objectives

- Advancing the priorities and initiatives identified in the Safer Journeys Strategy and its action plan. www.saferjourneys.govt.nz ;
- Achieving safer outcomes by working with communities to identify and deliver local land transport safety programmes and activities;

- Developing and motivating national, regional and local land transport safety partnerships to ensure an integrated approach to safety outcomes.

6.14.2 Levels of Service

The service level statement for safety is:

"To work towards a safe road system increasingly free of death and serious injury."

The 2017 NZ Transport Agency Communities at Risk Register [43] provides a ranking of different communities around NZ with regard to selected road safety risks. The Communities at Risk Register highlights personal risk to road users. Personal risk is a count of deaths and serious injuries (DSI) divided by distance or time travelled. This is used to highlight areas where a crash is more likely to occur based on use of the road network. Because personal risk is not affected by population size, personal risk is one way of making crash measures comparable between local authorities so that targeted road safety programmes can be delivered in the areas of highest need. The register shows:

- Nelson City to have a higher than average intersections crash risk;
- Nelson City to have low individual risk for cyclists and pedestrians;
- Older drivers (>75 years) in Nelson have low individual risk for a crash;
- Nelson to have medium individual risk for motorcyclists;
- Young drivers to be at low individual risk in Nelson City but are a high priority nationally;
- Safer Speeds is also identified as a high priority in the Safer Journeys strategy.

The analysis in Section 2.6.4.7 indicates that reductions in the number of DSI's is occurring steadily overtime.

6.14.3 Demand

The demand for road safety promotion is outlined in the Safer Journey vision. Road safety promotion is a low cost dynamic intervention that targets safety outcomes for the road network users.

The improvements in road safety that have resulted in all of Nelson previously medium to high risk user groups dropping to low risk in the Register have been as a result, in part to the programmes and initiatives listed in the below lifecycle management section. In order to maintain this safety improvement and make further gains Council needs to continue to be

43 http://nzta.govt.nz/resources/communities-at-risk-register/

proactive with road safety campaigns and initiatives that include speed reduction measures.

Funding has been provided to have a dedicated person available for the Road Safety Action Plan coordination.

6.14.4 Lifecycle management

The Road Safety Action Plan Working Group is tasked with the management of all road safety activities. To enable this, a supporting structure has been developed which includes:

- Three times a year council led and chaired Road Safety Action meetings, which include formal agendas and stakeholder reporting lines and minutes.
- Operational meetings for professional key staff as and when required with meeting recordings made.

The following specific activities are typically undertaken:

Cycling

The initiatives for improving cycle safety are Nelson's RIDE ON Strategy, 0800 CYCLECRASH and Be Bright on a Bike. Key outcomes are to improve community cycle skills, encourage more cycle use, drawing attention to cycle presence on the road and a reduction in crashes involving cyclists.

Motorcycling

The initiative for improving motorcycle safety is the "Top of the South Motorcycle Safety Programme. Key parts to the strategy are motorcycle training courses together with information publicised on licence requirements and safety gear as two closest neighbours Tasman and Marlborough District Council have medium casualty risk rating for motorcycles.

Older Drivers

The initiatives for improving safety with Nelson's older drivers are the Staying Safe, Car Fit and Mobility Scooter Training schemes. Key parts to achieve this are classroom based learning on staying safe and one to one mobility scooter training and support. A Car Fit package helps older drivers recognise what their vehicle's safety features are and assists in correctly adjusting them to their personal needs.

Speeds and Driving to the Conditions

The initiatives for reducing driver speeds will focus on driver education and awareness in particular to driving within residential streets. It is hoped that a greater ownership of streets and public space by residents can be achieved by investigation and implementation of a community development model to reduce speeds in residential streets.

Walking

The initiatives for improving safety while walking focuses on young pedestrians and parents of child pedestrians. The work will involve walking school buses and Feet First and Walk to School promotions. Other events and activities designed to promote and encourage using active transport as a mode of travel to and from school will be utilised.

Younger Drivers

The initiatives for improving safety amongst young drivers are Driver Licence Assistance course, Rotary Young Driver Awareness (RYDA), Students Against Dangerous Driving (SADD) and the training of teachers in delivering road safety across the school curriculum. Key outcomes are to provide increased awareness in the target group of young drivers and their parents about elevated risk levels and steps that can be taken to reduce that risk.

Programme Business Case

Options for achieving the outcomes, levels of service and responding to the demands for road safety promotion were developed and tested using the IAF framework. The assessment shows the proposed road safety promotion programme has a Medium results alignment as the road user behaviour change activities within the programme will be contributing to, and has outcomes aligned to national and or local programmes in a safer journeys area of medium concern with our neighbours in Tasman and Marlborough.

Participation numbers are used to measure the success of individual educational promotions. In order to achieve the gains in road safety that have been realised in the last three to five years the Council has run a variety of initiatives and campaigns.

Other safety related work streams include a review of the speed limit bylaw in 2018 with objectives to improve pedestrian safety in areas with no footpaths, review roads that have significantly changed in form or function since the last review and consider if area wide speed reductions are warranted to encourage the greater use of active modes.

6.14.5 Risks

The Road Safety team meet 3 times a year. Programme delivery issues, risks and responsibilities are shared and collaborated to deliver the programme.

RLTP is the overarching monitoring framework where safety risks, trends and costs are monitored.

The risk to staffing of the delivery of the RSAP is mitigated by the external sourcing of the services by specialised agencies. Procurement of specialised agencies to delivery road safety programmes and services is in accordance with the NCC procurement policy.

The delivery of the RSAP is tracked internally via the Infrastructure Project Register to ensure the programme is delivered on time and budget.

7. Financial summary

This Section sets out financial statements, funding strategy, depreciation forecast and charges for the transport asset and activities in Nelson City.

The Local Government Act 2002 (Part 6 Subpart 3) requires local authorities to manage their finances "prudently and in a manner that promotes the current and future interests of the community. This implies compliance with applicable Financial Reporting Standards, which include New Zealand equivalents to International Financial Reporting Standards (New Zealand IFRS).

In determining how activities will be funded Local Authorities are required to take the following into consideration:

- The contribution to the achievement of Community Outcomes (strategic alignment).
- Beneficiaries of each activity (beneficiary/user pays principles).
- The period over which benefits from the activity will occur (intergenerational equity issues).
- The extent to which identifiable individuals contribute to the need to incur expenditure (exacerbates and user pays principles).
- The costs and benefits of funding the activity compared to other activities (cost/benefit, prioritisation principles).
- The impact of funding the activity on the well-being of the community (ability to pay principles).

This Asset Management Plan provides the basis for meeting these requirements.

The Land Transport Management Act 2003 requires the NZTA to allocate and invest the National Land Transport Fund in both the state highways and the local road network whilst giving effect to the Government Policy Statement on Transport.

7.1 Financial statements and projections

7.1.1 Definition of Expenditure Categories

All expenditure on infrastructure assets falls into one of three categories:

- Operations and Maintenance Expenditure
- Capital Expenditure –Renewal/Replacement
- Capital Expenditure –Creation/Acquisition/Augmentation for both level of service compliance and growth

For the transport activity there are 6 cost centres as follows

- 5001 Subsidised Roading

- 5002 Unsubsidised Roading
- 5505 Parking Regulation
- 5510 Parking and CBD Enhancement
- 5560 Public Transport
- 5570 Total Mobility

7.1.2 Forecast Expenditure

The forecasted annual expenditure for the next three years is summarised in the table 7 - 1 below. A full breakdown over the plan term of 10 years is shown in full in table 7 – 2 and graphically in Appendix L.

Table 7 – 1: Forecasted Annual Expenditure 3 Year Summary
Table updated

	2018/19	2019/20	2020/21
Road Safety Promotion	119,000	93,000	90,000
Transport Planning	149,110	36,110	50,000
Maintenance & Operation of Local Roads	4,796,912	4,298,800	4,288,214
Renewal of Local Roads	2,662,000	2,501,634	2,483,313
New & Improved Infrastructure for Local Roads	773,000	120,000	382,400
Low Cost Low Risk Programme	1,776,000	2,540,200	2,134,800
Walking & Cycling	685,000	1,240,000	2,800,000
5001 Subsidised Roading Total	**11,111,022**	**10,979,744**	**12,378,727**
5002 Unsubsidised Roading Total	**1,507,984**	**2,259,322**	**2,770,724**
5505 Parking Regulation Total	**600,933**	**613,806**	**600,806**
5510 Parking & CBD Enhancement Total	**2,673,414**	**2,574,232**	**2,614,948**
Public Transport Services	1,847,000	1,928,630	1,884,674
Public Transport Infrastructure	360,000	50,000	236,000
5560 Public Transport Total	**2,207,000**	**1,978,630**	**2,120,674**
5570 Total Mobility Total	**299,668**	**314,048**	**329,291**
Transport Total	**18,400,021**	**18,719,782**	**20,815,170**

Table 7 – 2: Forecasted Annual Expenditure 10year Detail Table updated

$k	2018/19 LTP	2019/20 LTP	2020/21 LTP	2021/22 LTP	2022/23 LTP	2023/24 LTP	2024/25 LTP	2025/26 LTP	2026/27 LTP	2027/28 LTP
Grand Total	**22,520.0**	**22,839.8**	**24,935.2**	**27,151.4**	**26,333.2**	**29,396.9**	**29,033.2**	**28,811.3**	**22,405.8**	**23,930.4**
5001 Subsidised Roading	**11,111.0**	**10,979.7**	**12,378.7**	**13,246.5**	**11,993.9**	**17,183.5**	**16,428.7**	**17,678.6**	**11,041.1**	**11,938.7**
Expenses	**4,426.6**	**3,825.2**	**3,778.2**	**3,502.0**	**3,776.0**	**3,725.9**	**3,769.3**	**3,687.9**	**3,639.5**	**3,868.0**
Base Expenditure	4,087.4	3,591.4	3,613.4	3,502.0	3,612.0	3,682.1	3,752.1	3,589.5	3,639.5	3,754.5
Programmed Expenses	339.3	233.8	164.8	-	164.0	43.8	17.2	98.4	-	113.5
Capital Expenditure	**6,684.4**	**7,154.6**	**8,600.5**	**9,744.5**	**8,217.9**	**13,457.6**	**12,659.4**	**13,990.7**	**7,401.6**	**8,070.7**
Renewals	3,472.0	3,304.0	3,288.1	3,608.7	3,641.7	4,044.1	4,146.6	4,049.1	3,651.6	3,654.1
Capital Growth	204.0	211.5	977.4	1,865.7	1,932.4	6,333.2	5,222.3	5,981.6	1,750.0	900.0
500176551375. WC 341 Marsden Valley Ridgeway Upgrade	50.0	100.0	500.0	50.0	-	-	-	-	-	-
500176551532. WC 341 MI Waimea Ridgeway	-	10.0	50.0	100.0	20.0	-	-	-	-	-
500176552933. WC324 Main Rd Stoke/Marsden Rd	-	10.0	32.4	75.7	32.4	800.0	170.0	-	-	-
500176553094. WC151 Saxton Growth Area Transport Programme	-	-	-	1,170.0	1,170.0	4,420.0	4,420.0	4,420.0	-	-
500176553167. WC 341 Market Rd Intersection improvements	-	12.0	-	-	-	-	20.0	80.0	700.0	100.0
500176553168. WC 341 Gloucester Street intersection improvements	-	-	-	-	-	70.0	150.0	500.0	500.0	500.0
500176553169. WC341 Montreal Princes Drive Intersection	-	-	-	-	-	25.0	75.0	800.0	100.0	-
500176553171. WC341 Polstead Suffolk Intersection Upgrade	-	10.0	-	-	-	-	50.0	100.0	100.0	-
500176553172. WC324 Polstead Main Road Stoke Intersection Upgrade	-	10.0	-	200.0	300.0	700.0	-	-	-	-
500176553173. WC341 Ngawhatu Suffolk Intersection	-	10.0	-	-	-	-	-	50.0	50.0	250.0
500176553214. WC 341 Toi Toi Emano Street intersection	-	-	-	-	-	12.0	-	50.0	300.0	50.0
500176553215. WC324 Arapiki Road Upgrade	50.0	50.0	300.0	50.0	-	-	-	-	-	-
500176553232. WC341 Market Road/Bishopdale Ave Intersection improvements	-	-	15.0	20.0	200.0	-	-	-	-	-
500176752172. WC 341 Railway Reserve/Princes Dr cycle crossing upgrade	104.0	-	-	-	-	-	-	-	-	-
500176753175. WC341 Stoke Centre Traffic Calming and Pedestrian Safety Work	-	10.0	-	-	-	-	-	-	-	-
500176753176. WC341 Stoke Pedestrian Refuges	-	10.0	30.0	100.0	160.0	-	-	-	-	-
500176803174. WC452 Stoke East West Cycle Connection	-	-	50.0	100.0	50.0	350.0	350.0	-	-	-
50017697. Growth: investigation, options, testing, engagement	-	-20.5	-	-	-	-43.8	-12.7	-18.4	-	-
Capital Increased LOS	3,008.4	3,639.0	4,335.0	4,270.1	2,643.8	3,080.3	3,290.5	3,960.0	2,000.0	3,516.5
500179551525. WC 341 Minor Improvements	525.0	350.0	350.0	350.0	350.0	350.0	350.0	1,000.0	1,000.0	2,500.0
500179552168. WC 324 Waimea Rd/Van Diemen Jct improvements	-	-	-	-	54.1	108.1	20.0	900.0	300.0	-
500179552624. WC 341 Nile St/Clouston Tce intersection improvement	7.0	-	-	-	-	-	-	-	-	-
500179552934. WC 324 Quarantine/Nayland intersection upgrades	-	50.0	50.0	108.1	500.0	1,312.2	2,000.0	700.0	-	-

$k	2018/19 LTP	2019/20 LTP	2020/21 LTP	2021/22 LTP	2022/23 LTP	2023/24 LTP	2024/25 LTP	2025/26 LTP	2026/27 LTP	2027/28 LTP
500179552947. WC 341 Muritai SH6 intersection	-	-	-	-	-	-	-	-	-	50.0
500179553009. WC341 Toi Toi/Vanguard intersection upgrade	-	16.2	37.8	600.0	100.0	-	-	-	-	-
500179553025. WC341 Sharedzone - Beachville Cres	40.0	180.0	-	-	-	-	-	-	-	-
500179553026. WC341 Sharedzone - Wigzell	-	87.0	10.0	200.0	-	-	-	-	-	-
500179553027. WC341 Sharedzone - Mayroyd	30.0	-	-	-	-	-	-	-	-	-
500179553032. WC341 Airport Bridge Replacement	-	250.0	-	-	-	-	-	-	-	-
500179553035. WC 341 St Vincent Street Toi Toi Street safety improvements	-	-	50.0	150.0	200.0	-	-	-	-	-
500179553036. WC452 Main Road Stoke cycleway Saxton Creek to Champion Rd	-	80.0	400.0	-	-	-	-	-	-	-
500179553106. WC 341 Jenkins Creek shared path widening	180.0	-	-	-	-	-	-	-	-	-
500179553119. WC324 Streetlight conversion to LED	723.0	-	-	-	-	-	-	-	-	-
500179553226. WC 341 Waimea Road / Hampden Street intersection upgrade	40.0	250.0	-	-	-	-	-	-	-	-
500179553227. WC 341 Waimea Road Franklyn Street intersection improvements	-	15.0	20.0	50.0	700.0	100.0	-	-	-	-
500179553239. WC341 Railway Reserve improvements	-	-	12.0	-	25.0	200.0	200.0	200.0	-	-
500179701080. WC 341 Streetlight Improvement	-	50.0	100.0	100.0	-	-	-	-	-	-
500179752798. WC341 New Footpaths	700.0	700.0	700.0	400.0	350.0	450.0	650.0	650.0	650.0	650.0
500179801314. WC 452 UCP Saltwater Creek Crossing	400.0	-	-	-	-	-	-	-	-	-
500179802173. WC452 Maitai shared path to Nelson east programme	50.0	50.0	150.0	750.0	250.0	60.0	-	-	-	-
500179802199. WC341 Waimea Road Retaining Wall at Snows Hill	20.0	50.0	10.0	900.0	-	-	-	-	-	-
500179802537. WC 452 CBD Cycle parking facilities	-	-	-	12.0	35.0	-	-	-	-	-
500179803151. WC 341 Maitai shared path to Anzac Park active transport fac	60.0	300.0	250.0	-	-	-	-	-	-	-
500179803182. WC 452 Tahunanui Cycle Network - SH6 Tahunanui Drive connect	200.0	800.0	1,800.0	-	-	-	-	-	-	-
500179803212. WC452 Cross Town Links Brook to Central Programme	35.0	10.0	100.0	500.0	50.0	500.0	50.0	500.0	-	-
500179803224. WC452 Isel Park Cycle Connections	-	50.0	50.0	150.0	50.0	-	-	-	-	-
500179803233. WC452 Atawhai Shared path extension to Todds Valley	-	-	-	-	-	-	25.0	10.0	50.0	350.0
500179903213. WC 341 CCTV at traffic signals	10.0	130.0	-	-	-	-	-	-	-	-
500179903299. WC452 Travel demand management improvements	-	250.0	250.0	-	-	-	-	-	-	-
50017997. LoS: investigation, options, testing, engagement	-11.6	-29.2	-4.8	-	-20.3	-	-4.5	-	-	-33.5
5002 Unsubsidised Roading	**5,628.0**	**6,379.3**	**6,890.7**	**6,372.1**	**5,798.6**	**6,120.0**	**7,109.9**	**5,521.8**	**5,812.3**	**6,542.7**
Expenses	**1,105.8**	**1,338.0**	**1,743.5**	**1,238.1**	**1,150.5**	**1,153.4**	**1,123.7**	**1,142.9**	**1,184.4**	**1,171.3**
Base Expenditure	955.9	966.8	957.8	973.8	994.8	975.8	966.8	976.8	1,006.8	976.8
Programmed Expenses	149.9	371.2	785.7	264.3	155.7	177.6	156.9	166.0	177.6	194.5
Capital Expenditure	**4,522.2**	**5,041.3**	**5,147.3**	**5,134.1**	**4,648.0**	**4,966.6**	**5,986.2**	**4,379.0**	**4,627.8**	**5,371.4**

$k	2018/19 LTP	2019/20 LTP	2020/21 LTP	2021/22 LTP	2022/23 LTP	2023/24 LTP	2024/25 LTP	2025/26 LTP	2026/27 LTP	2027/28 LTP
Renewals	8.8	8.9	8.9	8.9	9.0	9.0	9.1	9.1	9.1	9.2
Capital Growth	4,120.0	4,790.0	4,130.0	4,145.0	4,180.0	4,210.0	5,817.2	4,120.0	4,120.0	4,120.0
500276552200. Marsden Valley Road Upgrade	-	-	10.0	25.0	60.0	90.0	1,697.2	-	-	-
50027691. Vested Assets	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0	4,120.0
500276912826. Hill Street North improvements	-	670.0	-	-	-	-	-	-	-	-
Capital Increased LOS	393.4	242.5	1,008.4	980.1	459.1	747.6	160.0	249.9	498.7	1,242.2
50027710. Land Purchase - LOS	54.1	54.1	54.1	54.1	54.1	54.1	54.1	54.1	54.1	54.1
500277701076. Road Frontage Planting Program	37.8	38.1	38.3	38.5	38.8	39.0	39.2	39.5	39.7	39.9
500277701078. Street Garden Dev	7.6	7.6	7.7	7.7	7.8	7.8	7.8	7.9	7.9	8.0
500277701079. Street Tree Dev	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9	17.0	17.1
500279552074. Milton St (Grove to Cambria)	-	-	50.0	70.0	50.0	430.0	-	-	-	-
500279552075. Halifax (Maitai to Milton)	-	-	-	-	-	-	51.3	100.0	180.0	1,100.0
500279552079. Mount Street and Konini Street upgrade	50.0	20.0	200.0	350.0	-	-	-	-	-	-
500279552166. Haven/Halifax Jct improvements	-	-	-	-	-	-	-	-	-	70.0
500279553010. Toi Toi St upgrade	50.0	80.0	550.0	100.0	-	-	-	-	-	-
500279553229. Additional survey markers	-	20.0	50.0	50.0	-	-	-	-	-	-
500279753262. Grove Street Footpath upgrade	-	10.0	50.0	300.0	300.0	200.0	-	-	-	-
500279803139. Maitai Valley Road shared path modifications	180.0	-	-	-	-	-	-	-	-	-
500279803228. Hampden Street walkway upgrade	-	-	-	-	-	-	-	50.0	200.0	-
50027997. LoS: investigation, options, testing, engagement	-2.3	-3.6	-8.1	-6.7	-8.1	-	-9.3	-18.4	-	-46.9
5505 Parking Regulation	**600.9**	**613.8**	**600.8**	**600.8**	**613.8**	**600.8**	**600.8**	**613.8**	**600.8**	**600.8**
Expenses	**600.9**	**600.8**	**600.8**	**600.8**	**600.8**	**600.8**	**600.8**	**600.8**	**600.8**	**600.8**
Base Expenditure	600.9	600.8	600.8	600.8	600.8	600.8	600.8	600.8	600.8	600.8
Capital Expenditure	**-**	**13.0**	**-**	**-**	**13.0**	**-**	**-**	**13.0**	**-**	**-**
Capital Growth	-	13.0	-	-	13.0	-	-	13.0	-	-
55057440. Capital: Plant & Equipment	-	13.0	-	-	13.0	-	-	13.0	-	-
5510 Parking and CBD Enhancement	**2,673.4**	**2,574.2**	**2,614.9**	**3,656.2**	**4,442.2**	**2,836.2**	**2,531.0**	**2,531.7**	**2,521.7**	**2,381.7**
Expenses	**1,909.9**	**1,830.9**	**1,824.9**	**1,901.2**	**1,907.2**	**1,871.2**	**1,926.0**	**1,866.7**	**1,866.7**	**1,866.7**
Base Expenditure	1,844.1	1,808.1	1,808.9	1,809.7	1,810.5	1,855.1	1,856.0	1,856.0	1,856.0	1,856.0
Programmed Expenses	65.8	22.8	16.1	91.5	96.8	16.1	70.0	10.8	10.8	10.8
Capital Expenditure	**763.5**	**743.4**	**790.0**	**1,755.0**	**2,535.0**	**965.0**	**605.0**	**665.0**	**655.0**	**515.0**
Renewals	313.5	683.4	430.0	415.0	655.0	165.0	505.0	665.0	655.0	515.0

$k	2018/19 LTP	2019/20 LTP	2020/21 LTP	2021/22 LTP	2022/23 LTP	2023/24 LTP	2024/25 LTP	2025/26 LTP	2026/27 LTP	2027/28 LTP
Capital Increased LOS	450.0	60.0	360.0	1,340.0	1,880.0	800.0	100.0	-	-	-
551079552994. Strawbridge Sq Layout & access improvement	-	-	10.0	70.0	600.0	100.0	-	-	-	-
551079552995. Putaitai St/ Main Rd Stoke Right turn	40.0	-	-	-	-	-	-	-	-	-
551079553100. Church Street Improvements	400.0	50.0	-	-	-	-	-	-	-	-
551079553120. Stoke Centre Traffic Calming and Ped Safety Works non sub ae	-	-	300.0	500.0	1,100.0	700.0	100.0	-	-	-
551079752984. Stoke Centre Enhancements	-	-	-	20.0	80.0	-	-	-	-	-
551079803236. Polytech to CBD enhancements	10.0	10.0	50.0	750.0	100.0	-	-	-	-	-
5560 Public Transport	**2,207.0**	**1,978.6**	**2,120.7**	**2,930.3**	**3,122.2**	**2,275.7**	**1,962.8**	**2,045.0**	**1,987.9**	**2,001.6**
Expenses	**1,847.0**	**1,928.6**	**1,884.7**	**1,894.3**	**1,964.5**	**1,915.4**	**1,926.8**	**2,009.0**	**1,951.9**	**1,965.6**
Base Expenditure	1,837.0	1,875.6	1,884.7	1,894.3	1,904.5	1,915.4	1,926.8	1,939.0	1,951.9	1,965.6
Programmed Expenses	10.0	53.1	-	-	60.0	-	-	70.0	-	-
Capital Expenditure	**360.0**	**50.0**	**236.0**	**1,036.0**	**1,157.6**	**360.3**	**36.0**	**36.0**	**36.0**	**36.0**
Capital Growth	360.0	50.0	200.0	1,000.0	1,121.6	324.3	-	-	-	-
556075902218. WC 531 Stoke interchange	-	-	-	-	21.6	324.3	-	-	-	-
556075902945. WC 531 Integrated Ticketing GRETS	310.0	-	-	-	-	-	-	-	-	-
556075902997. WC 531 CBD interchange	50.0	50.0	200.0	1,000.0	1,100.0	-	-	-	-	-
Capital Increased LOS	-	-	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
556079902335. WC 531 PT Minor Improvements	-	-	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
5570 Total Mobility	**299.7**	**314.0**	**329.3**	**345.4**	**362.6**	**380.7**	**400.0**	**420.4**	**442.0**	**464.9**
Expenses	**299.7**	**314.0**	**329.3**	**345.4**	**362.6**	**380.7**	**400.0**	**420.4**	**442.0**	**464.9**
Base Expenditure	299.7	314.0	329.3	345.4	362.6	380.7	400.0	420.4	442.0	464.9

7.1.3 Deferred Renewals

This plan includes no known deferred renewals.

There is potential for deferred renewals to become known as greater asset knowledge is gained. Specifically, the retaining wall asset (refer section 6.5), the CBD elements valuation (refer section 6.10) and dTIMS pavement analysis (refer section 6.2).

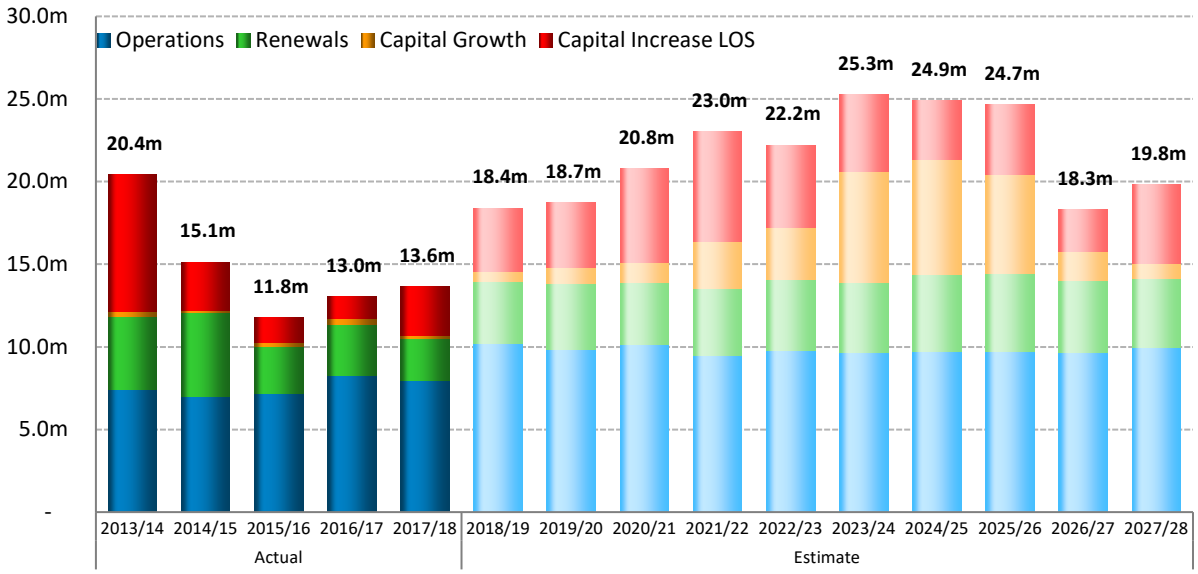
7.1.4 Growth Component of Capital Works

Figure 7 - 1 below indicates the proportion of capital works programme is associated with growth. A more detailed breakdown is contained within the Developed Contribution Policy.

7.1.5 Trends from the previous 3 years

Figure 7 - 1 below shows the actual expenditure trend for years 13/14 to 17/18, with the forecast expenditure for this plan over the next 10 years for comparison.

Figure 7 – 1: Financial Summary Chart updated



7.2 Funding strategy

7.2.1 Financial Treatment of Activities

The table below describes how each account is funded.

Table 7 – 3: Financial Treatment of Activities

Account Number	Account Name	Operations and Maintenance	Renewals[44]	Capital – Level of Service	Capital - Growth
5001	Subsidised Roading	Rates and NZTA Subsidy at FAR	Depreciation and NZTA Subsidy at FAR	Borrowing and NZTA subsidy at FAR	Borrowing, Development Contributions and NZTA subsidy at FAR
5002	Unsubsidised Roading	Rates	Depreciation	Borrowing	Borrowing and Development Contributions
5505	Parking Regulation	Rates and Parking Regulation Income	Depreciation	Borrowing	Borrowing
5510	Parking and CBD Enhancement	Rates and Parking Meter Income	Depreciation	Borrowing	Borrowing
5560	Public Transport	Fares, Rates, NZTA Subsidy at FAR and Crown appropriation for Supergold	Depreciation and NZTA Subsidy at FAR	Borrowing and NZTA subsidy at FAR	Borrowing and NZTA subsidy at FAR
5560	Total Mobility	Rates and NZTA Subsidy at 60%	Nil	Borrowing and NZTA subsidy at 60%	Borrowing and NZTA subsidy at 60%

7.2.2 Significant Sources of Transport Funding

Rates – in addition to funding from rate payers. Inner city and Stoke CBD ratepayers pay a higher differential to cover provision of special services in the CBD's.

New Zealand Transport Agency Co-Investment - The Transport Agency, like Council, works on a three year funding cycle. The Transport Agency allocates funding to local authorities through the National Land Transport Plan which it adopts in July 2018, after considering each Regional Land Transport Plan (RLTP). The eligibility rules for co-investment by NZTA can be found on their Planning and Investment Knowledge Base[45].

The Funding Assistance Rate (FAR) is the co-investment rate for transport activities that Council receives from the Transport Agency. In 2013 and 2014 the Transport Agency reviewed the principals and methods used in setting the FAR and resolved to transition to a single FAR for most eligible activities. In 14/15 Nelson's effective FAR averaged across all subsidised activities was

44 Council depreciates its assets according to the replacement value method in order to fund renewal projects.

45 https://www.pikb.co.nz/

46% and the Transport Agency is transitioning the FAR by a 1% per annum increase to 51% over five years. Thus the 2018/19 financial year the FAR will be 50% and 2019/20 and beyond the FAR will be 51%.

There are several transport activities that Council already funds from rates without any co-investment. As investment rules tighten, Council always has the option of continuing with the activity or improving the level of service for an activity by increasing the activity's funding from rates over the three year AMP time frame.

Parking Charges and Enforcement – Income from parking charges, footpath dining and market rental and parking enforcement activities are used in the maintenance, renewal and capital activities in the carpark and CBD enhancement account.

Road Opening, Road Closures, Access Crossing, and Over Weight and Over Dimension Vehicle Applications – Income from various applications to undertake an activity or work within the road reserve is collected to cover the administration and monitoring cost of that activity.

Development Contribution - In addressing actual and potential adverse effects from Developments, the Council may seek financial contributions. The contributions go towards the necessary land and works to construct, widen or upgrade any new or existing road, where:

- roads are not available; or
- existing roads are of inadequate width or construction to cater for increased usage caused by the subdivision or development; or
- alterations or works to existing roads are required for traffic safety or efficiency as a consequencee of the subdivision or development.

Furthermore, a financial contribution may be sought when the full number of on-site parking spaces is not provided as per the Resource Management Plan. Refer the Development Contributions Policy[46] for further details.

Tasman District Council – Contributions for the Public Transport and Total Mobility activities

Borrowing – Used to fund capital activities and buffer uneven depreciation.

7.3 Valuation forecasts

Section 7.1 and the LTP shows a programme of expected works for the ten years to 2028. This includes yearly financial forecasts of income and expenditure on transport activity operations and renewals and new capital expenditure. Please note that these figures in this AMP are based on 2018

46 http://nelson.govt.nz/building-and-property/property-land-use/development-contributions/

estimates and do not include inflation. The LTP figures differ beyond year 1 as they do include an allowance for inflation.

7.3.1 Forecast of future value of asset and valuation methodology

Asset valuation and depreciation

The basic value of an asset reduces in accordance with the wearing out over the asset's life arising from use, the passage of time, or obsolescence. This reduced value is called the depreciated replacement cost. It is accounted for by the allocation of the cost (replacement cost) of the asset less its residual value over its useful life.

Valuation Method

Every two years Council uses a professional external valuation company to re-value assets. In the intervening years Council adjusts the valuation by indexing to the construction cost index. The current valuation of the transport asset is presented in section 4.1.5.

7.4 Key assumptions made in financial forecasts

As well as the general assumptions that apply across Council's work, assumptions specific to transport are presented in the table below:

Table 7 - 4: Significant Forecasting Assumptions and Uncertainties

No.	Assumption	Degree of Risk or Uncertainty	Likely Impact if the Assumption is (or is Not) Realised or is Not Acceptable
1	Interest rates for new loans raised or existing debt refinanced during the years are forecasted in the range of 7.5-8%.	Low	Level of debt is moderate. Interest costs are not expected to vary significantly.
2	Growth is based on figures provided by statistics New Zealand and Nelson City Council growth projections.	Low	Any significant increase (or decrease) in the growth may require upgrading of intersections and links to occur at an earlier (or later) stage than presently proposed.
3	The actual remaining lives of assets will not deviate significantly from those contained in the asset valuation.	High	Changes in estimated asset lives could lead to significant changes in asset renewal projections, depreciation and renewal budgets.
4	The replacement values are a realistic cost and have taken into consideration engineering fees, resource consents etc.	Low	Replacement values have gone through a review process.
5	Depreciation based on estimated useful lives not on condition.	Medium	If proposed condition assessments indicate that Councils retaining wall and CBD elements have decreased useful lives, depreciation presently taken will be less than that required for replacement.

No.	Assumption	Degree of Risk or Uncertainty	Likely Impact if the Assumption is (or is Not) Realised or is Not Acceptable
6	The forecast are based on current NZTA funding thresholds and co-investment levels	Low	Increased (or decreased) rate payer contribution to maintain LoS
7	Maintenance and operations allocations are largely based on maintaining current level of service	Low	Increased (or decreased) rate payer contribution to maintain LoS
8	The National and Regional funding identified in the Regional Land Transport Plan will be supported in the National Land Transport Programme.	Medium	NZTA providing less funding than currently indicated and Council's share of project costs therefore increasing.
9	The NZTA financial assistance rates will increase from the current 49% to 51% in 2018/19.	Low	Increased rate payer contribution to maintain LoS
10	The NZ Transport Agency will co-fund the regions passenger transport at an increased level from 2015-18 RLTP.	Low	Increased rate payer contribution to maintain LoS
11	Tasman District Council will continue to contribute $84,000 per year to the Nelson / Richmond passenger transport service and $82,000 per year to the regions Total Mobility service.	Low	Increased rate payer contribution to maintain LoS
12	Public transport patronage will be at a level that continues to support the public transport level of service.	Low	Increased (or decreased) rate payer contribution to maintain LoS
13	The forecasts do not allow for fuel prices or inflation.	Low	The most significant impact as a result of increased (or decreased) fuel cost is the resurface budget as a large component of the price of resurfacing is in bitumen. Increased (or decreased) rate payer contribution to maintain LoS Nil impact due to inflation and escalation as the LTP makes allowance for inflation.
14	Staff resources will be available to commission the scheduled projects, activities and actions.	Medium	Project delivery and the benefits that flow from those projects will not be delivered when needed.
15	Energy prices will not increase/decrease significantly over the next ten years with a consequent effect on vehicle use or shifts to other modes of transport.	Medium	Any significant decrease (or increase) in energy prices may result in congestion (less congestion) requiring upgrading of intersections and links to occur at an earlier (or later) stage than presently proposed.
16	The number of vehicles and vehicle movements per household will continue at no greater than 2013 levels over the period covered by this Asset Management Plan.	Low	Any significant decrease (or increase) in household travel patterns) may result in congestion (less congestion) requiring upgrading of intersections and links to occur at an earlier (or later) stage than presently proposed.

No.	Assumption	Degree of Risk or Uncertainty	Likely Impact if the Assumption is (or is Not) Realised or is Not Acceptable
17	Parking meter revenue is collected at a level of $550,000 pa.	Medium	Increase (or decrease) in rates to balance car parking and CBD Enhancement account.
18	Tasman District Council will continue to promote free parking within Richmond.	Low	Increase (or decrease) in rates to balance car parking and CBD Enhancement account.
19	Free parking for the first hour and an increase thereafter to the rate of $1.50 per hour continues over the period covered by this Asset Management Plan.	Medium	Increase (or decrease) in rates to balance car parking and CBD Enhancement account.
20	It is assumed that natural disasters will occur with increasing frequency. This has been the experience of recent years and is consistent with predictions of climate change impacts. Exposure of low lying land to the risk of inundation from sea level rise is another assumption related to climate change. Council relies on Ministry for Environment guidelines in estimating sea level rise. Council's Land Development Manual currently provides for a 0.5m sea level rise by the end of the century but this will be reviewed in line with the latest MfE advice (1m for 100 years). The Nelson Tasman Civil Defence Emergency Plan states that the most significant natural hazards for Nelson are: earthquakes (greatest impact) and flooding (most likely). The probability of a magnitude 7 earthquake in Nelson is 87% in the next 50 years, and 98% in the next 100 years. The probability of a magnitude 8 earthquake is 43% in the next 50 years, and 67% in the next 100 years.	High	Funds may need to be reallocated to fund recovery and reinstatement.
21	Resource consents: It is assumed that resource consents held by Council will not be significantly altered and any due for renewal during the life of the plan can be renewed accordingly.	Medium	Conditions of resource consents altered and significant new compliance and activity mitigation costs.

No.	Assumption	Degree of Risk or Uncertainty	Likely Impact if the Assumption is (or is Not) Realised or is Not Acceptable
22	Government Policy Changes: It is assumed that any future Government legislation changes will take into account the need for a stable working and statutory framework. The Government has made known its intention to reform the Resource Management Act 1991, to receive a report back from the Rules Reduction Taskforce, and to continue to seek ways of addressing housing affordability and social housing need. It has also introduced the Building (Earthquake-Prone Buildings) Amendment Bill which includes a requirement on Councils to complete seismic assessments and to earthquake strengthen specified buildings. Further changes to legislation impacting on local government may take place, but this is not known at this time. It is assumed that Government will work with Councils to ensure that any legislative changes are managed appropriately.	Low	Financial impact resulting from a need to respond to significant legislation changes would impact on rates or fees and charges. It is not possible to quantify the potential financial impact of any future legislative changes at this time.
23	In 2015/16 the Government reimbursed council for SuperGold trips on a per-trip basis. The Government decided to shift to a bulk funding approach from 2016/17, where the level of funding will be agreed between Council and the NZ Transport Agency. The change will bring SuperGold Card funding into line with the way other public transport funding is allocated, and provide a ceiling on the cost of the scheme to Government, with a transfer of risk on any cost overruns now funded by council.	Low	Increased rate payer contribution to the SuperGold scheme as the rate of over 65 bus patronage will exceed the CPI adjustment made to the current bulk fund allocation.
24	Integration of the Nelson Southern Link project with the local road system will be fully funded by NZTA/Central Government).	High	Increased (or decreased) rate payer contribution to integrate new arterial road into transport system

7.5 Forecast reliability and confidence

Operation and Maintenance - The reliability and confidence of the financial forecasts for operation and maintenance activities for the first three years of this plan will be within -5% and +10% of budget. Historically maintenance and operating costs % variations have been low. Beyond three years the reliability decreases due to uncertainties in policy and technology in particular.

Capital – The upgrade/capital estimates include a contingency allowance to make provision for possible issues or circumstance that are unable to be reliably accounted for during the project development:

- Concept +/- 30%
- Initial & Planning +/-10 to +/- 25%
- Delivery/Construction +/- 5%

Projects of unusual complexity or presenting landowner / regulatory issues that cannot be quantified and such that estimating with accuracy is difficult, may lie outside these figures.

8. Asset Management Practices

The goal of infrastructure asset management is to:

"Deliver the required level of service to existing and future customers in a sustainable and cost effective manner."

A formal approach to the management of assets is essential in order to provide services in the most cost-effective manner, and to demonstrate this to customers and other stakeholders. The benefits of improved asset management are:

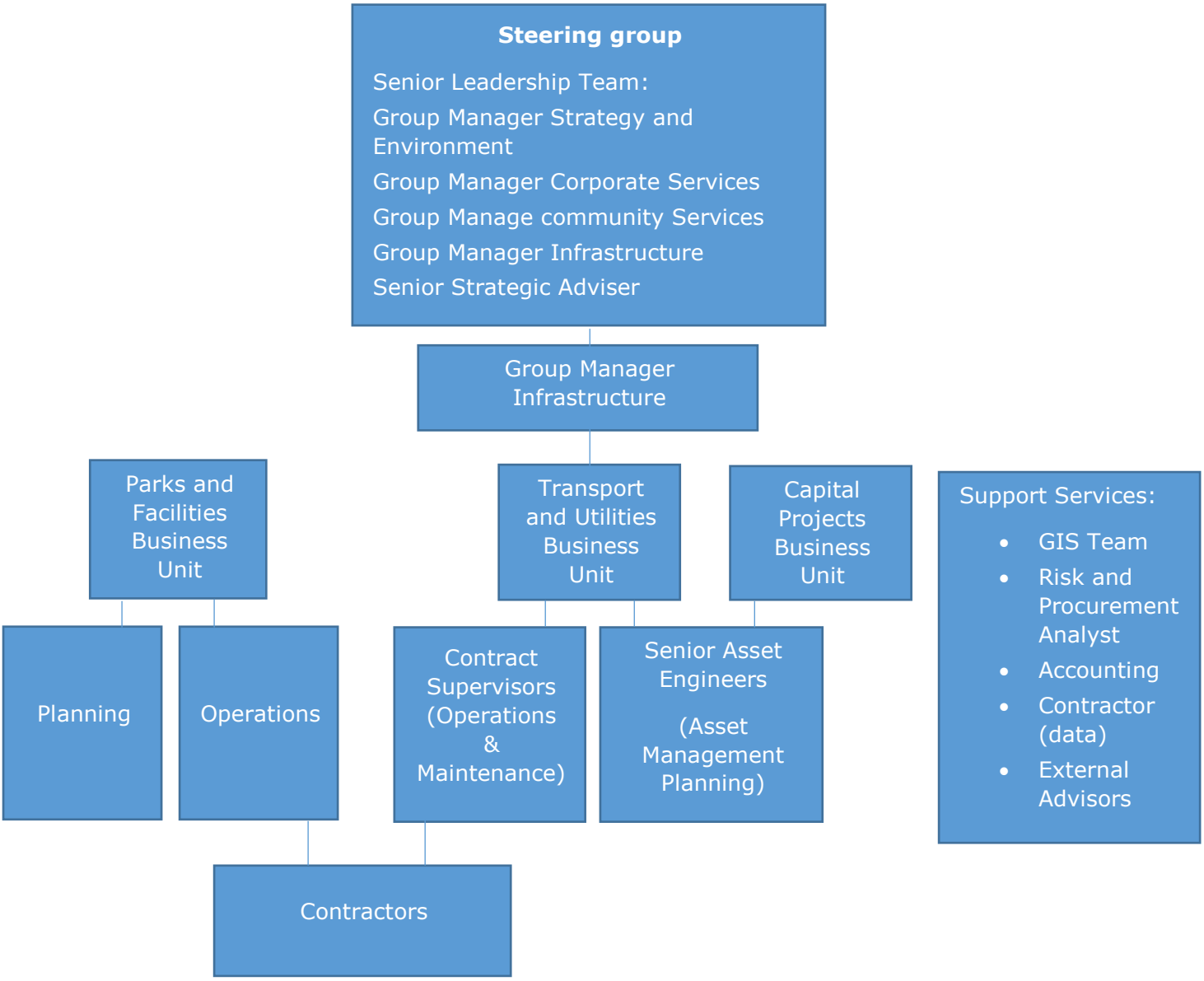
- Improved governance and accountability
- Enhanced service management and customer satisfaction
- Improved risk management
- Improved financial efficiency
- More sustainable decisions

The key elements of Asset Management are as shown below in figure 8 - 1:

Figure 8 – 1: Core Asset Management Practices

8.1 AM Leadership and Structure

Figure 8 – 2: Asset Management Structure



8.2 Management Systems

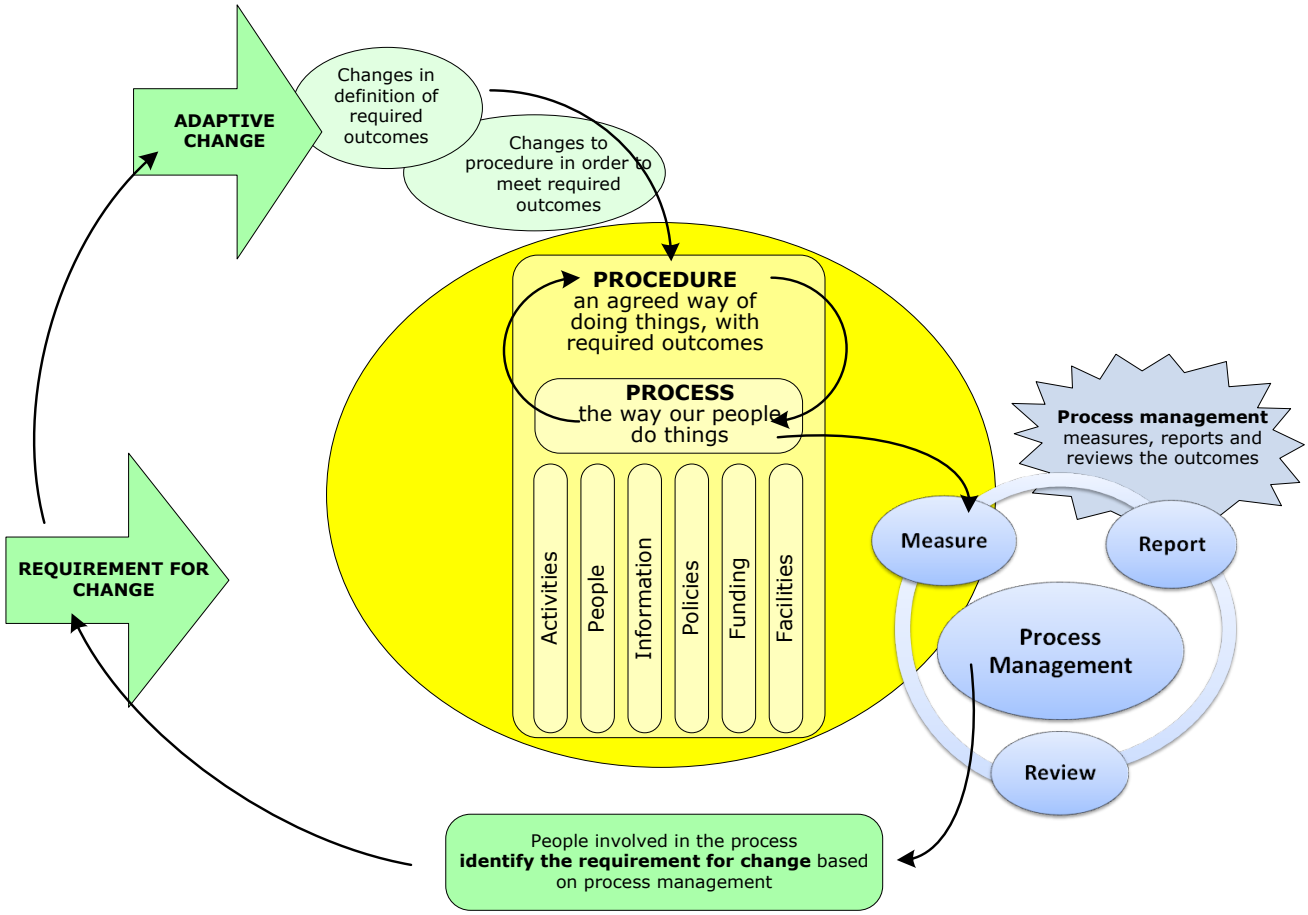
A management system is defined as the set of procedures an organisation needs to follow in order to meet its objectives.

Quality Management

The quality management system is process management based on a quality cycle as shown in figure 8 – 3 below.. It is aligned with ISO 9000, and benchmarked against this standard each year. The focus of the Quality Management programme is to improve the effectiveness and efficiency with which Nelson City Council deliver services to the community; ensuring processes deliver their required outcomes, which are aligned with community

outcomes and organisational goals. Required outcomes are typically defined in terms of the core key performance areas - customer satisfaction, legislative compliance, and management of resources (budget and staff time), and employee engagement.

Figure 8 – 3: Quality Management Lifecycle:



1: Define the Process: Document the Procedure

NCC's Quality Management system (QMS) is a process-based approach. A process is a set of interrelated or interacting activities which transforms inputs into outcomes. Required outcomes are achieved more efficiently when activities and related resources are managed as a process.

A procedure is an agreed way to carry out a process. A procedure includes and defines:

Required outcomes from the procedure (most important)

- Definition of the required outcome forms the "quality" standard for the process
    - Agreement of the required outcomes tells us what would success look like (our KPIs)
- We need to ensure that required outcomes are recorded so that they can be measured later - not just what needs to be achieved, but when, and how many, and what exceptions

People involved in the procedure (equally important)

- Definition of all of the people involved in all aspects of the process, including the customer, those "doing stuff", those "accountable for stuff" and any suppliers directly involved in the process
- Are the people involved the most effective, most efficient way to do this?

Activities comprising the procedure

- Defining all the activities required and undertaken to achieve the required outcomes
- Are all the activities undertaken necessary, are they in the right order, are the right people doing them, is this the most effective, most efficient way to do this?

Enablers that support the procedure

- The enablers of the process include things like information (and information systems), policies (and culture), funding and facilities. These should be documented as part of the process

Documenting the procedure (activities involved, who does what when, what funding and resources are required) provides a *written procedure* to support the process.

Processes work together to form end-to-end procedures:

Managing interrelated processes improves the organisation's effectiveness and efficiency in achieving its objectives. This means consideration of how processes interrelate to form end-to-end procedures with overall outcomes. The outputs from one procedure often form the trigger for the next procedure. End-to-end procedures have their own required outcomes.

2: Manage the procedure: Measure, Report and Review

Measuring whether the procedure is being followed and whether outcomes are being met This enables us to apply a factual approach to decision making and to the need for change.

- Measure how the process is going – is the procedure being followed – are interim goals being met? Measure the outputs of the process – were these met and did these meet the required outcomes?

Reporting tells us whether procedures are being followed and outcomes being met

- We need to not just know whether outcomes are being met, but to "know that we know"
- Reporting gives us options for remediation or consequences of non-conformity

The procedures and the outcomes are subject to review by those responsible and accountable for the process

- Why did we really do this? What did we think we would gain? Did we get that result?
- Are we doing the right things? Are we doing them the right way, and are we doing this consistently? Are we getting them done well? Are we getting the benefits?
- Review provides a tool for continual improvement of the process by re-examination and change to the required outcome, or by change in the process to achieve the required outcome

3: Improve the procedure: Requirement for Change, then Adaptive Change

Procedure are subject to adaptive improvement to the process and the required outcomes.

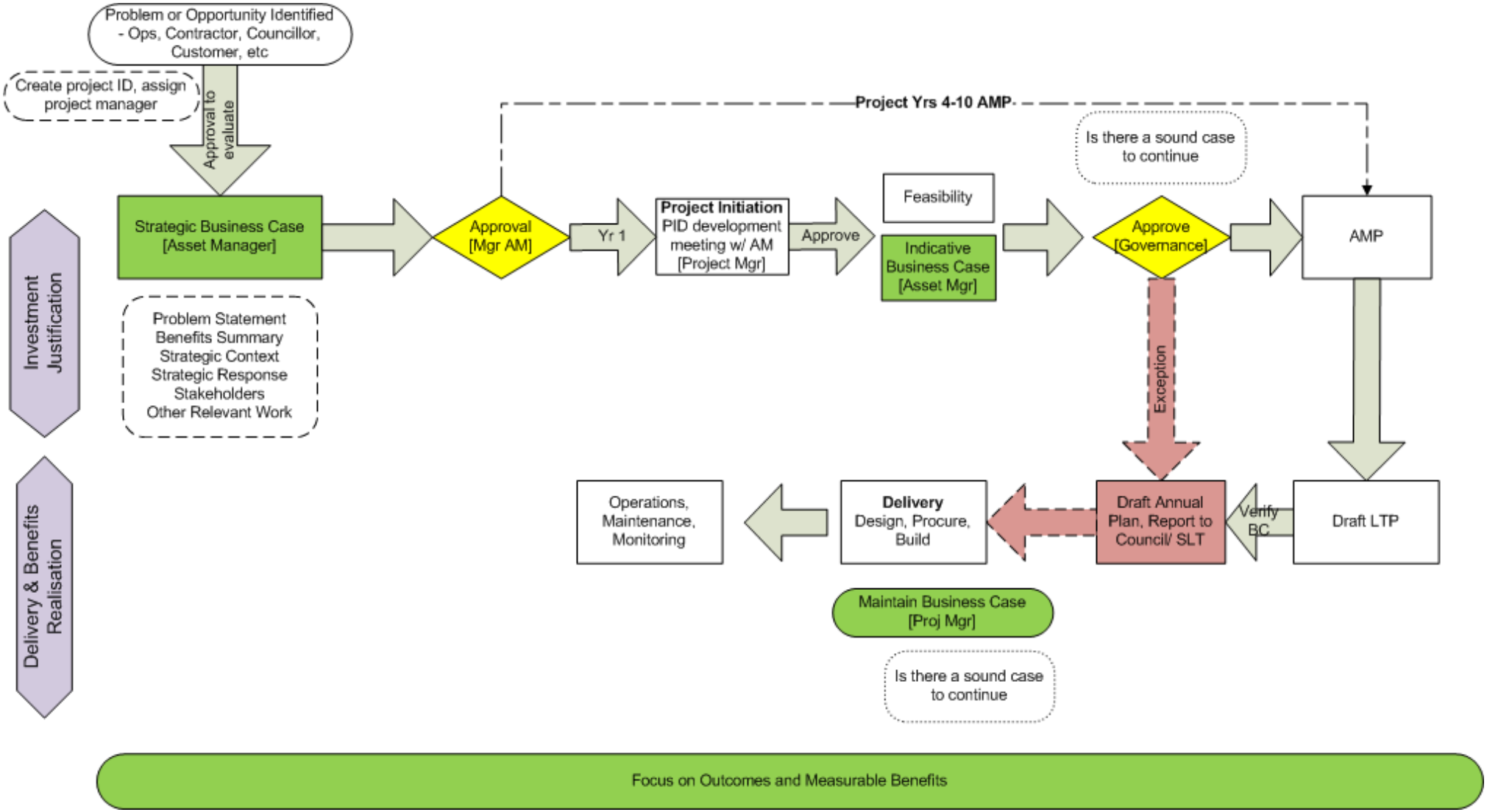
People involved with processes identify and initiate change:

- Are the required outcomes still required? Is there a requirement for change?
- Are the activities and people defined in this process the best way to achieve these outcomes?
- Are things being done in the right order, and by the right people, in the right places? Is the process being followed? Does everyone do it the way that we've agreed?
- Is there anything listed that isn't contributing? Is there something that would contribute more?

Project management

NCC processes for project management require that time, cost, and quality/scope objectives are agreed before project delivery begins. Project management is focussed on ensuring that the desired benefits, as per the agreed business case, are delivered. Project management processes are based on the principles of the PRINCE2™ method. Fiscal approvals, and change approvals are in line with Council delegations and Officer delegated authority.

Figure 8 - 4: Business Case Process



Health and Safety

Council has a Health and Safety Co-ordinator who in-conjunction with the Nelson City Council Health and Safety Committee ensures the responsibilities under the Health and Safety at Work Act 2015 are met. Regular safety training is provided to staff and induction processes are routine contractors and consultants working on Council sites where required. Council contracts and tenders require stringent HSE compliance.

Health and Safety in a strong focus of the Code of Practice for Temporary Traffic Management (CoPTTM) and requirements are strictly enforced and audited through the Corridor Assess Request (CAR) process.

8.3 Information Systems and Tools

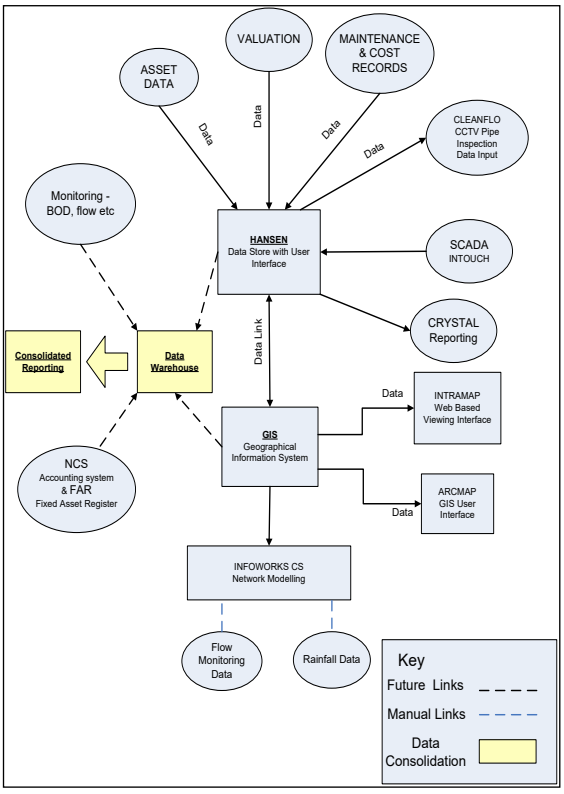
Asset Management Information Systems provide an understanding of assets to optimise lifecycle costs, identify required work, record completed work and cost of work. It benefits general management, long-term planning and data analysis.

All asset information is stored in the Asset Register linked with GIS and RAMM

An overview of the asset information system in its existing state and future state is depicted in Figure 8-5 below. The warehousing of specific data and further development of reporting will assist in management of the assets.

The Council has a number of information systems (RAMM, OBIS, Infor, MagiQ, InTouch, Network Model, and closed circuit television) that are integrated to varying degrees. The integration of these systems is considered to assist in the optimisation of operations, renewals and the ongoing development of the transport activity.

Figure 8 – 5: Asset Information Systems



Asset Improvement Register (ongoing AM practice)

The Asset Improvement Register is used to capture, store, and share ALL discussions, thoughts and concerns with regard to asset performance and improvement.

Integrated Accounting, Financial, Electronic Purchase Order, and Service Request Systems

Accounting is currently carried out to Generally Accepted Accounting Principles to comply with the Local Government Act 2002. The Nelson City Council uses integrated computer software supplied by Napier Computer Systems (MagiQ). The General Ledger is linked to packages that run Debtors, Creditors, Banking, Rates, Fixed Assets, Invoicing, Job Costing, and Payroll. Internal monthly financial reports are generated by Council significant activity and sub-activity categories although real time data is available at any time. External financial reports by significant activity are published in the annual report.

Service requests record customer questions, enquiries, and complaints is another suite to the MagiQ system with integration as appropriate.

Electronic Document and Records Management System (EDRMS)

Nelson City Council uses Objective as its electronic document and records management system.

Geographical Information System

Geographical information system was implemented in 1994 with data captured using photogrammetry (1994) and progressively delivered over the following years. Nelson City Council staff carried out accuracy checks on the geographical co-ordinate data supplied, searched all the engineering plans and field books for information on kerb and pipe alignments, material and age and entered this information into the Geographical information system and RAMM as appropriate .

Accuracy Limitations

The data captured by photogrammetry was required to be accurate to within a tolerance of +/- 0.3m. In inaccessible areas, it was not considered economic to search for buried fittings. Instead, the best estimated position was entered and the accuracy limitation flagged. Similarly, only limited fieldwork has been done to confirm the pipe material and sizes. The accuracy of this information is verified through time by asset data collection procedures.

Maintenance of GIS data

Procedures are in place to update new data into the Geographical information system on a monthly basis via Nelson City Council engineering staff.

Council's Engineering Standards require that any work on a Council asset must be proposed to Council by means of an engineering plan for approval and an "As-built" record submitted at the completion of works.

Data on assets associated with renewal and upgrade capital are now updated into the asset register by Nelson City Council Engineering and Finance staff. This ensures a high level of reliability.

RAMM

RAMM is used by council and maintenance contractors to record transport assets, condition assessments, maintenance and renewal activities and traffic counts. Maintenance contract payments are processed through RAMM on completion of as built records.

RAMM data forms the basis of the renewal programmes.

RAMM holds basic structures data which is supplemented by condition assessments maintained in OBIS (Opus Bridge Inventory System).

Asset management Recording System - Infor

The use of the Infor system has enabled the following:

Customer enquiries being logged directly and sent immediately to the contractor for action.

Contractor directly enters resolution confirmation at completion of job.

Tracking of expenditure on assets to allow assets that have a disproportionately high maintenance cost to be identified - upgrade or renewal can then be prioritised.

Nelson City Council principal contractor Nelmac has a live interface with Infor and this is used within the Transport activity for the stock effluent facility and vegetation maintenance. Any work associated with unscheduled maintenance is entered into Infor work order by the contractor. Completed work orders forms the basis of the contractors' payment.

There are known issues with the existing implementation of Infor surrounding the work order processes including a lack of reporting to trend results and alert for operational issues. With confirming the required reporting outputs for all levels of management the work order processes and data captured by the contractor and/or Nelson City Council staff can be refined to ensure the needs of all parties are met.

ProMapp

ProMapp is Nelson City Council's procedures library.

8.4 Service Delivery Models

Council Officers have participated in the Road Efficiency Group Series of works shops in 2015, 2016 and 2017 which have focussed on putting a business focus on the development of this plan and the Regional Land Transport Plan. In addition procurement has also been focussed on through REG activities. Council has completed a Smart Buyer Assessment which can be found in Appendix O. This assessment shows Nelson has embraced smart buyer principles but can still improve. Nelson has robust procurement practices considering the market, best practice standards and collaboration during the procurement process, but can improve in risk understanding and management, staff training and development and seeking feedback from suppliers.

Procurement

Procurement activities for transport assets and services are guided by one of two procurement strategies. For NZTA subsidised activities a specific procurement strategy aligned with NZTA policy and procedures is followed (A1632788). For non-subsidised activities the Council wide strategy is used.

The Strategies aims to achieve desired outcomes and quality at the lowest overall whole of life cost and sustain a pool of suppliers in the region of varying sizes and capabilities to meet the needs of the Council.

The objectives of the Procurement Strategies are:

- To attain value for money;
- To encourage competitive and efficient markets;
- To enable fair competition;
- To operate an efficient procurement process.

Maintenance contracts have been reviewed and grouped to provide a good balance between price and quality, and use either prequalification or price/quality supplier selection methods. In 2016 and 2017 all maintenance contracts were reviewed in accordance with the requirements of Section 17A of the Local Government Act.

The methods used to procure capital projects will differ depending on the size of the project, but will be either lowest price or price/quality.

Council maintains an in-house professional services capability balanced with external consultants as required to achieve best value for money. Additional professional services are sometimes required and will be procured following the guidelines of the NZ Transport Agency Procurement Manual whereby a supplier will be directly appointed for contracts under $100,000, and a closed contest will be used for work between $100,000 and $200,000. The supplier selection method will be determined depending on the services being procured, but will commonly be price/quality.

9. Plan improvement and monitoring

9.1 Status of AM practices

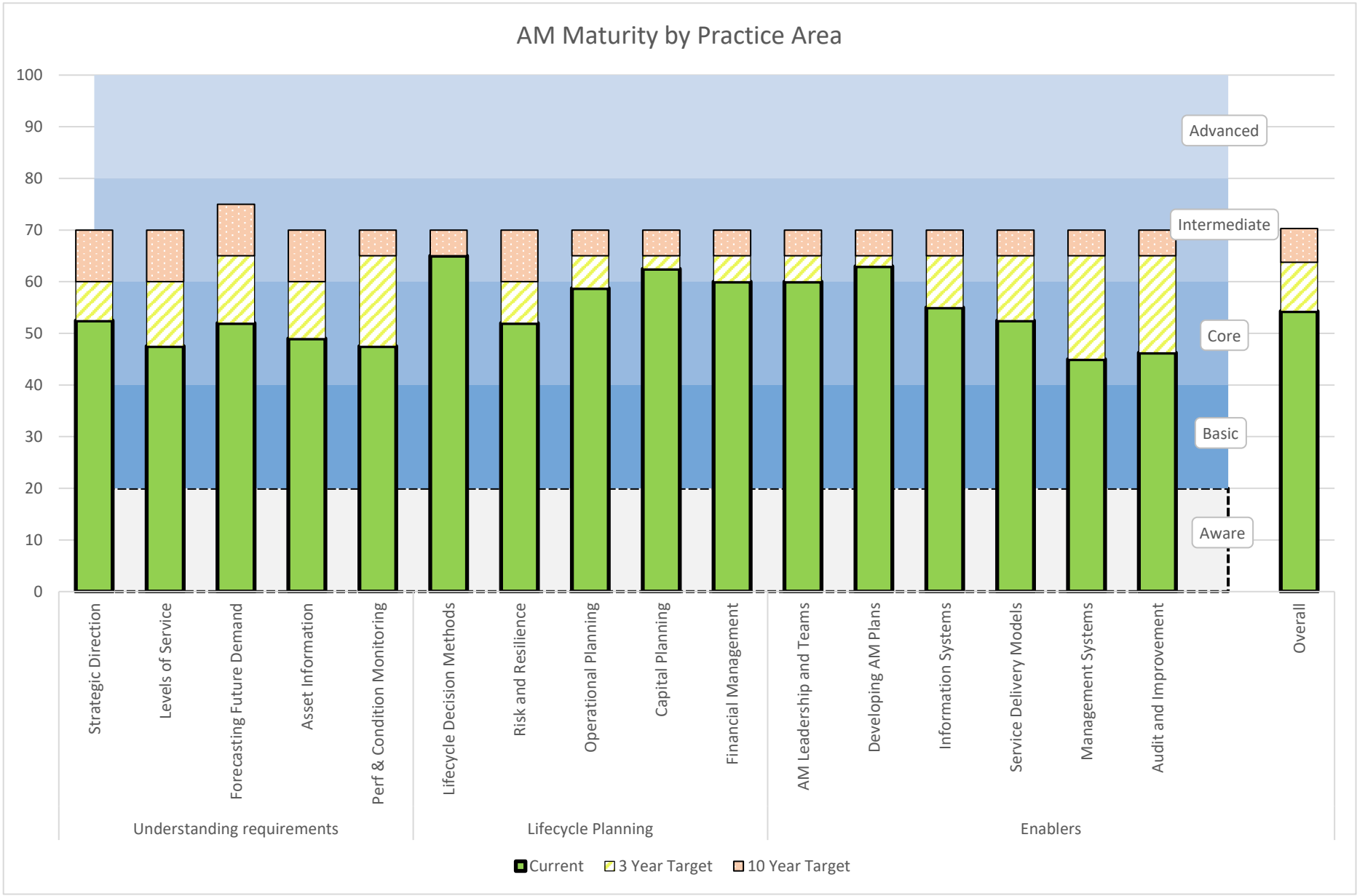
The primary focus of this improvement plan is to improve our asset management practices and process that will assist in achieving the least whole of life cost in operating the transport activity and maintaining the transport assets and bring improvements to the services provided. Knowledge and availability of the data on the network will improve responsiveness to issues as they arise and contribute to quality decision making.

9.1.1 Current and desired state of AM processes, data and systems

The level of maturity[47] of the transport Asset Management System is assessed as follows.

47 Refer to section 4.6 in IIMM Manual for description of what this means

Figure 9 - 1: Transport – AM Maturity by Practice Area


AM Maturity by Practice Area
100
90
80
70
60
50
40
30
20
10
0
Advanced
Intermediate
Core
Basic
Aware
Strategic Direction
Levels of Service
Forecasting Future Demand
Asset Information
Perf & Condition Monitoring
Lifecycle Decision Methods
Risk and Resilience
Operational Planning
Capital Planning
Financial Management
AM Leadership and Teams
Developing AM Plans
Information Systems
Service Delivery Models
Management Systems
Audit and Improvement
Overall
Understanding requirements
Lifecycle Planning
Enablers
Current
3 Year Target
10 Year Target

This assessment has highlighted small gaps across all aspects of asset management with some risk presented in the performance and condition monitoring and management systems categories.

Refer to document A1792947 for detailed Maturity Assessment.

9.1.2 NZTA Audit Finding

NZTA Financial Audit 2015

NZTA undertook a financial audit of NCC systems in 2015. Council submitted an action plan to NZTA in February 2016, A1504096. There were seven actions documented. Five are now complete, and two related to changes to be incorporated into NCC-NZTA Procurement Strategy. The draft strategy was sent to NZTA in February 2017 for review and comments prior to NCC finalising the strategy. Council has been following up with NZTA for their comments, this was last chased with NZTA on 13 April 2017 and received the response: "I would work on the assumption while you are waiting for sign off at this end is that you can proceed with your planning" (A1815074).

NZTA Investment Audit 2017

NZTA undertook an investment (technical) audit of Council's systems in June 2017. Draft findings were presented at the conclusion of the audit. A1815108. A final report is yet to be received.

Key messages were:

- The key to achieving least whole-of-life cost for the network is strong asset management practice, which includes enabling the use of innovative services, products and methods of procurement. This requires:
    - effective planning and delivery to achieve value for money objectives, e.g. early tendering opportunities, awareness of the annual programme and better timing of works;
    - improved knowledge sharing;
    - a consistent road classification system and levels of service across the whole network;
    - greater collaboration between asset owners;
    - Consistency in application – Deficiency database and prioritisation;
    - Whole of Network Thinking – connected with partner roads.
- A step change in performance measurement and management and data collection is required to obtain best value for money and to develop requirements for improved data input, transformation of the data into useful, repeatable and meaningful information, dissemination, and effectiveness in the use of data, focusing on areas such as:
    - requirements for data, data-based systems (e.g. RAMM), dTIMS and technology platforms;
    - measurements to assess the effectiveness of different road maintenance projects and new materials;
    - measurement to enable better timing of interventions by road classification;
    - WC214 Road Rehabilitation projects require benefit cost appraisals;

- Ensure that all available maintenance data, including, but not limited to, surfacing records, traffic counts, maintenance cost data and pavement condition data, is entered into the RAMM database;
- Request that the Transport Agencies, RAMM specialist and Regional Liaison Engineer attend the Council's next RAMM Treatment Selection process field validation;
- Implement a formal staged safety audit process for all design projects to commence at feasibility/preliminary design and continue through to a post construction audit;
- Review its current unsubsidised construction programme with the assistance of the Regional Liaison Engineer to maximise available funding assistance;
- Carry out annual condition rating on all routes carrying over 500 vehicles per day in alternate years to full network ratings;
- Integrate safe systems thinking and greater awareness of road safety issues and effects. Investigate if a Safety Management System model developed by another Approved Organisation, such as Tasman District Council, provides a suitable basis for its own Safety Management System, or joint implementation.

The above preliminary recommendations from the NZTA Investment Audit 2017 have been incorporated into the improvement programme and will be updated as necessary once the actual recommendations are received.

9.2 Improvement programme

9.2.1 Actions proposed and timetables for improving accuracy and confidence in the AM plan

Table 9 – 1: Actions proposed and timetables for improving accuracy and confidence in the AM plan

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
Establishing Strategic Direction	Direction setting for transport outcomes required		1	Group Manager Infrastructure	ongoing	Included in staff cost budgets
Defining and Measuring Levels of Service	Measures to be developed where missing, e.g. signs, streetlights, CBD amenity facilities. Adopt reporting and data sets when new ONRC measures are introduced		2	Asset Manager Transport	Ongoing	Included in staff time cost budgets
	Improve data collection and recording so analysis and trends are robust		2	Team Leader Operations - Transport and Solid Waste	ongoing	Included in staff time cost budgets
	Determine cost relationships for those level of service measures that will represent VFM.		2	Asset Manager Transport	ongoing	Included in staff time cost budgets
Forecasting Future Demand	Interrogate and set up demand models and monitoring scheme for Travel Demand Management work stream. Develop strategies in conjunction with emerging technologies.		1	Asset Manager Transport	ongoing	Monitoring demand and patronage included in TDM/Technology budget allocation.

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
	Seal surface and rehab demand to be better quantified by using dTIMS.		1	Asset Manager Transport	ongoing	Included in WC 151 Network and Asset Management allocation.
	Continue with regular transport demand model updates.		1	Asset Manager Transport	ongoing	Included in WC 151 Network and Asset Management allocation.
	Natural hazards and future impact of sea level rise needs to be better understood/mitigated	Sea level rise is expected to result in inundation of the current level of the key coastal roads around 2050. Early planning is necessary to understand impacts and some mapping and assessment has already been undertaken. Cross organisation coordination is required for optimum results.	1	Asset Manager Transport	ongoing	Included in WC 151 Network and Asset Management allocation.
	Improve integration of risk assessments into business as usual decision making.		2	Asset Manager Transport/ Team Leader Operations - Transport and Solid Waste	ongoing	Included in WC 151 Network and Asset Management allocation.
	Motorcycle safety	Monitor emerging motor cycle crash problem and national initiatives to address and priorities interventions where and when appropriate. Target motor cycle safety with Safety promotions	2	Asset Manager Transport	2020	Included in safety promotion budgets initially. Physical works TBC
	Improve data collection and reporting for NBus punctuality, trips and passenger data.	Current data collected does not allow evaluation of demand at different points along routes. No punctuality data is collected or reported on with the supplier expected to self-monitor. This is unlikely to be accepted by NZ Transport Agency as a performance monitoring method in the next contract. Integrated electronic monitoring system will be implemented in 2017/18.	1	Asset manager Transport	2018-2021	$61,000 in total over the next three years

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
Collecting Asset Information (Asset Knowledge)	Data requirements to be determined for unsubsidised activities, e.g. Parking and CBD	CBD asset value not well understood due to limitations in current data sets.	1	Asset Manager Transport	ongoing	Included in staff time cost budgets
	Determine information gaps and load/collect missing data. Improve RAMM data collection and recording with RAMM improvement processes and new Maintenance contractor	ONRC has a high demand on accuracy of RAMM data for national comparative analysis and reporting. Data gaps and inaccuracies prevent correct and timely maintenance intervention or renewal but also provide inaccurate records for all ONRC peer comparison and NZTA oversight.	1	Asset Manager Transport/ Team Leader Operations - Transport and Solid Waste	ongoing	$ initially to repair historical records $520k included in AMP budgets for data collection
	Increase knowledge of RAMM within operations and GIS teams and formalise process of data transfer so one source truth. Understand data accuracy/missing gaps	Staff training in RAMM, include GIS and other teams who interface with data. Document "source of truth" for all assets/activities and 'parent' "child" relationships between different data systems	2	Asset Manager Transport	ongoing	Included in WC 151 Network and Asset Management allocation.
	Improve understanding of RAMM data required for valuation purposes and ensure captured and up to date	Synchronise RAMM, GIS, Infor, and OBIS. Confirm how assets are currently valued, how they should be valued, complete RAMM data sets for known assets. Question confidence of completeness and accuracy of RAMM data and define a process to get confidence to required level, including short, medium and long term goals.	2	Asset Manager Transport	ongoing	Included in WC 151 Network and Asset Management allocation.
	Review of Lifelines Study and assessment of how to include into asset management decision making priorities and processes.		3	Asset Manager Transport	ongoing	Included in WC 151 Network and Asset Management allocation.

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
	Increase coverage and frequency of pedestrian and cycle data collection.	Currently, comprehensive cycle and walking data is collected in spreadsheet form. This data needs to be included in the increased data availability improvement programme. The availability and cost of other third party data sets (e.g. Strava) will be investigated to widen the data set, once the current data is in a management system. This will allow closer monitoring of changes in use of these transport modes.	1	Asset manager Transport	2017	Included in staff cost budgets
	Traffic count locations	Improved traffic count data, location and frequency. All road sections in RAMM should have a current traffic count. Additional sites are required from current status, and a count is required when roads are added through subdivisions. Count locations, frequency need to be determined before retendering the traffic count contract in 2018.	1	Asset Manager Transport	2018	Included in staff cost budgets
	Use and monitoring of traffic count data	Better use of counts and data for intervention measures, data collection pre and post intervention. Business cases must refer to current traffic count data and where necessary take before and after counts, and record these in RAMM for recording of monitoring of project outcomes.	2	Asset Manager Transport	2020	Included in staff cost budgets
	Traffic counts data storage	No easily accessible location for traffic count data storage. Use of external contractors for storage and access to Council traffic data.	1	Asset manager Transport	2020	Included in staff cost budgets
	Sub soil features	Footings tie backs and geogrids in road need to be captured so not damaged during road openings	2	Asset Manager Transport	2024	TBC
Monitoring Asset Performance and Condition	Unify data analysis tools and instructions to enable repeatable analysis by any party	A large amount of data is currently collected but is difficult to access and relies on a single person to analyse. Wider support of RAMM facilities and RAMM, OBIS, Infor GIS and spreadsheet integration is needed. Staff	2	Asset Manager Transport	ongoing	Included in WC 151 Network and Asset Management allocation.

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
		training maybe required to widen resource base for use of data available.				
	Use maintenance contractor to load condition data going forward. Improvement programme in place for historic data improvement, internally and through ONRC.		2	Asset Manager Transport/ Team Leader Operations - Transport and Solid Waste	ongoing	Included in WC 151 Network and Asset Management allocation.
	Improvement programme required for capital project works to be recorded in RAMM		2	Asset Manager Transport	ongoing	Included in staff time cost budgets
Lifecycle Decision Methods	Improve business case process and integration into programming processes to allow better informed decision making.		1	Transport Asset Manager	ongoing	Included in staff cost budgets
	Integrate NZTA Multi-criteria and NPV analysis into Business case process. Use experts to develop B/C analysis when required.		1	Transport Asset Manager	ongoing	Included in staff cost budgets
	Pavement condition testing and analysis regime	Current practice is to be reactive rather than predicting when failures are likely to occur in road pavement structures. A testing programme to allow prioritisation prior to failure will be investigated in the next three years and recommended in the next AMP.	2	Asset Manager Transport	2018-2021	$35k year for testing $20k every 3 years for analysis of testing results
	Develop and Update Council Policy	There are multiple policies that inform the transport decision making processes. These need regular review and updating. Most are currently out of date. Following an initial review and update these need to be	2	Transport Asset Manager	2020	Included in staff cost budgets

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
		maintained in a system for timely reminders and review.				
Managing Risk and Resilience	Review all NZTA risk guidance documentation	Cross reference NZTA into NCC risk registers, and business case templates so are prompted in decision making processes. Use links rather than written guidance so updates are automatic	3	Transport Asset Manager	2020	Included in staff cost budgets
	Undertake more frequent monitoring and reporting framework for transport risks		1	Transport Asset Manager	Annually	Included in staff cost budgets
	Review Lifeline study and determine critical assets for inclusion into strategy and emergency procedures manual.		1	Transport Asset Manager / Team Leader Transport and Solid Waste	2018	Included in staff cost budgets
Operational Planning	LOS criteria needs refining and ONRC added as part of all Maintenance contracts retendering		2	Transport Asset Manager / Team Leader Transport and Solid Waste	Prior to retendering	Included in staff cost budgets
	Transport specific response plans to be developed and tested with contractors and Civil Defence Life Line responders		1	Transport Asset Manager / Team Leader Transport and Solid Waste	2018	Included in staff cost budgets
	Up to date and accurate information on councils external web site	Many things are published externally for public access and to guide public decision making. A register of what is available and current version needs to happen, possibly in conjunction with the Policy update.	2	Transport Asset Manager	2018	Included in staff cost budgets
Capital Investment Planning	Improvement programme to get strategic business cases developed, and		2	Transport Asset Manager	Ongoing	Included in staff cost budgets

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
	scoped before financial forecasts are required. Better understanding between scope and LOS and estimates					
	Overarching prioritising/ programming tools need to be developed		2	Transport Asset Manager	Ongoing	Included in staff cost budgets
Financial Management	Update RAMM data and transport models before updating financial modelling, continue to use known issues interim		2	Transport Asset Manager	Ongoing	Included in staff cost budgets
	Update RAMM and condition assessments ongoing to ensure financial inputs robust		2	Transport Asset Manager	Ongoing	Included in staff cost budgets
Asset Management Leadership and Teams	Training for new staff to understand AM systems and outcomes required to understand use and outcomes		1	Transport Asset Manager	Ongoing	Included in staff cost budgets
Developing AM Plans	Up to date data and analysis required before start of AM stakeholder consultation.		1	Transport Asset Manager	2020	Included in staff cost budgets
	Living document, so improvement actions can be tracked for next review period		1	Transport Asset Manager	Ongoing	Included in staff cost budgets
Establishing and Maintaining	Staff resourcing to maintaining the ProMapp interface		2	Transport Asset Manager / Team Leader	Ongoing	Included in staff cost budgets

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
Management Systems				Transport and Solid Waste		
Establishing and Maintaining Information Systems	Staff training on RAMM and fill missing gaps in data to include cross discipline group e.g. GIS to better integrate IS		1	Transport Asset Manager	Ongoing	Included in staff cost budgets
Service Delivery Models	Definition of roles in AM delivery		1	Transport Asset Manager	Ongoing	Included in staff cost budgets
Audit and Improvement	Schedule improvement activities as a project so they get the organisation focus they require		1	Transport Asset Manager	Ongoing	Included in staff cost budgets
	Actions from NZTA Investment Audit 2017	Once audit report is received plan a measurement system to: Assess the effectiveness of different road maintenance projects and new materials; Measurement to enable better timing of interventions by road classification; Review its current unsubsidised construction programme with the assistance of the Regional Liaison Engineer to maximise available funding assistance.	2	Asset Manager Transport	2018	Included in staff cost budgets
	Actions from NZTA Financial Audit 2015 (A1504096).	Disclose use of qualified tender evaluator when required. (NZTA funded activities over $200K) - Involve qualified auditors in Tender Evaluation Team and document. Identify staff to undertake training and continuing education to gain qualification and maintain a current list of available qualified auditors. Refer NZTA Financial Audit Action Plan A1504096.	1	Transport Asset Manager	Ongoing	Included in appropriate project budgets

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
		Update existing or create new subsidised procurement strategy to address NZTA required information			Submitted for NZTA review 13 April 2017	
Asset Specific Strategies						
Structures	Accurate cross council records	Confirm stormwater, parks and transport assets for operation, maintenance, renewal, valuations, and budgeting purposes. This will require updating of GIS, RAMM, Infor and accounting records	1	Project Advisor Roading	2020	Included in staff cost budgets
	Structural integrity of large diameter culverts for heavy transport loads	Large diameter culvert under road carriageways (previously SW assets) can be subject to heavy transport loads. These culverts need inspection in accordance with NZTA S/6: 2015. For ongoing monitoring of the structural viability of the large culverts they will be included in RAMM and OBIS and included in an ongoing monitoring programme.	1	Project Advisor Roading	2020	Average of $60k year ongoing
	Management of overweight vehicles on network	Deterioration of older bridges from very heavy loads to be better understood and managed by overweight permit process.	1	Asset Manager Transport	2018	Included in staff cost budgets
	Maintenance of waterway capacity at bridges and large culverts	A global consent has been issued to enable gravel clearance at bridges and culverts. A work programme, and intervention criteria need to be set with consideration of the Freshwater rules and desired outcomes to enable the bridge waterways to be maintained for flood capacity.	2	Asset Manager Transport	2020	Included within staff cost budgets
	Retaining walls inventory and condition assessment	A detailed assessment of retaining walls and their condition needs to be undertaken to enable risk and priorities for maintenance and renewal to be assessed.	1	Project Advisor Roading	2017 - 2019	$180k initial inspection and $60k/year ongoing

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
	Structures Data Collection and Analysis	Photos stored on project drive, reports in hard copy and Tardis, not linked to the basic asset data in RAMM. Poor links between them. No overweight history connected to bridge asset data	1	Project Advisor Roading	2019	Included in staff cost budgets
	Gap in capability in overweight permit officer expertise	Missing internal expertise in overweight permits to understand and manage network requirements, regulatory requirements and industry expectations and demands.	1	Asset manager Transport	2020	TBC
	Priority matrix for structural renewals to inform renewal programme	Define a priority matrix for the wall and bridge renewal programme	1	Asset Manager Transport	2020	Included within staff cost budgets
	Procurement VFM	Ad hoc procurement of professional inspection services may be delivering poor value for money	3	Project Advisor Roading	2024	Included in appropriate budgets
	Crash barriers	Crash barriers and handrails are a structural and safety component of structures that need inspection and maintenance to maintain optimum performance	1	Asset Manager Transport	2019	Budget for inspections in included in AMP budgets
	Critical Assets	A methodology for determining asset criticality to a component level, along with options, will be determined to integrate criticality into the ongoing operation, maintenance, renewals and capital programme for the transport activity.	3	Asset Manager Transport	2025	Included within staff cost budgets
	Ownership of retaining walls	Long term there should agreement between residents and NCC whether a wall is a transport asset or private. Agreement should be recorded against affected property PPR so future property owners are aware of ownership through LIM reports. Needs robust action plan and council approval to proceed.	5	Asset Manager Transport	2030	TBC
Road Safety	Safety Management System	Integrate safe systems thinking and greater awareness of road safety issues and effects.	2	Asset Manager Transport	2020	Included within staff cost budgets

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
		Investigate if a Safety Management System model developed by another Approved Organisation, such as Tasman District Council, provides a suitable basis for its own Safety Management System, or joint implementation.				
Abandoned Vehicles	Action plan for management of abandoned vehicles	Statistics are available for abandoned vehicles (A1829184) but an action plan to reduce rate of abandoned vehicles and improve cost recovery is required	2	Asset Manager Transport	2019	Included within staff cost budgets and should result in overall cost savings
Unsealed pavements	Data recording	Improved data recording to understand costs associated with maintenance of unsealed roads	3	Asset Manager Transport	Ongoing	Included in staff time costs
	Seal extensions	Business case to be prepared to seal for each gravel road. Business case focus on whole of asset life maintenance costs but also consider future subdivision demands, drainage and improvement costs and maintenance issues.	3	Asset Manager Transport	2030	Included within staff costs budgets
Drainage	Data recording	Better data collection and records are required. Drainage records in RAMM for base records, then reflected into GIS for Utilities reference. As built drawings to be forwarded to GIS to update map references for all drainage features (kerbs, subsoil drains, sumps, sump leads etc.)	2	Asset Manager Transport	2020	Included within staff and contractor cost budgets
	Develop drainage renewal priority matrix to inform renewal programme	Define a priority matrix for drainage renewal. Consider condition, adjacent works and benefits to adjacent pavement	2	Asset Manager Transport	2020	Included within staff cost budgets
	Coordination of services	Better coordination with SW projects, to add subsoil drains, kerbs and sumps where beneficial with Stormwater upgrade projects In advance of their identification at plan check time	2	Asset manager Transport	2020	Included within staff cost budgets

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
Sealed pavements and surfacing	Data accuracy	Review all data in RAMM to find errors and omissions. Particularly focus on data that is used in ONRC measures, so data is accurately comparable to others. Then focus on data that is useful to decision making for maintenance works.	1	Asset Manager Transport	2018	Additional RAMM expertise requires est. $50k/pa
	Expected life of surfaces	RAMM settings of expected age profile for sealed surfaces to be updated for the local life expectancy from historical data to inform renewal strategy and valuation process. See A1593141.	1	Asset Manager Transport	2020	Included within staff time costs
	Safety Audit	Ensure all Rehabilitation sites have safety audits, and/or exception forms signed off. Incorporate safe systems approach. When sites qualify for rehabilitation, heavy maintenance, or resealing check opportunities for improvement are considered and included in auditing process and works when appropriate.	1	Asset manager Transport	2018	Est $5k per site for safety audit to be included in site specific project costs.
	Drainage for pavement protection	Coordinate with drainage works to get drier pavements, and to minimise rehab works.	2	Asset Manager Transport	2018	Included within rehabilitation site project costs.
	Survey existing Pavement depth and subgrade	Collect data from projects and utilities test pits and repairs, opportunity to gain missing pavement depth and subgrade data and store in RAMM. Use CAR's as mechanism to gain this data.	2	Asset Manager Transport	2020	TBC
	Trench reinstatement detail	Consider changing detail in LDM for trench reinstatement to gain full width, or half width reinstatements, or between white lines (Kerb and WEL or WEL to CL) and permit chipseal reinstatements over larger area, offsetting cost against the ac and PMB trench reinstatement costs and to avoid PMB join on wheel tracks.	3	Asset Manager Transport	2020	Included within staff time costs

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
	Technology and materials supply changes	Monitor materials supply issues, quarry life etc. and changing technology for benefits to be gained for network	3	Asset Manager Transport	Ongoing	Courses and conference costs (TBC) are over and above staff time costs
CBD, planting and amenity programmes **CBD, planting and amenity programmes**	CBD Safety	Investigate crash records for patterns and form an action plan (especially pedestrian crashes in and around CBD), of safety messaging, safety improvements, or behaviour change etc.	2	Asset Manager Transport	2018	Included in staff time costs
	Whole of life issues for CBD decisions	Discussions with Community Partnerships to inform them about maintenance costs and asset management systems for CBD assets and coordination requirements for ongoing life of new assets	3	Asset Manager Transport	2021	Included in staff time costs
	Future planning for CBD assets	Learn from Community Partnerships processes and long term visions to determine programme of maintenance activities. Develop a closer working relationship and information sharing.	3	Asset manager Transport	2021	Included in staff time costs
	CBD assets	Survey all CBD assets and update GIS database, and understanding of assets and conditions	3	Asset manager Transport	2020	Included in staff time costs
	Maintenance programme	Determine minimum programme and LOS requirements for CBD assets, implement and monitor.	3	Asset Manager Transport	2021	Included in staff time costs
Environmental	Data capture	Improve RAMM data collection, quantity and quality of data collection and review historical records for completeness and accuracy	2	Asset Manager Transport	2020	Included in staff time costs
		Undertake study to understand impacts of street sweeping and sump cleaning frequencies on water quality	1	Asset Manager Transport	2018	$40K

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
Traffic Services	Streetlight data	Streetlight data in RAMM is limited. Use LED upgrade as opportunity to improve all data. Add lighting categories to road sections, lantern details and install date. Add pole height and outreach details. Add electrical compliance inspection dates.	2	Maintenance contractor	Ongoing	Included in appropriate budgets
	Streetlight improvements	Many streets with poor lighting standards, and banding expected to be accentuated with LED renewal programme. Streetlight improvement programme required	1	Asset Manager Transport	2018	Included in AMP budgets
	Traffic signal data	Traffic signals data in RAMM Contractor but not RAMM Manager. Needs coordination and errors fixed.	1	Asset Manager Transport	2018	Included in staff time costs
	Traffic signals - structures	Traffic signal poles, especially those with outreach arms are a structural liability and need to be assessed routinely in accordance with NZTA S6: 2015. No assessments are currently undertaken.	2	Project Advisor Roading	2020	Included in appropriate budgets
	Streetlight pole structural integrity	A testing programme was started in 2016 and needs to be continued to monitor streetlight poles structural integrity after end of manufacturers design life.	1	Asset Manager Transport	Ongoing	Included in appropriate budgets
	LED	Led streetlights have a long design life. Cleaning is recommended at 6 yearly intervals to maintain light output. This is included in cost estimates, but is a new service so needs to be monitored for issues, and effectiveness etc.	2	Asset manager Transport	Post LED upgrade, and ongoing for existing LED lights	Included in appropriate budgets
	Contractor payments through RAMM	Contractor payments for traffic signals and streetlight works should be done through RAMM Contractor for improved record keeping.	6	Team Leader Transport and Solid Waste	Next Transport Electrical Contract Renewal	Included in staff time costs

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
	LOS detail	Add a LOS matrix to the Asset Management Plan to identify traffic services components (and maybe all road assets) and minimum maintenance requirements and where to find and update records for these. E.g.: Traffic lights: cables, poles, arms, LED etc.	5	Asset Manager Transport	2030	TBC
Cycle, footpaths and walkways	Data storage	Input historic pedestrian and cycle counts into RAMM, or develop alternative storage system.	1	Asset Manager Transport	2018	Included in staff time costs
	Safety	Analysis of pedestrian crash rates and causes for safety campaign, or other interventions.	1	Asset Manager Transport	2018	Included in staff time costs. Road safety specialists and intervention costs TBC
	Footpath condition rating	Improve footpath deficiency database. Current system provides inconsistent results. Regular monitoring, and consistent approach to condition rating to be developed with rating contractor.	2	Asset Manager Transport	2020	Included in appropriate budgets
	Seniors walking routes	Determine preferred walk routes close to aged care facilities and areas of elderly population. Install seats and prioritise footpath rehab to same areas. Potential for bequests for seating capex cos	3	Asset Manager Transport	2024	Included in appropriate budgets
	Pedestrian and cycle counts	Review pedestrian and cycle count locations frequency and methods for new traffic count contract	2	Asset Manager Transport	2018	Included in staff time costs
	Pedestrian and cycle network maps	Update cycle and pedestrian network maps, with existing routes and supported proposed routes. Community engagement required for unclear cycle/pedestrian corridors, and proposed routes.	2	Asset Manager Transport	2020	$140k included in AMP for community engagement
	Safety audits	Safety audits to be completed for all stages of pedestrian and cycling projects, or a road safety exception report is to be filed	1	Asset Manager Transport	Ongoing	Included in appropriate budgets

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
Vegetation	LOS guidelines	Develop LOS guidelines	5	Asset Manager Transport	2030	Included in staff time cost budgets
Emergency works /Response	Emergency response priorities	Work with Civil Defence for preferred emergency response priorities, where transport can assist with good outcomes. Use ONRC hierarchy as a guide.	1	Asset Manager Transport	2019	Included in staff time costs
	Lifeline Links	Understanding of Lifeline Links implications, and weaknesses along these routes and include in priority databases for renewal projects.	1	Asset Manager Transport	2020	Included in staff time cost budgets
	Emergency traffic management	Develop Traffic Management Plans for Civil Emergency response scenarios with Civil Defence and Maintenance Contractor	2	Team Leader Transport and Solid Waste	2021	Included in staff time cost budgets
Public Transport	Total Mobility	Manual system and ad-hoc assessment for services needs to be addressed to reduce suspected fraud	1	Team Leaser Transport and Solid Waste	Ongoing	Allowance in AMP budgets
	Bus tracking	Customers cant track bus location arrival time/delays	4	Team Leaser Transport and Solid Waste	2020	Included in AMP allowances
	Public access to bus stops	Customers can’t search google maps for bus routes.	1	Team Leaser Transport and Solid Waste	2018	TBC
	Public Satisfaction Surveys	Undertake a public satisfaction survey, (repeat the 2013 survey) and review with patronage data from electronic ticketing once implemented.	2	Asset Manager Transport	2020	TBC
	Data Collection and Analysis	Current data collected does not allow evaluation of demand at different points along routes. No punctuality data is collected or reported on with the supplier expected to self-monitor. This is unlikely to be accepted by NZ Transport Agency as a performance monitoring method in the next contract. Integrated electronic monitoring system is due in 2017.	2	Asset Manager Transport	2020	Allowance in AMP PT budgets

Priority Areas	Improvement Action	Commentary	Priority	Responsibility	Timeline	Estimated cost
Carparks	Valuations	There is a large investment in parking meters: these are not captured in the valuations.	3	Asset Manager Transport	2021	Included in staff time costs
	Cycle parking	Data capture of all cycle parking facilities, condition, valuation and demand monitoring to determine supply and demand locations and LOS metrics.	5	Asset manager Transport	2024	Included in staff time costs
	Parking contribution to network efficiency	Connection between parking and network and asset management does not have a LOS for the interdependency of supply: mode share: congestion. TRACKS Model does not include all transport modes so a different modelling format might need to be considered.	6	Asset Manager Transport	2024	Unknown
	Electric vehicle charging	Monitor demand for electric vehicle charging, and impact on public parking facilities and how council can enable cleaner transport options.	2	Asset Manager Transport	Ongoing	Included in staff time costs

9.3 Monitoring and review procedures

9.3.1 Procedures and timetable for performance reporting

The Nelson City Council Transport Asset Management Plan is a regularly revised and evolving document and will be reviewed annually and updated at least every three years to coincide with the Annual and Long Term Plans and to incorporate improved decision making techniques, updated asset information, and Nelson City Council policy changes that may impact on the levels of service.

The Asset Management Plan will be improved throughout its life cycle as further information about the transport systems assets and activities are collected in terms of condition, performance and service delivery. Nelson City Council is committed to advanced data collection and management systems that will allow for a greater appreciation of the performance and condition of the Nelson City Council assets.

Nelson City Council will report variations in the adopted annual plan budgets against the original asset management plan forecasts and explain the level of service implications of budget variations.

Internal Audit

Internal audits will be taken every three years to assess the effectiveness of the plan in achieving its objectives. The internal audit will also assess the adequacy of the asset management processes, systems and data.

9.3.2 Timetable for external audit and review

Statutory Audit

The Local Government Act requires that an independent, annual audit of the operations of the Nelson City Council be carried out.

9.4 Performance measures

9.4.1 Outline of performance measures for the AM system

Benchmarking

Benchmarking (trending) of the activity through Audit NZ, Local Government NZ and NZTA initiatives is carried out at the request of these organisations to give increased understanding of:

- The efficiency and efficiency variations of individual activities.
- Effects of any programmes instigated by the Asset Management Plan.
- Operating costs over range of individual activities.

Examples of types of benchmarking that are considered include tracking responsiveness to service calls and performance and costs against One Network Road Classification levels of service. Refer to section 6.2.2 for the five year annual sealed pavement cost comparison.

9.4.2 How the effectiveness of the AM plan will be measured

The effectiveness of the Asset Management plan will be monitored by the following procedures:

- Financial expenditure projections prior to year-end;
- Level of service reporting at year-end;
- ONRC benchmarking at year-end;
- The ongoing updating of the asset register of the transport assets when repairs or maintenance is carried out and the attributes are compared with the asset register attributes.

10. Appendices

APPENDIX A RELEVANT TRANSPORT LEGISLATION

The overall framework for planning, funding and managing the land transport system includes the following Acts, Regulations and Rules. Bills and Rules under development have been provided as they are likely to become legislation in the short term. All acts, regulations and rules are to be read as including any amendment that may occur from time to time.

A.1 Acts of Parliament

The Acts below are listed by their original title for simplicity however all amendment acts shall be considered in conjunction with the original Act, these have not been detailed in this document. For the latest Act information refer to http://www.legislation.govt.nz/

- Local Government Act 1974 / 2002
- Government Roading Powers Act 1989;
- Land Transport Act 1998
- Land Transport Amendment Act 2009
- Land Transport Management Act 2003
- Land Transport Management Amendment Act 2003 / 2013
- Land Transport (Enforcement Powers) Amendment Act 2009,
- Land Transport (Road Safety and other matters) Amendments Act 2011
- Land Transfer Act 1952
- Public Transport Management Act 2008
- Resource Management Act 1991
- Resource Management Amendment Act 2003 / 2013
- Resource Management (simplifying and streamlining) Amendment Act 2009,
- Building Act 2004
- Building Amendment Act 2012 / 2013
- Public Works Act 1981 TRANSPORTATION Appendix A.docx Page A-2
- Telecommunications Act 1987
- Electricity Act 1992
- Biosecurity Act 1993
- New Zealand Public Health and Disability Act 2000
- Health Act 1956
- Summary Offences Act 1981

- Civil Defence Emergency Management Act 2002
- Health and Safety at Work Act 2015
- Utilities Access Act 2010
- Land Drainage Act 1908
- Requirements of the Auditor General (refer Appendix J for improvement measures specific to the Transport Activity).

A.2 Bills

- Local Government Act 2002 Amendment Bill (No.3).

A.3 National Policies, Regulations and Strategies

- The New Zealand Coastal Policy Statement 2010 http://www.doc.govt.nz
- National Policy Statement for Freshwater Management 2014 http://www.mfe.govt.nz/fresh-water/national-policy-statement
- National Policy Statement for Freshwater Management Amendment 2017
- http://www.mfe.govt.nz/fresh-water/national-policy-statement
- The National Energy Efficiency and Conservation Strategy http://www.eeca.govt.nz
- The Heavy Motor Vehicle Regulations 1974 http://www.legislation.govt.nz/
- The Building Regulations http://www.legislation.govt.nz/
- NZ Transport Agency Specifications, Rules, Policies, Manuals and Guidelines http://www.nzta.govt.nz
- NZTA Long Term Strategic View 2017 https://nzta.govt.nz/planning-and-investment/long-term-strategic-view
- Road Efficiency Group One Network Road Classification https://nzta.govt.nz/roads-and-rail/road-efficiency-group/onrc
- Austroads Guidelines and Manuals http://www.austroads.com.au/
- Government Policy Statement 2018 http://www.transport.govt.nz
- Safer Journeys http://www.saferjourneys.govt.nz
- The New Zealand Transport Strategy http://www.transport.govt.nz
- Ministry of Transport Statement of Intent http://www.transport.govt.nz
- The Government's Sustainable Development Programme of Action http://www.beehive.govt.nz
- NAMS Manuals and Guidelines http://www.nams.org.nz
- Office of the Auditor General's publications http://www.oag.govt.nz

- All Land Transport Rules, including
- Operator Licensing 2007, Passenger Service Vehicles 1999, Road User Rule 2004, Setting of Speed Limits 2003, Traffic Control Devices 2004, Vehicle Dimensions and Mass 2002, Vehicle Lighting, Driver Licensing.

A.4 Bylaws and Vehicle Control Regulations

- Parking and Vehicle Control Bylaw 207 (2011) and 2012 Amendment;
- Speed Limits Bylaw 210 (2011) and associated Amendment,
- Land Transport (Infringement and Reminder Notices) Regulations 1998 and 2012,
- Land Transport (Offences and Penalties) Regulations 1999,
- Land Transport (Ordering a Vehicle off the Road) Notice 1999
- Land Transport (Requirements for Storage and Towage of Impounded Vehicles) Regulations 1999;
- Land Transport (Storage and Towage fees for Impounded Vehicles) Regulations 1999,
- Transport Services Licensing Regulations 1989,
- Traffic Regulations 1976.

A.5 Standards New Zealand

For all refer to http://www.standards.co.nz

- AS/NZS ISO 31000:2009 Risk Management Principals and Guidelines
- NZS 4404:2010 Land Development and Subdivision Infrastructure
- AS/NZS ISO 9001:2008 Quality Management Systems
- AS/NZS 4801:2001 Occupational Health and Safety Management Systems
- SNZ HB 2002:2003 Code of Practice for Working in the Road
- AS/NZS 1158 Lighting for Roads and Public Places Set
- AS/NZS 4676:2000 Structural Design Requirements for Utility Services Poles

A.6 Local and Regional Policies, Regulations, Standards and Strategies

- The Regional Land Transport Plan
- The Regional Land Transport Strategy for Nelson City Council 2009
- Draft Resource Management Plan 2016
- Tasman Regional Policy Statement (TRPS) http://www.tasman.govt.nz TRANSPORTATION Appendix A.docx Page A-3
- Land Development Manual 2010

- Council's Procurement Strategy
- NCC Procurement Strategy for activities funded through the national Transport Programme 2017, A1632788
- Nelson City Council Transport and Roading Policies, as can be found through ProMapp.

APPENDIX B NELSON'S STRATEGIES AND POLICIES

Nelson City Council Long Term Plan

The last Long Term Plan was adopted in July 2015. It is a requirement of the Local Government Act 2002 to have such a plan to manage the Council's activities and budgeting. Details in the plan forms the basis for the Council's annual planning process. The plan must have a focus on social, cultural, economic and environmental outcomes. The next LTP 2018 -2028 will be adopted by Council in June 2018.

Nelson Regional Policy Statement 1997

This document is at the top of the hierarchy of resource management considerations. It is prepared under the Resource Management Act and has statutory force.

Its purpose is to identify regional issues in terms of natural and physical resources and to outline objectives, policies and methods to achieve integrated management of the natural and physical resources of the whole region, including cross-boundary issues with other regions.

Other plans prepared under the Resource Management Act must now "give effect" to the provisions of the relevant regional policy statement for a region or district (changes to the Resource Management Act in 2005 have increased the importance of the Regional Policy Statement).

Nelson's Regional Policy Statement was made operative in 1997.

Amongst the regional cross-boundary issues identified are:

"consistent management of transport nodes (including the port and airport), their adverse effects and equality of access (Nelson City/Tasman District)"; and

"a consistent approach to roading (Marlborough District/Nelson City/Tasman District)."

Key Chapters of the Regional Policy Statement in relation to the arterial study are Chapter 8, The Coast; and Chapter 14, Infrastructure. In general terms, Chapter 6, Development and Hazards, anticipates an increasingly compact urban form for the city, for efficiency reasons but also to protect and retain the rural setting of the city and to avoid natural hazards which are perceived as significant in areas adjacent to urban areas in the future (including climate change and sea level rise).

Nelson Resource Management Plan

This document is an integrated district and regional plan for the management of all the region's natural and physical resources under the Resource Management Act (with the exception of air quality, for which there is a separate regional plan). The Plan was made operative in 2004 and has full statutory weight.

While much of the Plan and its policy framework is organised to apply to individual zones (e.g. residential, commercial, industrial) there is a set of District wide objectives and policies which apply across the whole region. Amongst them is a significant section on land transport, DO10.

Regional Land Transport Plan 2015-2021

RLTPs are six-year documents with a ten year horizon that provide strategic context and direction for each regional programme. Key considerations include:

- developing a significance policy to prioritise significant activities;
- developing the front end strategic case using business case approach principles;
- having a programme of activities, not just projects, with clear linkages between all activities and agreed outcomes, e.g. relationship between investing in different modes and activities funded outside the National Land Transport Fund;
- setting out land transport objectives, policies and measures for at least 10 financial years;
- considering the infrastructure implications and/or public transport service improvements that are needed to support growth areas;
- considering the feasibility and affordability of alternative regional land transport objectives;
- identifying performance measures that will be used to monitor activities.

A mid-term review of the Regional Land Transport Plan was adopted by Council in June 2018.

Regional Public Transport Plan 2015

The purpose of the regional public transport plan is to provide:

A means for encouraging councils and operators to work together in developing public transport services and infrastructure.

An instrument for engaging with the public in the region on the design and operation of the public transport network.

- A statement of:
    - The public transport services that are integral to the public transport network.
    - The policies and procedures that apply to those services.
    - The information and infrastructure that supports those services.

The Regional Public Transport Plan is under review at the time of writing this Asset Management Plan. It will be adopted by 30 June 2015.

Infrastructure Strategy

In 2014 the Local Government Act 2002 was amended to include section 101B - a requirement for local authorities to prepare an infrastructure strategy as part of the Long Term Plan. The strategy is expected to look at least thirty years into the future and detail the issues that the local authority can reasonably foresee. The office of the Auditor General has provided guidance documents for authorities to use when developing the strategy.

Much of the work required for the strategy comes from the development of this asset management plan and in order to avoid un-necessary duplication this plan focusses on the first ten years of the thirty year strategy timeframe.

Arterial Traffic Study 2011

The Arterial Traffic Study was a key initiative in order to achieve the Community Outcomes 2009/19 Nelson Community Plan.

The objective of the Arterial Traffic Study was to determine the best transport system configuration between Annesbrook and the Queen Elizabeth II/Haven Road roundabouts that will improve the city as a whole in the long term. Refer to section 7.1 for more details on the outcomes of the study.

Social Wellbeing Policy 2010

The Council's vision for this policy is that Nelson has a happy, healthy community where people have access to necessary services and facilities and feel connected to each other and to the city.

Council will ensure that social wellbeing issues are considered when planning and delivering new services, facilities and activities.

Areas where Council has a key responsibility or role include the physical environment, leisure and recreation, social connectedness, cultural identity, civil and political rights and safety (particularly relating to safety in public spaces). With limited resources available Council needs to focus on areas where it can have a significant impact and rely on partners to take the lead in other areas.

Council has chosen to focus on particular issues surrounding older people, youth and affordable housing in this policy. These three areas relate to key trends affecting Nelson and have been raised as particular concerns by the community.

Over and above initiatives that directly aim to improve social wellbeing, most Council activities (such as economic development, transport, water supply, waste collection, environmental planning, parks and community facilities) impact on the wellbeing of the community.

Council's social wellbeing role includes:

- Leading by example - looking at Council activities through a social wellbeing "lens" to improve social wellbeing outcomes for the community;
- Partnering, collaborating and facilitating – with central government, community organisations and other stakeholders to target initiatives effectively;
- Delivery – of services and activities (including through grants to community groups) within wellbeing areas where Council has responsibility;
- Advocacy – at regional and national levels;
- Planning – ensuring that the development of facilities and services contributes to enhancing wellbeing in the future.

Out And About – Active Travel And Pathway–Based Recreation Policy – October 2015

The Out and About Active Travel and Pathway-based Recreation Policy covers physical activities on our roads, footpaths and pathways, either for travel or recreation purposes. It includes:

- walking and running;
- non-motorised wheeled forms of transport such as cycling, mountain biking, scooting and skateboarding;
- wheelchairs;
- mobility scooters; and
- electric bicycles.

The Active Travel Network Hierarchy, Pathway-based Recreation Network Map, Active Travel Works Programme will all be developed with user input and consultation.

Heart Of Nelson – Central City Strategy

This was a special study, carried out in 2009, focused at the Council's interest in achieving various community outcomes in the LTP. The Mayor's Foreword states that the Council "wants to maintain a vibrant and vital heart of the city" for locals and visitors, and to encourage economic development. It is intended "to manage growth in a coordinated manner and to maintain and enhance the successfulness of the City Centre and surrounding area".

The Strategy consists of an overall vision supported by numerous specific suggestions and proposals to enhance the function, usability and vitality of the city centre over time.

Road Reserve Management Policies And Procedures

Objective is to provide for a consistent approach to road reserve asset and activity management and to demonstrate to the community that Council recognises the critical importance of managing the road reserve asset and activities in an effective and sustainable manner;

Council will manage the city's assets and activities on the road reserve in a cost effective, sustainable, well planned and coordinated manner to provide agreed levels of service. Council will use the various policies and procedures referenced in Road Reserve Management Policy as the means to fulfil its ownership responsibilities under the Local Government Act 2002.

Land Development Manual 2010

The Nelson City Council Land Development Manual 2010[48] forms the basis for design and construction of all Nelson City's roads, drains, water supply and reserve

48 http://nelson.govt.nz/environment/nelson-resource-management-plan/nelson-resource-management-plan-2/view-the-nrmp/land-development-manual-2010/

areas. The Land Development Manual is a revision of, and replacement for, the Nelson City Council Engineering Standards 2003. Nelson in conjunction with Tasman District Council are currently revising the 2010 Land Development Manual into a single region wide document that is anticipated to become operative in 2018.

Road Safety Action Plan

A Road Safety Action Plan is prepared (A1794373) to address safety issues presenting on the network, and greater Top of the South area, in conjunction with Tasman District Council and Marlborough District Council.

The action plan will target :

- Cyclists. All road users to decrease the number of cycle related crashes.
- Cyclists. Delivery of NZTA approved cycle skills education courses as part of the Ride On Cycle Strategy.
- Older Drivers. Staying Safe and Carfit Courses, based on the NZTA suite of resources aimed at reducing Nelsons high representation of older drivers in crashes.
- Walking. All road users to decrease the number of pedestrian related crashes. The 2014 Communities at Risk Register shows Nelson and Tasman have medium to high individual risk for pedestrians.
- Motorcycles, Marlborough and Tasman have high motorcycle crash rates. Nelson partners with these councils and ACC to deliver motorcycle safety strategy.
- Speed. All vehicle drivers to reduce speed related crashes. Delivery includes stopping distance demonstrations

APPENDIX C STRATEGIC DOCUMENTS, STUDIES AND MODELS PROVIDING DEMAND DATA

Table C – 1:

Demand Driver	Document Name	Date	Source reference	Notes
Sustainability	Sustainability Stock take	April 2011	A293617	
Population	Population projections	2015 2017	A1322277 A1803950	
All	Arterial Traffic Study	2010-2011	A371678 - Stage 1 A362768 - Stage 1B A431870 – Stage 3 A618888 - Stage 4	Includes consideration of fuel price rises, sea level rises etc.
Water Quality	Street sweeping in Nelson City: Contaminant characterisation and analysis of current sweeping practice	August 2012	A1794026	
Update on several key demand drivers	Regional Land Transport Strategy & Regional Land Transport Programme Annual Monitoring report	September 2010 November 2013	A378027 A478601	Includes journey to work, main means of travel, traffic volume, travel times on arterials, vkt's, cycle and ped counts, comprehensive cycle count data, PT patronage, safety data.
Traffic growth	Nelson Tasman Transport Model TRACKS model building report	2009-2010	A673715-model building report 1089224-model data 945050,945051-turning movement data 945048-level of service	Includes data on future transport demands.
	Nelson Southern Link Investigation: Future Forecasting Report	2016	https://www.nzta.govt.nz/assets/projects/nelson-southern-link/Nelson-Southern-Link-Investigation-Future-Forecasting-FINAL.pdf	Includes data on future transport demands.
Central City strategic direction	Heart of Nelson Strategy	Aug 2009	RAD 845339	
	First Retail - Nelson CBD - Project Prioritisation Report	Sept 2015	A1444524	
Population, freight, car parking, future land use and residential growth areas	TRACKS models input data	May 2009	RAD 781450 RAD 813236	
	Approval of growth assumptions and other model inputs for the	Aug 2015	Info Council R4620	

Demand Driver	Document Name	Date	Source reference	Notes
	Southern Arterial Investigation			
Traffic flow along Waimea Road	Waimea Rd Microscopic Traffic Simulation Model	July 2009	798279, 798280, 813239, 797883	Includes various intersection scenarios.
Sea-level rise	Review of Nelson City minimum ground level requirements in relation to coastal inundation and sea level rise	August 2009	RAD 825295	
Population and employment growth to 2016, journey to work patterns and discussion of travel patterns	Passenger Transport Network Review	October 2008	RAD 701862	
Traffic flow	Signalised intersection design data		796898	
Road safety data	Crash Accident Study	1995 1998 2001 2008	799187 342066 799203 742399	
Car Parking	2009 Central Business District Parking assessments and district ratio analysis	2009	800221, 800227, 800228	
	Parking Studies	2005 2008	682309 788326	
	Parking Demand/Occupancy	2016	A1790341	
Traffic flow and parking data	Nelson Central Business District Microscopic Traffic Simulation Model	2012 5/2005	A789874 789948	

APPENDIX D NZTA SUBSIDISED MAINTENANCE AND NETWORK OPERATIONS AND RENEWALS PROGRAMME BUSINESS CASE WORKSHEET (A1784758)

				Investment Objectives				Other MCA Factors											
Work Category	Strategic Response	Option No.	Option	Throughput PS 1	Travel Time PS1	Availability and Access PS2 & 3	IAF Results Alignment	Feasibility	Network Resilience	Stakeholder Acceptability	IAF / GPS / LTSV alignment Comment	Rough Order Cost ($m) (first 3 years Continuous programmes, first 10 years projects)	Assumptions/Comments	BASELINE 1	SUPPORT GROWTH, AGING POPULATION & LEAST COST ASSET PRESERVATION 2	DO MINIMUM 3	BALANCED 4	Rationale for selection
111 & 212 & 214	Sealed Pavements and Surfacing	1	Maintain investment level plus allowance for network growth.	0	0	0	low	2	0	-1		$ 6.8m		Y	Y	N	N	Low risk option that aligns with previous expected resurface age prediction model
		2	Reduce investment level by increasing forecast useful life on chipsealed surfaces by 2 years but allocate funds to improve pavement data, undertake deterioation testing and analysis to improve understanding of forward works through increased N&AM budget.	0	0	0	low	2	0	1		$ 6.1m	Decrease of $230K/yr on resurfacing over option 1	N	N	Y	Y	Higher risk compared with option 1 but aditional data collection and modelling is programmed to reassess longrun spend requirement.
		3	Increase investment level to include allowance for network growth plus additional rehabilitation amounts to better reflect increasing HCV loadings and pavement failures observed in isolated areas.	0	0	0	low	2	0	-2		$ 7.0m	Increase over option 2 of $300,000K/pa for WC 212	N	N	N	N	
112 & 211	Unsealed Pavements	1	Reduce investment - renew 15mm gravel rather than 25mm previously scheduled plus maintain existing grading frequency, likely to result in rougher ride and less potential to repond to changing harvesting plans from forestry users	0	0	0	low	2	-1	1		$ 0.3m	Decrease $8k year on gravel costs over option 2	N	N	Y	N	
		2	Maintain as existing	0	0	0	low	2	0	1		$ 0.4m	maintenance as per tender and gravel costs at 25mm renewal	Y	Y	N	Y	
		3	Seal all unsealed roads	0	0	0	low	-1	0	-1		$ 3.6m	High capital cost, minimal benefits plus increase in overall maintenance costs. 10 year programme to seal	N	N	N	N	
		4	Divest roads that serve only 1 user to that user, and maintain remainder as existing	0	0	-1	low	-2	-1	-2		$ 0.5m	Short term additional cost of disposal but long term savings where feasible	N	N	N	N	
113 & 213	Drainage	1	Maintain investment level plus allowance for network growth	0	0	0	low	2	0	1		$ 0.8m		Y	N	N	N	
		2	Existing investment level plus network growth and SW asset transfer.	0	0	0	medium	2	0	1		$ 0.8m	$20k allowance for sw asset transfer until conditions assessed over option 1	N	N	Y	N	
		3	Improve drainage condition rating and actual condition/value and demand where drainage improvement can be used as a stand alone intervention to extend pavement life and reset renewal cost accordingly. Increase in sump and kerb sweeping to improve SW run of quality plus network growth and SW asset transfer.	0	0	0	medium	2	0	1		$ 0.9m	First 3 years same as option 1 until condition assessment complete. Additional $134k sump cleaning against $40k previous budget	N	Y	N	Y	
114 & 215	Structures	1	Maintain existing 3yr investment level of $525,389 for WC114 structures maintenance and $1,162,365 for renewals but increase allowance under N&AM to undertake greater frequency inspections to better understand condition and life able to be consumed.	0	0	-2	low	0	-1	0		$ 1.7m	uses historic 3year rolling average	Y	N	Y	N	
		2	Reduce investment in component replacement in short term to allow increase in N&AM	0	0	-2	low	0	-2	-1		$ 1.5m	uses historic 3year rolling average minus $180k for improved AM	N	N	N	N	Not a valid do min because of liability implications if structures fail
		3	Increase investment level to match proposed urgent identified work programme in short term and depreciation level in long term with increase allowance under N&AM to refine long run expenditure in next AMP cycle	0	0	1	medium	-1	1	1		$ 2.3m	basd on identified works for first 3 years and maintenance ongoing	N	Y	N	Y	correct sizing for the short term from known issues but not evidence based for ongoing
121	Environmental maintenance - Vegetation control	1	Maintain existing programme with decrease in stock effluent maintenance to reflect actual demand	0	0	0	low	0	0	1		$ 1.0m	uses historic 3 year rolling average	Y	N	Y	Y	High risk associated with trees on road reserve especially in hill side suburbs were road boundary is not well defined.
		2	Increased programme to maintain a better appearance of existing assets	0	0	0	low	0	0	-1		$ 1.1m	add 10% over option 1	N	Y	N	N	Increased amenity increases desirability of active travel modes
		3	Minimise maintenance and only respond to urgent arbourist works, for safety or loss of service.	0	0	-1	low	-2	-2	-1		$ 0.5m	half of previous budgets, and expect some response may be emergency works	N	N	N	N	Not feasible to accept risk of trees blocking roads/accesses or lower safety threshhold of less tree maintenance.
122 & 123 & 222	Traffic Services	1	Reduce budget due to maintenance and power cost savings from LED upgrade and maintain other budgets at status quo.	0	0	0	low	2	-1	1		$ 3.7m	$89,935/yr power savings from LED conversion, but new $22k required for electrical compliance	N	N	Y	N	
		2	Maintain current budget but use power and maintenance cost savings from LED conversion to invest in streetlight pole renewals and road sign renewal to reflect increased number of signs recently identified by survey and renewal analysis.	0	0	0	low	2	0	1		$ 3.9m		Y	Y	N	Y	Demand existis for steel and concrete streetlight renewal plus sign renewal to minimise the risk of falling poles and night time crashes
124	Cycle facilities	1	Maintain as existing	0	0	0	low	2	0	0		$ 0.2m		Y	N	Y	N	
		2	Increase budget to reflect increasing asset size	0	0	0	low	2	0	1		$ 0.2m	maintenance will increase over short term. Renewal of surface for Railway Reserve required in med term then maintenance will drop again	N	Y	N	Y	
140	Minor Events	1	Maintain as existing response item	0	0	2	low	2	2	1		$ 0.3m	match previous 3 years allocation - global warming driving more and increased intensity events	Y	Y	Y	Y	
141	Emergency Works	1	Maintain as existing response item	0	0	2	low	2	2	1		$ - m	no budget allocated, as needs specific allocation following a recognised significant event	Y	Y	Y	Y	
151	Network and Asset Management	1	Maintain existing	-1	-1	-2	low	2	-2	-1		$ 1.8m	match last 3 years	Y	N	Y	N	
		2	Improve data collection and storage and understanding with a focus on retaining walls and bridges. Improve Ramm data collection and analysis with new mtce contractor. Forecast increased cost for traffic data collection due to change in provider.	0	0	1	high	2	1	1	Improved data required for results alignment on all services	$ 3.8m	Improved data will help inform decision and reduce risks to asset and customer journey experiences.	N	Y	N	Y	Data improvement critical to better Network and Asset Mnagement.
151	Network and Asset Management - Network User Information	1	Maintian Existing	0	0	0	low	2	0	1		$ 0.2m		Y	N	Y	N	
		2	Increase budget to allow 1 x FTE plus promotion budget. Include technology focus in work programme. Carpooling, cycle, walk promotion, work place/education/school/significant traffic generators travel plans	1	1	1	very high	1	0	1	Making better use of existing asset plus ability to lead technology advances aligns with GPS	$ 0.8m	$250k year for TDM to address congestion issues and delay significant project interventions	N	Y	N	Y	TDM could avoid significant capital works
432	Road Safety Promotion	1	Reduce promotion	0	0	0	low	2	0	1		$ 0.3m	20% decrease as Nelson does not feature in communities at risk register for road safety except urban intersections.	N	N	Y	N	
		2	Maintain as existing	0	0	0	low	2	0	1		$ 0.3m	match previous 3 years, with input from NZTA promotion development	Y	Y	N	Y	
		3	Increase promotion	0	0	0	low	2	0	1		$ 0.4m	20% increase	N	N	N	N	
511, 514, 524	Public Transport	1	Operate as existing (minimal promotion)	0	0	0	low	2	0	-1		$ 1.7m						
		2	Increase arterial services to 10minute headway plus minor route changes plus promotion	1	1		medium	-1		1		$ 2.0m						
		3	Increase arterial services to 10minute headway plus minor route changes, plus reduce fares, plus promotion	2	2	0	Medium	-1	0	1		$ 2.6m	match previou review complete	Y	Y	Y	Y	Maintain as existing until review is complete
517	Total Mobility	1	Maintain as existing	0	0	0	low	2	0	1		$ 0.7m	Match existing while implementing change to Ridewise.	Y	N	Y	N	
		2	Increase budget to cover Ridewise, and lead assessment agency costs	0	0	2	low	2	0	1		$ 0.9m	6% growth on current costs plus addition of agency costs for eligability assessment that was previous undertaken FOC plus ridewise operational costs.	N	Y	N	Y	Aging population plus increased admin costs to operate service
519, 521	Wheelchair Hoists	1	Maintain as existing	0	0	0	low	2	0	1		$ 0.2m		Y	Y	Y	Y	

Rhys Palmer: Figures need refining once bus review completed

APPENDIX E Risk

Table E – 1: Consequence Rating (Impact)

Rating	Safety	Health	Asset Performance/ Service Delivery	Environmental/ Historical/cultural	Financial	Political / Community/ Reputational	Relationship with Iwi	Legal compliance	Information/ decision support
Exterme (5)	Multiple fatalities of workers or public (MF)	Significant loss of life expectancy for multiple persons or incapacity for more than 1000 person days	Service not provided for more than 5000 person days	Permanent environmental damage on a nationally significant scale and/or permanent loss of nationally significant building, artwork, or other valued entity	Overspend, loss (i.e. spend without result) or income loss of > $5m OR >100% of business unit budget	Major loss of public confidence in Council (>2000 opponents via social media or other mediums) Negative international mainstream media coverage; shareholder or key stakeholder outage; or loss of a key customer	Major breakdown of relationship affecting multiple areas. Refusal to resolve without one or more major concessions from council	Litigation/ prosecution or civil action successful resulting in major (>50% of maximum available) fine/costs awarded and/or imprisonment of council officer.	Multiple errors in information and analysis and presentation misleading (intentionallly or not) or not understandable by non- specialists
Major (4)	Single fatality of workers or public (SF)	Single loss of life expectancy or incapacity for between 100 and 1000 person days	Service not provided for less than 5000 person days but more than 500 person days	Major environmental damage with long-term recovery requiring significant investment and/or loss or permanent damage to a registered historical, cultural or archaeological site or object	Overspend, loss (i.e. spend without result) or income loss of > $1m and <$5m OR between 70% and 100% of business unit budget	Significant negative public reaction likely (200-2000 opponents via social media or other mediums) Negative national mainstream media coverage; significant negative perception by shareholder or key stakeholder; or a customer disruption	Significant breakdown of relationship largely in in one area. Some concessions from council sought before substantive issue considered by iwi grouping affected	Litigation/ prosecution or civil action successful resulting in minor fine(<50% of max available)/ costs awarded.	One major error in information, analysis incomplete and presentation ambiguous
Moderate (3)	Notifiable injury of workers or public.	Incapacity for between 20 and 100 person days	Service not provided for less than 500 person days but more than 50 person days	Measurable environmental harm on a nationally significant scale. Some costs in terms of money and/or loss of public access or conservation value of the site and/or restorable damage to historical, cultural or archaeological site or object	Overspend, loss (i.e. spend without result) or income loss of > $0.5m and <$1m OR between 30% and 70% of business unit budget	Some negative public reaction likely (30-200 opponents via social media or other mediums) Repeated complaints; Regulatory notification; or negative stakeholder, local media attention	Major relationship damaged in a single area but amenable to negotiation	Documented Breach of legislation, no legal action or prosecution or civil action not successful.	Information correct but presentation/ analysis insufficient to support decision on the day
Minor (2)	Serious injury on one person requiring medical treatment (MA)	Incapacity for between 1 and 20 person days	Service not provided for less than 50 person days but more than 5 person days	Medium term environmental impact at a local level and/or development compromising the integrity of a registered historical, cultural or archaeological site	Overspend, loss (i.e. spend without result) or income loss of > $100k and <$500k OR between 10% and 30% of business unit budget	Minor public reaction likely (<30 active opponents via social media or other mediums) Workforce attention; limited external attention;	Relationship damage resolvable through normal communication/ consultation mechanisms	Formal warning of breach from legislative authority.	Information correct, analysis complete but presented in a way which could be misinterpreted
Insignificant (1)	Minor injury requiring only first aid or less (FA)	Incapacity for less than 1 person day	Service not provided for between 1 & 5 person days	Short term and temporary impact requiring no remedial action and/or restorable loss damage to historical/ cultural record	Overspend, loss (i.e. spend without result) or income loss of > $10k and <$100k OR between 5% and 10% of business unit budget	Very limited negative reaction (1 or 2 active opponents via social media or other mediums) Internal attention only from staff directly working on the matter.	Iwi/ tribe/ hapu public dissatisfaction resolvable through routine communication	Breach of minor legislation/ no legal action	Small errors in information or presentation - no effect on decision

Table E – 2: Risk Matrix – Consequences x Likelihood

CONSEQUENCES					LIKELIHOOD of the given consequence occurring			
Insignificant(1)	Minor (2)	Moderate (3)	Major (4)	Extreme (5)	Descriptor	Qualitative guidance statement	Indicative Probability range %	Indicative frequency range (years)
Medium (5)	Medium (10)	High (15)	Very High (20)	Very High (25)	Almost certain (5)	The consequence can be expected in most circumstances OR *A very low level of confidence/information*	>90%	>1 occurrence per year
Medium (4)	Medium (8)	High (12)	High (16)	Very High (20)	Likely (4)	The consequence will quite commonly occur OR *A low level of confidence/information*	20% - 90%	Once per 1-5 years
Low (3)	Medium (6)	Medium (9)	High (12)	High (15)	Possible (3)	The consequence may occur occasionally *A moderate level of confidence/information*	10% - 20%	Once per 5-10 years
Very Low (2)	Low (4)	Medium (6)	Medium (8)	High (10)	Unlikely (2)	The consequence may occur only infrequently *A high level of confidence/information*	2% - 10%	Once per 10 - 50 years
Very Low (1)	Very Low (2)	Low (3)	Medium (4)	Medium (5)	Rare (1)	The consequence may occur only in exceptional circumstances *A very high level of confidence/information*	<2%	Less than once per 50 years

Table E – 3: Residual Risk Tolerance

Risk Level	Description and Action	Authority for continued tolerance	Timing for implementing action	Obligation to promptly advise including advising treatments
Very High	Not normally tolerable, immediate intervention to reduce risk	Full Council on advice from CE	Immediate if possible but no more than one month	Full Council using best practicable means
High	Not normally tolerable, initiate action as soon as practicable to reduce risk below High	SLT or Group Manager (Council at CE discretion)	As soon as practicable but no more than 2 months	SLT or accountable Group Manager (Council at CE discretion)
Medium	Normally tolerable, frequently review to look for opportunities to further reduce risk where practicable	Business Unit Manager	At least within one quarter	Accountable Group Manager
Low	Acceptable risk, routine review for low cost actions to reduce risk further	No specific authority required	Routine review period (e.g. 3- 6 monthly)	None
Very Low	Acceptable risk, no specific actions to reduce further	No specific authority required	Only if incidental to another action	None

Table E – 4: Comprehensive Risk Table

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
	High level policies, procedures and controls							
Resource Consent Conditions on road reserve		Infrastructure developed through Resource Consent not in accordance with Land Development Manual, Policy or in alignment with councils future transport planning	All necessary resource consents required and obtained and projects and maintenance activities to be designed to minimise need for resource consents and to include resource consent provisions where required.	Major (4)	Unlikely (2)	Medium (8)	Reduce	Adopt environmental management outcomes into AMP, and Land Development Manual
Private Resource Consent Conditions affecting road reserve and transport activities		Private consent conditions limit or restrict transport outcomes on the road network	Transport team to work with planning team for future resource consents so future and changing traffic demands can be accommodated	Moderate (3)	Possible (3)	Medium (9)	Reduce	Ongoing transport involvement in resource consent application processed
Inaccurate growth information/ assumptions		Inappropriate decision made about future infrastructure and services	Growth monitoring to be frequent and trends related to national/international data where possible	Major (4)	Possible (3)	High (12)	Reduce	Regular monitoring regime

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
Increasing standards		Public expectations of Transport safety, quality and environmental standards are increasing	Mitigation strategies vary depending on the outcomes required.	Moderate (3)	Likely (4)	High (12)	Share	The implications of increased levels of service, resulting in increased expenditure are fully recognised by Councillors
	Financials							
Poor financial forecasting		Reflects on Council as poor planning	Ensure assumption to project cost estimates are fully understood and refine estimates before each Annual Plan and Transport Investment On Line entries.	Major (4)	Possible (3)	High (12)	Reduce	Ensure robust asset management and project management practices are followed
Desired NZ Transport Agency funding not obtained		Additional costs to Council or implementation of projects delayed, maintenance deferred or projects removed from programme	Monitor NZ Transport Agency funding procedures and manuals and submit application in a timely manner	Major (4)	Possible (3)	High (12)	Share	Follow NZTA application Guidelines and ensure politicians are fully informed
Non-compliance with NZ Transport Agency funding agreement		Reduction or refund of NZ Transport Agency contributions	Annually report on compliance requirements	Major (4)	Possible (3)	High (12)	Reduce	Implement measures to address any non-compliance

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
Insurance		Unplanned expenses following a natural event or disaster.	Insurance for unsubsidised structures, and funding through NZTA.	Moderate (3)	Almost certain (5)	High (15)	Accept	There is a residual risk where an event is not planned or covered by Insurance or NZTA. A lower LOS needs to be accepted and programme for remediation over a time frame that is acceptable to the stakeholders.
Impact of emergency event		Resources are focused on emergency response and repair	Defer non-critical works programme to free budget and resources to response	Moderate (3)	Possible (3)	Medium (9)	Reduce	Maintain LCLR priority list so least priority projects can be deferred first
Impact of external factors inflating tender prices		Prices substantially higher than anticipated estimates	Defer non-critical works programme to redirect budgets	Moderate (3)	Possible (3)	Medium (9)	Reduce	Maintain LCLR priority list so least priority projects can be deferred first
	Organisation Management							
Failure to act on identified risk		Potential legal action against Council	Robust risk analysis process in places and reviewed quarterly	Major (4)	Possible (3)	High (12)	Reduce	Identified risk improvements implemented
Lifelines plan not fully integrated with transport asset management plan		Lifeline asset failure reducing effectiveness of Nelson Tasman Emergency Management procedures. Failure to comply	Improvement programme for lifeline understanding	Moderate (3)	Possible (3)	Medium (9)	Reduce	Coordinate with Civil Defence for best integration of Lifelines Plan into AMP

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
		with Civil Defence Emergency Management Act						
Data Management Improvements not undertaken		Reduction in NZTA funding to reflect data accuracy	Improvement Plan for RAMM data quantity and quality	Major (4)	Unlikely (2)	Medium (8)	Reduce	Staff training, and contractor involvement to improve data
Asset Management Plan improvement plan not undertaken		Future forecasting not accurate. Decision making not optimised.	Annually report on improvement plan	Moderate (3)	Possible (3)	Medium (9)	Reduce	Annually report on improvement plan
	Health and Safety							
Road Safety		Safety levels of service perceived not to have been achieved (although in reality works being)	Training and increased awareness of Safe Systems approach, adequate budgets and road safety auditing	Major (4)	Possible (3)	High (12)	Reduce	Continue to monitor crash rates and set interventions via the TAMP
No agreed procedure with Police for road closure or traffic light failure event		Reduced safety leading to increased accident risk	Establish a Police traffic emergency procedures process	Moderate (3)	Possible (3)	Medium (9)	Reduce	Establish a Police traffic emergency procedures process

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
	Transport Asset Management							
Asset Management Plan not fully implemented		LTP, RLTP and Annual Plan not fully implemented resulting in recognition of poor Council performance and public dissatisfaction	Ensure robust project management practices are followed	Major (4)	Unlikely (2)	Medium (8)	Reduce	Ensure robust project management practices and whole of life considerations are followed
Performance monitoring of levels of service not completed		Levels of service not met resulting in public dissatisfaction	Establish and implement monitoring programme annually for LTP, RLTP and AMP	Moderate (3)	Possible (3)	Medium (9)	Reduce	Review annually
Noncompliance with Land Development Manual for constructed /adopted assets		Substandard works requiring greater maintenance or earlier renewals	Project Scope and plan and site check procedures to be sufficiently resourced and implemented	Major (4)	Possible (3)	High (12)	Reduce	Project Scope and plan and site check procedures to be sufficiently resourced and implemented
Unauthorised construction on road reserve		Public liability risk to Council. Risk of underground service damage	Maintenance contractor record of defects and activity affecting the road network and auditing of the CAR process	Moderate (3)	Possible (3)	Medium (9)	Reduce	Establish and implement monitoring programme to ensure all approvals (including street opening notices and Traffic Management Plans) are obtained

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
Network modelling and condition assessments not applied		Capital and renewals works programme not optimised. Future forecasting not accurate	Road Asset Maintenance Management database (RAMM) and traffic models regularly updated and assessed	Moderate (3)	Possible (3)	Medium (9)	Reduce	Road Asset Maintenance Management database (RAMM) and traffic models are regularly updated and assessed
Significant Natural Event		Resources reapportioned as necessary which might compromise Asset Management Plan implementation and agreed LOS. Potential public claims from a lack of understanding of the risks	Delay implementation of this plan and reviewed modify as necessary when resources re-established	Extreme (5)	Possible (3)	High (15)	Reduce	Preliminary risk maps of areas particular susceptible to flooding, liquefaction, tsunami, slips and fault lines to be mapped and published Continue to work with utility asset managers for a comprehensive approach
	Use of Transport Asset							
Changed use requires different infrastructure		Poor level of service for changed user expectations of network	Consider aged population, technology and mode share considerations in all asset management decisions	Major (4)	Possible (3)	High (12)	Reduce	Consider aged population, technology and mode share considerations in all asset management decisions
Changed use results in poor safety outcomes		Crash risk associated with	Awareness of Safe Systems Approach in	Extreme (5)	Likely (4)	Very High (20)	Reduce	Staff training in Safe Systems Approach to increase awareness

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
		change of use layout or design	all aspects the transport system					
Uncertain future demand for central long stay parking from increased central city living		Parking demand exceeds supply and results in conflict with inner city retail parking	Investigate future demand and develop/review parking policy for supply of long stay parking with inner city redevelopment	Moderate (3)	Likely (4)	High (12)	Reduce	Investigation and policy development/review
	Road pavements (including footpaths, cycleways and car parks)							
Structural failure/blockage due to earthquake or landslide		Pavement failure and road closure	Maintenance contractor has 24 hour call out facility. Emergency procedures priorities depending on ONRC hierarchy and identification of critical assets	Major (4)	Possible (3)	High (12)	Reduce	Emergency Procedures Manual
Vehicle crash damage		Road closure and chemical /load spill clean-up. Pollution of watercourse	Maintenance contractor has 24 hour call out facility. Establish a pollution emergency response plan and make ready for implementation	Moderate (3)	Possible (3)	Medium (9)	Reduce	Emergency Procedures Manual

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
Inadequate maintenance		Road failure	Maintenance programme implemented	Moderate (3)	Possible (3)	Medium (9)	Reduce	Deliver maintenance programme
Heavy vehicle pavement damage		Road failure	Monitoring programme within maintenance programme	Moderate (3)	Possible (3)	Medium (9)	Reduce	Deliver maintenance programme
Inadequate Traffic Management Plan for high volume roads		Reduced safety leading to increased crash risk	Traffic Control in accordance with Code of Practice for Temporary Traffic Management (CoPTTM)	Moderate (3)	Possible (3)	Medium (9)	Reduce	Traffic Control in accordance with Code of Practice for Temporary Traffic Management (CoPTTM)
Inadequate on-road residential parking		Unsafe parking or installation of no-parking lines leading to public dissatisfaction	Travel Demand Management and local engagement when modifying on-road parking	Minor (2)	Likely (4)	Medium (8)	Reduce	Consider when designing local road upgrades
Inadequate road width to accommodate all desired transport mode facilities (footpaths/ cycleways/traffic lanes and parking)		One mode or user will need to change	Consultation and use of multi-criteria analysis for business cases	Moderate (3)	Likely (4)	High (12)	Reduce	Consultation
Conflict between user demands on footpath space		Poor footpath shape profile at driveways	Alternative driveway profile or shift footpath away from kerb line when	Minor (2)	Likely (4)	Medium (8)	Reduce	Implement plan to provide 1.2m flat footpath when physically practical with all new and renewed footpaths.

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
			renewal opportunity exists					
	Road bridges (including footbridges and cycleway underpasses)							
Overweight permit policy is out of date		Poor control of overweight vehicle journeys across network, and unintended risk to structures	Overweight permit process is being managed by bridge inspection consultants	Extreme (5)	Possible (3)	High (15)	Reduce	Update Overweight permit Policy, process and documentation, with urgency. Staff training on overweight permit processes and officer assigned to manage overweight permit process
Increased traffic loadings		Increasing vehicle loading limits put additional stresses on bridges and culverts	Desktop structural assessment when loading rules are changed, and posting of bridges that do not accommodate new loadings. Transfer sw culverts to roading assets and do loading assessments	Extreme (5)	Possible (3)	High (15)	Reduce	Include loading data and demand into structural maintenance and renewal programme, so under capacity bridges and culverts are identified and monitored
Premature failure		Catastrophic damage to bridge structure.	Inspect in accordance with NZTA S/6:2015 Bridge and other	Extreme (5)	Possible (3)	High (15)	Reduce	Principal inspections on all structures and ongoing inspection programme

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
		Prolonged road closure	significant highway structures inspection policy.					
Structures approaching end of useful life		High inspection and maintenance costs and risk of premature/seismic failure	Inspect in accordance with NZTA S/6:2015 Bridge and other significant highway structures inspection policy.	Extreme (5)	Possible (3)	High (15)	Reduce	Principal inspections on all structures and ongoing inspection programme
Structural failure due to earthquake or landslide		Damage to retaining structure(s) and journeys impacted	Inspection maintenance and renewal programme	Extreme (5)	Possible (3)	High (15)	Reduce	Implement a prioritised maintenance and renewal programme to meet and mitigate structure risks
Inadequate design		Damage to retaining wall	Design to comply with Building Control Act requirements	Major (4)	Possible (3)	High (12)	Reduce	Adequate design and budget to comply with Building Act requirements and site constraints
Inadequate maintenance		Retaining wall failure and journeys impacted	Inspect in accordance with NZTA S/6:2015 Bridge and other significant highway structures inspection policy.	Moderate (3)	Possible (3)	Medium (9)	Reduce	Principal inspections on all structures and ongoing inspection programme
	Road retaining walls							

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
Ownership of retaining walls		Unknown liability where a wall is not registers as a roading asset, and legal issues where a resident is unaware that they have responsibility	Current programme to identify all road retaining walls and undertake condition assessments	Major (4)	Possible (3)	High (12)	Share	Principal inspections on all structures and ongoing inspection programme and improvement programme to confirm private ownership responsibilities for walls on road reserve that are not road assets
Structural failure due to earthquake or landslide		Catastrophic damage to several retaining walls. Road closure	Inspection maintenance and renewal programme	Extreme (5)	Possible (3)	High (15)	Reduce	Implement a prioritised maintenance and renewal programme to meet and mitigate structure risks
Inadequate design		Damage to retaining wall	Design to comply with Building Control Act requirements	Major (4)	Possible (3)	High (12)	Reduce	Adequate design and budget to comply with Building Act requirements and site constraints
Inadequate maintenance		Retaining wall failure	All bridges constructed to Q50 or Q15 standard (depending on location). Inspect in accordance with NZTA S/6:2015 Bridge and other significant highway structures inspection policy.	Moderate (3)	Possible (3)	Medium (9)	Reduce	Principal inspections on all structures and ongoing inspection programme
	Roading drainage (sub soil drains, sumps,							

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
	pipework and culverts)							
Inadequate road drainage		Downstream flooding, pavement damage and increased maintenance costs	Upgrade road drainage where secondary flow paths are inadequate and historically private property flooding occurs	Moderate (3)	Likely (4)	High (12)	Reduce	Prioritise drainage improvements to minimise consequences
Inadequate design or no kerb, channels and sumps		Downstream flooding, pavement damage increased maintenance costs	All road upgrades include drainage in accordance with Land Development Manual	Moderate (3)	Likely (4)	High (12)	Reduce	Coordination with Stormwater improvement projects for complementary road drainage improvements
Inadequate maintenance		Downstream flooding, pavement damage, increased maintenance costs, increased risk of storm water pollution	Maintenance and renewal programme	Moderate (3)	Possible (3)	Medium (9)	Reduce	Monthly review of contractor forward work programme
	Streetlights							
Inadequate streetlights that do not comply with Land Development Manual		Poor lighting contributing to low levels of perceived night time safety and rate of night time crashes	Streetlight improvement programme	Moderate (3)	Likely (4)	High (12)	Reduce	Deliver implementation programme

Identification			Analysis: Residual Risk					
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**	**Response e.g. Accept, Reduce, Share**	**Treatments**
Inadequate maintenance		Streetlights or streetlight column failure	Inspection, testing, data recording and monitoring for intervention needs	Moderate (3)	Possible (3)	Medium (9)	Reduce	Deliver maintenance programme
	Traffic Signals							
Power failure or damage		Increase in travel time and increase in safety risk due to lights being inoperable	Maintenance intervention to ensure ongoing operation, 24hr day/7day week maintenance service to bring signals back into service	Moderate (3)	Possible (3)	Medium (9)	Reduce	Manage as uncontrolled intersection and install appropriate signs except at critical asset intersections in peak hour where Police appointed as Pointsmen until signals are operational
Power failure or damage		Traffic cameras inoperable	Cable traffic cameras independently of signals to retain service in event of signals failure	Minor (2)	Likely (4)	Medium (8)	Reduce	Re-cable existing cameras and all new cameras to be independent of signals for power and comms
Inadequate maintenance of structural components		Structural failure of signal pole or arm	Inspect in accordance with NZTA S/6:2015 Bridge and other significant highway structures inspection policy.	Moderate (3)	Possible (3)	Medium (9)	Reduce	Initial principal inspections and establish ongoing inspection programme

Identification			Analysis: Residual Risk				Response e.g. Accept, Reduce, Share	Treatments
Event Description	**Asset Group**	**Consequence**	**Existing Controls**	**Consequence**	**Likelihood**	**Current Risk Level**		
Inadequate maintenance		Increase in travel time and increase in safety risk due to lights being inoperable	Maintenance programme implemented. Where signals are disconnected install temporary priority give way signs	Moderate (3)	Possible (3)	Medium (9)	Reduce	Manage as uncontrolled intersection and install appropriate signs except at critical asset intersections in peak hour where Police appointed as Pointsmen until signals are operational
	Safety Barriers							
Inadequate barriers not complying with Land Development Manual or Building Code for structural elements		Personal injury.	Include safety barriers and handrails as structural items and inspect in accordance with NZTA S/6:2015 Bridge and other significant highway structures inspection policy.	Major (4)	Possible (3)	High (12)	Reduce	Inspection and inventory and ongoing monitoring and maintenance programme

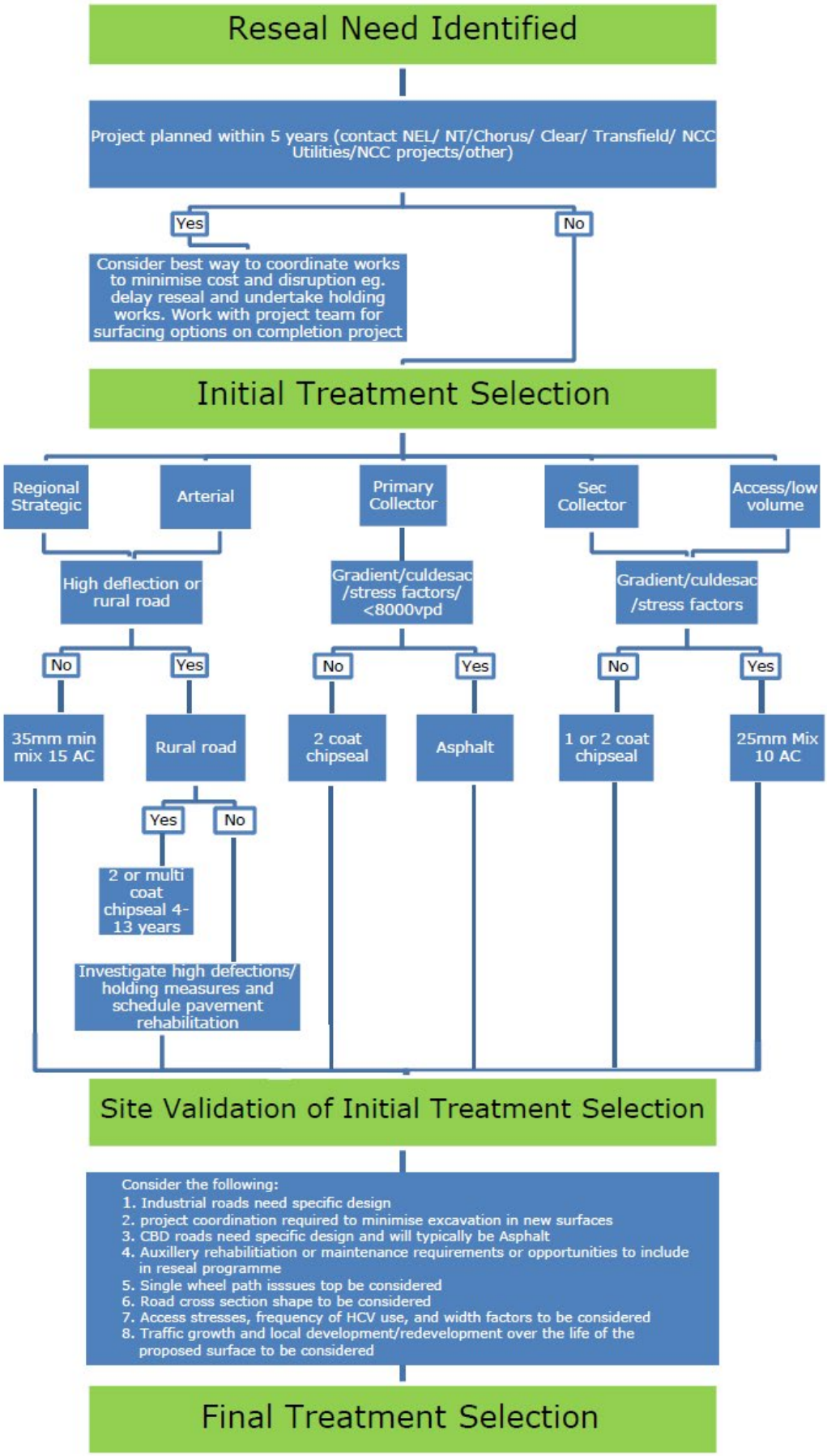
APPENDIX F DEFINITION OF LEVELS OF SERVICE

Table F – 1: Definition of Levels of Service

Definitions Of LoS				Table 1
LoS	Description	Nelson Traffic Model LoS criteria		
		Link (vehicles per hour)	Intersection (delay/veh)	
			Priority	Signal/Rotary
LoS F	Forced flow. The amount of traffic approaching a point exceeds that which can pass it. Flow break-downs occur, and queuing and delays occur.	In excess of **900-1700** depending on link type	50 sec	80 sec
LoS E	Traffic volumes are at or close to *capacity and there is virtually no freedom* to select desired speed and to manoeuvre within the traffic stream. Flow is unstable and *minor disturbances within the traffic stream will cause break-downs in operation*.	Between **720-1360** depending on link type	35 sec	55 sec
LoS D	Approaching unstable flow where *all drivers are severely restricted* in their freedom to select desired speed and to manoeuvre within the traffic stream. The general level of *comfort and convenience is poor* and small increases in traffic flow will cause operational problems.	Between **585-1105** depending on link type	25 sec	35 sec
LoS C	Stable flow but most drivers *are restricted to some extent* in their freedom to select their desired speed and to manoeuvre within the traffic stream. The general level of *comfort and convenience has declined noticeably*.	Between **450-850** depending on link type	15 sec	20 sec
LoS B	Stable flow where drivers still *have reasonable freedom* to select their desired speed and to manoeuvre within the traffic stream. The general level of comfort and convenience is less than LoS A.	Not Applicable	Not Applicable	
LoS A	Free flow in which drivers are *virtually unaffected* by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high and the general level of *comfort and convenience is excellent*.			

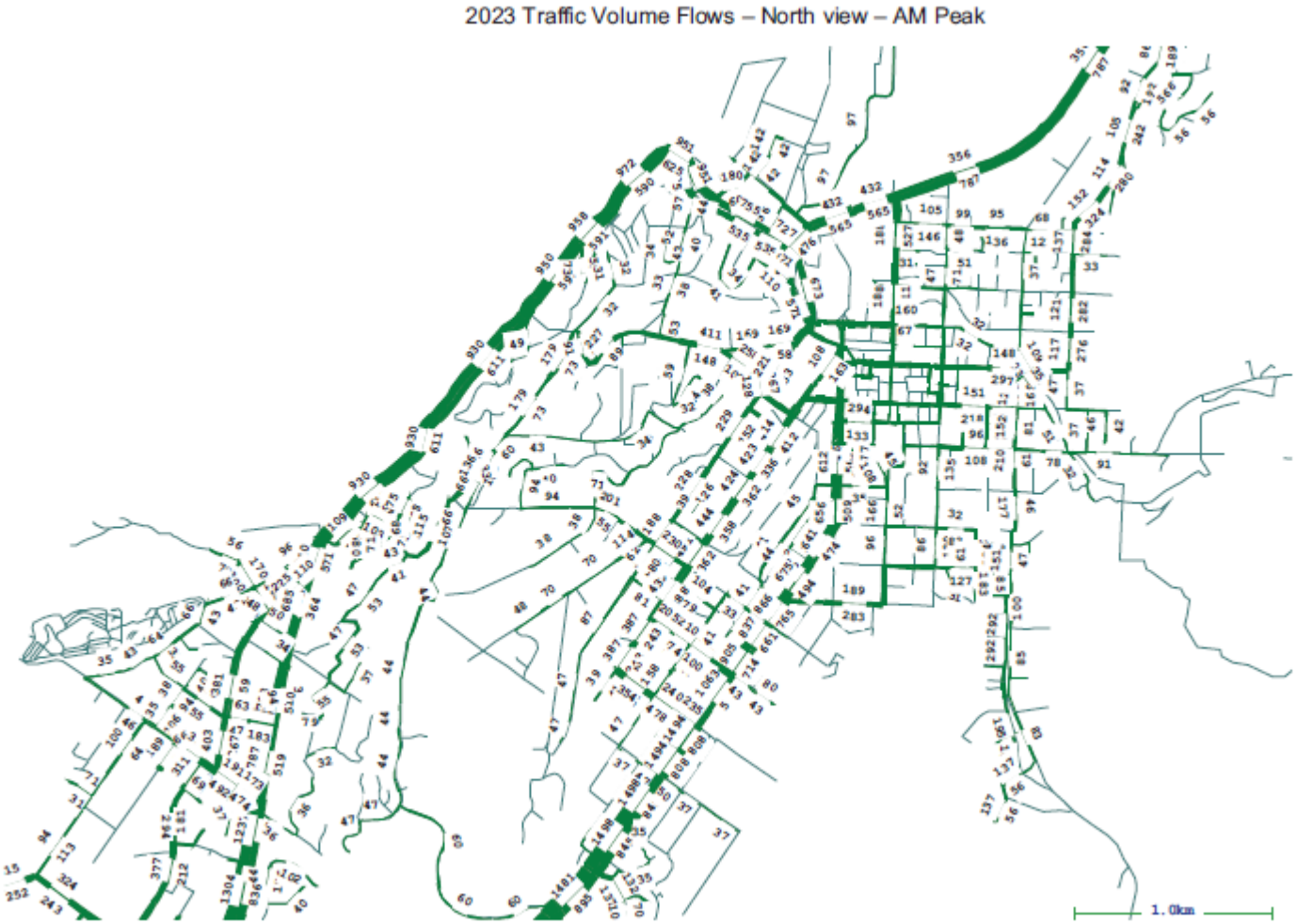
NB The LoS for priority intersections is dictated by the delay on the worst approach and the LoS for roundabouts and signalised intersections is calculated based on the weighted average delay across all approaches.

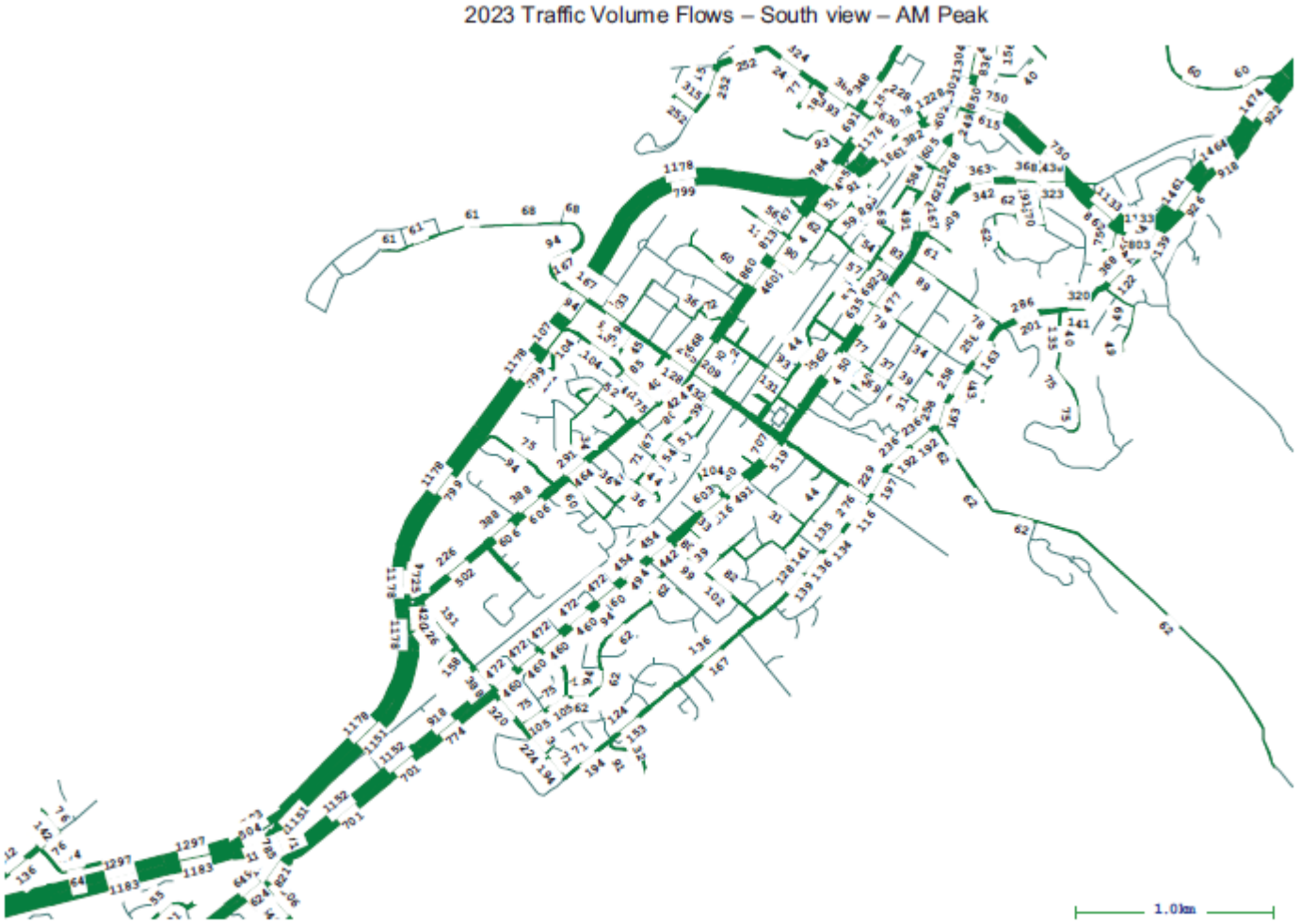
APPENDIX G RESURFACE TREATMENT SELECTION FLOWCHART

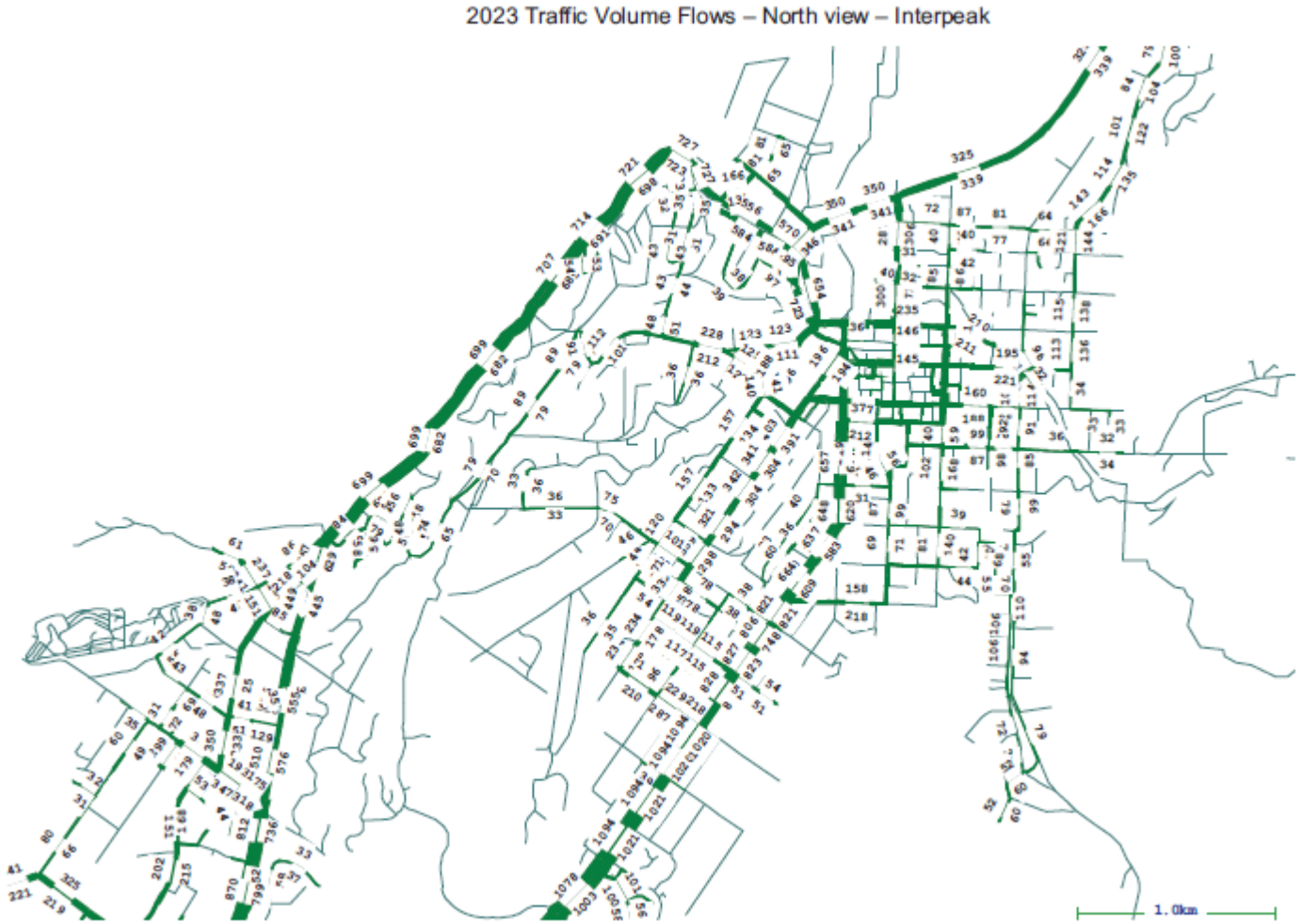


APPENDIX H NELSON-TASMAN TRANSPORTATION MODEL 2023 AND 2033 TRAFFIC VOLUME PLOTS AND LEVELS OF SERVICE PLOTS

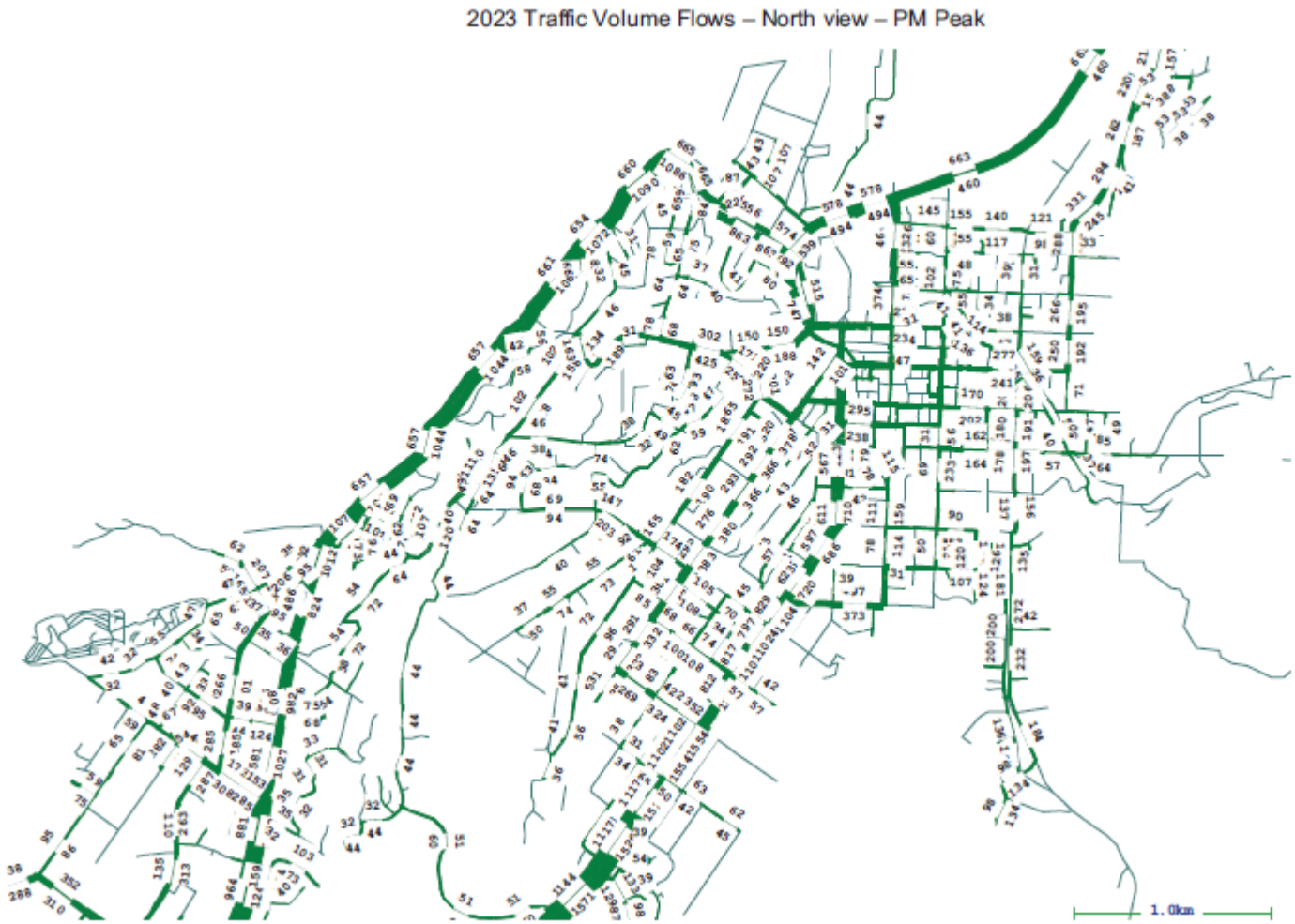
(https://www.nzta.govt.nz/assets/projects/nelson-southern-link/Nelson-Southern-Link-Investigation-Future-Forecasting-FINAL.pdf)



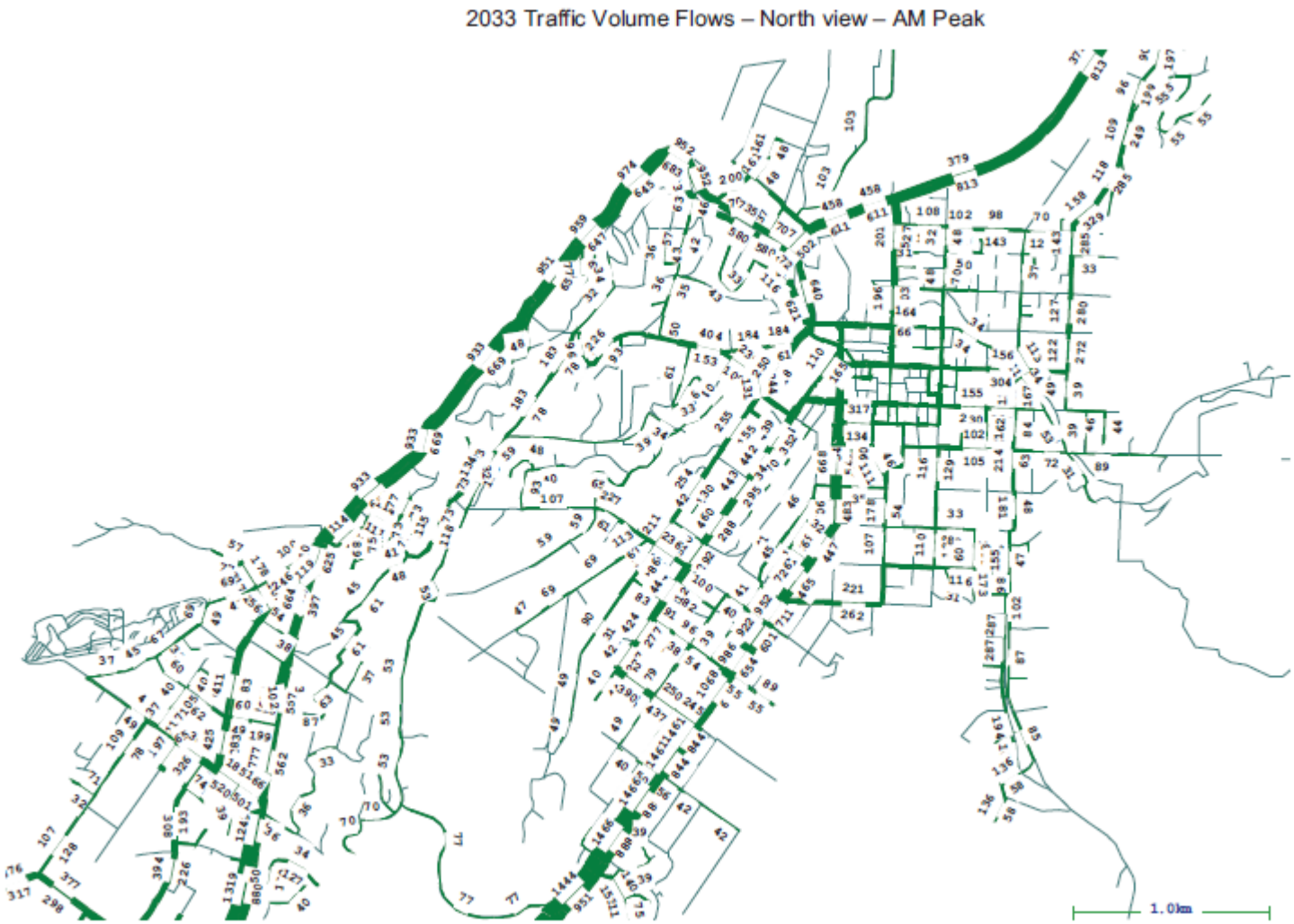

2023 Traffic Volume Flows – South view – AM Peak
1.0km


2023 Traffic Volume Flows – North view – Interpeak
1.0km

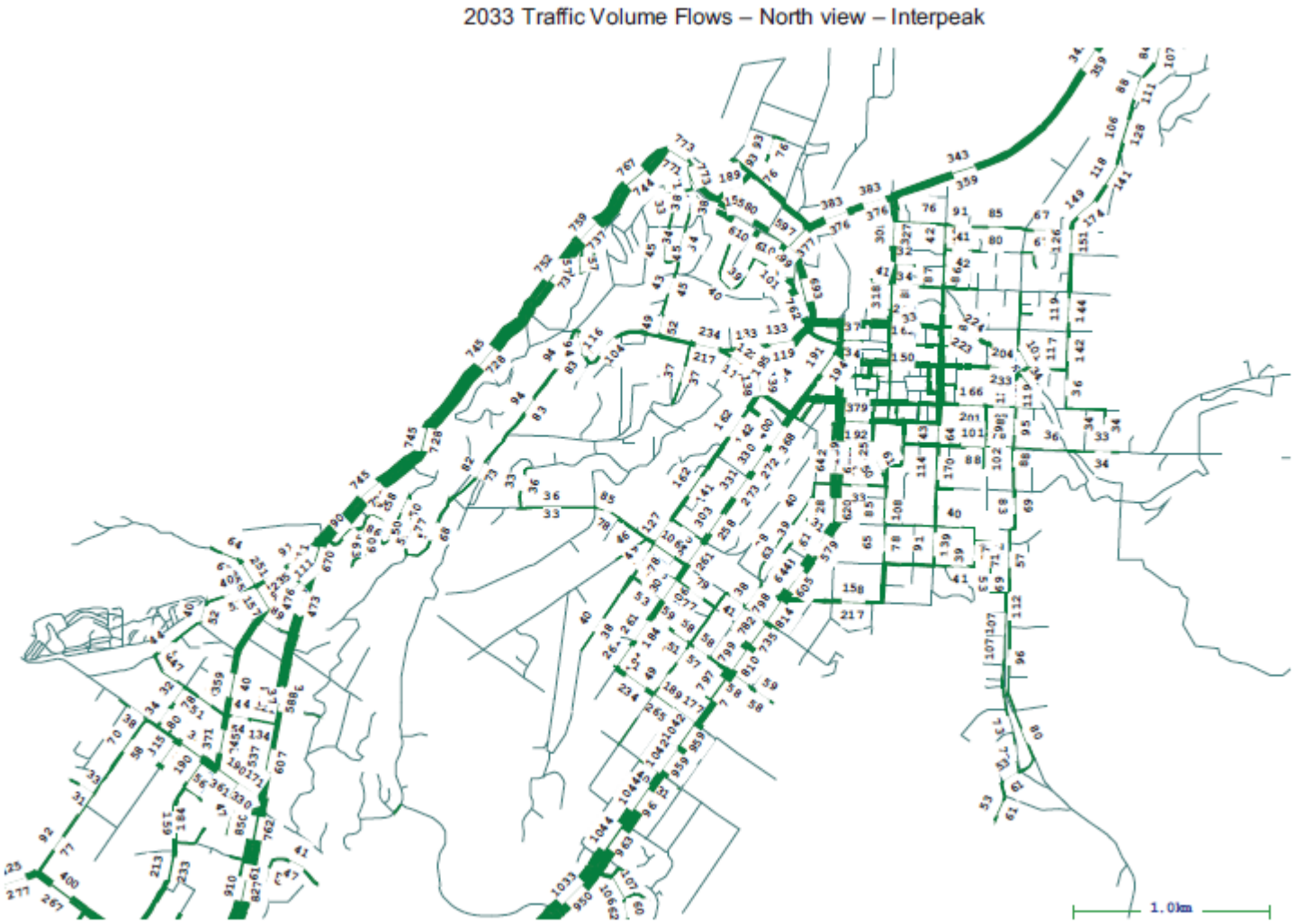

2023 Traffic Volume Flows – South view – Interpeak
1.0km

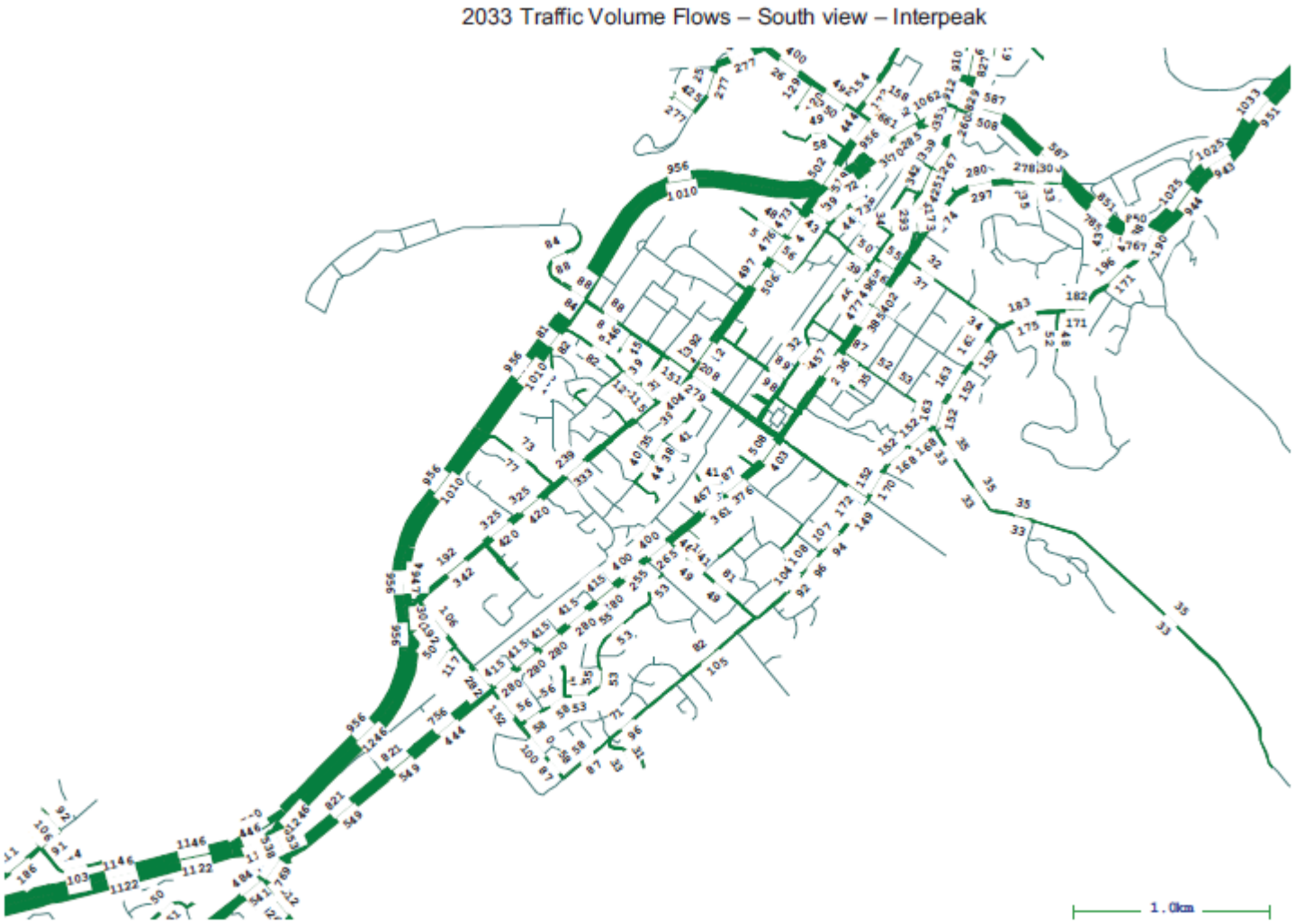

2023 Traffic Volume Flows – North view – PM Peak
1.0km


2023 Traffic Volume Flows – South view – PM Peak
1.0km

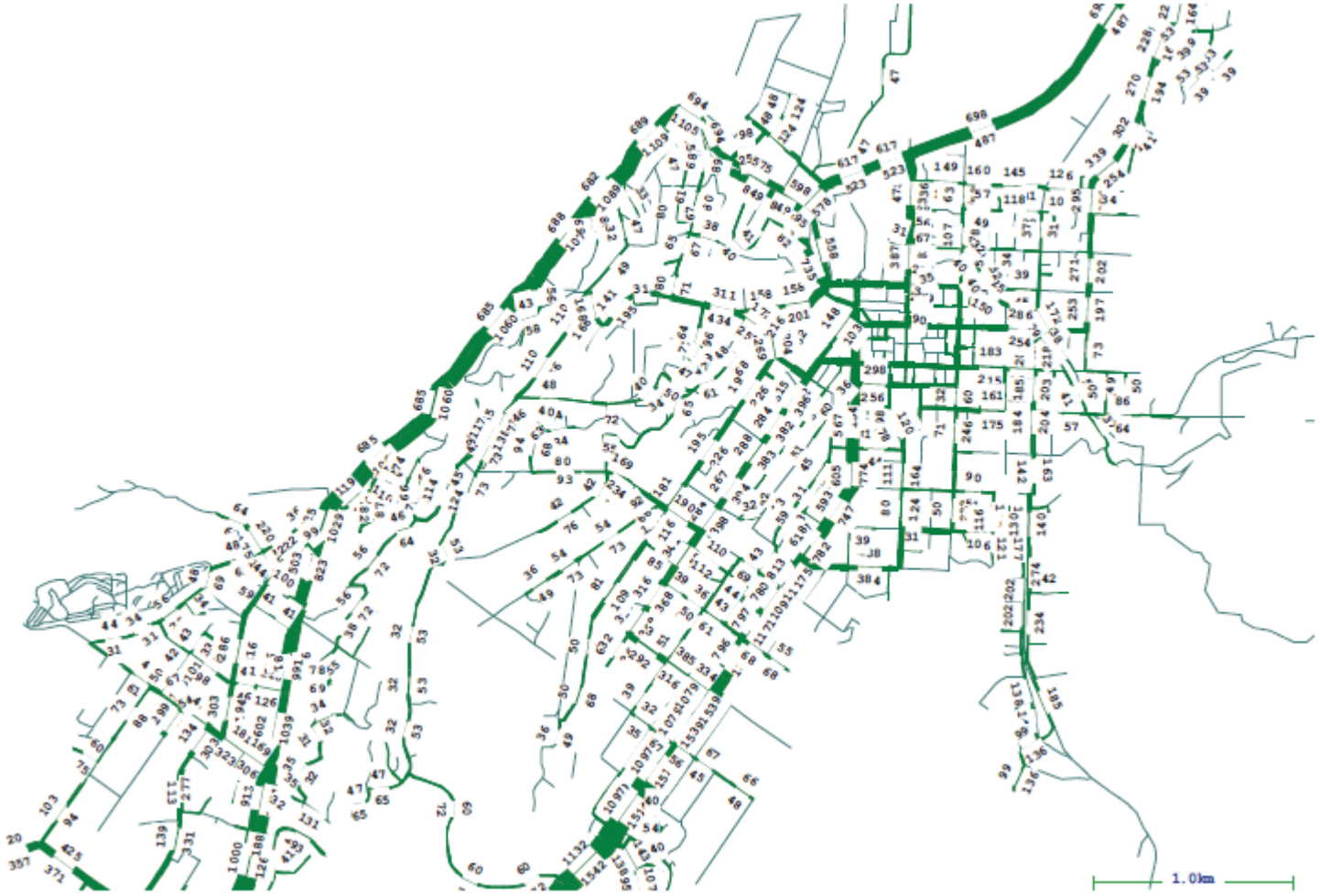

2033 Traffic Volume Flows – North view – AM Peak
1.0km


2033 Traffic Volume Flows – South view – AM Peak
1.0km


2033 Traffic Volume Flows – North view – Interpeak
1.0km

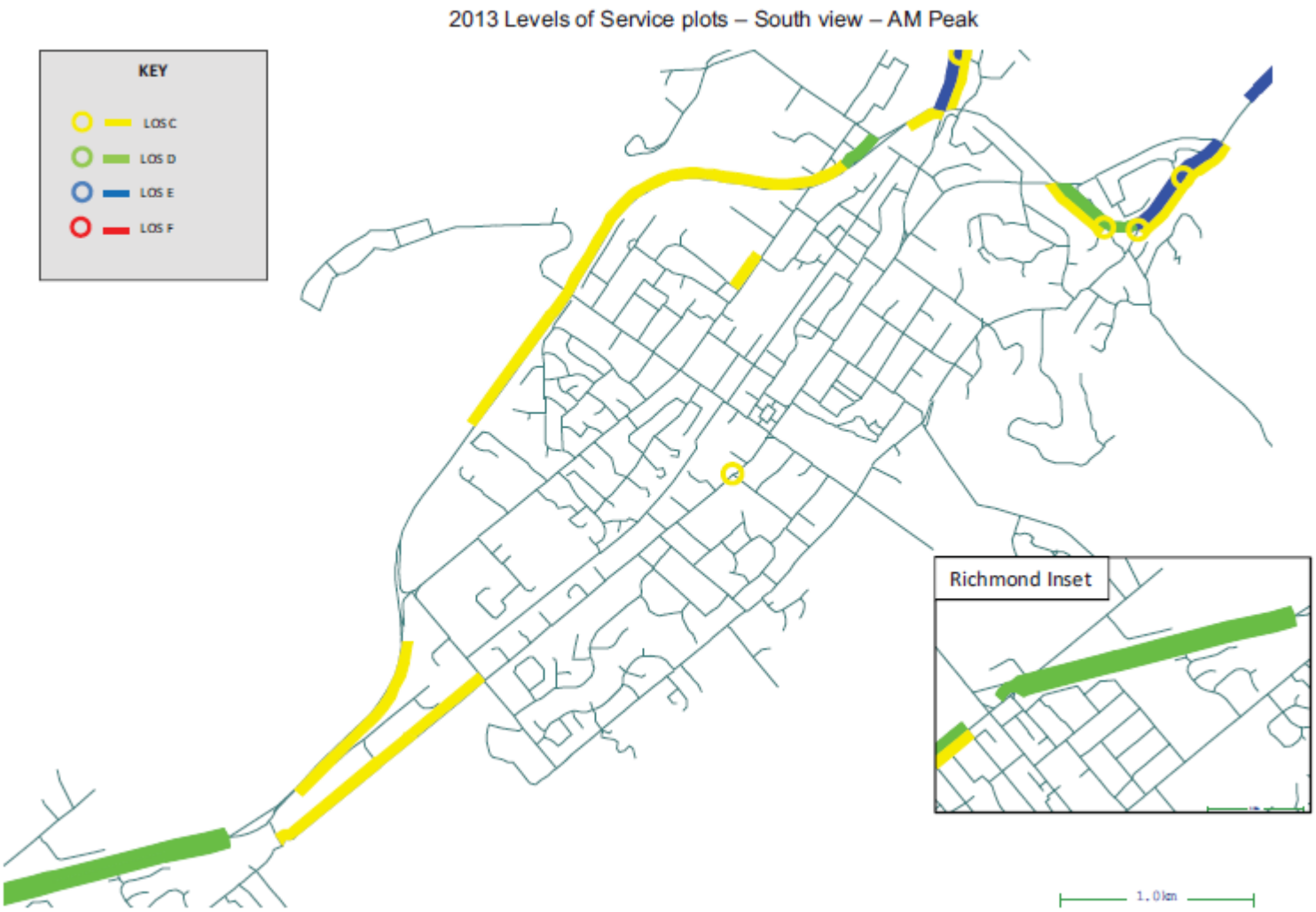

2033 Traffic Volume Flows – South view – Interpeak
1.0km

2033 Traffic Volume Flows – North view – PM Peak

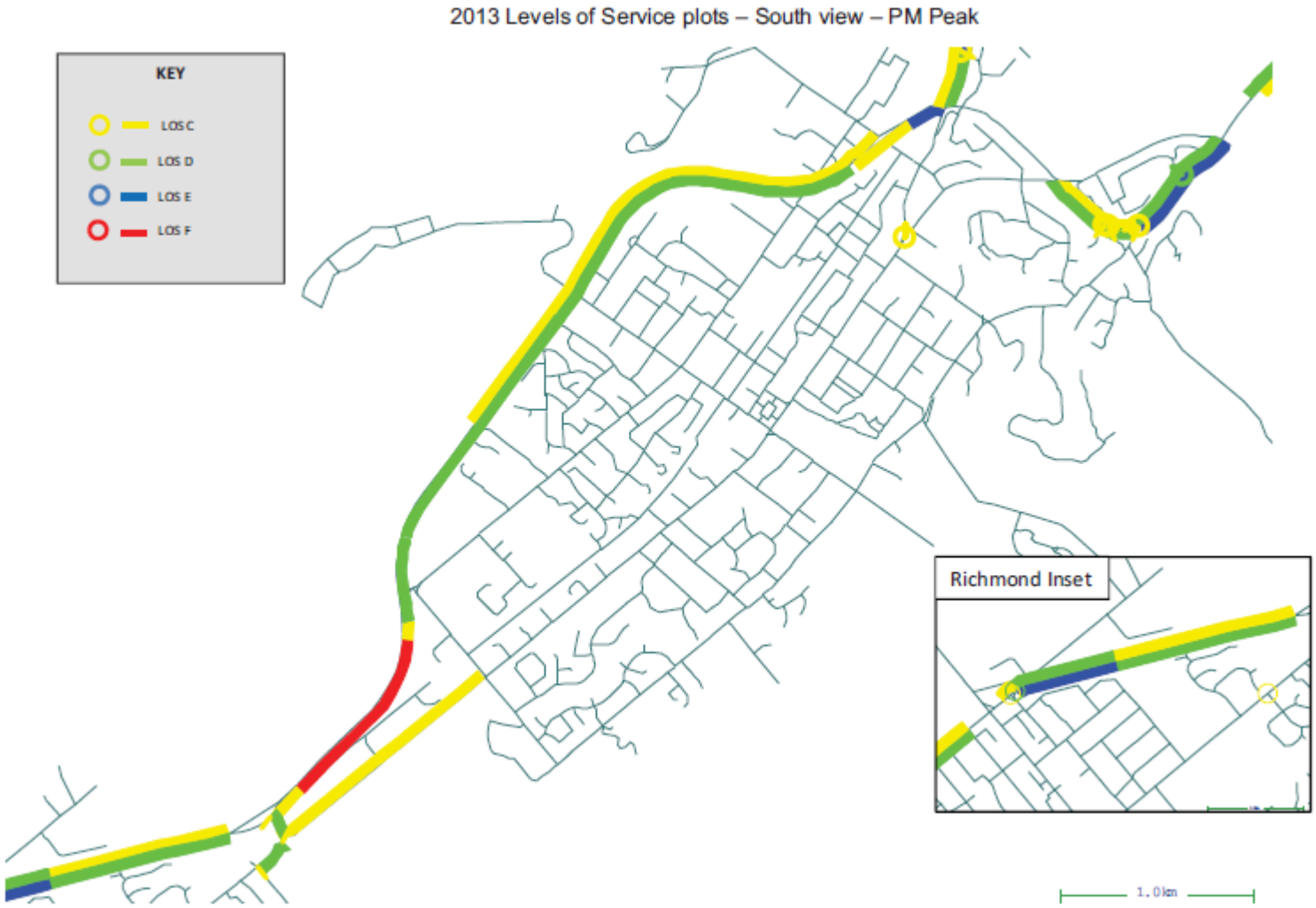



2033 Traffic Volume Flows – North view – PM Peak
1.0km

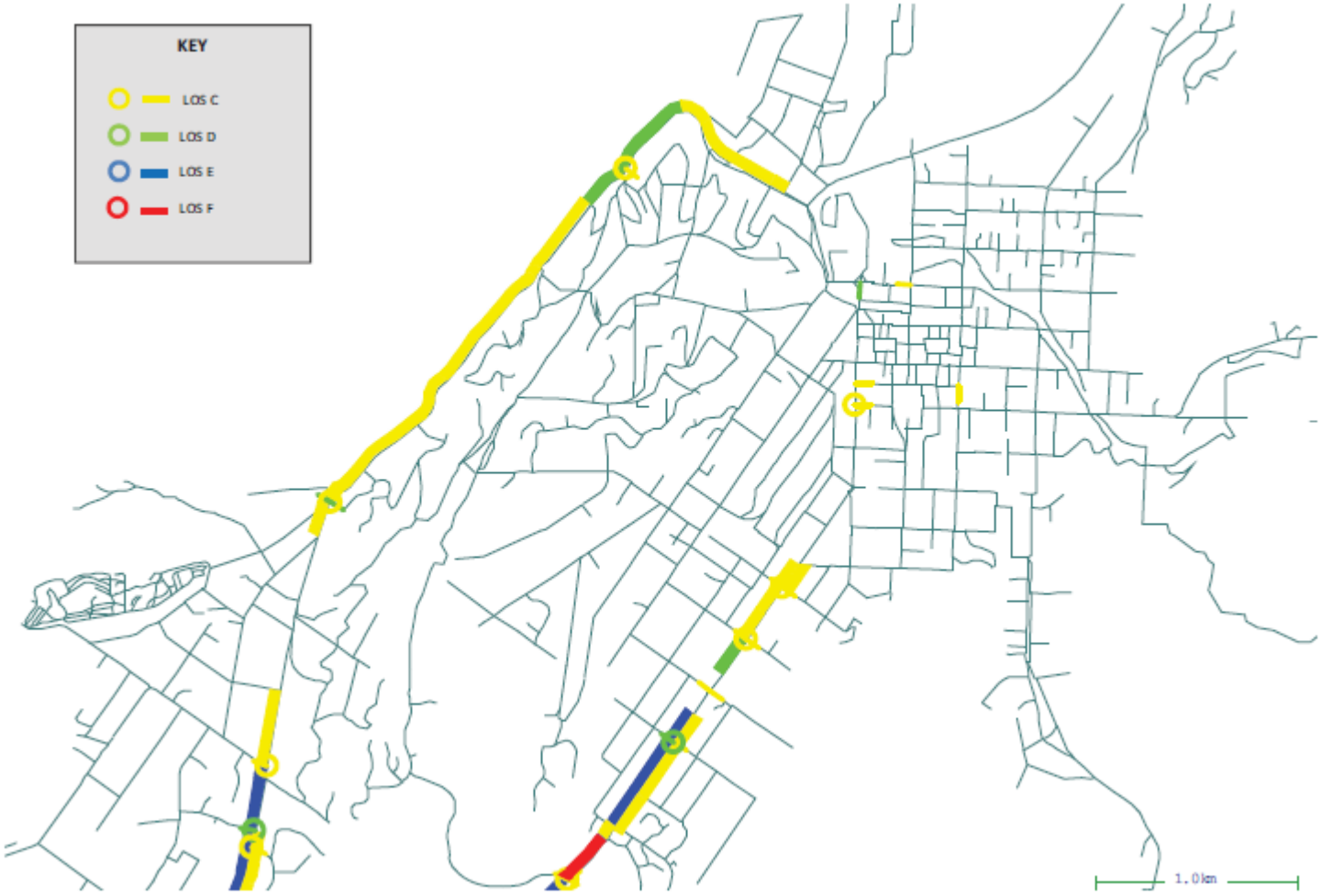
2013 Levels of Service plots – North view – AM Peak

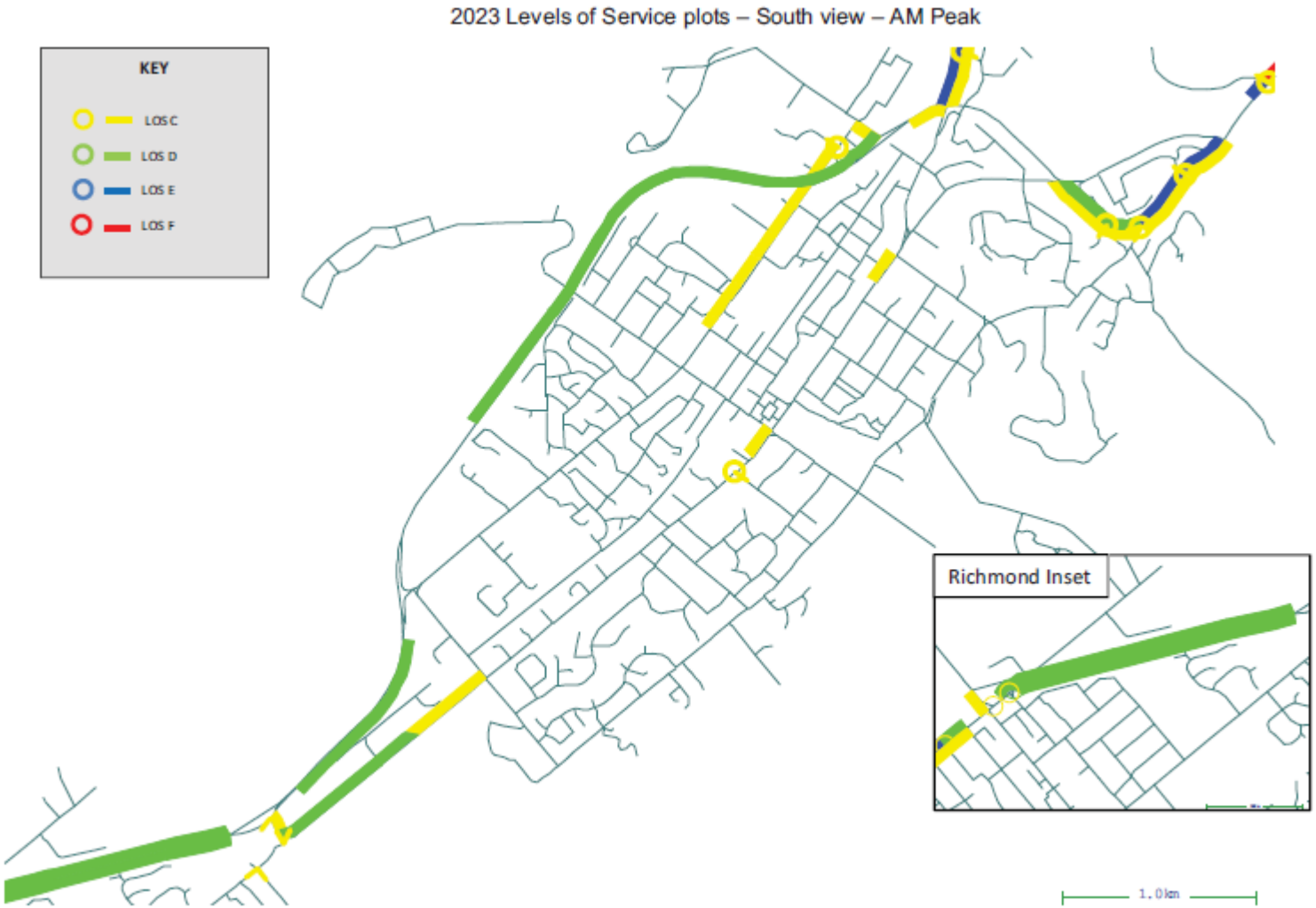

2013 Levels of Service plots – South view – AM Peak
KEY
LOS C
LOS D
LOS E
LOS F
Richmond Inset
1.0km

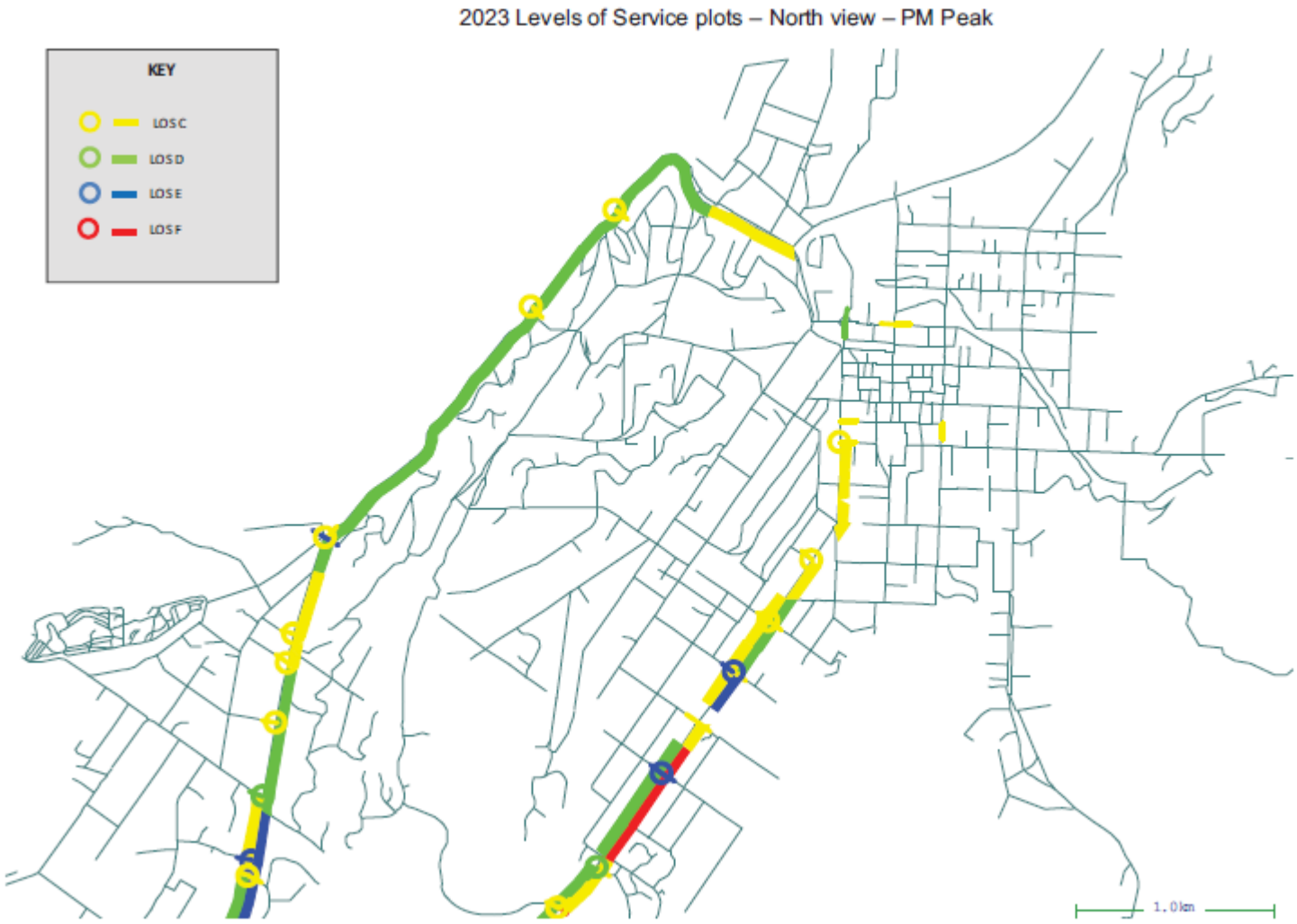
2013 Levels of Service plots – North view – PM Peak

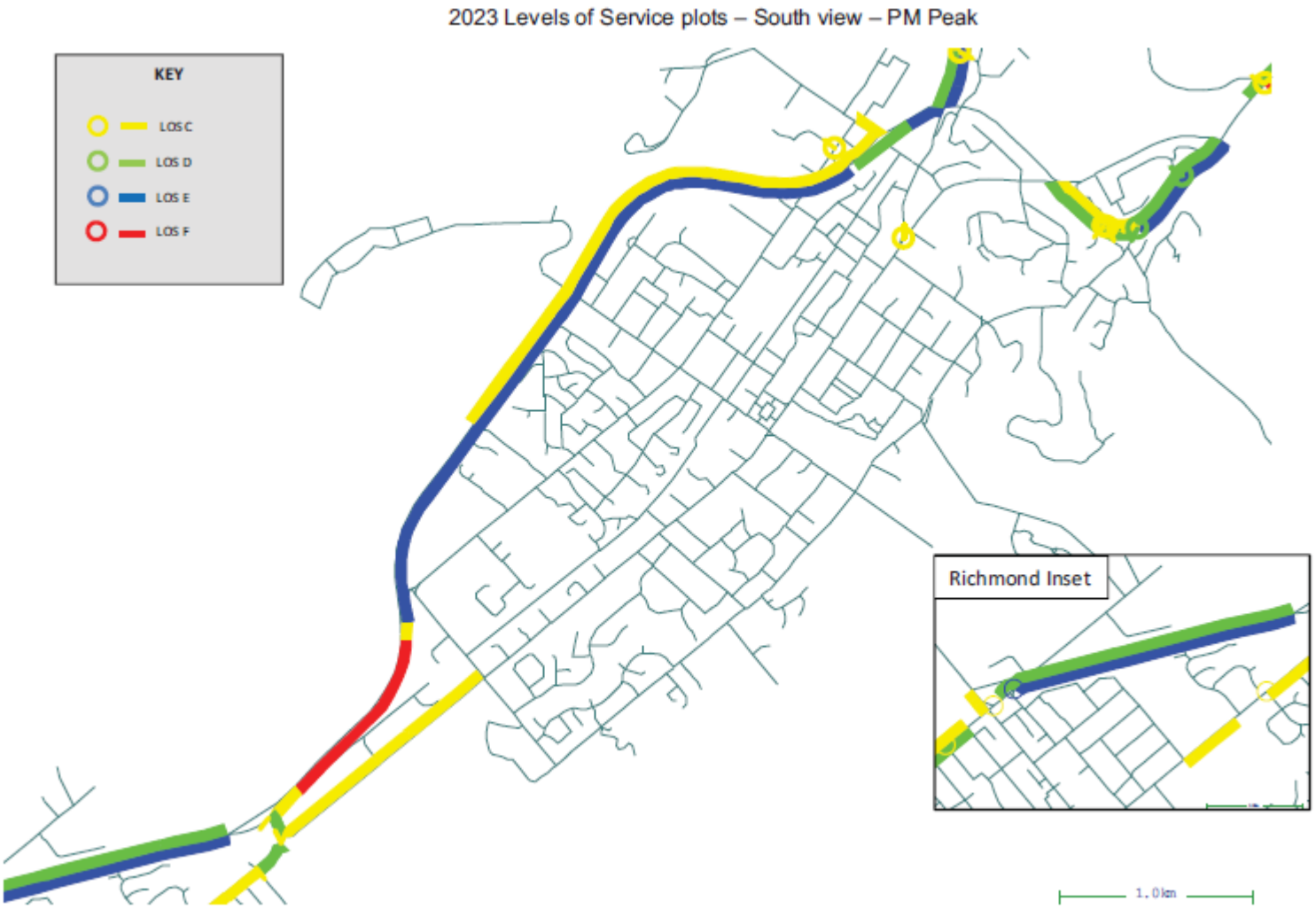

2013 Levels of Service plots – South view – PM Peak
KEY
LOS C
LOS D
LOS E
LOS F
Richmond Inset
1.0km

2023 Levels of Service plots – North view – AM Peak

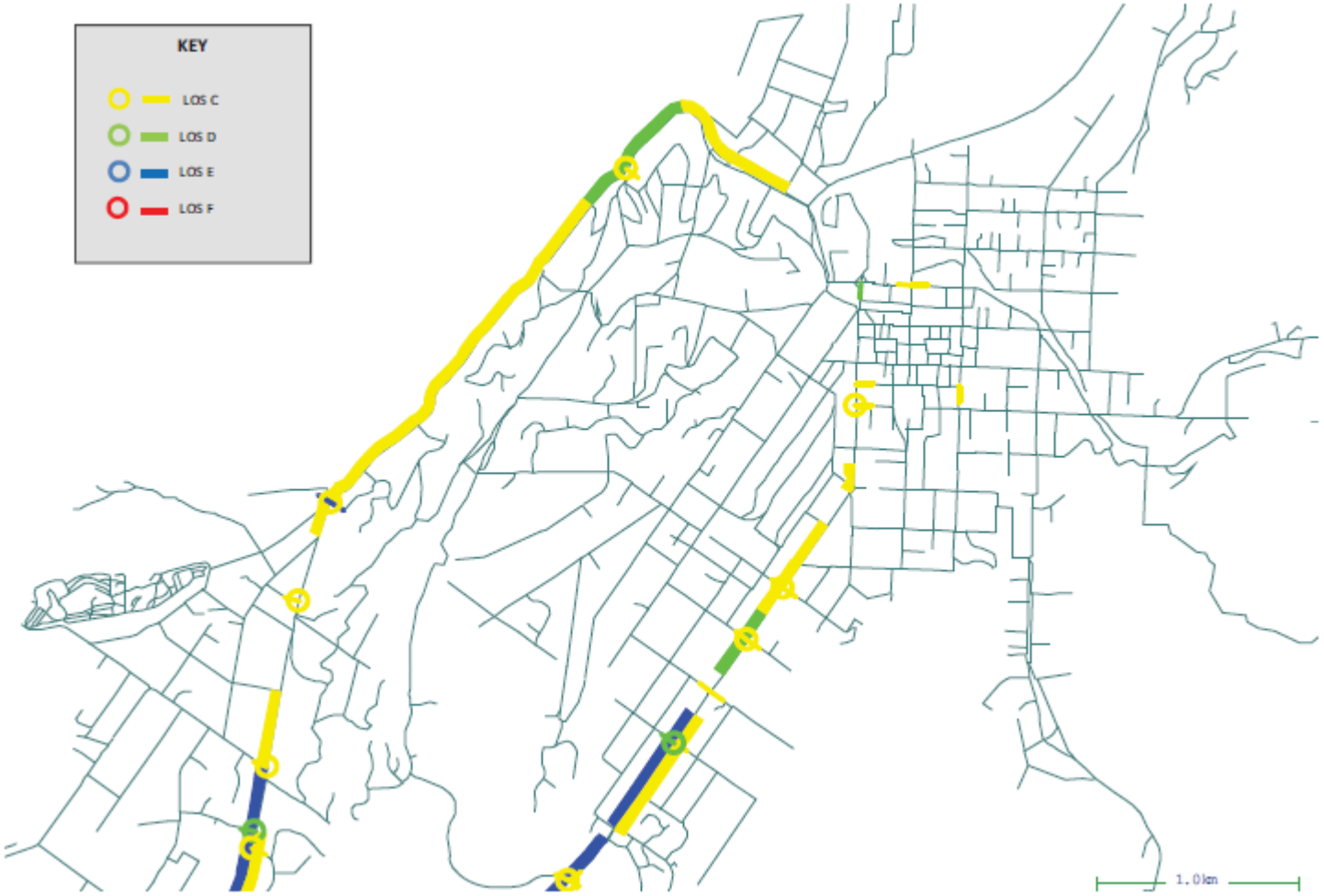


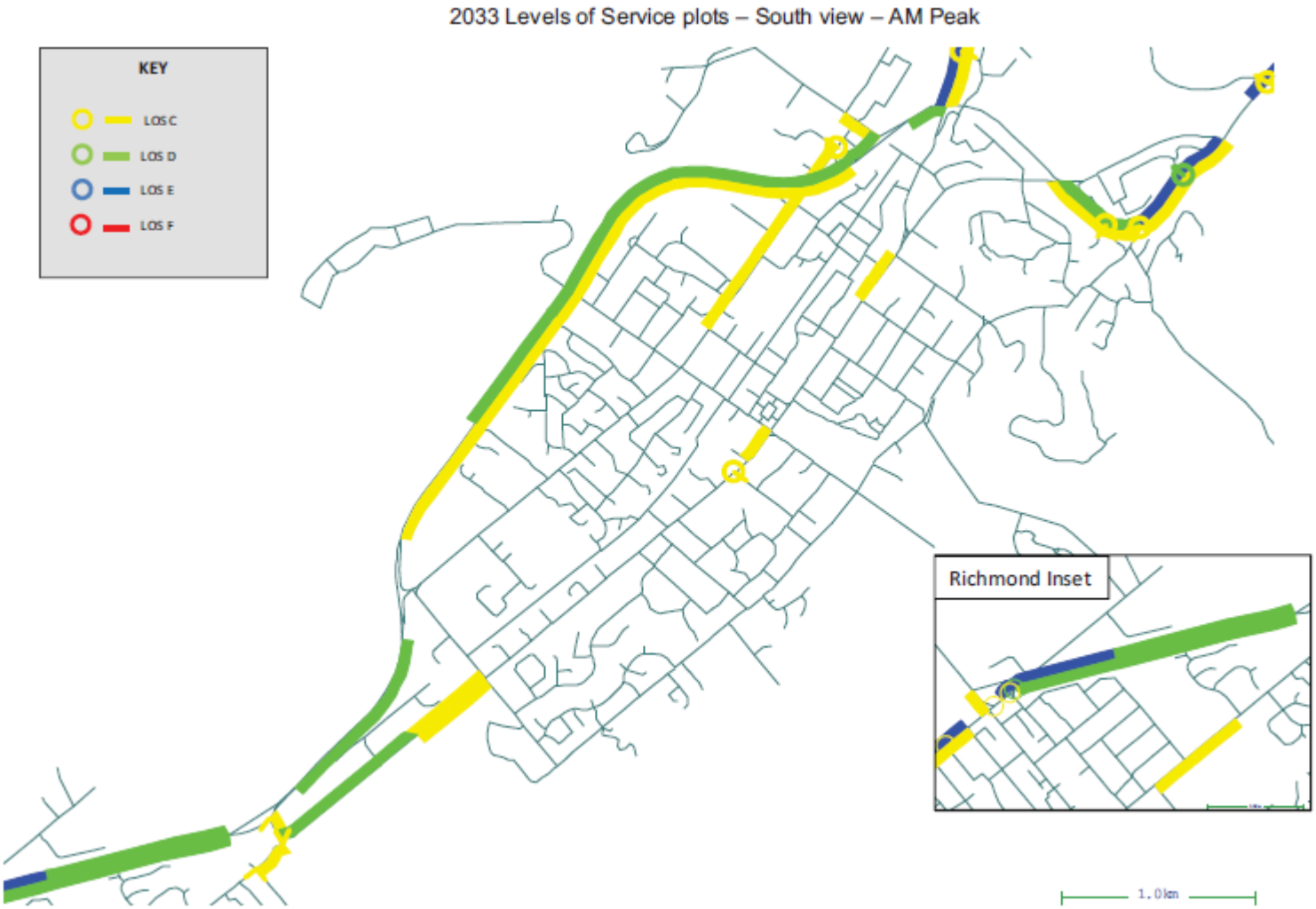

2023 Levels of Service plots – South view – AM Peak
KEY
LOS C
LOS D
LOS E
LOS F
Richmond Inset
1.0km


2023 Levels of Service plots – North view – PM Peak
KEY
LOS C
LOS D
LOS E
LOS F
1.0km

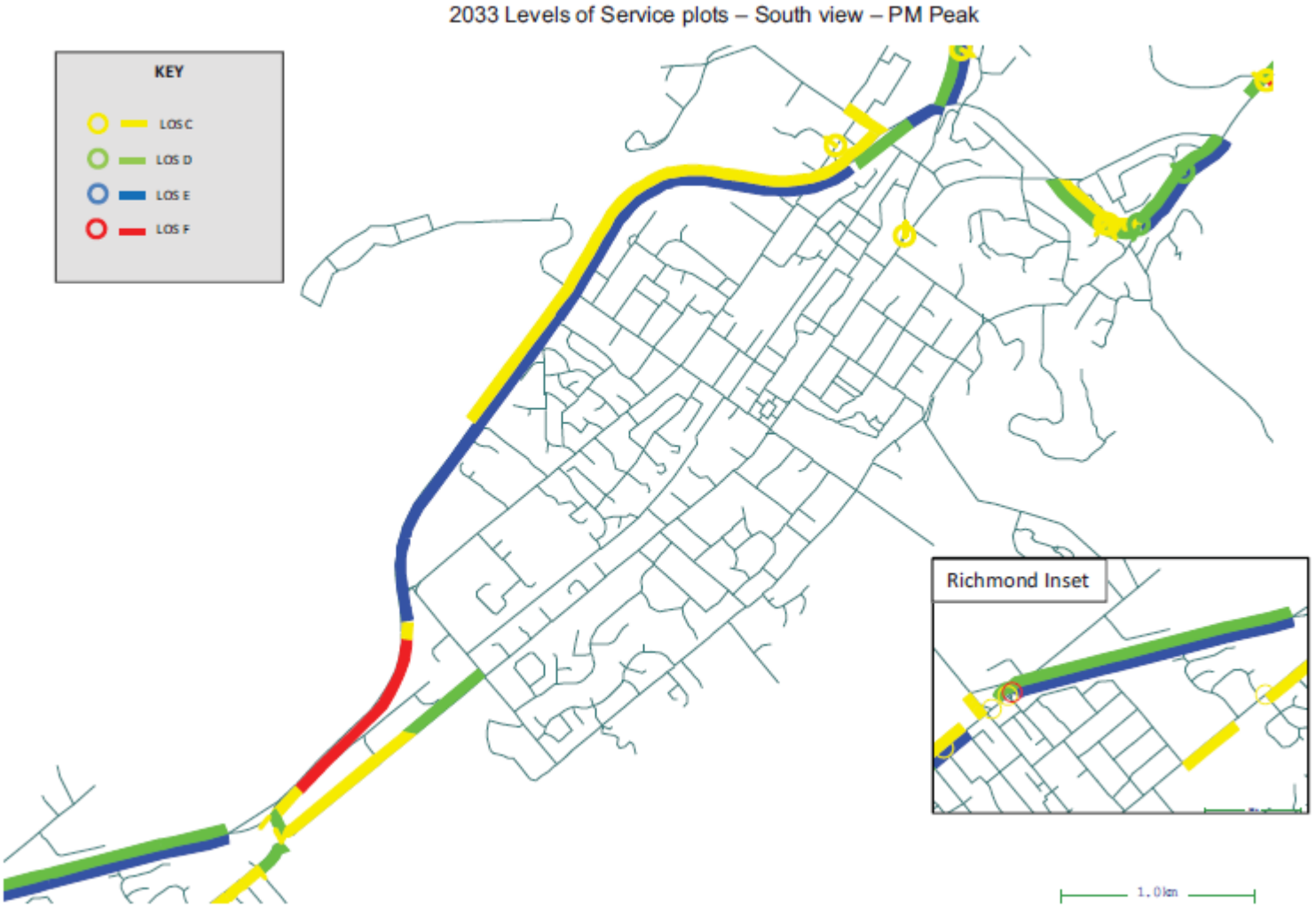

2023 Levels of Service plots – South view – PM Peak
KEY
LOS C
LOS D
LOS E
LOS F
Richmond Inset
1.0km

2033 Levels of Service plots – North view – AM Peak




2033 Levels of Service plots – South view – AM Peak
KEY
LOS C
LOS D
LOS E
LOS F
Richmond Inset
1.0km

2033 Levels of Service plots – North view – PM Peak


2033 Levels of Service plots – South view – PM Peak
KEY
LOS C
LOS D
LOS E
LOS F
Richmond Inset
1.0km

APPENDIX I PREVIOUS LEVEL OF SERVICE AND WHY THEY HAVE CHANGED

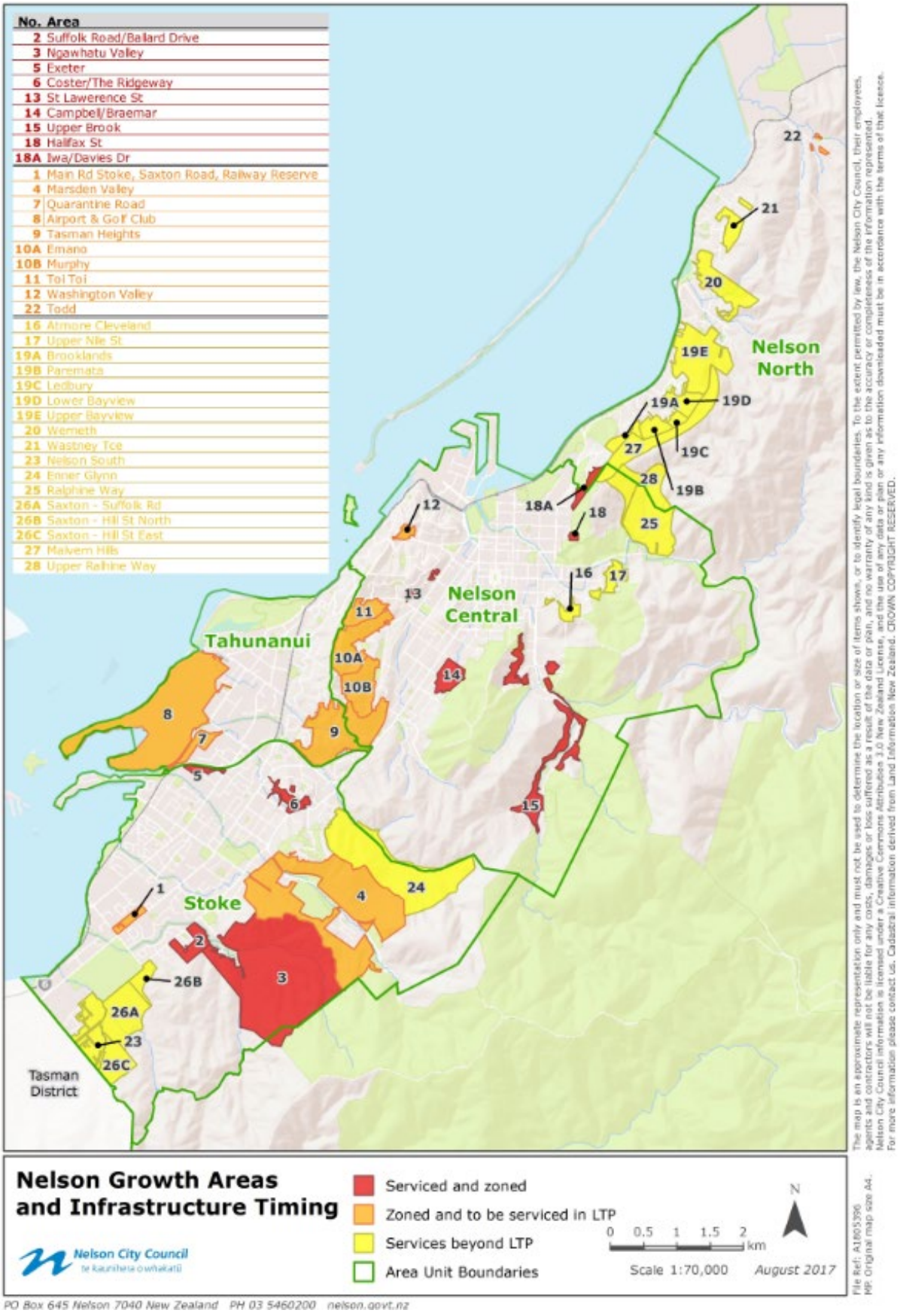
Table I – 1: Previous level of service and why they have changed

Service	Previous Level of Service	Proposed Level of Service	Reason for change
Quality – A smooth road surface	Average road roughness standard (National Association of Australian State Roading Authorities) by road classification by NCC Land Development Manual road classification.	The average quality of ride on a sealed local road network, measured by smooth travel exposure by One Network Road Classification (ONRC)	To incorporate nationally consistent ONRC framework into LoS measures
The percentage of the sealed local road network that is resurfaced.	6.4% - 7.4%	Not less than 3% or not more than 8.5%	To reflect the increased variance in resurface area due to the typically constant resurface budget and wide cost difference in different treatments
The fare recovery ratio (equitable sharing of costs)	50%	Not less than 45% and not more than 55%	To reflect the typical variance in this measure
Percentage of the community that travel to work by walking or cycling	25% of all journeys to work trips are by walking or cycling by 2018.	2018/19 20% 2019/20 20% 2020/21 21% 2027/28 25%	Target forecast down to reflect actual recent performance and proposed programmes and activities to increase the number of trips contained within 2018 TAMP.
Parking Occupancy - Percentage of short stay parking spaces occupied in midweek peak in December (excluding taxi and loading bays)	85%	No greater than 95% in the peak hour	To reflect the increasing demands on central city parking and the policy direction of not using car parking pricing as a TDM incentive
Occupancy of long-stay parking spaces between peak travel times measured at 5 locations within the CBD fringe.	A reducing trend	Between 85% and 95% in the peak hour	To reflect the increasing demands on central city parking and the policy direction of not using car parking pricing as a TDM incentive
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. (ONRC Customer Outcome 1 measure.)	The number of fatalities and serious injuries on local roads reduces by 4% per year from a base of 2007	Reduction of 5 death and serious crashes by 2027/28 year	The Department of Internal affairs mandatory measures require the LoS measure to be reported as a whole number

Service	Previous Level of Service	Proposed Level of Service	Reason for change
Number of injury crashes per kilometre of road. (Collective Risk ONRC Customer Outcome 2 measure)	The collective risk for each year reduces by at least 4% per year from a base of 2007	2% reducing trend over time	To reflect increasing vehicle volume on the network increasing the road safety risk
Number of crashes involving cyclists.	Nelson City cycle crash numbers do not increase from those in the base year of 2007 (23)	Number of cycle crashes less than 22	Target changes to reflect the 10 year performance
Number of crashes involving pedestrians	Number of crashes involving pedestrians each year reduces by at least 4% per year from a 2007 base.	Number of pedestrian crashes less than 10	Target changes to reflect the 10 year performance

APPENDIX J INFRASTRUCTURE PLANNING PROCESS FOR GROWTH PROJECTS

Figure J - 1: Nelson Growth Areas and Infrastructure Timing



APPENDIX K REGIONAL LAND TRANSPORT PROGRAMME 2015-2021

Table K – 1: Extract from Regional Land Transport Plan – Agreed Top of the South Significant Activities

Indicative Ranking	Activity Description	Organisation Responsible and Region	Contributes to Regional Objectives	Linkage to Problem Statement and Performance Monitoring Measure	Draft Profile	Phase	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	Summary Total	Total Cost	NLTF Share
1	SH1 Weld Pass realignment	NZTA Marlborough	2) Supporting economic growth through providing better access across the Top of the South's key journey routes 3)Communities have access to a resilient transport system 4) Communities have access to a safe transport system	**Problem Statement** 2 Lack of redundancy, and susceptibility of the network to the impacts of climate change and high impact natural hazards increases the risk of losing community connectivity and impacting the economy. **Problem Statement** 3 Driver behaviour and unforgiving roads lead to unacceptable levels of death and serious injuries. **Measures** - Road Safety, Resilience, Travel time reliability	HL	Indicative Business Case									$38,099,700	$38,099,700
						Detailed Business Case										
						Pre-Implementation	1,545,000							1,545,000		
						Property		1,545,000						1,545,000		
						Imp/ Construction			15,913,500	19,096,200				35,009,700		
2	Nelson Southern Link Investigation 49	NZTA Nelson	1) A sustainable transport system that is integrated with well planned development, enabling the efficient movement of people and goods 2) Supporting economic growth through providing better access across the Top of the South's key journey routes 3)Communities have access to a resilient transport system	**Problem Statement** 1 Constraints on the transport network are leading to delays affecting freight, tourism, business and residential growth. **Measure** - Travel time reliability	HL	Indicative Business Case									$14,212,079	$14,212,079
						Detailed Business Case	2,060,000	1,060,900						3,120,900		
						Pre-Implementation			5,463,635	5,627,544				11,091,179		
						Property										
						Imp/ Construction										
3	SH 6 Rocks Road walking and cycling project	NZTA Nelson	1) A sustainable transport system that is integrated with well planned development, enabling the efficient movement of people and goods 4) Communities have access to a safe transport system 5) Communities have access to a range of travel choices to meet their social, economic health and cultural needs	**Problem Statement** 3 Driver behaviour and unforgiving roads lead to unacceptable levels of death and serious injuries. **Problem Statement** 4 Roads and footpaths inadequately support our ageing population and increasing active travel demands creating barriers to utilise alternative modes of transport **Measure** – Safety, Mobility	HL	Indicative Business Case									$6,589,144	$6,589,144
						Detailed Business Case										
						Pre-Implementation			5,463,635	1,125,509				6,589,144		
						Property										
						Imp/ Construction										
4	SH60 Richmond to Upper Takaka Safety and Resilience Improvements	NZTA Tasman	3)Communities have access to a resilient transport system 4) Communities have access to a safe transport system	**Problem Statement** 2 Lack of redundancy, and susceptibility of the network to the impacts of climate change and high impact natural hazards increases the risk of losing community connectivity and impacting the economy. **Problem Statement** 3 Driver behaviour and unforgiving roads lead to unacceptable levels of death and serious injuries. **Measures** Road Safety, Resilience	HL	Indicative Business Case									$30,050,552	$30,050,552
						Detailed Business Case	412,000									
						Pre-Implementation		1,060,900								
						Property			1,092,727							
						Imp/ Construction				11,255,088	16,229,837			$27,484,925		
5	SH 60 Motueka Investigation	NZTA Tasman	1) A sustainable transport system that is integrated with well planned development, enabling the efficient movement of people and goods 4)	**Problem Statement** 3 Driver behaviour and unforgiving roads lead to unacceptable levels of death and serious injuries.		Indicative Business Case									$6,025,500	$6,025,500
						Detailed Business Case										

49 The NZTA have recently completed the Programme Business Case. They will now be progressing with the Detailed Business Case and consequently the total cost of the option for any Southern Link route or Rocks Road Walking and Cycling project has not been finalised. Under the high growth scenario, which Nelson has been experiencing, construction of a new state highway corridor could be brought forward into the timeframe of the next Nelson Long Term Plan and the Draft Nelson City Council Transport Asset Management Plan would need to respond accordingly.

Indicative Ranking	Activity Description	Organisation Responsible and Region	Contributes to Regional Objectives	Linkage to Problem Statement and Performance Monitoring Measure	Draft Profile	Phase	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	Summary Total	Total Cost	NLTF Share
			Communities have access to a safe transport system 5) Communities have access to a range of travel choices to meet their social, economic health and cultural needs	**Problem Statement** 4 Roads and footpaths inadequately support our ageing population and increasing active travel demands creating barriers to utilise alternative modes of transport **Measure** - Road Safety		Pre-Implementation	515,000							$515,000		
						Property	206,000							$206,000		
						Imp/ Construction		5,304,500						$5,304,500		
6	SH6 Blenheim to Nelson Improvements	NZTA Marlborough/ Nelson	3)Communities have access to a resilient transport system 4) Communities have access to a safe transport system	**Problem Statement** 2 Lack of redundancy, and susceptibility of the network to the impacts of climate change and high impact natural hazards increases the risk of losing community connectivity and impacting the economy. **Problem Statement** 3 Driver behaviour and unforgiving roads lead to unacceptable levels of death and serious injuries. **Measures** Road Safety, Resilience	HL	Indicative Business Case										$18,463,264	$18,463,264
						Detailed Business Case	257,500	265,225						$522,725		
						Pre-Implementation			546,364					$546,364		
						Property								$0		
						Imp/ Construction				5,627,544	5,796,370	5,970,261		$17,394,176		
7	Nelson and Richmond Urban Optimisation (NOF)	NZTA/ Nelson/ Tasman	1) A sustainable transport system that is integrated with well planned development, enabling the efficient movement of people and goods 2) Supporting economic growth through providing better access across the Top of the South's key journey routes 4) Communities have access to a safe transport system 5) Communities have access to a range of travel choices to meet their social, economic health and cultural needs	**Problem Statement** 1 Constraints on the transport network are leading to delays affecting freight, tourism, business and residential growth. **Problem Statement** 4 Roads and footpaths inadequately support our ageing population and increasing active travel demands creating barriers to utilise alternative modes of transport **Measure** - Travel time reliability	MM	Indicative Business Case										$2,879,573	$2,879,573
						Detailed Business Case	185,658	371,315						556,973		
						Pre-Implementation			1,092,727					$1,092,727		
						Property										
						Imp/ Construction							1,229,874	$1,229,874		
8	Saxon Growth Area Transport Projects	NCC Nelson	1) A sustainable transport system that is integrated with well planned development, enabling the efficient movement of people and goods 3)Communities have access to a resilient transport system 5) Communities have access to a range of travel choices to meet their social, economic health and cultural needs	**Problem Statement** 1 Constraints on the transport network are leading to delays affecting freight, tourism, business and residential growth. **Problem Statement** 2 Lack of redundancy, and susceptibility of the network to the impacts of climate change and high impact natural hazards increases the risk of losing community connectivity and impacting the economy. **Measure** - Travel time reliability	HML	Indicative Business Case										$11,630,000	$5,815,500
						Detailed Business Case	150,000	150,000	150,000	600,000				1,050,000		
						Pre-Implementation				570,000	600,000			1,170,000		
						Property					570,000			570,000		
						Imp/ Construction						4,420,000	4,420,000	$8,840,000		
9	SH 1 Picton Port Access Improvements	NZTA Marlborough	1)A sustainable transport system that is integrated with well planned development, enabling the efficient movement of people and goods 2) Supporting economic growth through providing better access across the Top of the South's key journey routes 4) Communities have access to a safe transport system	**Problem Statement** 1 Constraints on the transport network are leading to delays affecting freight, tourism, business and residential growth. **Problem Statement** 2 Lack of redundancy, and susceptibility of the network to the impacts of climate change and high impact natural hazards increases the risk of losing community connectivity and impacting the economy. **Problem Statement** 3 Driver behaviour and unforgiving roads lead to unacceptable levels of death and serious injuries. Measure – Safety, Resilience, Travel time reliability	HL	Indicative Business Case										$3,230,904	$3,230,904
						Detailed Business Case	515,000							$515,000		
						Pre-Implementation		530,450						$530,450		
						Property										
						Imp/ Construction			2,185,454					$2,185,454		

Indicative Ranking	Activity Description	Organisation Responsible and Region	Contributes to Regional Objectives	Linkage to Problem Statement and Performance Monitoring Measure	Draft Profile	Phase	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	Summary Total	Total Cost	NLTF Share
10	SH1 Koromiko Valley Pathway (Picton to Spring Creek)	NZTA Marlborough	1) A sustainable transport system that is integrated with well planned development, enabling the efficient movement of people and goods 2) Supporting economic growth through providing better access across the Top of the South's key journey routes	**Problem Statement** 3 Driver behaviour and unforgiving roads lead to unacceptable levels of death and serious injuries. **Problem Statement** 4 Roads and footpaths inadequately support our ageing population and increasing active travel demands creating barriers to utilise alternative modes of transport **Measure** – Safety, Mobility	ML	Indicative Business Case									$10,226,229	$10,226,229
						Detailed Business Case			546,364					$546,364		
						Pre-Implementation				562,754	579,637			$1,142,391		
						Property						2,388,105		$2,388,105		
						Imp/ Construction							6,149,369	$6,149,369		

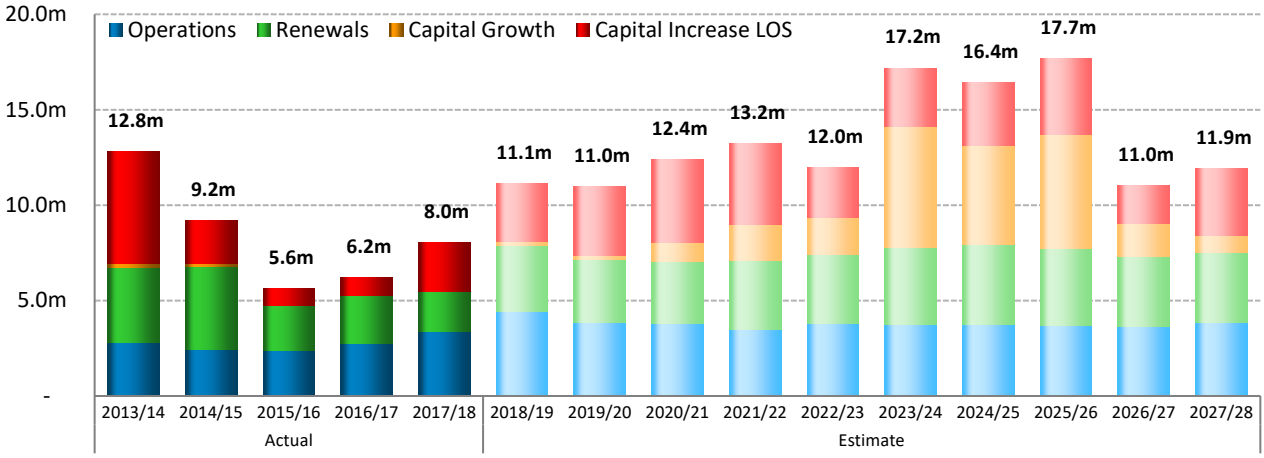
Table K – 2: Extract from Regional Land Transport Plan - Activities proposed within Nelson City (Refer Table 4 for significant Nelson and inter-regional activities)

Duration	Activity	Organisation Responsible	Contributes to Objectives	Performance Monitoring Measure	Total Cost	NLTF Share	Assessment Framework
2018-21	SH Low Cost Low Risk Programme	NZTA	Various	Various	$208,000	$208,000	NA
2018-21	NCC Low Cost Low Risk Programme projects <$1M	NCC	Various	Various	$10,002,000	$5,001,000	NA
2018-2021	New Footpath	NCC	Various	Various	$2,100,000	$1,050,000	NA
2018-21	NCC Low Cost Low Risk Public Transport projects <$1M	NCC	Various	Various	$820,000	$418,200	NA
2018-22	NCC Public Transport Terminus	NCC	Various	Various	$2,400,000	$1,224,000	TBC
2019/20-2020/21	Nelson TDM / Active travel	NCC	Various	Various	$500,000	$255,000	NA
2021-25	Quarantine / Nayland intersection upgrade	NCC	Growth and resilience	Various	$4,722,750	$2,408,603	TBC

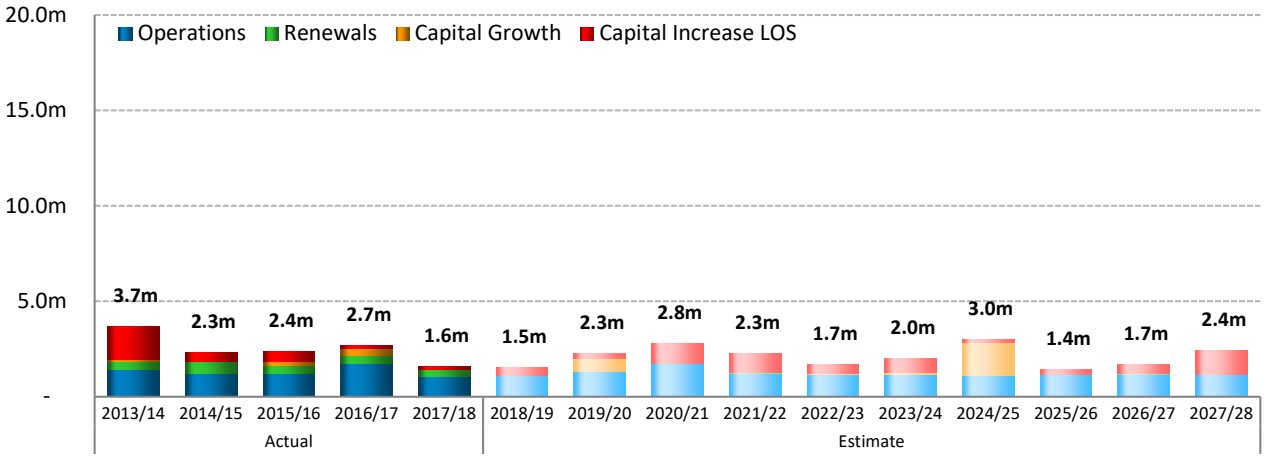
Duration	Activity	Organisation Responsible	Contributes to Objectives	Performance Monitoring Measure	Total Cost	NLTF Share	Assessment Framework
2018-23	Streetlight Improvement	NCC	Safety	Various	$1,300,000	$663,000	TBC
2018-23	Maitai shared path to Nelson east programme	NCC	Alternative transport choices	Various	$1,570,000	$800,700	TBC
2018-25	Cross Town Links Brook to Central - programme	NCC	Alternative transport choices	Various	$1,770,000	$902,700	TBC
2018-23	Stoke East West Cycle Connection	NCC	Alternative transport choices	Various	$1,225,000	$624,750	TBC
2018-22	UCP Tahunanui Cycle Network	NCC	Alternative transport choices	Various	$2,800,000	$933,000	TBC
2018/19	Electronic Bus Ticketing	NCC	Alternative transport choices	Various	$310,000	$201,500	NA
2018/19-2021/22	Marsden / Ridgeway Intersection Project	NCC	Growth and safety	various	$700,000	$357,000	TBC

APPENDIX L FINANCIAL EXPEDITURE BY COST CENTRE

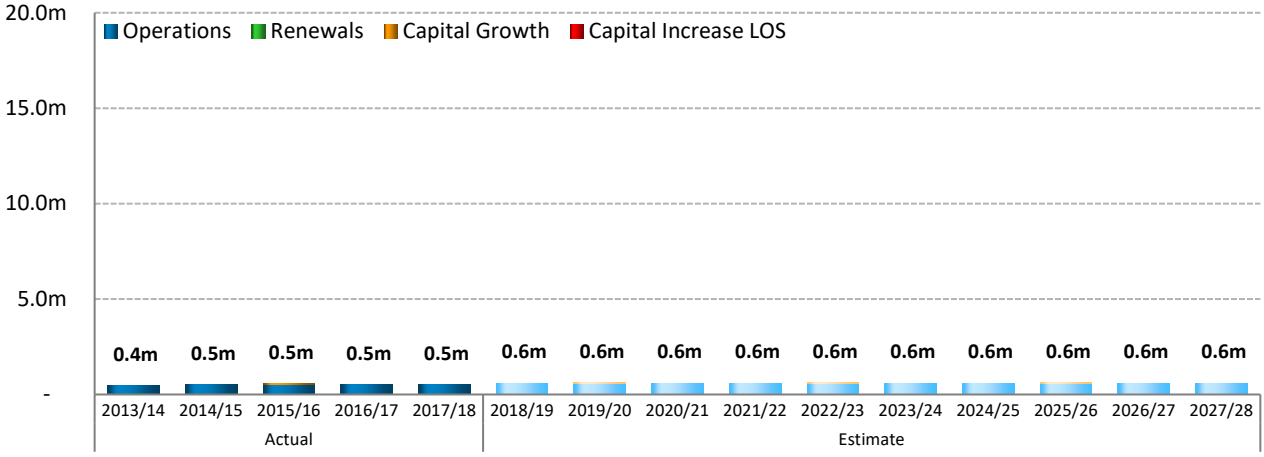
Graph L - 1: 5001 Subsidised Roading Expenditure



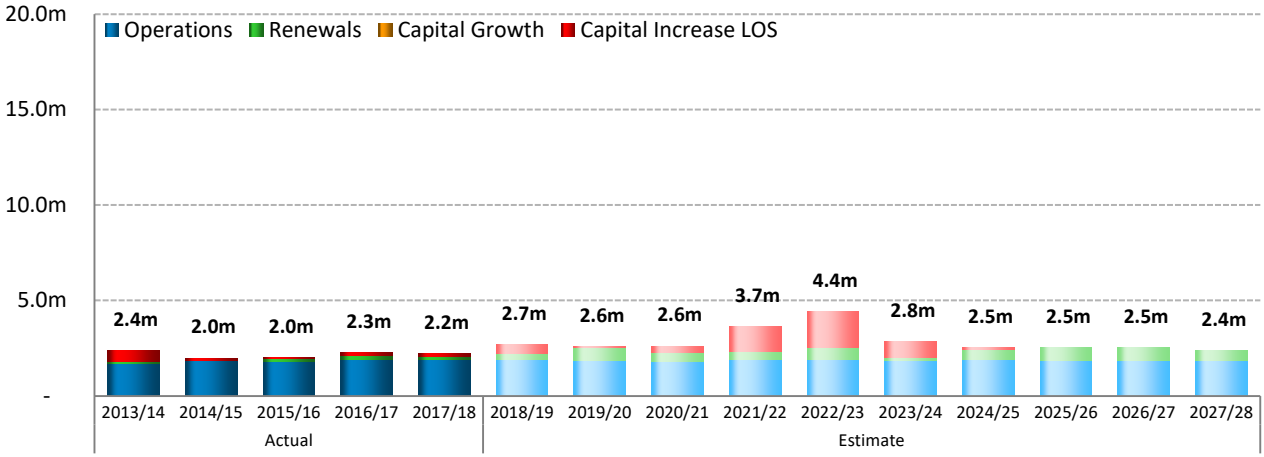
Graph L - 2: 5002 Unsubsidised Roading Expenditure



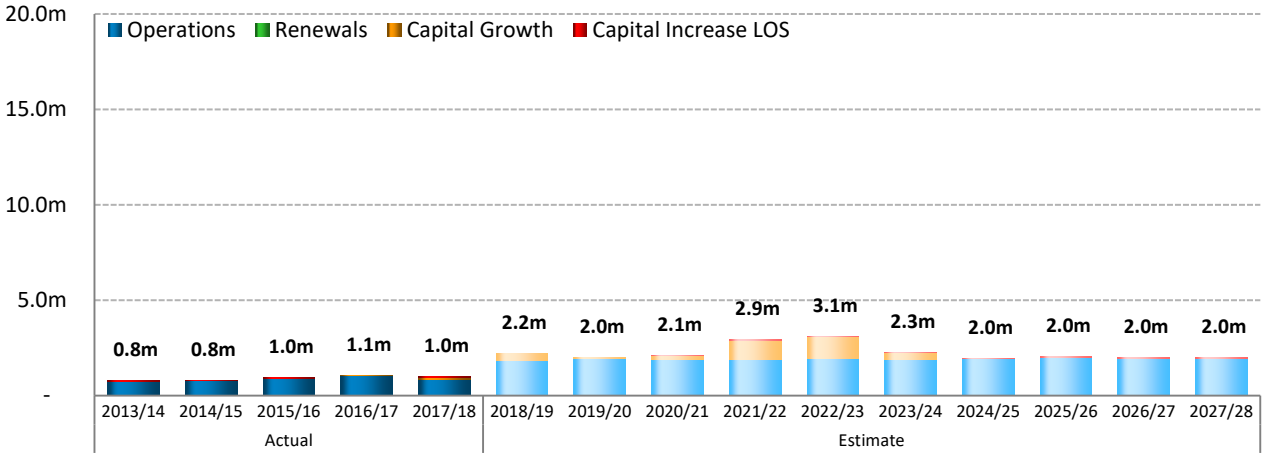
Graph L – 3: 5505 Parking Regulation Expenditure



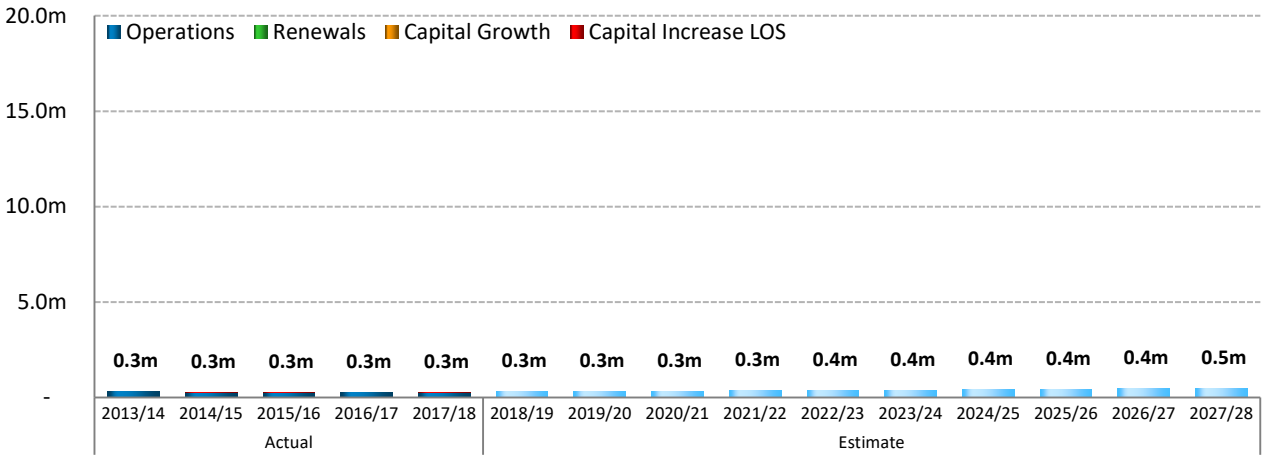
Graph L – 4: 5510 Parking & Centre Enhancement Expenditure



Graph L – 5: 5560 Public Transport Expenditure



Graph L – 6: 5570 Total Mobility Expenditure



APPENDIX M LOW COST LOW RISK AND NEW FOOTPATHS PRIORITY MATRIX

Table M – 1: Low Cost Low Risk and Footpaths Priority List

Ranking											
Minor Improvement	Structure	Homezone	Footpath	PT Minor Improvement	Include in Ranking	Project Category	Logged Date	Project ID	Name	Location/Site description. Include road name, RAMM Id and coordinates	Problem/Opportunity	Capex Estimate $ ex. GST
1	…	…	…	…	✓	Minor Improvement			Cable Bay catch fence	1635677,51, 5442019.27	Reactive work due to active slip above narrow section of Cable Bay Road. Does not need a business case	20,000
2	…	…	…	…	✓	Minor Improvement		3286	Athol Street stabilisation	1630432.80, 5440366.67 - 17 Athol Street	Land movement undermining road retaining wall. Legal opinion that Council could be liable for damages if not fixed and affects private property because knows about the issue. Likely loss of service on secondary collector road if retaining wall fails.	190,000
3	…	…	…	…	✓	Minor Improvement	10-May-18		Waimea Road southbound cycleway at Motueka Street intersection	Waimea Road x = 1622807, y = 5429143	Through cyclists southbound on Waimea Road have to cross the left turn traffic at the Motueka Street traffic lights. There have been 2 crashes in 4 years from this conflict. Crashes involving cyclists are typically injury and can be serious	200,000
4	…	…	…	…	✓	Minor Improvement	10-May-18		Whakatu Drive Underpass	Poorman Stream Whakatu Drive underpass x= 1618837, y= 5427592	Underpass was put in to cater for students accessing the adjacent college and intermediate and primary school. Underpass floods and has repeated gravel build-up from the stream that either needs clearing or blocks the cycleway	2,000
5	…	…	…	…	✓	Minor Improvement	10-Nov-17	3226	500179553226. WC341 Waimea Road Hampden Street intersection improvements		High crash rate, northbound cyclists on Waimea Road vs right turning vehicles at Hampden Street	220,000
6	…	…	…	…	✓	Minor Improvement	10-Nov-17	2168	500179552168. WC 324 Waimea Rd/Van Diemen Jct improvements		Reduce travel time delay on Waimea Road by restricting Van Dieman St flows dominating in the morning and evening peaks. Improve amenity on Van Diemen, Brougham, Collingwood with corresponding transfer to CBD Ring route.	1,479,350
7	…	…	…	…	✓	Minor Improvement	10-Nov-17	3213	500179903213. WC 341 CCTV at traffic signals		add CCTV to traffic signals to assist with traffic monitoring	140,000
8	…	…	…	…	✓	Minor Improvement	20-Mar-18	3170	TDC Champion Road roundabout improvement and cycle underpass	Champion Road Salisbury Road intersection	TDC led improve capacity of roundabout and provide underpass for cyclists and pedestrians to Main Road Stoke cycleway	750,000
9	…	…	…	…	✓	Minor Improvement			Washington Valley ped refuge and speed complaints	Washington Valley ped refuge and speed complaints, Pioneer Park	Speed on the corner of Washing ton Valley Road and proximity of playground. Curve on Washington Valley Road contributes to loss of control when speeding vehicles negotiate corner. See A1732260. Coordinate with Parks fence programme	100,000
10	…	…	…	…	✓	Minor Improvement	01-Jan-16		Waimea Road pedestrian refuge approx outside #13 Waimea Road	x=1623355, y=5429923 outside #13 Waimea Road	Requests for ped refuge to help people cross around the Cox Lane area. Outside #13 is the closest location that won't affect driveways or minimal effect on driveways	100,000
11	…	…	…	…	✓	Minor Improvement	10-Nov-17	3227	500179553227. WC341 Waimea Road Franklyn Street intersection improvements		High demand for College Students crossing Waimea Road. Demand for better access for college and NMDHB onto Waimea Road. Franklyn Street is link between Waimea Road and Vanguard Street	880,000

12	...	...	...	...	✓	Minor Improvement			Resolve flooding issues at QEII Drive Underpass	Maitai Walkway, QEII Drive Underpass	new underpass floods during high tide events causing people to cross busy SH6 where there are no crossing facilities and a high speed environment (est 70km/h). Underpass is a link in the coastal cycleway route	30,000
13	...	...	...	...	✓	Minor Improvement	10-Nov-17	1080	500179701080. WC 341 Streetlight Improvement		Streetlight improvement programme to add streetlights where illumination standards are not met due to old pole spacings or layout or additional illumination is justified	1,300,000
14	...	...	...	...	✓	Minor Improvement			Main Road Stoke cycleway Saxton Creek to Champion Road	Main Road Stoke cycleway Saxton Creek to Champion Road, Between Saxton Creek and Champion Road	Timed to coincide with stormwater upgrade in year 2-5	250,000
15	...	...	...	...	✓	Minor Improvement	16-May-18		Pedestrian refuge SH6 Tahunanui Drive		Requests for crossing facility to help pedestrian to cross SH6 between Tahunanui School and Annesbrook Drive	150,000
16	...	...	...	...	✓	Minor Improvement	28-May-18		Toi Toi Street upgrade	x=1622113, y=5430221 Toi Toi Street between Abraham Heights and Montreal Road	Subdivision planned for end of the road. No footpath, speed issues, high demand for school journey facilities e.g. cycleways	620,000
17	...	...	...	...	✓	Minor Improvement	30-Apr-18		Ross Road slump repairs	Ross Road	Road is slumping and risk of failure making road impassable because is only 1 lane practical width already	150,000
18	...	...	...	...	✓	Minor Improvement	10-Nov-17	2172	500176752172. Railway Reserve/Princes Dr cycle crossing upgrade			104,000
19	...	...	...	...	✓	Minor Improvement	10-Nov-17	3233	500179803233. WC341 Atawhai Shared path extension to Todds Valley		Due to growth in the Todds Valley/Nelson North area there is demand to extend the Atawhai Drive off road walking and cycling facilities north. Possible larger contribution from NZTA because the likely route is alongside the state highway to provide transport choice.	420,000
20	...	...	...	...	✓	Minor Improvement	10-Nov-17	3167	500176553167. WC 341 Market Rd Intersection improvements		traffic signals	910,000
21	...	...	...	...	✓	Minor Improvement	10-Nov-17	3035	500179553035. WC 341 St Vincent Street Toi Toi Street safety improvements		intersection improvements to improve poor safety performance and to cater for growth in the Victory area	400,000
22	...	...	...	...	✓	Minor Improvement		3026	Wigzell Area wide traffic calming and Beachville	All of Kawai Street South	re Neighbourhood Support letter, investigate. Has been transferred to Homezone/shared zone/traffic calming programme for area wide treatment.	300,000
23	...	...	...	...	✓	Minor Improvement	10-Nov-17	3026	500179553026. WC341 Sharedzone - Wigzell		Minor works to lower traffic speeds and improve pedestrian and cycle access to road space	300,000
24	...	...	...	...	✓	Minor Improvement	10-Nov-17	3175	500176753175. WC341 Stoke Centre Traffic Calming and Pedestrian Safety Work		Works identified in the Stoke Centres study to improve traffic and pedestrian facilities	10,000
25	...	...	...	...	✓	Minor Improvement			Waimea Road Pedestrian Refuge	Waimea Road Pedestrian Refuge, Near Russel St Flats/ Brunner Walkway/nth bound walkway.	Pedestrian desire line across Waimea Road between bus stops and residential areas. No facility for crossing 2500vph arterial. Propose a central refuge.	60,000
26	...	...	...	...	✓	Minor Improvement			Waimea Road Ped refuge	x= 1622405, y=5428585 outside Russell Flats	From Waimea Road enhancement study. Project is currently unallocated with Capital Projects. Site selection for a refuge is expected to take time to negotiate with residents because any location will affect driveways.	100,000
27	...	...	...	...	✓	Minor Improvement	10-Nov-17	3151	500179553151. WC341 Maitai path to Anzac Park connection		Connection of Railway Reserve arterial cycle route with Coastal arterial cycle route at Maitai Path/Rutherford Park area.	600,000
28	...	...	...	...	✓	Minor Improvement	28-May-18		Poorman Stream walkway	x=1619664, y=5426715 alongside Poorman Stream between Main Road Stoke and Neale Ave	No connection for pedestrians and cyclists. High demand because potentially on school route and provides connections between Railway Reserve and Isel Park ped and cycle facilities	560,000
29	...	...	...	...	✓	Minor Improvement			The Ridgeway/Arapiki Road - Pedestrian safety improvements	Intersection of Arapiki Road and The Ridgway	Children coming down Arapiki to cross Ridgeway have poor sightlines to north. Tighten left turn radius, construct pedestrian build-outs. 2nd issue at intersection raised : on western side , the Arapiki Rd crossing point does not have good visibility especially for school kids. Also traffic turning left from Ridgeway into Arapiki, turn left at main intersection not slip left turn, pedestrians not expecting them to turn left there. Arapiki Road is an intersection in the Stoke Foothills assessment. This project is programmed	50,000

											for 2018/18 to be considered once the involvement if this intersection is known for Ridgeway traffic, i.e. will it remain, take more traffic or be a roundabout or changed priority etc. See A1724094 peds having difficulty crossing the Ridgeway north of Arapiki Road	
30	…	…	…	…	✓	Minor Improvement	10-Nov-17	3130	500176553170. WC341 Champion Salisbury capacity and cycle crossing upgrade		Increase capacity at the Champion Road/Salisbury Road roundabout, in conjunction with TDC	150,000
31	…	…	…	…	✓	Minor Improvement	10-Nov-17	1532	500176551532. WC 341 MI Waimea Ridgeway		Assessment for Growth projects and planning for minor works at the Waimea Road Ridgeway intersection to slow speeds of traffic entering The Ridgeway	180,000
32	…	…	…	…	✓	Minor Improvement	10-Nov-17	3239	5001 7955 3239. WC341 Railway Reserve Improvement programme		Improvement opportunities in conjunction with resurfacing of Railway Reserve	630,000
33	…	…	…	…	✓	Minor Improvement			Gloucester St - Pedestrian crossing	Gloucester Street immediately north-west of Vanguard Street	Difficult for pedestrians to cross Gloucester Street. High speeds of vehicles leaving roundabout into Gloucestser street and poor sightlines especially south past Post Boy Hotel to Vanguard Street	700,000
34	…	…	…	…	✓	Minor Improvement	10-Nov-17	3009	500179553009. WC341 Toi Toi/Vanguard intersection upgrade		intersection upgrade for growth in the Toi Toi street area	754,000
35	…	…	…	…	✓	Minor Improvement	10-Nov-17	3224	5001 7980 3224. WC341 Nile Street cycle facilities		Connection of Nile Street East cycle facilities to Central School and Willow Walk to provide transport choice	300,000
36	…	…	…	…	✓	Minor Improvement	10-Nov-17	3235	500179803235. WC341 Teal Valley Road to Cable Bay Road		Project to provide transport choice. Due to the population growth and development in the Lud Valley, Teal Valley and Cable Bay Road area, there is a need to provide off-road connections between these valleys and to Hira School, shop and local reserve. Hira School is on a limited site on the State Highway and is used by the community for recreation purposes. Cable Bay is becoming a significant visitor destination with several tourism enterprises as well as the walkway and foreshore related recreation activity. Possible larger contribution from NZTA because the likely route is alongside the state highway	600,000
37	…	…	…	…	✓	Minor Improvement	10-Nov-17	3234	500179803234. WC341 Wakapuaka Hall Reserve to Glen Road		Wakapuaka has tennis courts, a community hall, a pre-school and the Country Club. The development of the pre-school centre has been the catalyst for the reinvigoration of Wakapuaka as the social and recreational centre for the community. To support the use of the Wakapuaka Hall Reserve there is a need for an off-highway connection along the main road to the Glen Road turn off. Council will need to consider options for providing the connection including Transport asset solutions to provide transport choice. Possible larger contribution from NZTA because likely route is adjacent to the state highway	600,000
38	…	…	…	…	✓	Minor Improvement	10-Nov-17	3214	500176553214. WC 341 Toi Toi Emano Street intersection			600,000
39	…	…	…	…	✓	Minor Improvement	10-Nov-17		Cycle crossing Atawhai Cycleway Marybank intersection		difficult intersection adjacent 80km/h state highway for primary school children to cross to get to Clifton Terrace School	100,000
40	…	…	…	…	✓	Minor Improvement	30-Apr-18		Nayland Road ped refuge	x=1618472, y=5426221 Nayland Road Orchard Stream walkway	Pedestrians need facility to cross busy Nayland Road	150,000
41	…	…	…	…	✓	Minor Improvement			Continuation of Maitai Path past SHA development at Para Para Rd	Para Para Road	Completion of path at full width past new SHA development on Para Para Rd. Need to tie in with Development timeframe - was this done with Rutherford Park - needs to tie in with Anzac to Maitai 3151?	200,008
42	…	…	…	…	✓	Minor Improvement			Gloucester St - Pedestrian crossing	Gloucester Street | Gloucester Street immediately north-west of Vanguard Street	People First group, want crossing between pub & video store. A simple pedestrian refuge in this location will not provide the required level of safety due to the hotel being at the edge of the footpath and obstructing visibility. A significant re-design of the intersection would be required and may not be feasible. The cost would likely be greater than $300,000 for a set of traffic signals for example.	700,000
43	…	…	…	…	✓	Minor Improvement			Tukuka Street k and C	Tukuka Street between Waimea Road and Kawhai Street	There is no formal footpath outside the day-care centre resulting in poor footpath shape and parking in the footpath zone. The road is due for reseal 2018/19. Opportunity to install kerb before reseal	45,000
44	…	…	…	…	✓	Minor Improvement	10-Nov-17	3032	500179553032. WC341 Airport Bridge Replacement		Improve LoS to shared path. (increase width and remove steep grades). Potential to collaborate with airport.	400,000

45	...	...	...	...	✓	Minor Improvement			Crossing facility Seymour Ave	Crossing facility Seymour Ave, northern end/intersection with Scotland Street	2017 Annual Plan Submission 12467 from Andrea Warn. The residents of Seymour Avenue strongly urge the Nelson City Council to consider installing a raised crossing/path, or a safe crossing point, on at least one end of Seymour Avenue, so that pedestrians and especially The Brook school children can safely cross on their way to all schools from the Brook Valley. Seymour Avenue is the main feeder route for all Brook school children to Nelson Boys and Girls Colleges, Nelson Intermediate, St Joseph's and Nelson Central. I have witnessed multiple near misses, car vs. pedestrian/bike, at the far end of Seymour Ave. adjacent to the bridge and also at the intersection junction of Seymour Ave/Scotland Street. Children cannot see past the parked cars and SUV's waiting at the back entrance to St. Joseph's, whilst checking left, right and behind them also. If the NCC wants kids and residents to actively get to school and places of work, thereby reducing congestion and improving health, it must install the infrastructure to safely allow this to happen. Thank you.	100,000
46	...	...	...	...	✓	Minor Improvement	10-Nov-17	3176	500176753176. WC341 Stoke Pedestrian Refuges		Additional crossing facilities for pedestrians at Main Road Stoke	300,000
47	...	...	...	...	✓	Minor Improvement	10-Nov-17	3172	500176553172. WC324 Polstead Main Road Stoke Intersection Upgrade		Intersection improvements at the Polstead Road intersection with Main Road Stoke to accommodate growth in the Stoke Foothills area	1,360,000
48	...	...	...	...	✓	Minor Improvement	16-May-18		Railway Reserve crossings in Stoke		Lighting issues, and issues with shape of the traffic deflections that is too hard for big vehicles to negotiate resulting in damage to the facilities - needs to be checked	100,000
49	...	...	...	...	✓	Minor Improvement			Grove St	Grove St, Between Collingwood Street and Tasman Street	Long straight section with few cars parked encourages higher speeds. Kindergarten on this section. Allows for build-outs or chicane.	20,000
50	...	...	...	...	✓	Minor Improvement	10-Nov-17	2947	500179552947. WC 341 Muritai SH6 intersection		Intersection improvements at the Muritai Street intersection with SH6 Tahunanui Drive to reduce pedestrian severance and reduce attractiveness of Muritai Street as a through route	50,000
51	...	...	...	...	✓	Minor Improvement			Van Dieman Refuge near Fairfield Park	Van Dieman Street	Proposed under WCS package but costly and decision to construct waiting on assessment of likely cross town route before proceeding	190,000
52	...	...	...	...	✓	Minor Improvement	28-May-18		Marsden Valley Road cycleway	x=1620619, y=5425900 between Ridgeway and Marsden Road	Existing path is not suitable standard for cyclists. Upgrade to cater for cyclists and pedestrians. Connects to Nelson Christian Academy. Provides off road alternative for new residential areas in Marsden Valley. Connects to Isel Park facilities	50,000
53	...	...	...	...	✓	Minor Improvement	10-Nov-17	2199	500179802199. WC341 Waimea Road Retaining Wall at Snows Hill		Replace/upgrade existing retaining wall on lifeline route to improve resilience	980,000
54	...	...	...	...	✓	Minor Improvement			Jenkins Creek Shared Path	Jenkins Creek between Beatson and Waimea Rds	Pinch point. Path users go over private property when going around bend. Potential conflict with manoeuvring vehicles	130,000
55	...	...	...	...	✓	Minor Improvement	01-Jan-18	3174	Isel Place to Christian Academy cycle connection	1620227, 5426162	Parks plan to concrete the path between Isel Place and Christian Academy widening path to 3m would provide for cyclists as well as pedestrians and provide an off road connection from Marsden Valley to Stoke as well as the Christian Academy. Include a crossing facility on the Ridgeway	150,000
56	...	...	...	...	✓	Minor Improvement	10-Nov-17	2933	500176552933. WC324 Main Rd Stoke/Marsden Rd		Intersection improvements at the Marsden Road intersection with Main Road Stoke to accommodate growth in the Stoke Foothills area. Scope to be coordinated with ID 1375	1,120,470
57	...	...	...	...	✓	Minor Improvement	10-Nov-17	3168	500176553168. WC 341 Gloucester Street intersection improvements		intersection improvements for safety and growth in the Victory area.	1,720,000
58	...	...	...	...	✓	Minor Improvement	10-Nov-17	3174	500176803174. WC452 Stoke East West Cycle Connection		Cycle facilities connecting Stoke Foothills to Railway Reserve. Pedestrian refuge to connect Isel park in 18/19 path extension in following years	1,225,000
59	...	...	...	...	✓	Minor Improvement			Speed complaints Seymour Ave	Seymour Ave	Speed complaints and boy racers in Seymour Ave	100,000
60	...	...	...	...	✓	Minor Improvement	28-May-18		Mount Street and Konini Street upgrade	x=1623157, y=5430328	Roads have no footpath high speeds and requests for traffic calming and pedestrian facilities. Project to align with stormwater upgrade in the area.	780,000
61	...	...	...	...	✓	Minor Improvement			Main Road Stoke - Footpath connection north side between Bus Stop and Elm Street	Main Road Stoke - Footpath connection north side between Bus Stop and Elm Street,	Land purchase required - Refer A1660174 &A1659037 for further info. Likely power pole relocation required. Ped refuge location design done.	300,000

									between Elm Street and Saxtons Field entrance		
62	…	…	…	…	✓	Minor Improvement			Shakespeare Walk/Bridge	Shakespeare Walk	Pedestrian conflict - To be mitigated with pedestrian buildouts on both sides of the road.	100,000
63	…	…	…	…	✓	Minor Improvement			Nayland Road Pedestrian Refuge	364 Nayland Road	Linking both ends of shared path (received 03-03-2015 from Cheryl). There is adequate road width and distance from intersection and driveways to fit refuge. Will remove quite a long length of parking both sides of the road	200,006
64	…	…	…	…	✓	Minor Improvement			Main Road Stoke - Fill deep ditch in co-ordination with parks project	Main Road Stoke - Fill deep ditch in co-ordination with parks project, adjacent Saxtons Field	Culverts to headwalls created during construction of speed limit reduction measures at Elm St created and modified existing run off road hazards. Parks wish to fill ditch in short to medium term and transport propose to part fund rather than invest now in traversable culvert headwalls that will be redundant in short term. Not likely to be a subsidised project unless traffic benefits identified. Need to coordinate with Parks. Needs study of sw implications for Saxtons Field and road and pipe sizing etc.	300,000
65	…	…	…	…	✓	Minor Improvement			Strawbridge Square Car Park-Footpath narrowing	Strawbridge Carpark	Driveway from Songer Street is very narrow. Cost depends on solution chosen. At lower end remarking and signing the driveway for exit only would solve the issue. Defer to be part of Stoke Centres review and upgrade	50,000
66	…	…	…	…	✓	Minor Improvement			Arrow St/Quebec St intersection - Safety improvements	Intersection of Arrow Street and Quebec Road	Small flush roundabout to allow for safer right turn movements from downhill approach of Arrow Street.	30,000
67	…	…	…	…	✓	Minor Improvement	10-Nov-17	3232	500176553232. WC341 Market Road/Bishopdale Ave Intersection improvements		Intersection improvements in conjunction with SW secondary flow path changes to improve right turning provisions for Bishopdale Ave off market Road. Lack of space at intersection due to high HCV traffic tracking over RTB. Needs to be coordinated with York Stream secondary flow paths project programme for design in 2022.	230,000
68	…	…	…	…	✓	Minor Improvement	10-Nov-17	3171	500176553171. WC341 Polstead Suffolk Intersection Upgrade		Intersection improvements at the Polstead Road intersection with Suffolk Road to accommodate growth in the Stoke Foothills area	260,000
69	…	…	…	…	✓	Minor Improvement	10-Nov-17	3173	500176553173. WC341 Ngawhatu Suffolk Intersection		Intersection improvements at the Ngawhatu Road intersection with Suffolk Road to accommodate growth in the Stoke Foothills area	560,000
70	…	…	…	…	✓	Minor Improvement	10-Nov-17	1375	500176551375. WC 341 Marsden Valley Ridgeway Upgrade		Intersection safety improvements at the Marsden Road intersection with The Ridgeway to accommodate growth in the Stoke Foothills area. Scope to be determined in coordination with ID2933	615,000
71	…	…	…	…	✓	Minor Improvement			Quebec Rd - Speed reduction	Quebec Road for 600m east of Prince Drive	Traffic calming required along straight connecting to Princes Dr. Straight section is out of character with the remainder of Quebec Road. Traffic calming will reduce speeds on this section to be similar to the rest of the route.	50,000
72	…	…	…	…	✓	Minor Improvement			3080 Nikau Street new footpath	Nikau Street, Polstead Road to Palm Ave	part of new footpath connection programme. Top up of budget	100,008
73	…	…	…	…	✓	Minor Improvement			Vanguard St - Protection of shared path from parked cars	Vanguard Street	Need some sort of protection to prevent vehicles parking on Shared path. This is an enforcement issue.	70,000
74	…	…	…	…	✓	Minor Improvement			Nile Street/Maitai Valley Road intersection upgrade	Nile Street/Maitai Valley Road intersection	Poor safety record at this intersection caused by limited visibility and poor alignment. Allows for minor kerb changes and calming to reduce speeds and improve stop position.	100,000
75	…	…	…	…	✓	Minor Improvement			Speeding complaints - Quebec Rd	Quebec Rd		
76	…	…	…	…	✓	Minor Improvement			repair Whitby road retaining wall - footpath	Whitby Road, just above Richardson Street intersection	Builders vehicles have been parking on the footpath and the load has failed the retaining wall. The failure is only affecting the footpath so does not qualify under Mtce/renewal subsidy codes	130,000
77	…	…	…	…	✓	Minor Improvement	10-Nov-17	3169	500176553169. WC341 Montreal Princes Drive Intersection		New connection between Princes Drive and Montreal subdivision for growth and network resilience	1,000,000
78	…	…	…	…	✓	Minor Improvement	30-Apr-18		Montreal Road traffic calming	Montreal Road between Toi Toi Street and Abraham Heights	Speed complaints and wide road that permits high speeds through residential area. There is a second line for footpath improvements and could be progressed together	150,000

79	...	...	...	...	✓	Minor Improvement	30-Apr-18		Abraham Heights traffic calming	Abraham Heights	Speed complaints and wide road that permits high speeds through residential area. There is a second line for footpath improvements and could be progressed together	200,000
80	...	...	...	...	✓	Minor Improvement	10-Nov-17	3027	500179553027. WC341 Sharedzone - Mayroyd		Minor works to lower traffic speeds and improve pedestrian and cycle access to road space on a street where no footpaths or separation are feasible	30,000
81	...	...	...	...	✓	Minor Improvement	10-Nov-17	3215	500176553215. WC324 Arapki Road Upgrade		Project to coordinate drainage and retaining wall renewal of Arapiki Road. Needs to coordinate with SW upgrade project. Needs to consider crash history on Arapiki Road.	650,000
82	...	...	...	...	✓	Minor Improvement			Natalie Street new footpath connection	Natalie Street new footpath connection, St Vincent Street to end	Footpath requested by Ideal Services (SR1734478) for disabled persons to access workshops from St Vincent Street	20,000
83	...	...	...	...	✓	Minor Improvement		2200	Near misses with cyclists driving out of Marsden Cemetery	Marsden Valley Road	Conflict between cyclists on path and cars exiting cemetery driveway. Road marking and signage to inform drivers of cycle activity.	50,000
84	...	...	...	...	✓	Minor Improvement			Kea Crossing - Manuka Street Ford	Kea Crossing - Manuka Street Ford, Willow Walk intersection of Manuka Street	Refer A1576299	25,000
85	...	...	...	...	✓	Minor Improvement	10-Nov-17	3094	500176553094. WC324 Hill Street to Suffolk Road Link		New road connection to access subdivisions along Stoke Foothills between Richmond and Stoke	10,800,000
86	...	...	...	...	✓	Minor Improvement	10-Nov-17	2537	500179802537. WC 341 CBD Cycle parking facilities		New CBD cycle parking facilities to encourage transport choices	45,000
87	...	...	...	...	✓	Minor Improvement	10-Nov-17	3025	500179553025. WC341 Sharedzone - Beachville Cres		Minor works to lower traffic speeds and improve pedestrian and cycle access to road space on a street where no footpaths or separation are feasible	150,000
88	...	...	...	...	✓	Minor Improvement		3026	Tipahi Street K and C and footpath	Tipahi Street between Franklyn Street and Eckington Terrace	Gravel and ice make footpath that is flush with road slippery especially in the winter time. Opportunity to install kerb before reseal. Services upgrades are planned 7-10 years out.	120,000
89	...	...	...	...	✓	Minor Improvement			Franklin St/Boys College/Hampden St	Franklin Street/Hampden Street	Annual Plan submission to tidy up Franklin St, improve parking in Hampden St, safety issues. Likely to get very close or exceed the $300,000 limit so might be better as a project.	500,000
90	...	...	...	...	✓	Minor Improvement	28-May-18		Jenkins Stream Pascoe to Airport	x=1619923, y=5428390 adjacent Jenkins Stream between Pascoe Street and Quarantine Road	Potential to provide off road connection through the industrial area of stoke	550,000
91	...	...	...	...	✓	Minor Improvement	10-Nov-17	2624	500179552624. WC 341 Nile St/Clouston Tce intersection improvement		Intersection improvements at Nile Street/Clouston Tce in conjunction with Nile Street Stormwater project - likely to be complete 17/18	7,000
92	...	...	...	...	✓	Minor Improvement	10-Nov-17		Dodson Valley Atawhai Cresent intersection - monitor for crashes. An intersection upgrade is likely in the future because of the growth in the Dodson Valley area		Traffic growth causing stress in intersection capacity and safety	800,000
93	...	...	...	...	✓	Minor Improvement			Erosion Airlie Street The Glen		A1717919/A1717922	200,000
94	...	...	...	...	✓	Minor Improvement			remove wall Kidson Place for kerb and batter	Kidson Place adjacent Carters	Road was widened historically to include parking, but retaining wall is rotating so needs to be repaired. Cheapest option is to remove parking, and batter to replace wall.	20,000
95	...	...	...	...	✓	Minor Improvement		2200	Widening of footpath to shared path standard on Marsden Valley Rd, east of Sanctuary Drive	Marsden Valley Road Footpath.	Growth in Marsden Valley required higher level of service for pedestrians to be separated from higher volumes of traffic. To provide continuity of off road cycling facilities east of Sanctuary Dr, could use existing bridge over stream to get back onto Marsden Valley Rd east of Marsden Park.	100,000
96	...	...	...	...	✓	Minor Improvement			Speeding complaints - Moana Ave	Moana Ave		
97	...	...	...	...	✓	Minor Improvement			Monaco toilet block parking	Monaco toilet block parking, by toilet block in reserve on corner of Point Road and Martin Street	see email A1827821. Car drove into parked vehicle. Sun strike can be an issue. High parking demand for people including commercial vehicle drivers to access toilet block and no provision for parking. Would need an indented parking area. Possible greater benefits than just transport if	30,000

									access to toile block is improved, so benefits greater than just the neighbourhood are included	
98	...	...	...	...	✓	Minor Improvement		Examiner St - Speed humps	Examiner Street 30m west of Trafalgar Street South	Speed humps too severe. They are likely to be achieving the objective of slowing vehicles down. The profile of the humps complies with the relevant design guidelines.	10,000
99	...	...	...	...	✓	Minor Improvement		Marybank Road - Roundabout improvements	Intersection of Marybank Road and Noel Jones Drive	Larger trucks will struggle to track through intersection but this is uncommon and only really during construction. Tresillian Ave will be connected through in the next couple of years so an alternative route will be available.	30,000
100	...	...	...	...	✓	Minor Improvement		Speeding complaints - Seymour Ave	Seymour Ave	Temporary works installed April 2017. Needs speed measures up to 6months after to confirm speed drop compared to pre-treatment counts. Needs a design and permanent works if effective and treatment worked	
101	...	...	...	...	✓	Minor Improvement		Speeding complaints - Tipahai St	Tipahai St		
102	...	...	...	...	✓	Minor Improvement		Speeding complaints - Campbell St	Campbell St		
103	...	...	...	...	✓	Minor Improvement		Speeding complaints - Princes Drive	Princes Drive		
104	...	...	...	...	✓	Minor Improvement		Speeding complaints - Seafield Tce	Seafield Tce		
105	...	...	...	...	✓	Minor Improvement		Speeding complaints - HAMPDEN St	HAMPDEN St		
106	...	...	...	...	✓	Minor Improvement		Karaka St - Traffic calming	Karaka Street north of Orchard Street	Traffic calming by Council flats. Some has been done already but 200m between build-outs so an additional build-out needed.	20,000

Table M – 2: Network Deficiencies - Footpaths

NETWORK DEFICIENCIES - FOOTPATHS				
Original description	**Road/Walkway Name**	**Location**	**Notes**	**Construction estimate**
Footpath in front of 413 Waimea Road	Waimea Road	Between Chings Road and The Ridgeway - South side	Evidence of high use by school children.	$ 33,750.00
Songer Street footpath, south side west of Nayland Rd 360m	Songer Street	Between Nayland Road and Durham Street - South side	Some levels issues, driveway, gardens on road reserve.	$ 85,500.00
Bronte Street footpath behind St Joseph's	Bronte Street	Between Scotland Street and Collingwood Street	No footpath along the back of St Joseph's School. Trees and bank make construction more expensive.	$ 72,000.00
Centennial Road footpath	Centennial Road	Full length on south side.	Gap in footpath on south side, popular with school children.	$ 45,000.00
Kea Street footpath	Kea Street	Full length on north side.	Tracks on grass show desire lines, crossings at intersection with Kaka St lead you nowhere, just into middle of intersection	$ 29,250.00
Nikau Street footpath	Nikau Street	Full length on south side.	Full length to provide higher level of service for pedestrians accessing back of school in particular.	$ 69,750.00
Palm Avenue footpath	Palm Avenue		Between Nikau Street and Apple Lane.	$ 20,250.00
Manson Avenue footpath	Manson Avenue		Full length. Close to school.	$ 110,250.00

NETWORK DEFICIENCIES - FOOTPATHS				
Original description	**Road/Walkway Name**	**Location**	**Notes**	**Construction estimate**
Stanley Crescent footpath	Stanley Crescent	From Beachville Crescent to end - South side	Some visibility issues over crests.	$ 108,000.00
Emano Street footpath (Lower section)	Emano Street	Piko Street to Orsman Crescent	Footpath on one side only. High proportion of children in the area walk to school.	$ 222,000.00
Emano Street (Upper section)	Emano Street	Orsman Crescent to end	No footpath. Part of walkway to the top of port hills.	$ 192,000.00
Arapiki Road footpath	Arapiki Road	South side west of crest	80m of footpath between No 24 and 32, south side to improve schoolchildren visibility to cross Arapiki Rd, avoids crossing at toe of hill (poor visibility) or at Ridgeway/Arapiki.	$ 64,000.00
Scotia Street footpath	Scotia Street	Anglia Street to 140m north	Visibility around corner difficult, new house on corner will complicate lack of footpath.	$ 168,000.00
Maire Street Footpath	Marie Street	50m at end	Involves sale of land. Links end of existing footpath to walkway at end of road.	$ 40,000.00
Maitai Path	Maitai Path	Adjacent to Whakatu land	Length of Maitai path to be upgraded once Whakatu redevelop the site at 16 Paru Paru Road. Agreements in place to allow widening once they establish café outdoor area on neighbouring park.	$ 35,000.00
Brougham Street footpath	Brougham Street	East of Collingwood Street	Footpath is missing on southern side. Very difficult to construct as all driveways would need to be regraded for a long way back into properties. No opportunity to join to the Scotland Street footpath as road gets too close to boundary.	$ 300,000.00
Dodson Valley Road footpath	Dodson Valley Road	South side between Winton Place and Atawhai Crescent	Hill in the way. Not feasible to provide footpath on this side of the road and still provide access to properties. Have added pedestrian build-outs to minor improvements list instead.	$ 372,000.00
Bledisloe Avenue footpath	Bledisloe Avenue	In front of numbers 2-16	Missing section in front of 2-16 leads to Bledisloe Reserve.	$ 29,250.00
Reeves Street footpath	Reeves Street	West side for 70 m north of Aldinga Avenue	Restricted visibility when crossing at end of footpath on north side.	$ 35,000.00
Montreal Road footpath	Montreal Road	South of Toi Toi Street	Footpath on one side only.	$ 252,000.00
Joyce Place footpath	Joyce Place	Full length	Footpath on one side only. Is a new subdivision and in a short cul-de-sac so not a priority.	$ 36,000.00
Washington Road footpath	Washington Road	East of Britannia Heights intersection	No footpath on residential side of road, 4 houses affected, steep bank and tight road alignment. Children have to cross road to reach footpath at bottom of bank. No feasible option for providing a footpath on the west side of the road and still being able to provide vehicle access to the properties affected.	$ 192,000.00
Rangiora Terrace footpath	Rangiora Terrace	Between end of existing footpath and Tamaki Steps	Rough surface from base of steps onto existing footpath, No footpath around Rangiora Tce intersection and over rise towards sea. Too dangerous and have to cross road. Rangiora Tce upgrade no longer in AMP. Rough surface to be dealt with by maintenance.	$ 12,000.00
The Ridgeway footpath	The Ridgeway	From Somerset Tce towards Kauri St on the east side	Footpath is in poor repair, when repaired can it be moved 1 metre back from traffic lanes, peds are very close to moving traffic lanes.	$ 210,000.00
Jellicoe Ave footpath	Jellicoe Avenue	Bledsloe Ave to Railway Reserve	Well-worn path from Bledsloe Ave to Railway Reserve.	$ 27,000.00
Airlie Street footpath	Airlie Street	Full length	No footpath.	$ 336,000.00

NETWORK DEFICIENCIES - FOOTPATHS				
Original description	**Road/Walkway Name**	**Location**	**Notes**	**Construction estimate**
Bridge on approach to the Airport/Quarantine Rd	Quarantine Road		Bridge on approach to Quarantine Rd/Bolt Rd roundabout on Quarantine has no footpath on south side. Some pedestrians to airport and general walkers.	$ 200,000.00
Douglas Rd to Observatory Hill walkway	Off Road	Off Road	Off road recreational route. Needs to be part of any development of the land above Douglas Road. Over private property.	$ 600,000.00
Observatory Hill to Emano St walkway	Off Road	Off Road	Off road recreational route. Needs to be part of any development of the land above Emano Street. Over private property.	$ 270,000.00
Stanley Crescent to Washington Rd walkway	Off Road	Off Road	Off road recreational and transport route. Over private property.	$ 240,000.00

APPENDIX N FOOTPATH REHABILITATION SITES AND NEW FOOTPATH CONNECTION SITES

Proposed Footpath Rehabilitation sites - Draft Treatment Selection 2015/2018

Table N – 1: Proposed Footpath Rehabilitation sites

Footpath Renewal Surveys – All Need Site Validation and Treatment Confirmation															Yearly Total		
															$ 392,530	$ 407,200	$ 400,910
Road	Road Name	Start	End	Carriageway Start Name	Carriageway End Name	Carriageway Hierarchy	Side	Width	Length	Area	Condition	Profile	Ranking = Condition X Profile	Surveyor's Comments	cost	18/19 footpath	19/20 footpath	20/21 footpath
95	DOMETT STREET (95)	14	215	TASMAN ST	NILE ST EAST	LOCAL	Right	1.8	201	361.8	300	5	1500	Holes, cracking, ruts and bumps along most of section	36180	36180		
314	RUTHERFORD STREET (314)	985	1007	EXAMINER STREET	WAIMEA ROAD	ARTERIAL	Left	2.7	22	59.4	300	5	1500	Cracking and uneven by tree	5940	5940		
380	TUKUKA STREET (380)	267	386	KAWAI STREET SOUTH	WAIMEA ROAD	LOCAL	Left	2.2	90	198	300	5	1500	Holes and uneven	69300	19800		
140	HARLEY STREET (140)	189	277	ST JOHN STREET	HARDY STREET	LOCAL	Right	1.6	88	140.8	300	5	1500		14080	14080		
140	HARLEY STREET (140)	189	243	ST JOHN STREET	HARDY STREET	LOCAL	Left	1.5	54	81	300	5	1500		8100	8100		
266	PARKERS ROAD (266)	850	851	OTTERSON STREET	GOLF ROAD	COLLECTOR	Right	1.8	240	432	300	3	900	Hole and cracking, position not exact	43200	43200		
368	TOSSWILL ROAD (368)	5	51	STATE HIGHWAY 6	CHAMBERLAIN STREET	LOCAL	Right	1.5	46	69	300	3	900	5m hole and edgebreak	6900	6900		
385	VICKERMAN STREET (385)	550	611	WILDMAN AVENUE	RODGERS ST	COLLECTOR	Left	1.1	61	67.1	300	3	900	Uneven surface and hump	6710	6710		
395	WASHINGTON ROAD (395)	385	388	HASTINGS ST	PRINCES DR	COLLECTOR	Right	1.9	150	285	300	3	900	Uneven round plate - position not exact	28500	28500		
331	SONGER STREET (331)	620	625	DERBY STREET	REEVES STREET	COLLECTOR	Left	1.6	400	640	300	3	900	Ruts and cracking at intervals in section from 611m to 720m	64000	64000		
358	THE RIDGEWAY (SOUTH) (358)	408	712	KAURI STREET	SOMERSET TERRACE	COLLECTOR	Left	1.2	300	360	300	3	900	Cracking, ruts, holes and uneven along over half of section	36000	36000		
385	VICKERMAN STREET (385)	626	839	RODGERS ST	SEALORDS	SUBCOLLECTOR	Left	1.1	213	234.3	300	3	900	Cracking, humps and bumps at intervals	23430	23430		
136	HAMPDEN STREET (136)	649	773	NGATITAMA ST	ALLEN ST	LOCAL	Right	2.5	124	310	300	3	900	Uneven and cracking	31000	31000		
223	MOANA AVENUE (223)	360	380	CENTRE MOANA AVENUE ROUNDABOUT (STA	ROAD WIDENS	COLLECTOR	Left	1.2	230	276	300	3	900	Cracking and settlement - position not exact	27600	27600		
11	AKERSTEN STREET (11)	1000	1025	CROSS QUAY	END OF MAIN CULDESAC	SUBCOLLECTOR	Left	1.4	25	35	300	1	300	Sections lifting by tress and cracking and settlement at intervals in section from 894m to 1324m	3500	3500		
502	DAVIES DRIVE (502)	250	270	WALTERS BLUFF	WHITEHEAD PLACE	LOCAL	Right	1.5	20	30	300	1	300		3000	3000		

Footpath Renewal Surveys – All Need Site Validation and Treatment Confirmation															Yearly Total			
															$ 392,530	$ 407,200	$ 400,910	
Road	Road Name	Start	End	Carriageway Start Name	Carriageway End Name	Carriageway Hierarchy	Side	Width	Length	Area	Condition	Profile	Ranking = Condition X Profile	Surveyor's Comments	cost	18/19 footpath	19/20 footpath	20/21 footpath
104	ELLIOTT STREET (104)	213	254	ROAD NARROWS (GARAGE)	COLLINGWOOD ST	LOCAL	Left	0.6	41	24.6	300	1	300	Only gravel surface	2460	2460		
153	HOMER STREET (153)	6	99	NAYLAND RD	END	LOCAL	Right	1.4	93	130.2	300	1	300	Cracking, bumps and ruts at intervals	13020	13020		
153	HOMER STREET (153)	45	99	NAYLAND RD	END	LOCAL	Left	1.4	54	75.6	300	1	300	Cracking and holes for a few metres	7560	7560		
285	QUEBEC ROAD (285)	529	634	ARROW STREET	ABRAHAM HEIGHTS	LOCAL	Left	1.1	105	115.5	300	1	300	16m section dropping out and 10m with no surface	11550	11550		
304	ROGERS STREET (304)	8	250	VICKERMAN ST	END AT GATES PORT ACCESS	LOCAL	Left	2.8	242	677.6	300	1	300	Poor gravel surface	67760		67760	
320	SCOTIA STREET (320)	250	280	BEATSON ROAD (NORTH END)	ULSTER STREET	LOCAL	Right	1.4	30	42	300	1	300	Cracking and holes at intervals along section from 16m to 306m	4200		4200	
356	THE CLIFFS (356)	430	452	WHITBY RD	ENTRANCE AREA (SIDE ST)	LOCAL	Right	1.8	22	39.6	300	1	300	Uneven surface, cracking and bumps	3960		3960	
388	VOSPER STREET (388)	75	104	TOI TOI ST	END	LOCAL	Left	1.5	29	43.5	300	1	300	Uneven surface	4350		4350	
68	CAWTHRON CRESCENT (68)	140	160	WAIMEA RD	STAFFORD AVE	LOCAL	Left	1.5	20	30	300	1	300	Bumps, cracking and holes at intervals in section from start to end of Stafford Ave	3000		3000	
7809	SUNNYBANK RISE (7809)	160	200	WASTNEY #65	UNKNOWN	LOCAL	Left	1.3	40	52	300	1	300		5200		5200	
49	BOLT ROAD (49)	200	215	PARKERS ROAD ROUNDABOUT (BOLT)	ROTHERHAM STREET	COLLECTOR	Left	1.7	15	25.5	300	3	900	15m with no surface at intervals along full length of section	2550		2550	
56	BROOK STREET (56)	1923	1935	WESTBROOK TERRACE	TANTRAGEE SADDLE RD	LOCAL	Right	1	12	12	300	3	900	Humps, bumps and hole caused by tree roots	1200		1200	
385	VICKERMAN STREET (385)	130	142	SH 6 HAVEN ROAD SOUTHBOUND	WILDMAN AVENUE	LOCAL	Right	2	12	24	300	3	900	Cracking and settlement - position not exact	2400		2400	
52	BRIDGE STREET (52)	960	1140	TASMAN STREET (NORTH)	MILTON STREET	COLLECTOR	Right	2.5	180	450	40	5	200	Rut, cracking, bumps, holes and uneven surfaces at intervals	45000		45000	
7838	BRONTE STREET (CENTRAL) (7838)	65	144	TRAFALGAR STREET	COLLINGWOOD STREET	LOCAL	Left	2.1	79	165.9	40	5	200	Cracking and bumps at intervals	16590		16590	
550	CAR PARK MILLERS ACRE (550)	89	149	HALIFAX ST SOUTH	HALIFAX ST NORTH	CAR PARK	Left	2	60	120	40	5	200	Cracked and uneven for 10m in this section	12000		12000	
138	HARDY STREET (WEST) (138)	922	1066	ALTON STREET	TASMAN STREET (SOUTH)	LOCAL	Left	3	144	432	40	5	200	Cracking, holes and bumps	43200		43200	

Footpath Renewal Surveys – All Need Site Validation and Treatment Confirmation																Yearly Total		
																$ 392,530	$ 407,200	$ 400,910
Road	Road Name	Start	End	Carriageway Start Name	Carriageway End Name	Carriageway Hierarchy	Side	Width	Length	Area	Condition	Profile	Ranking = Condition X Profile	Surveyor's Comments	cost	18/19 footpath	19/20 footpath	20/21 footpath
168	KAWAI STREET (NORTH) (168)	400	450	ALFRED ST	FRANKLYN ST	LOCAL	Left	2.5	50	125	40	5	200	Ruts and cracking	12500		12500	
7805	MAIN ROAD STOKE (7805)	800	820	MARSDEN ROAD	ROAD WIDENS	ARTERIAL	Left	2.1	20	42	40	5	200	Holes, bumps and cracking within section from 775m to 888m	4200		4200	
7805	MAIN ROAD STOKE (7805)	950	997	MARSDEN ROAD	ROAD WIDENS	ARTERIAL	Left	2.1	47	98.7	40	5	200	Uneven surfaces, cracking and holes at intervals from 888m to 1210m	9870		9870	
7805	MAIN ROAD STOKE (7805)	997	1027	ROAD WIDENS	PUTAITAI STREET	ARTERIAL	Left	2.1	30	63	40	5	200	Uneven surfaces, cracking and holes at intervals in section from 888m to 1210m	6300		6300	
7805	MAIN ROAD STOKE (7805)	4183	4505	ELMS STREET	SALISBURY ROAD	ARTERIAL	Left	1.4	322	450.8	40	5	200	Vegetation , cracking and uneven surfaces at intervals along whole length	45080		45080	
209	MARSDEN VALLEY ROAD (209)	390	410	THE RIDGEWAY	START OF CHRISTIAN ACADEMY BRIDGE	LOCAL	Right	1.4	20	28	40	5	200	Cracking	2800		2800	
241	NAYLAND ROAD (241)	844	1010	FERGUSSON ST	SONGER STREET	COLLECTOR	Right	1.3	166	215.8	40	5	200	Bump at joint	21580		21580	
241	NAYLAND ROAD (241)	2135	2225	ALDINGA AVENUE (NORTH)	ALDINGA AVENUE (SOUTH)	COLLECTOR	Left	1.1	90	99	40	5	200	Bumps and cracking at intervals	9900		9900	
253	NILE STREET (EAST) (253)	421	531	ALTON STREET	TASMAN STREET	COLLECTOR	Left	3.3	110	363	40	5	200	Humps and bumps for 30m and cracking	36300		36300	
314	RUTHERFORD STREET (314)	1198	1381	BROUGHAM STREET	VAN DIEMEN STREET	LOCAL	Left	2	183	366	40	5	200	Cracking at intervals and hump	36600		36600	
314	RUTHERFORD STREET (314)	1392	1433	VAN DIEMEN STREET	ENDEAVOUR ST	LOCAL	Left	2.6	41	106.6	40	5	200	Cracking and hole	10660		10660	
541	SALISBURY ROAD (541)	0	160	MAIN ROAD STOKE	CHAMPION ROAD	ARTERIAL	Left	1.4	160	224	40	5	200	Some cracking and uneven surfaces	22400			22400
495	SARGESON STREET (495)	6	60	MASEFIELD STREET	GLOVER PLACE	LOCAL	Left	1.2	54	64.8	40	5	200	Couple of tripping hazards	6480			6480
361	TIPAHI STREET (361)	223	263	FRANKLYN ST	MOTUEKA ST	LOCAL	Left	2.4	40	96	40	5	200	Cracking	9600			9600
361	TIPAHI STREET (361)	288	324	FRANKLYN ST	MOTUEKA ST	LOCAL	Left	2.4	36	86.4	40	5	200	Cracking	8640			8640
372	TRAFALGAR SQUARE (WEST SIDE) (372)	33	108	ROAD NARROWS	NILE STREET WEST	LOCAL	Left	1.5	75	112.5	40	5	200	Several holes	11250			11250
372	TRAFALGAR SQUARE (WEST SIDE) (372)	108	312	NILE STREET WEST	TRAFALGAR STREET ROUNDABOUT (EXAMIN	LOCAL	Left	1.8	204	367.2	40	5	200	Holes and cracking	36720			36720
391	WAIMEA ROAD (391)	100	185	RUTHERFORD STREET	VAN DIEMAN STREET	ARTERIAL	Left	1.8	85	153	40	5	200	Cracking and humps and bumps	15300			15300

Footpath Renewal Surveys – All Need Site Validation and Treatment Confirmation																Yearly Total		
																$ 392,530	$ 407,200	$ 400,910
Road	Road Name	Start	End	Carriageway Start Name	Carriageway End Name	Carriageway Hierarchy	Side	Width	Length	Area	Condition	Profile	Ranking = Condition X Profile	Surveyor's Comments	cost	18/19 footpath	19/20 footpath	20/21 footpath
391	WAIMEA ROAD (391)	1110	1212	FRANKLYN STREET	MOTUEKA STREET	ARTERIAL	Left	1.8	102	183.6	40	5	200	Cracking and hole	18360			18360
79	CHURCH STREET (79)	6	140	HARDY ST	TRAFALGAR SQ WEST	CENTRAL CITY	Left	1.8	134	241.2	40	5	200	Cracking and hole at intervals	24120			24120
87	COLLINGWOOD STREET (87)	1342	1526	NILE STREET	BRONTE STREET	COLLECTOR	Left	3.1	184	570.4	40	5	200	Cracking and bumps	57040			57040
116	FRANKLYN STREET (116)	5	232	VANGUARD ST	TIPAHI ST	LOCAL	Left	1.5	227	340.5	40	5	200	Cracking and holes at intervals	119175			34050
116	FRANKLYN STREET (116)	243	358	TIPAHI ST	KAWAI ST	LOCAL	Left	1.4	115	161	40	5	200	Cracking and holes at intervals	16100			16100
136	HAMPDEN STREET (136)	585	647	NGATIAWA ST	NGATITAMA ST	LOCAL	Left	2.6	62	161.2	40	5	200	Cracked and uneven	16120			16120
7805	MAIN ROAD STOKE (7805)	1512	1629	RANUI STREET	LEMARI AVENUE	ARTERIAL	Left	2.9	117	339.3	40	5	200	Uneven surface, cracking and holes at intervals in section from 1512m to 1788m	33930			33930
7805	MAIN ROAD STOKE (7805)	1629	1788	LEMARI AVENUE	TAINUI STREET	ARTERIAL	Left	2.9	159	461.1	40	5	200	Uneven surfaces, cracking and holes at intervals in section from 1512m to 1788m	46110			46110
241	NAYLAND ROAD (241)	1000	1120	FERGUSSON ST	SONGER STREET	COLLECTOR	Left	1.5	120	180	40	5	200	Rut, cracking and bumps	18000			18000
241	NAYLAND ROAD (241)	1148	1305	FERGUSSON ST	SONGER STREET	COLLECTOR	Left	1.7	157	266.9	40	5	200	Rut, uneven surface, cracking and holes	26690			26690
314	RUTHERFORD STREET (314)	785	813	NILE STREET WEST	EXAMINER STREET	ARTERIAL	Left	2.7	28	75.6	40	5	200	Bumps around trees and trees need pruning - several branches hang low and then when wet are a hazard to even short people	7560			
314	RUTHERFORD STREET (314)	822	985	EXAMINER STREET	WAIMEA ROAD	ARTERIAL	Left	2.7	163	440.1	40	5	200	Holes, cracking, ruts and bumps at intervals	44010			
52	BRIDGE STREET (52)	262	400	TRAFALGAR STREET	ALMA LANE	CENTRAL CITY	Left	3.5	138	483	40	5	200	Bumps, cracking and uneven surfaces at intervals	48300			
7838	BRONTE STREET (CENTRAL) (7838)	150	305	TRAFALGAR STREET	COLLINGWOOD STREET	LOCAL	Left	2.6	155	403	40	5	200	Cracking and depressions at intervals	40300			

Table N – 2: Network Deficiencies – New Footpath Connection Updated

Ranking											
Minor Improvement	Structure	Homezone	Footpath	PT Minor Improvement	Include in Ranking	Project Category	Logged Date	Project ID	Name	Location/Site description. Include road name, RAMM Id and coordinates	Problem/Opportunity	Capex Estimate $ ex. GST
…	…	…	1	…	✓	Footpath	18-Jan-18		Van Dieman Street footpath	40 Van Diemen Street, 1623665.89, 5429739.75	There is no formal footpath connection along the frontages #40 to #48 Van Diemen Street. There is an opportunity to work with the subdivider of #40 Van Diemen Street to install a footpath	150,000
…	…	…	2	…	✓	Footpath	01-Jan-14		Main Road Stoke footpath	x= 1618786, y=5425710 entrance to old Robinsons Complex and Supercheap	Site is between 2 retirement villages and adjacent arterial road. Pedestrians have to leave footpath and walk on road approaching the access way to a commercial complex. Footpath does not continue across entranceway because of private property issues. Land purchase now complete so footpath can be installed	50,000
…	…	…	3	…	✓	Footpath			Dodson Valley Rd	East of Atawahi Crescent, narrow section	Growth up Dodson Valley, speed on DVR	150,000
…	…	…	4	…	✓	Footpath			Centennial Road footpath	Centennial Road | Full length on south side.	Gap in footpath on south side, popular with school children. Need to observe school use. Solution is likely to be compromised due to proximity of fences to road edge. Consider after Tahunanui cycle network to see how best to provide for cycle and foot traffic	47,450
…	…	…	5	…	✓	Footpath	22-May-18		Main Road Stoke Supercheap			100,000
…	…	…	6	…	✓	Footpath			Bledisloe Avenue footpath	Bledisloe Avenue	Missing section in front of 2-16 leads to Bledisloe Reserve.	30,000
…	…	…	7	…	✓	Footpath			Arapiki Road crossings at The Ridgeway	Arapiki Road | Crossing the Ridgeway and Arakipi Road at intersection	Poor crossing locations and limited sight distances need to be corrected by changing alignments or providing crossing facilities	50,000
…	…	…	8	…	✓	Footpath			Nikau Street footpath	Nikau Street | Full length on south side.	Full length to provide higher level of service for pedestrians accessing back of school in particular	70,400
…	…	…	9	…	✓	Footpath			Washington Road footpath	Washington Road | East of Brittania Heights intersection	No footpath on residential side of road, 4 houses affected, steep bank and tight road alignment. Children have to cross road to reach footpath at bottom of bank. No feasible option for providing a footpath on the west side of the road and still being able to provide vehicle access to the properties affected.	384,000
…	…	…	10	…	✓	Footpath		3127	Atawhai Drive opposite Founders	Atawhai Drive | Between Iwa Road and Walters Bluff	Missing section opposite Founders Park.	192,000
…	…	…	11	…	✓	Footpath	27-Mar-18		Cherry Ave	Baigent Road to end	no footpath	50,000
…	…	…	12	…	✓	Footpath			Maitai Path	Maitai Path | Adjacent to Whakatu land	Length of Maitai path to be upgraded once Whakatu redevelop the site at 16 Paru Paru Road. Agreements in place to allow widening once they establish café outdoor area on neighbouring park.	112,000
…	…	…	13	…	✓	Footpath			Franklyn Street	Franklyn Street | South side - Vanguard to Tipahi	No K&C	160,600
…	…	…	14	…	✓	Footpath			Bridge on approach to the Airport/Quarantine Rd	Quarantine Road	Bridge on approach to Quarantine Rd/Bolt Rd roundabout on Quarantine has no footpath on south side. Some pedestrians to airport and general walkers.	400,000
…	…	…	15	…	✓	Footpath			Alfred Street	Alfred Street | North side - Vanguard to Kawai	need to coordinate with Utilities upgrade. SW upgrade currently planned for 2025- 2027/28	544,000
…	…	…	16	…	✓	Footpath			Neale Ave	Neale Ave | Kea Street to end of path outside 29 Neale Ave	Close to schools and connects to new path request on Kea Street. Evidence of people walking this section where there is no path from the tracks in the grass on aerial photos	22,000

…	…	…	17	…	✓	Footpath		Bledisloe Avenue footpath	Bledisloe Avenue | In front of numbers 2-16	Missing section in front of 2-16 leads to Bledisloe Reserve.	28,600
…	…	…	18	…	✓	Footpath		Kea Street footpath	Kea Street | Full length on north side.	Tracks on grass show desire lines, crossings at intersection with Kaka St lead you nowhere, just into middle of intersection	28,600
…	…	…	19	…	✓	Footpath		Kea Street footpath	Kea Street | Kea from main Road Stoke to Kaka and from Kaka to Neale Ave	Full length. Close to school. Check water renewals	44,000
…	…	…	20	…	✓	Footpath		Kawai Street	Kawai Street | West side - Alfred to Franklyn	need to coordinate with Utilities upgrade. SW upgrade currently planned for 2025- 2027/28	146,000
…	…	…	21	…	✓	Footpath		Seafield Terrace	Seafield Terrace | Between Athol St and Airlie St	Footpath in conjunction with other narrowing measures to slow vehicle speeds. Refer MI deficiency tab.	656,000
…	…	…	22	…	✓	Footpath		Tipahi Street	Tipahi Street | East side - Alfred to Franklyn	need to coordinate with Utilities upgrade. SW upgrade currently planned for 2025- 2027/28. Delay reseal to suit	100,000
…	…	…	23	…	✓	Footpath		Emano Street footpath (Lower section)	Emano Street | Piko Street to Orsman Crescent	Footpath on one side only. High proportion of children in the area walk to school. Deliver with Emano Street sw, currently scheduled for 2022 - 2025/26	270,100
…	…	…	24	…	✓	Footpath		Emano Street (Upper section)	Emano Street | Orsman Crescent to end	No footpath. Part of walkway to the top of port hills. Deliver with Emano Street sw, currently scheduled for 2022 - 2025/26. Delayed to 2026/27 assuming deliver last in scheme and to keep to $216 per year for new footpath connections programme	384,000
…	…	…	25	…	✓	Footpath		Thompson Terrace	Thompson Terrace	SR1607150	624,000
…	…	…	26	…	✓	Footpath		Airlie Street footpath	Airlie Street | Full length	No footpath.	672,000
…	…	…	27	…	✓	Footpath		Rangiora Terrace footpath	Rangiora Terrace | Between end of existing footpath and Tamaki Steps	Rough surface from base of steps onto existing footpath, No footpath around Rangiora Tce intersection and over rise towards sea. Too dangerous and have to cross road. Rangiora Tce upgrade no longer in AMP. Rough surface to be dealt with by maintenance.	14,600
…	…	…	28	…	✓	Footpath		Miro Street	Miro Street | Off Westbrook Terrace	Needs consultation with residents to see if footpath or shared zone is preferred because could be treated either way due to low volume cul-de-sac. No Sw so check SW priority. Possibly deliver in a package of Brook Street works	19,800
…	…	…	29	…	✓	Footpath		Hinau	Off Westbrook Terrace	Needs consultation with residents to see if footpath or shared zone is preferred because could be treated either way due to low volume cul-de-sac. Possibly deliver in a package of Brook Street works	22,000
…	…	…	30	…	✓	Footpath		Maire Street Footpath	Marie Street | 50m at end	Involves sale of land. Links end of existing footpath to walkway at end of road.	80,000
…	…	…	31	…	✓	Footpath		Taunton Place	cul de sac off Maitland	Lots of kids going to Primary schools. Should include connection on south side of Maitland Ave and walkway upgrade to the Ridgeway off end of Maitland. Could make shared zone path way down street or narrow road and put footpath in existing road space. Could be issues with residents because of property development on road reserve. Needs consultation	320,000
…	…	…	32	…	✓	Footpath		Observatory Hill to Emano St walkway	Off Road | Off Road	Off road recreational route. Needs to be part of any development of the land above Emano Street. Over private property.	328,500
…	…	…	33	…	✓	Footpath		Douglas Rd to Observatory Hill walkway	Off Road | Off Road	Off road recreational route. Needs to be part of any development of the land above Douglas Road. Over private property.	730,000
…	…	…	34	…	✓	Footpath		Scotia Street footpath	Scotia Street | Anglia Street to 140m north	Visibility around corner difficult, new house on corner will complicate lack of footpath.	336,000
…	…	…	35	…	✓	Footpath		Reeves Street footpath	Reeves Street | West side for 70 m north of Aldinga Avenue	Restricted visibility when crossing at end of footpath on north side.	15,400
…	…	…	36	…	✓	Footpath		Mc Mahon Street	Manson Ave to Polstead Road	to connect Manson Ave to Polstead Road	28,600
…	…	…	37	…	✓	Footpath		Manson Avenue footpath	Manson Avenue	Full length. Close to school. Check water renewals	110,000
…	…	…	38	…	✓	Footpath		Montreal Road footpath	Montreal Road | South of Toi Toi Street	Footpath on one side only.	504,000
…	…	…	39	…	✓	Footpath		Joyce Place footpath	Joyce Place | Full length	Footpath on one side only. Is a new subdivision and in a short cul-de-sac so not a priority.	35,200

…	…	…	40	…	✓	Footpath			The Ridgeway footpath	The Ridgeway | From Somerset Tce towards Kauri St on the east side	Footpath is in poor repair, when repaired can it be moved 1 metre back from traffic lanes, peds are very close to moving traffic lanes.	255,500
…	…	…	41	…	✓	Footpath		2174	Domett St	Domett St | Bridge St - Nile St	No kerb to define edge of footpath on west side.	120,000
…	…	…	42	…	✓	Footpath			Arapiki Road footpath	Arapiki Road | walkway to Main Road Stoke	connect Towai Street walkway to main Road Stoke	125,000
…	…	…	43	…	✓	Footpath		3026	Locking Street	Locking Street | East side # 68-89		384,000
…	…	…	44	…	✓	Footpath		3025	Stanley Crescent footpath	Stanley Crescent | From Beachville Crescent to end - South side	Some visibility issues over crests. Included in scope of Beachville Crescent Shared Zone Project reassess after delivery of this if something else still required	131,400
…	…	…	45	…	✓	Footpath			Jellicoe Ave footpath	Jellicoe Avenue | Bledsloe Ave to Railway Reserve	Well-worn path from Bledsloe Ave to Railway Reserve.	26,400
…	…	…	46	…	✓	Footpath	30-Apr-18		Abraham Heights footpaths	Abraham Heights	No footpath on one side of road, 520m	200,000
…	…	…	47	…	✓	Footpath			Footpath in front of 413 Waimea Road	Waimea Road | Between Chings Road and The Ridgeway - South side	Evidence of high use by school children. Further interrogation of need to make sure we don’t encourage dangerous crossing and discourage use of underpass.	33,000
…	…	…	48	…	✓	Footpath			Dodson Valley Werneth Street	Werneth Street | Opposite Cloverly Street to end	New footpath required for subdivision growth. Schedule to suit utilities upgrades and/or subdivision plans	50,000

APPENDIX O SMART BUYER ASSESSMENT

Figure O – 1: Smart Buyer Self-Assessment

REG | THE ROAD EFFICIENCY GROUP

Smart Buyer Self Assessment

This assessment is based on the Smart Buyer Principles identified in the Road Maintenance Task Force Report. Score the following by ticking the appropriate box - (1) Disagree to (5) Strongly Agree.

Whenever you score yourself "4 or 5" think of an example you can use to justify your score to an independent auditor or the other attendees at this workshop.

S17A reviews for Roading Activity

Assessment statement Our Organisation	Score				
	1	2	3	4	5
1. Fully understands the different contracting models available. Business Cases developed for recent collaborative contract with TDC				✓	
2. Holds meetings that update the contracting industry on the forward works programme and any changes in approach, and proactively engages with the contracting industry to ensure it gains optimal value from any changes being implemented. GMI & BUMs meeting with local CCNZ 1-2 times a year to discuss				✓	
3. Has sufficient robust data (or is in the process of gathering robust data) on our networks to enable optimal integrated decision-making.				✓	
4. Has access to expertise that fully enables best use of the data available. Any Team (internal & External) Consultants				✓	
5. Is open to alternative solutions to those proposed in the contract documents. - Various projects Collaborative Contract				✓	
6. Understands risk and how to allocate and manage it.			✓		
7. Has a Council that is prepared to pay more now to achieve a lower whole of life cost. Regular use PDM & AMP & associated workshops				✓	
8. Actively pursues value for money & does not always award contracts to the lowest price. Recent examples & see above					✓
9. Is able to manage supplier relationships/contracts to ensure optimal expenditure, which sustains infrastructural assets at appropriate levels of service.				✓	
10. Supports ongoing skill and competency training and development for staff.			✓		
11. Actively shares and gains knowledge within the sector. Attend RCA, TOTS, REG...					✓
12. Is effective in keeping up with best practice in procurement, including best practice RFP/contract documentation. SV at OA templates see above				✓	
13. Regularly seeks and receives candid feedback from suppliers on its own performance as a client and consistently looks to improve its performance. Discussion at CCNZ meetings close out meetings.			✓		
14. Explores opportunities for collaboration by either sharing in-house resources with neighbours, or by procuring together or tendering together. That exploration could be through an LGA s17A evaluation of transport function delivery options. Complete S17A's TDC/NCC Roading Maintenance Contract REG					✓
Number of ticks in each column			3	8	3
Multiplying factor	x1	x2	x3	x4	x5
Total Score in Column			9	32	15
Total Score	56.				

Score:	Interpretation
65 to 70:	Our organisation is a Smart Buyer - people love working for us and with us!
55 to 64:	Our organisation has embraced Smart Buyer principles but can still improve.
45 to 54:	Our organisation gets by but has opportunities for improvement.
30 to 44:	Our organisation is not rocking the boat when it comes to pursuing value for money.
0 to 29:	Our organisation is a bit of a basket case!

If you were to repeat this assessment in one or two years' time, how do you expect it will have changed? which questions will show the greatest change (up or down)? and what action/inaction will have been the driver of that change?

The need for 'smarter buyers' (pages 36 and 37 of the RMTF report)

A theme that underpins a number of the conclusions of this review is that RCAs must be both efficient and effective managers of their road assets and smart buyers of the services they require. These issues strongly relate to the concept of 'smart procurement' with a balanced focus across 'the three Es':

1. economy – through securing (or supporting) the provision of products, materials and expertise at the quality, in the volumes and at the times and locations required, at the lowest price
2. efficiency – through the processes used, including standard documentation and contracting forms selected for achieving best cost / quality and outcomes; and knowledge of the product / materials and supplier market applied
3. effectiveness – taking opportunities for changing from traditional products and materials by maintaining support for innovation in the nature and characteristics of products and materials, and for a strong supplier market

The impact of raising the capability of RCAs would include reduced supplier selection process costs, better management of risk and more objective assessment of performance for use in future supplier selection processes.

The contracting industry has provided the following useful analysis of the characteristics of a smart buyer: Some RCAs are smart buyers but this is believed to be the exception.

Smart buyers have:

- An improved understanding of costs that better inform their decision making process
- An understanding of the impact delivery models and supplier selection criteria can have on the value of contracts
- Robust forward work programmes that are communicated to the industry and supported by budgets that allows the work to be completed
- Knowledge of the network to determine treatments required based on physical evidence and supported by knowledge of the costs involved
- In house expertise that aids the decision making process and allows acceptance of innovative solutions possibly with or without the involvement of consultants
- A clear understanding of risk and how it is allocated and managed
- An understanding that lowest price will not always deliver desirable outcomes
- An understanding that being prepared to pay more may result in enhanced whole of life value for money.

Not so smart buyers:

- Award contracts predominately based on price – with little appreciation of any risk to best value for money
- Outsource work to the detriment of asset knowledge
- Choose contract forms that are fashionable, not well understood and poorly managed
- Lack technical and contractual management skills
- Lack asset management skills that prevent the development of robust forward work programmes
- Do not support forward work programmes with appropriate budgets.

Task Force members debated the nuances around individual items in these lists but believe that they provide a platform on which to build a list of the characteristics that would be exhibited by an RCA that has the capability and the capacity to be a smart buyer.

One Task Force member described a smart buyer in the following terms:

A 'smart buyer' RCA ensures its staff are up-to-date, regularly shares best practice experiences with colleagues from other agencies, and supports and resources their teams appropriately in the recognition that getting the strategic direction right is a very small cost compared to the consequence of getting it wrong. This requires staff to be involved in regular training, attendance and participation in sector gatherings, and involvement in NZTA investigating teams and the like. Ironically in the interests of 'cost-saving' many agencies are limiting staff involvement in these activities. A smart buyer does not ask the question – what if I train my staff and they leave? – but rather asks the question – what if I don't train my staff and they stay?

The following table provides examples to support the 4 and 5 score in the smart buyer form above.

Table O – 1: Evidence / Examples to support the scoring of 4 and 5

Smart Buyer Self-Assessment reference	Evidence / Example
1	Business case developed for the recently renewed maintenance contract to have collaboration with Tasman district council. A s17A review was recently completed on the roading activity.
2	GM Infrastructure and Business Unit managers undertake regular meetings with CCNZ and other suppliers to discuss issues and upcoming opportunities.
3	Currently undertaking a major review of data quality to identify gaps and efficiencies. New positions in maintenance contract to improve data collection / acquisition.
4	Have access to experts both internally (Asset management and Operational Teams) and externally with Consultants and through the Maintenance Contractor.
5	Alternative solutions are always encouraged through the various projects. The main road maintenance contract is set up as a collaborative approach to encourage efficient maintenance solutions to be delivered.
7	Regular use of the PQM, Asset Management practice communicated throughout Activity Management Plan preparation.
8	New road maintenance contract evaluation method was not lowest price.
9	Have a good working relationship with contractor. New road maintenance contract aligns work with ONRC LoS requirements.
10 & 11	Actively attends industry workshops and forums giving presentations where appropriate for example Road Controlling Authority forums, Top of the South meetings, REG catch ups. Still gap in having sufficient in-house resource to evaluate tenders that hold the NZQA qualification required for subsidised funded contracts.
12	Have independent auditing as part of internal organisational assurance, keeping up with best practice that is advised through the organisational assurance team, using PQM as mentioned above.
14	Completion of the s17A review of the roading activity, working together with neighbouring councils on maintenance contract, regional council interaction with REG groups and also at South Island RTC level.