Waipara to Inangahua

CORRIDOR MANAGEMENT PLAN

7 7A 65 69

2018-2028

NZ TRANSPORT AGENCY
WAKA KOTAHI

New Zealand Government

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Executive summary

The corridor comprises the entire length of SH7 from its intersection with SH1 at Waipara to Greymouth, where SH7 intersects SH6. The corridor also includes SH69, SH65 and SH7A in their entirety. The Stillwater - Ngakawau rail line runs adjacent to the corridor for part of its length, crossing SH7 and SH69 in several places.

The corridor is approximately 384 km long (3.4% of the state highway network). The total value of assets along the corridor is $435M (1.9% of the total national asset value).

The corridor serves a main function as a freight connector between Christchurch and the West Coast and Nelson-Tasman Regions. It is also a critical lifeline connecting remote communities to each other and the wider South Island. Sections of the corridor have secondary functions as alternative routes for major adjacent state highways. SH7 is a key part of the alternative route for SH73, being less impacted during winter and more resilient to seismic activity along the Alpine Fault line.

SH65 and SH7 between Springs Junction and Waipara serve as the alternative route for SH1 between Picton and Christchurch. This part of the corridor is currently operating as the SH1 Picton to Christchurch alternative route (SH1 Alternative route) following the Kaikoura earthquake in November 2016. The corridor has a high-risk profile given its primary collector classification for supporting these major routes and its lack of alternative routes.

As well as providing a network resilience function, the corridor connects tourist and recreation destinations on the West Coast, Nelson and Hanmer Springs to Christchurch and Canterbury.

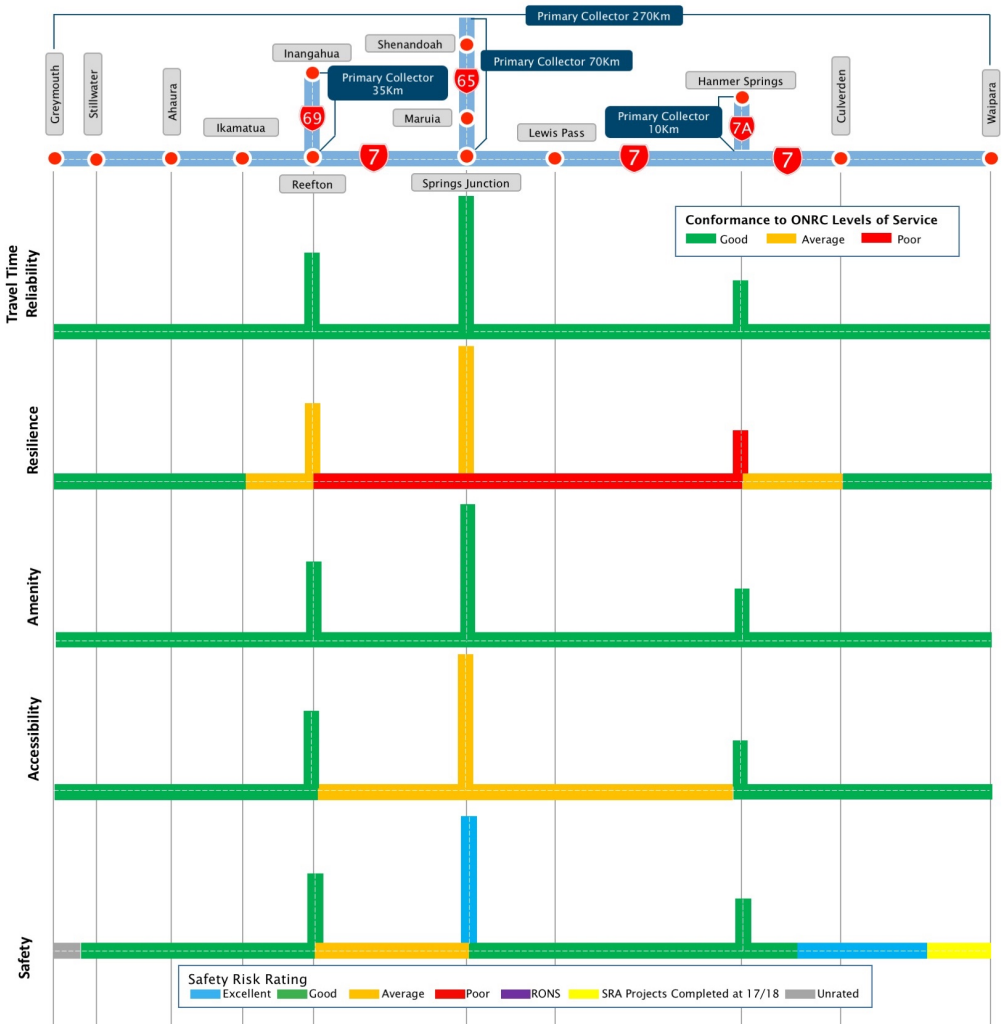
Canterbury Region has substantial dairying which generates significant movements on the roading network. Increasing dairy intensification in Canterbury has the potential to further increase heavy vehicle movements over the corridor.

Planned growth in tourism around the West Coast and Nelson -Tasman regions, may necessitate further investment in the corridor to ensure it is equipped to support the growth, which may increase the number of customers using the corridor, and maintain appropriate customer Levels of Service (LoS).

Along its length, the corridor generally provides reliable travel times due to low traffic volumes. There is good provision for journey information via variable messaging signage (VMS). Minor constraint points exist along the corridor at single lane bridges. Winter weather conditions can impact journey times due to closures around Lewis Pass. Travel time LoS on the corridor is particularly poor when parts of the corridor operate as detour routes for major state highways (SH1 and SH73) due to increased traffic volumes causing congestion.

Safety on the corridor for a large section of SH7 is poor for the road classification. Fatigue and unsafe passing on the road is a common factor contributing to crashes along this section. Risk to road users increases during winter as road conditions through the mountainous area are affected by snow and ice.

Figure 1 - Performance of the corridor against ONRC outcomes



Future investment to ensure the corridor meets its LoS is centred on assuring access and resilience is maintained. The impact of the 2016 Kaikoura earthquake has led to use of the corridor as the SH1 alternative route exposing assets to increased demand, beyond the current classification of the corridor. Additional investment to offset this increased demand has been required and is expected to continue to ensure the corridor can fulfil its role as the main alternative route to SH1 into the future.

Introduction

Purpose

What is the corridor management plan?

This Corridor Management Plan describes the customer service delivery story for the Waipara to Inangahua corridor, as measured against the One Road Network Classification performance framework. It is intended to describe the investment story, i.e. why invest in this corridor, in a context everyone can understand whether the activities are delivered through investment in the State Highways maintenance, operations, renewals and improvements programmes.

The corridor management plan considers a combination of:

- The **pressures** on the system that are resulting in increased demand or a reduction in levels of service
- The **current state** of the system and how it is performing
- The **response** the Agency is investing in to deliver the customer levels of service along the corridor.

It is important to note that this is a first-generation Corridor Management Plan, therefore, we expect it to be improved as we learn from this approach. It sets a firm foundation to improve from in the next 2-3 years, utilising a common framework and consistent data sets across the 30 corridors.

Why is it needed?

The corridor plan provides a link between the long-term planning outlook, the 10-year medium term investment programme and the 3-year land transport programmes for the next funding round.

Traditionally, the approach to investing in maintenance and renewals is to consider each asset activity in isolation, i.e. pavement, structures, drainage, and in isolation of capital expenditure. The Corridor Management Plan approach considers all assets within the corridor and takes a holistic view of the customer levels of service they provide throughout the corridor.

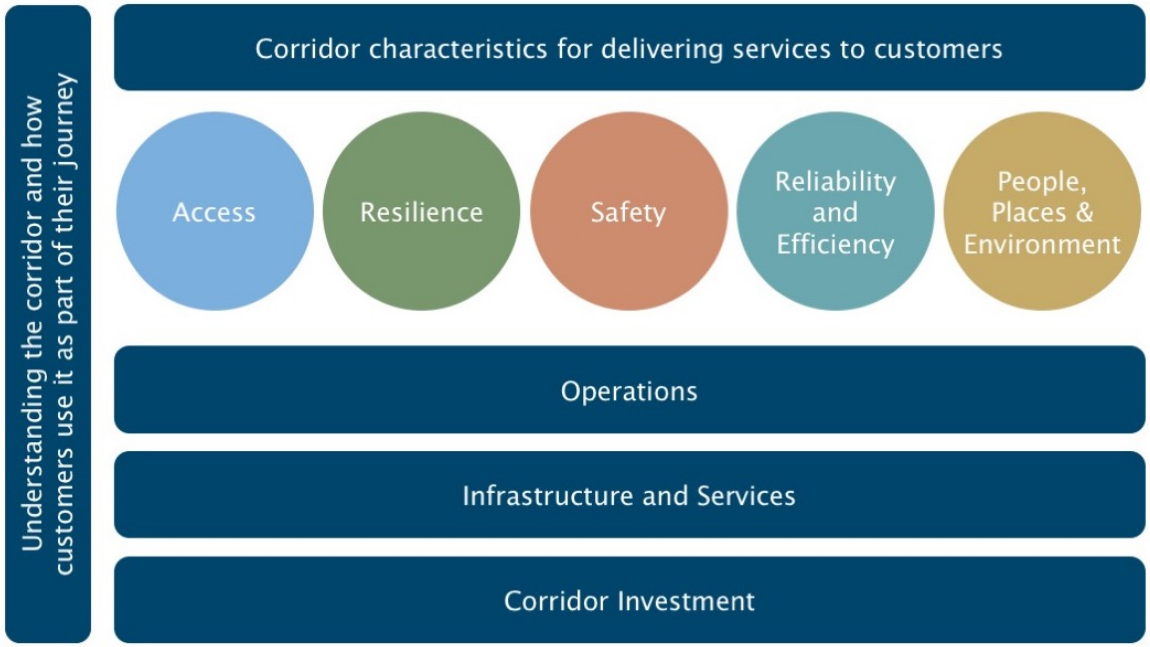
Planning is currently undertaken at the regional level, but typically significant journeys traverse more than one region. By considering the significant customer journeys and destinations, the corridor management plan is a vehicle to engage in regional and inter-regional conversations by focusing on the issues that are important and may extend beyond the state highways network.

How will we use it?

The Corridor Management Plan will provide the customer story and case for investment in maintenance, renewal and improvement on the corridor, based on targeting maintenance to achieve the appropriate customer levels of service within the context of providing value for money. The information presented in the corridor management plan helps to inform the business case for investment in State Highways for the subsequent triennial period.

In conjunction with the long-term view, the corridor management plan will provide for engagement with key stakeholders and partners to shape the future of the corridor. It responds to the needs of the users of the corridor to shape the future service levels.

Figure 2 - Corridor management plan framework



The corridor at a glance

Corridor overview

The corridor comprises the entire length of SH7 from its intersection with SH1 at Waipara to Greymouth, where SH7 intersects SH6. The corridor also includes SH69, SH65 and SH7A in their entirety.

The corridor primarily functions as a freight connector between Christchurch (via SH1) and the West Coast and Nelson-Tasman Regions. It also forms a critical lifeline connecting remote communities and towns linked by the corridor to each other and the wider South Island. Sections of the corridor also serve secondary functions as alternative routes for major adjacent state highways. SH7 is a detour route for SH73, being less impacted during winter than SH73 and is more resilient to seismic activity along the Alpine Fault line.

SH65 and SH7 between Springs Junction and Waipara serve as the alternative route for SH1 between Picton and Christchurch. At the time of developing this CMP, this part of the corridor is currently operating as the SH1 Picton to Christchurch alternative route (SH1 Alternative route) following the Kaikoura earthquake in November 2016.

As well as providing a network resilience function, the corridor connects tourist and recreation destinations on the West Coast, Nelson and Hanmer Springs to Christchurch and Canterbury.

The regional economy

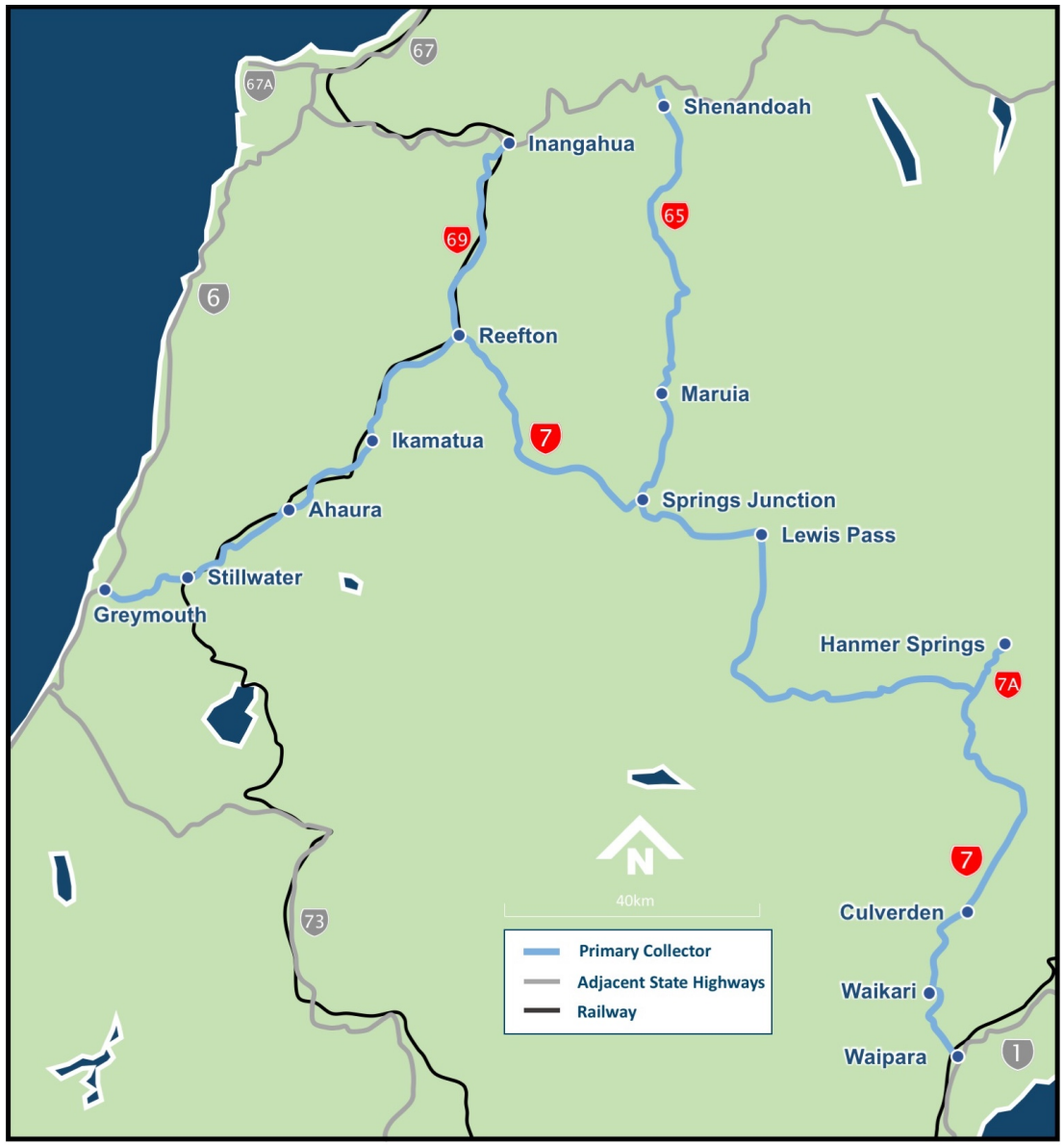
The corridor traverses Canterbury, West Coast, and Nelson-Tasman Regions.

The Canterbury region, has a population of 600,100 (13% of New Zealand's population), and accounts for 13.6% of New Zealand's GDP. Substantial dairying generates significant movements on the network. Increasing dairy intensification in Canterbury has the potential to further increase heavy vehicle movements over the corridor.

The West Coast has a population of 32,600 and has a low proportion of people under 40. Nelson-Tasman Region, with a population of 50,300 relies on the primary production sector to support the economy of the area. 12.9% of employment in the Region is in horticulture. Stone and pip fruit is also strong within Nelson-Tasman. The Region is growing as a cycle tourism area, attracting more tourists outside the peak season. The opening of both the Heaphy Track during winter and the Old Ghost Road in the Buller Gorge contribute to this growth.

The Abel Tasman National Park is also a key tourist draw for the area and there are opportunities for the region to grow the Cruise Ship market. Port Nelson also acts as a gateway facilitating economic development within the Region.

Figure 3 – Corridor overview



Understanding our customers

Key customers

Customers have different needs, expectations, and personal circumstances for using the transport system. Therefore, what customers value from the transport network needs to be understood in the context of who they are.

Rural residents

The corridor facilitates lifeline day to day access between remote rural communities/ towns and adjacent agricultural land on the corridor and the wider Regions. Use is localised around Greymouth, Reefton, Hanmer Springs and neighbouring communities.

Insights into rural resident users:

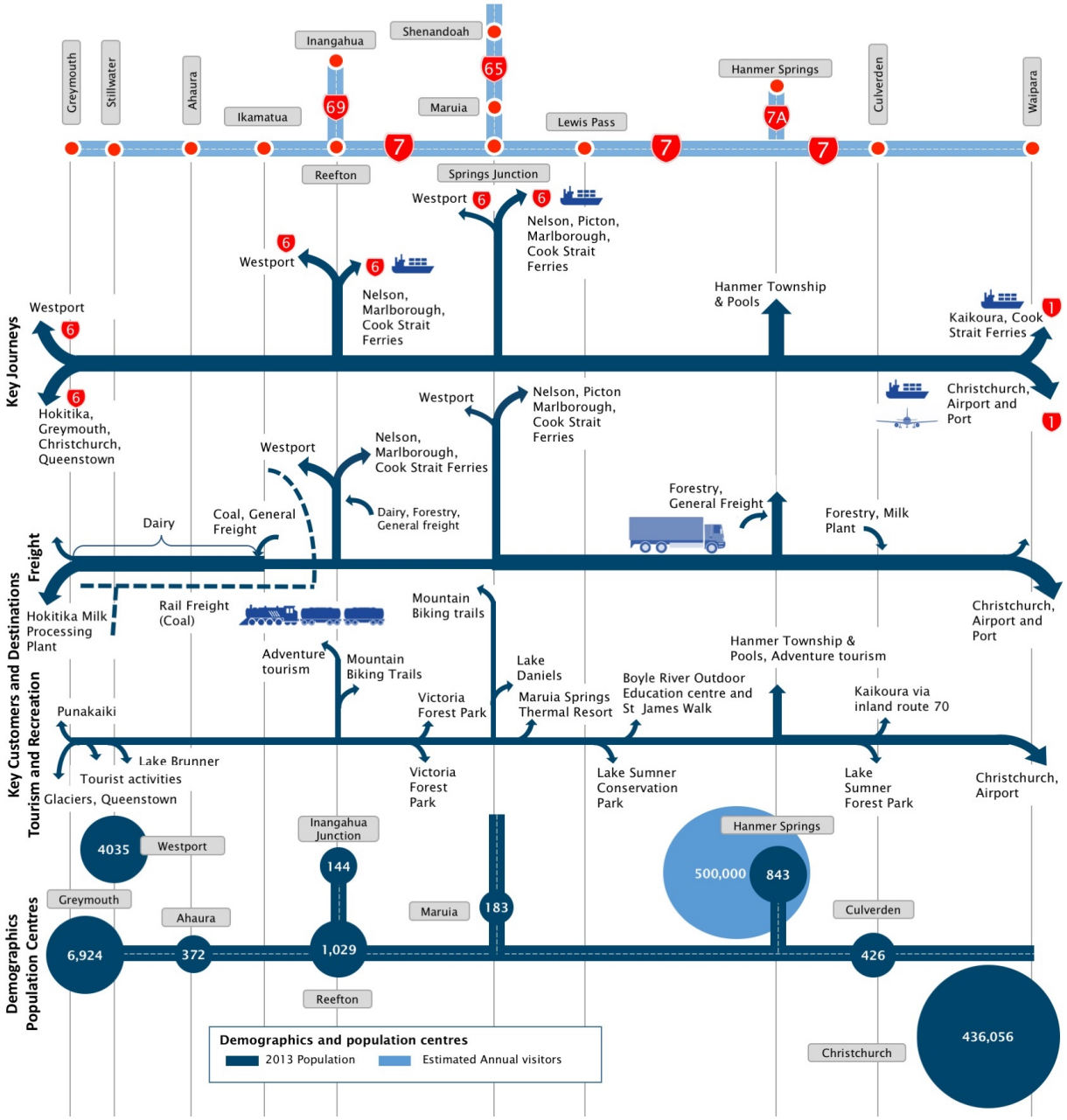
Road use: Private car, light vehicles and agricultural vehicles are predominant modes. Agricultural vehicles may be slow moving and may straddle the centre line. Stock movement may also occur. These activities are seasonal.

Road knowledge: Rural resident users are familiar with the road and weather conditions in their area. Journey times are predictable, provision of VMS and information is good. Are aware of challenging geometry, constraint points and passing places. Valuable source of local information and may be first to identify an incident or defect. May provide local assistance, on occasion (during weather event/ snow clearing functions etc.). Good relationships with road Contractors.

Pain points: Over weekend and school holiday periods traffic volumes increase and traffic may be more tidal (between Waipara and Hanmer Springs) leading to increased journey times and more unfamiliar drivers. Parts of the corridor have no or limited mobile phone coverage. Use of the corridor as an over dimension vehicle route increases slow moving vehicles. Limited slow vehicle bays/ pull over areas to let other vehicles pass when using agricultural vehicles.

Rural residents expect: Predictable journeys, good communications and relationships with Road Managers, Contractors and Operators. To be kept up to date on road information, weather, road conditions and hazards.

Figure 4 - Key customers, journeys, and destinations



Tourist users

Only a small number of tourist destinations are directly accessed from the corridor, however it connects key tourist destinations on the West Coast via SH6 ('Glacier Highway': Punakaiki, Fox glacier and Franz Joseph glacier and 'Great Coast Road' between Westport and Greymouth) to Canterbury Region and the East Coast. These users are unfamiliar with the corridor and include international and infrequent domestic tourists.

The corridor is sensitive to increases in tourist users when local events are held attracting an influx of visitors, such as the Wild Foods Festival in Hokitika. Journeys to Westport from Christchurch and Greymouth to Nelson via SH7 and SH69 are supported by the corridor. Tourists are likely to use SH7 and SH65 to access Nelson from Christchurch.

Generally, tourists travel by private car, rental car and self-drive campervans. A small number of tourists may cycle, despite unsuitable road widths and shoulder provision over most of the corridor. Tourists may use the corridor to access cycle trails around Inangahua, Murchison and West Coast. Links to the ferry connection at Picton can lead to tidal traffic, generally affecting those travelling from Picton to Greymouth using SH69 and SH7.

Private bus services operate between Christchurch and Reefton serving tourist groups.

Insights into tourist users are as follows:

Road use: Tourists are likely to travel long distances and may travel late into the night to reach their destination. May tow a boat or caravan. Traffic volumes increase during holiday periods and weekends as tourists travel from Christchurch to Hanmer Springs, Westport and Nelson.

Road knowledge: International visitors and infrequent domestic visitors have a low level of road knowledge and will often focus on the amenity of the area. Weather and road conditions can be unpredictable during winter and unfamiliar drivers may not be competent during winter conditions. Challenging geometry presents a hazard where drivers may be fatigued from long distance travel.

Pain points: A lack of passing opportunities can result in queues and driver frustration (Lewis Pass). Lack of formal stopping places along the corridor may result in driver fatigue. There are areas with little or no mobile phone coverage along the corridor. The temporary increase in traffic following the Kaikoura earthquake increases travel times and reduces LoS. Lack awareness of journey times and driving conditions.

Tourist users expect: Ability to drive comfortably and easily around the country, with adequate directional signage of tourist destinations and facilities. Suitable places to stop for photographs, rest breaks and refreshments. Regular and accurate traffic and weather information.

Local business and regular domestic users

The corridor provides connections for regular business travel by local commercial operators between rural towns linked by the corridor. Regular domestic users on the corridor journey between Christchurch to Nelson for recreation, visiting relatives or for business in Christchurch during the week. Journeys by these regular domestic users may contribute to tidal traffic flows over weekend periods.

There are no public transport services operating on the corridor, so these users generally travel by private car or light vehicle.

Insights into local business and domestic users are as follows:

Road use: Regular domestic and commercial users have good road knowledge and are confident on the route, which may lead to driver frustration with slow vehicles. May travel early morning or late evening.

Road knowledge: Familiar with the route and have awareness of challenging parts of the corridor and suitable passing places. Journey times on the corridor are generally predictable outside school holiday periods. Weather and road conditions can be unpredictable during winter leading to higher levels of uncertainty. May tow a boat or caravan for recreational use.

Pain points: Use of the corridor by a high proportion of slower unfamiliar drivers and slow vehicles can reduce journey time reliability. Use of the corridor as the SH1 Alternative route since the Kaikoura earthquake in November 2016 has significantly increased the number of unfamiliar drivers and slower vehicles on the route which has exacerbated the lack of passing opportunities leading to increased journey times. Lack of mobile phone coverage over significant parts of the corridor. A lack of passing opportunities can result in queues and driver frustration (Lewis Pass). Slow incident response times due to the remoteness of the corridor can impact business and commercial users.

Local business and regular domestic users expect: Predictable journey times, accurate and up to date information about traffic, weather, road conditions and hazards. Accurate and timely information about road conditions during winter is important for those travelling early morning or late evening when there may be less awareness of road conditions. Rapid incident response times.

Freight operators

The corridor facilitates critical connections for primary industries that drive economic activity, consequently good access and reliable travel time are critical. Dairy and milk processing plants at Culverden and Hokitika are reliant on the corridor to operate. When freight rail between Stillwater and Westport is unavailable, the corridor provides a resilience function facilitating transport of coal from West Coast coal mines to Ikamatua for stock piling until the rail connection becomes available.

Logging and forestry movements use the corridor to access Port Nelson. The corridor also facilitates domestic freight forwarding from Christchurch (Port of Lyttelton).

As the SH1 Picton to Christchurch alternative route, following the Kaikoura earthquake in November 2016, the corridor is currently a critical freight route servicing West Coast, Picton, Nelson, and Marlborough. This will continue until SH1 is reopened.

Parking areas for heavy vehicles along the corridor are limited. Heavy vehicles stack at Springs Junction when conditions on Lewis Pass prevent onward movements, when drivers require a rest period, and when drivers are changing. This facility has recently been expanded to accommodate more vehicles following the use of parts of the corridor as the SH1 Alternative route. Springs Junction provides a convenient location for a rest stop as drivers are unable to complete their journeys in one shift. Culverden also provides a key rest area with facilities.

The corridor is the only over dimension route from Picton to Christchurch and the West Coast. These movements account for 1800 vehicles a year with a key movement currently being the transportation of wine silos.

Insights into freight operators are as follows:

Road use: Journey time reliability and route resilience are important for schedule and time restrictions. Drivers are unable to make journeys in one shift therefore rely on stopping places. Temporary use of this lower standard route as the SH1Alternative route has caused a significant temporary increase in freight traffic on the corridor, and unfamiliar drivers.

Road knowledge: Knowledge of road conditions is high, confidence of managing the difficult conditions in winter is low. Driving the corridor is a long and technical haul and even for drivers familiar with the route, fatigue can be a hazardous factor in challenging locations where road widths are limited (Lewis Pass). Use of the corridor as the SH1 Alternative route has meant route is being used by more unfamiliar drivers.

Pain points: Narrow road widths and winding topography are challenging to navigate. Limited passing lanes reduce journey time reliability. Steep ascents and descents reduce optimal speeds. Single lane bridges and narrow road widths do not allow two heavy vehicles to pass safely. Winter conditions exacerbate difficult driving conditions for heavy vehicles. There are no stock effluent disposal stations along the corridor. Provision of accommodation for freight operators in rural areas is limited when demand is high (i.e. during its use as SH1 Alternative route).

Freight operators expect: Up to date information on reliable journey times and current weather conditions, especially during winter. Convenient places for heavy vehicles to stop to allow drivers to have a rest and passing places to enable safe overtaking. Provision for stock effluent disposal. Rapid incident response times.

How we deliver services along the corridor

Transport partners

The land transport system comprises more than State Highways. To provide customers with a reliable and safe journey usually requires the use of two or more transport infrastructure provider's networks. As such, the NZ Transport Agency works with other network providers to provide a one network approach.

The NZ Transport Agency works closely with the local authorities and regional councils along the corridor shown in Figure 5.

Collaboration along the corridor

The NZ Transport Agency works collaboratively with the Department of Conservation (DoC) on tree management along the corridor. Regular tree thinning maintenance is required along SH7 to reduce formation of ice from shading and to reduce the impact of falling branches under snow weight.

The NZ Transport Agency works closely with the Territory Local Authorities and regional councils in developing Emergency Procedures and Preparedness Plans (EPPP).

KiwiRail is also a key partner due to the proximity of their railway infrastructure on the corridor. The Stillwater Ngakawau rail line runs adjacent to the corridor for part of its length, crossing SH7 and SH69 in several places. The Midland line extends from Stillwater to Lyttelton Port and is a key transporter of coal freight.

The NZ Transport Agency is also working with Kaikoura District Council and Hurunui District Council on the management of SH70 between Culverden and Kaikoura to bring it up to an up to an appropriate standard for use as part of a diversion route to Kaikoura.

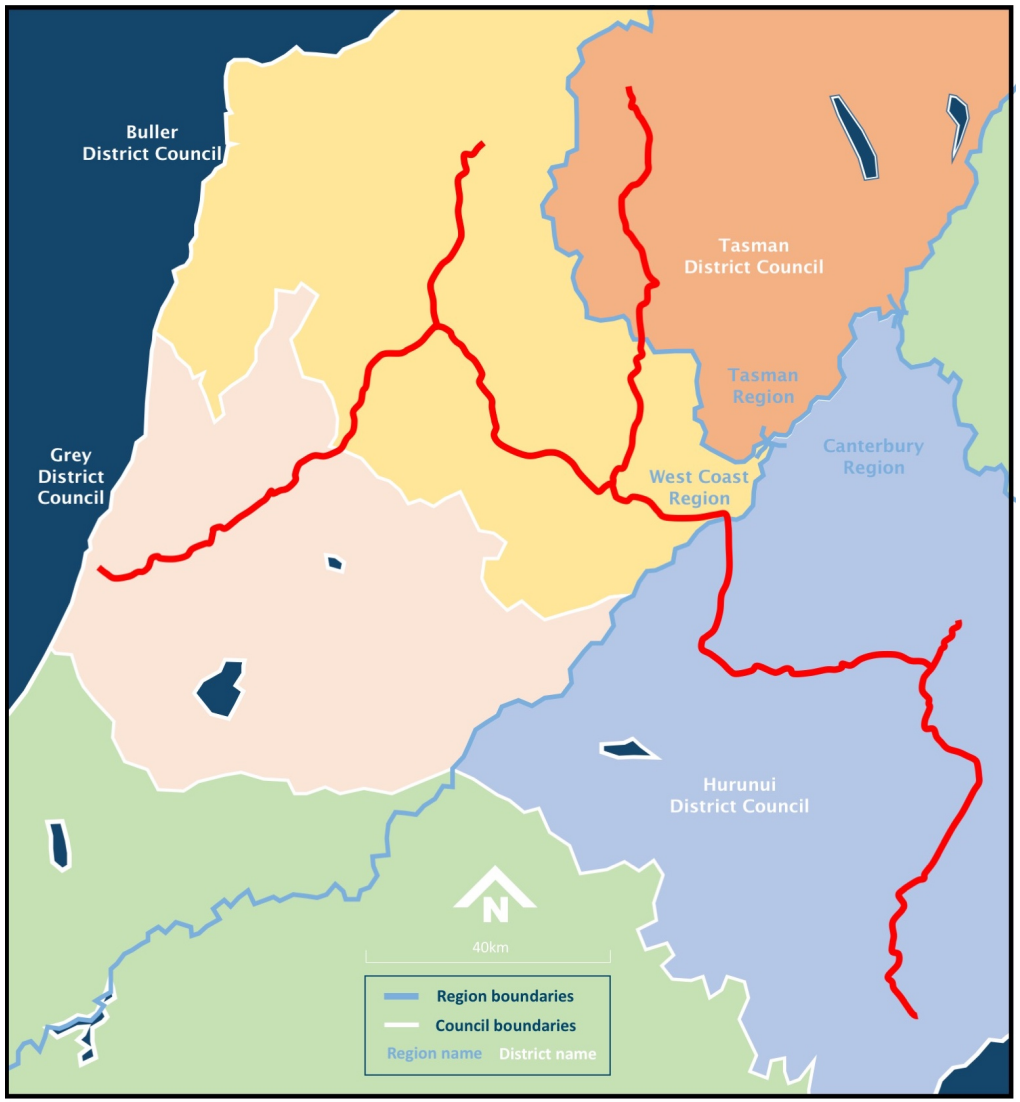
Wellington Transport Operations Centre

Intelligent Transport Systems (ITS) and traffic signals on the corridor are managed by the Wellington Transport Operations Centre (WTOC) who also assist in facilitating delivery of travel information for key journeys to customers.

North Canterbury Transport Infrastructure Recovery (NCTIR)

The Transport Agency is part of the North Canterbury Transport Infrastructure Recovery (NCTIR) alliance. NCTIR has a brief to strengthen SH7 and SH65 whilst it is used as the SH1 alternative route following the Kaikoura earthquake in November 2016. NCTIR alliance which includes KiwiRail and private contractors Fulton Hogan, Downer, Higgins and HEB construction is responsible for the maintenance, operation and restoration of the bridges, tunnels, roads, and rail links damaged by the Kaikoura earthquake to deal with the additional traffic and improve safety and journey reliability for customers.

Figure 5 - Map of associated local authorities



Network Outcomes Contracts approach

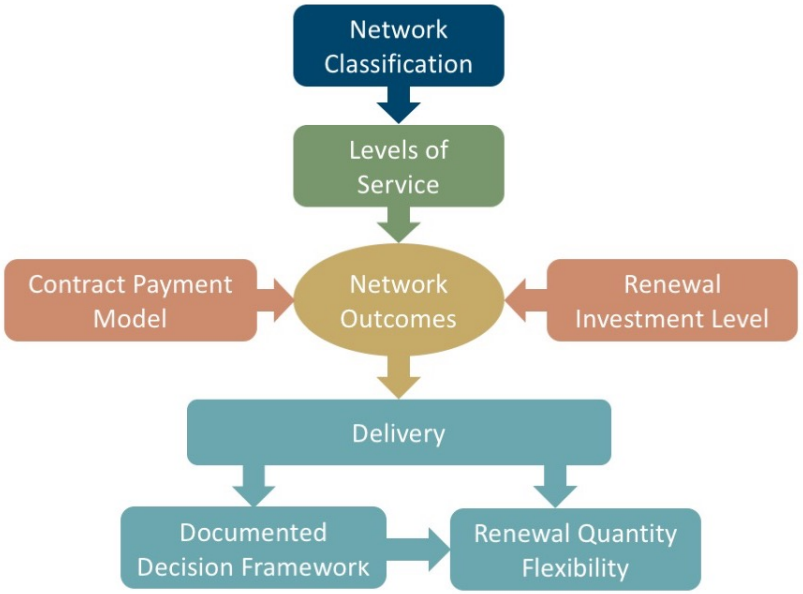
Network Outcome Contracts (NOC) are aimed at improving the effectiveness of service delivery for maintenance and operations of the state highway network. Elements of previous procurement methodologies (PSMC, Hybrid and Traditional models) have been integrated into the NOC contract model which delivers services through a primary supplier incorporating both professional services and physical works for all key maintenance activities.

To support this a central Governance and Management Group represents the interests of the Maintenance and Operations teams in the delivery of the NOCs. This group resolves issues, looks at opportunities for improvement, recommends changes to the national contact documentation, and ensures a consistent application, understanding and implementation of the NOC delivery model.

The core scope of work typically includes, but is not limited to maintenance, operations and renewals. The core scope of work typically excludes transport planning, ITS maintenance and management, capital works, emergency works reinstatement, Traffic Operation Centre activities, bridge and other structures management and repairs.

The contract process for the NOC is shown in Figure 6 below:

Figure 6 - NOC process



Collaborative delivery of services

The corridor covers three NOC contract areas, namely, North Canterbury, West Coast, and Nelson. The Boundary of the North Canterbury and West Coast contract areas occurs approximately 20km east of Springs Junction along SH7 in Lewis Pass, whereas the boundary of West Coast and Nelson contract areas occurs approximately 20km north of Springs Junction along SH65.

North Canterbury Network Outcomes Contract

The North Canterbury NOC is undertaken by Downer. The contract commenced on 1 May 2017 for 5 years with an opportunity for a further 2-year extension based on performance. This contract covers 763km of State Highway network in Canterbury.

West Coast Network Outcomes Contract

The West Coast NOC is undertaken by Fulton Hogan Limited. The contract commenced on 1 September 2015, with a 7-year contract and an opportunity for a further 2-year extension based on performance.

Nelson Tasman Network Outcomes Contract

Nelson Tasman NOC is undertaken by Fulton Hogan Limited. The contract commenced 1 April 2016, with a 5-year contract period and an opportunity for a further 2-year extension based on performance. These contracts are supported by the following regional specialist maintenance contracts:

- **Traffic monitoring sites** – Undertaken by AgFirst and commenced on 1 July 2014 for a period of 5 years.
- **Bridges and structures** – Undertaken by Opus International Consultants (Professional Services Contract) awarded on 1 July 2014 for a period of 5 years.

Drivers for change

The Waipara to Inangahua corridor caters for variable levels and types of customers and this demand is expected to grow in the future. The corridor is part of a key link between the communities of the West Coast and Christchurch for the supply of goods and services, and access to ports.

Alternative route

SH65 and SH7 sections of the corridor between Springs Junction and Waipara serve as the alternative route for SH1 between Picton and Christchurch. At the time of developing this CMP, this part of the corridor is currently operating as the SH1 Picton to Christchurch alternative route (SH1 Alternative route) following the Kaikoura earthquake in November 2016.

With significant traffic volumes on this section of the corridor as a result of its SH1 function, considerable investment has been made to improve Levels of Service.

Resilience

The corridor is a critical lifeline connecting West Coast communities not only to each other, but the wider South Island. It also connects tourist and recreation destinations on the West Coast, Nelson and Hanmer Springs to Christchurch and Canterbury. As such, the resilience of the corridor is important.

Economic growth and development

The regional growth programme for the West Coast has highlighted its vulnerability to fluctuations in two commodity sectors on which the Region is heavily dependent – dairy and minerals. The regional economy is traditionally driven by mining, dairying and tourism. This reliance on few sectors exposes the region to risk. Diversifying the economy and building resilience is an important challenge for the region's future.

The Growth Study for the West Coast has identified opportunities for, and barriers to economic growth which include several challenges linked to the transport network. These are safety, resilience and limited financial resources of the Region owing to its small and dispersed population.

Plans to increase tourism growth in the West Coast and Nelson-Tasman Regions will increase the number of visitor travelling in campers, buses resulting in slower vehicles on the corridor. The narrow winding and steep nature of the corridor together with high numbers of single lane bridges result in difficult driving conditions for unfamiliar drivers. This may necessitate further investment in the corridor to ensure it is equipped to support planned growth of these customers and to maintain appropriate customer LoS.

Given the remoteness of the West Coast Region from main population centres in the South Island and the challenging topography, the corridor is subject to vulnerabilities such as ice, snow, flooding and rockfalls which can cause significant disruption to communities and users that rely on the connection provided by the corridor.

Whilst tourist growth is expected to increase, the population growth in the West Coast is forecast to decrease which will reduce the available rates from which Territorial authorities can draw funds to invest in the transport infrastructure.

Understanding customer levels of service on the corridor

Current levels of service performance

The One Network Road Classification (ONRC) is a framework that categorises roads throughout the country depending on what purpose they serve. Importantly it will help New Zealand to plan, invest in, maintain, and operate the road network in a more strategic, consistent, and affordable way throughout the country.

Over time all roads in a particular category should offer an increasingly consistent and fit for purpose customer level of service (LoS) for road users. With the knowledge of current LoS experienced by customers, we can better target investment to meet future intended service levels.

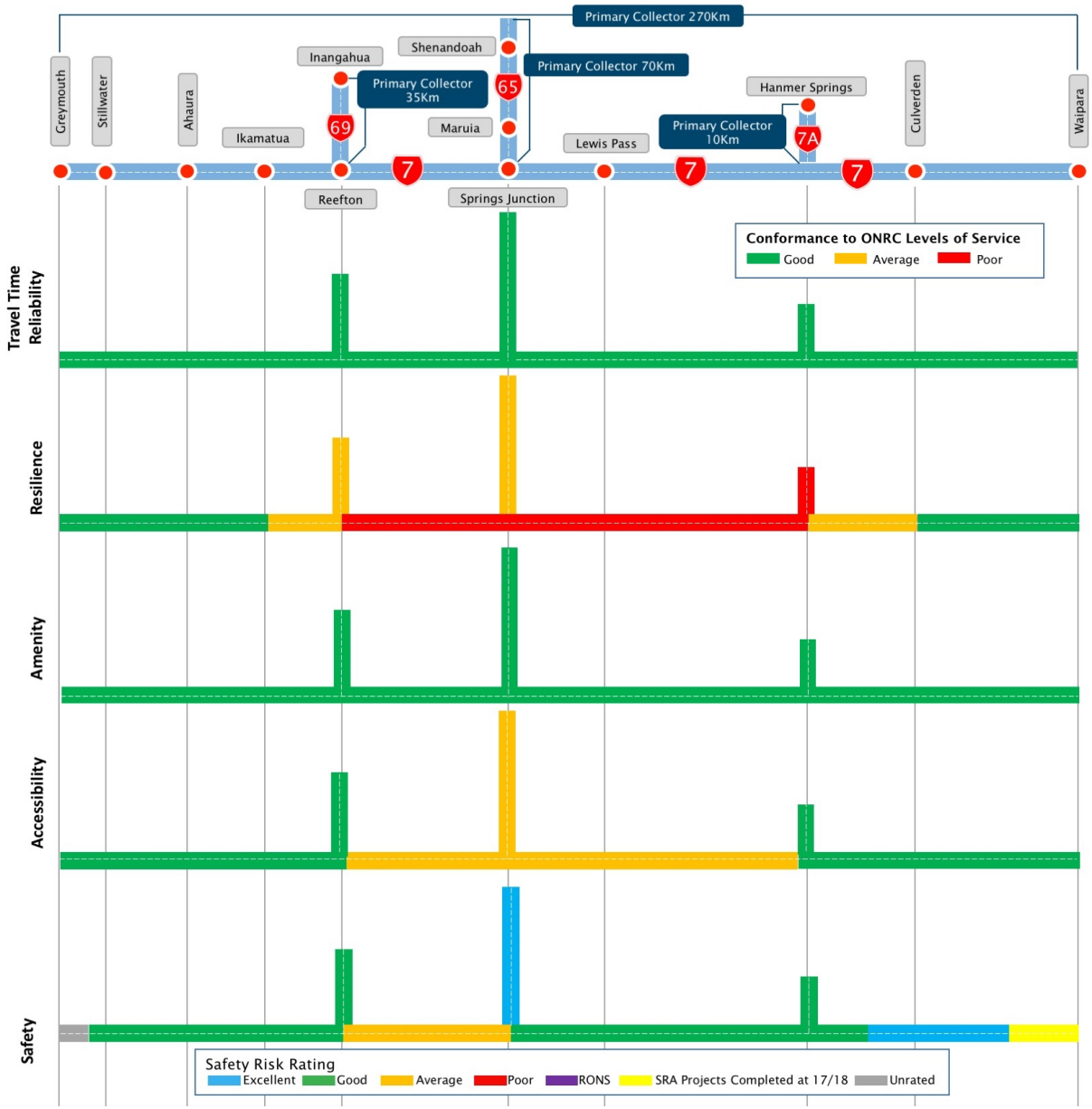
Overall, customers will be provided with the right level of road transport infrastructure where it is needed, determined by a robust, impartial, nationally consistent tool – the ONRC.

Road classification

The entire corridor is classified as a primary collector. The Kaikoura earthquake has led to use of the corridor as the SH1 Alternative route exposing customers and corridor assets to increased risk and poor customer LoS. Notwithstanding its use as the SH1 Alternative route, the corridor does not meet its LoS as a primary collector. Additional investment is needed to improve LoS to satisfactory level for its function as a primary collector. Consideration of how LoS and the current classification applies to those detouring customers whilst the corridor is in use as an alternative route is important. **This does not consider its current use as the SH1 alternative route.**

Overleaf provides additional context to explain the current levels of service along the corridor based on the road classification.

Figure 7 - Current ONRC levels of service performance



Summary of current performance

Figure 7 shows how the Waipara to Inangahua corridor is performing against the ONRC Levels of Service, as they relate to each of the three current classifications.

Levels of service performance has been determined by workshop participants in the development of this corridor plan and is therefore not solely based upon consolidated evidence from the ONRC technical measures.

A simple four-point assessment has been utilised as follows:

Exceeds	The level of service provided by the section of corridor for the activity under consideration exceeds what is required for a highway of that classification
Good	The section of corridor generally meets the LOS requirements for the activity and ONRC
Average	The section of corridor meets some but not all of the LOS requirements for the activity and ONRC classification
Poor	The section of corridor generally fails the LOS requirements for the activity and ONRC classification, or there is a significant gap in the LOS for some aspects of the activity.

Travel time reliability

Along its length, the corridor would usually provide reliable travel times due to low traffic volumes. However, on the SH65/SH7 section acting as the SH1 alternative route, current travel time LoS is particularly poor due to increased traffic volumes causing congestion. There is good provision for journey information via variable messaging signage (VMS). Minor constraint points exist along the corridor at single lane bridges and narrow winding road sections. Winter weather conditions can impact journey times due to difficult driving conditions and closures around Lewis Pass. Delays are further experienced over long weekends and holiday periods (summer) as both domestic and international tourists become more predominant users.

Resilience

Resilience is low between Hanmer Springs and Reefton owing to the lack of alternative routes. The route is generally prone to snow and ice during the winter, however it has a higher level of resilience than SH73 during these conditions. Given the proximity to river catchments, some low-lying areas of the route (Sylvia Flats, Reefton Saddle, Lewis Pass, Culverden, Reefton, Springs Junction) are prone to flooding incidents. Parts of the route are also affected by erosion/ scour undermining the road. The corridor provides a network resilience function to SH1 as the SH1 Alternative route and SH73 during snow events and should a seismic event on the Alpine Fault reduce its availability. SH7 and SH69 are also used to transport coal from the West Coast to Ikamatua when the freight rail connection is unavailable. The corridor has a high-risk profile between Hanmer Springs and Springs junction given its low classification for supporting these major routes and its lack of alternative routes.

Amenity

The corridor has a high standard of amenity along its entirety. Conservation areas and reserves along SH7 and SH65 offer spectacular scenery. There are no cycling facilities along the corridor, whilst this is considered appropriate for the current level of mode share, this may become a pressure in the future. Enhanced maintenance repairs are being effected to assist in maintaining customer levels of service due to the impact of the increased traffic from the SH1 alternative route.

Accessibility

The majority of the corridor, from Culverden to Ahaura, offers an average level of accessibility appropriate for its classification. From Waipara to Culverden and from Ahaura to Greymouth, there are rest stops and some passing areas for road users. Some sections of the corridor are narrow and tortuous resulting in limited passing opportunities.

The corridor has been made available for HPMVs (where possible) following the Kaikoura earthquake in November 2016. However, some sections of SH7 and SH65 are narrow for two way heavy vehicles. Temporary measures to assist pedestrians have been installed at Springs Junction to accommodate increased numbers of pedestrians crossing SH7 between facilities whilst the route accommodates SH1 detour traffic.

Safety

Safety on the corridor for a large section of SH7 is poor for the road classification.

Fatigue and unsafe passing are common factors contributing to crashes. Risk to road users increases during winter as road conditions through the mountainous area are affected by snow and ice. The presence of trees shading the road can increase the occurrence of black ice.

The collective risk rating from Hanmer Springs to Waipara (SH7) is medium to low. Personal risk is generally high from Ikamatua to Springs Junction and from Lewis Pass to Hanmer Springs. Sections of SH65 also have high personal risk.

Investment in safety on the corridor is planned through management and maintenance and some treatment strategies. However, there are still areas where risk is high and no investment is planned. The challenging topography may constrain improvements.

Improving the customer experience

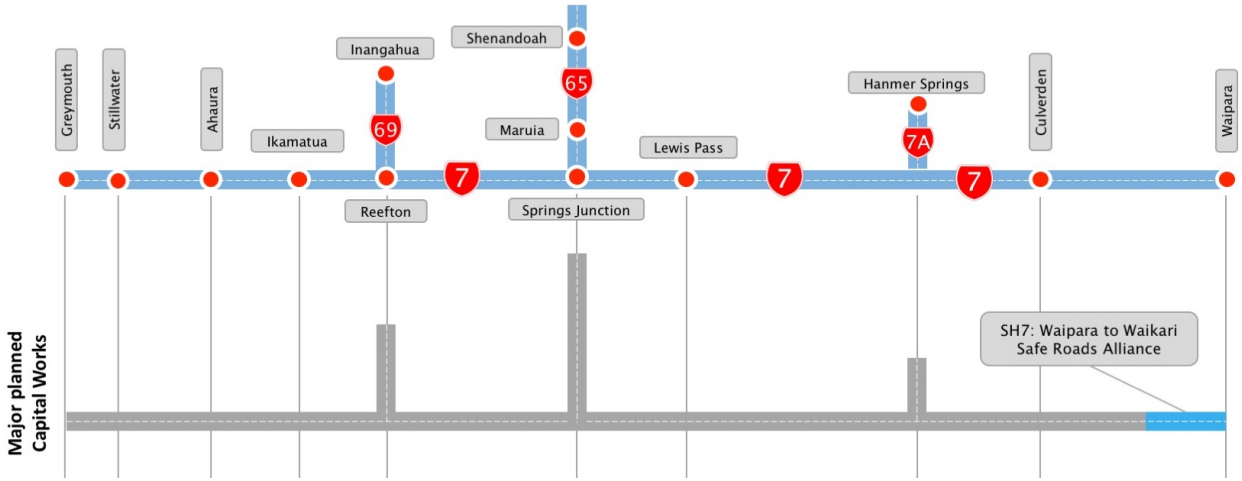
In responding to Customer Levels of Service (LoS) it is important to acknowledge that significant improvements to the corridor are planned or underway. There are several planned improvements across the corridor.

Waipara to Waikari on SH7 is a Safe Roads project which will also include improvements to safety barriers.

In addition to the improvements shown on Figure 8, a significant investment programme on SH7 between Waipara and Springs junction and SH65 is ongoing through NCTIR whilst these parts of the corridor are used as SH1 Alternative route. There are numerous locations where improvements and upgrades are currently occurring, these include: road widening at several critical points to ensure safe travelling for both light and heavy vehicles in both directions. To improve passing opportunities along SH7, slow vehicle bays are proposed between Springs Junction and Reefton. This is a high regional priority due to increased traffic and safety concerns during the use of SH7 and SH65 as the SH1 Alternative route. Safety barrier and terminal upgrades, signage improvements, heavy vehicle stacking areas and shoulder widening are also being implemented as part of this programme.

Planned improvements are discussed in greater detail later in this document.

Figure 8 – Significant corridor planned improvements



Access

Carriageway configuration

The carriageway consists of a two-way single carriageway along its entire length. There are pockets with slow vehicle bays on SH7 between Reefton and Springs Junction. There are limited passing opportunities elsewhere on the corridor except for a long straight 13km section between Culverden and Waipara. There are multiple single lane bridges providing constraint points on the corridor.

The corridor runs adjacent to rivers for significant sections of SH7 and for most of SH69 and SH65. Carriageway cross section and road widths are narrow along the route with many areas lacking appropriate shoulder provision. Winding sections through steep terrain create a difficult and constrained environment for opposing heavy vehicle traffic to pass each other safely.

Speed limits

The corridor is generally 100km/h, with speed limits of 50km/h, 60km/h, 70km/h and 80km/h through urban and community areas, appropriate for those environments.

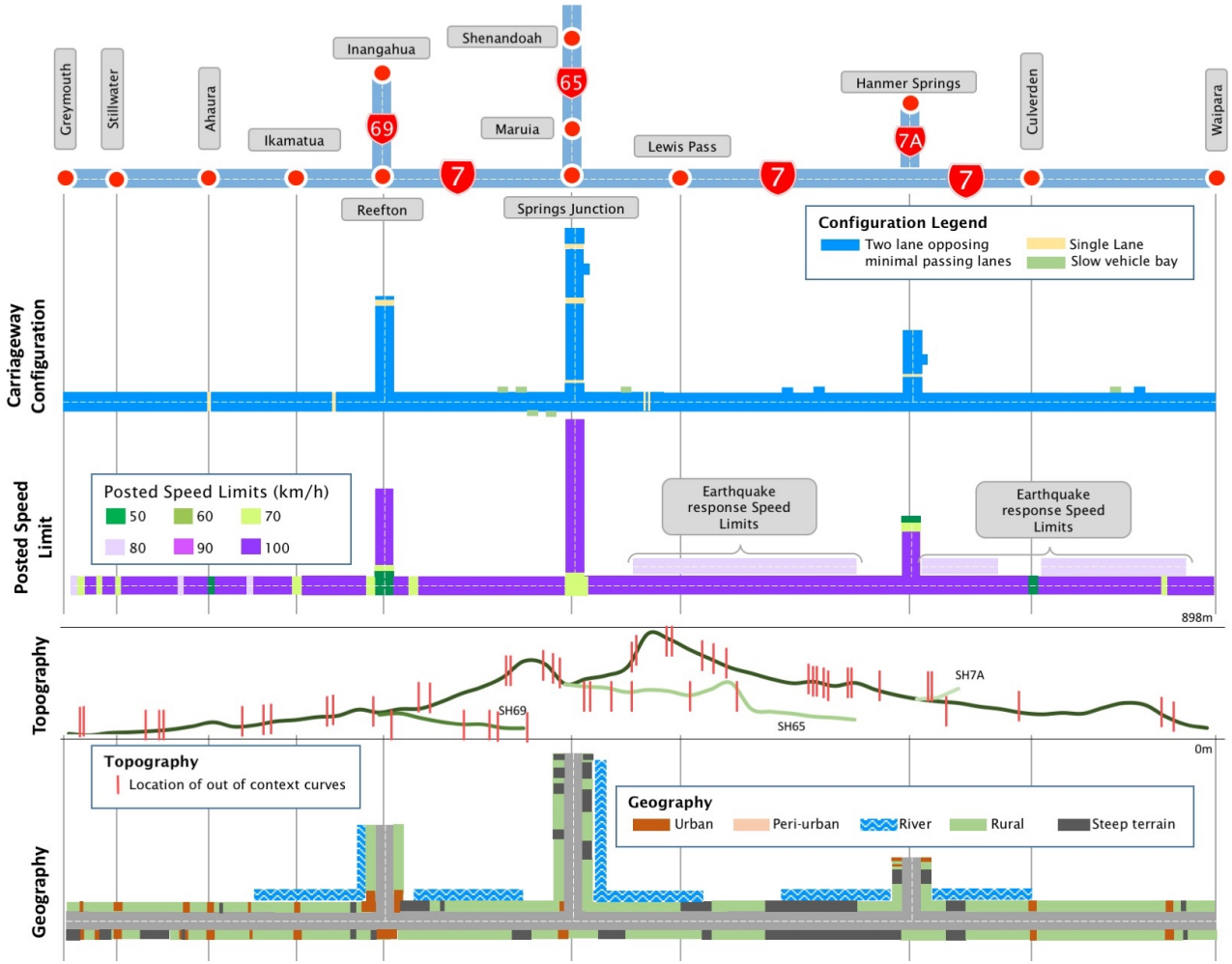
Temporary speed limits of 80km/h are in place (at the time of writing) with enhanced police enforcement to address safety and traffic issues resulting from the use of the corridor as the SH1 Alternative.

Topography/geography

The corridor navigates through rural highway landscape, occasionally passing through low density townships. Between Greymouth and Reefton and around Culverden, the road is generally low lying. The corridor passes through high altitude areas, traversing the Southern Alps through Lewis Pass. The corridor through the mountain pass is steep and sloping both on, and adjacent to the road on SH7 from Reefton to Hanmer Springs. Typical alpine geography and dense trees on both sides of the road create a tunnel effect in these mountainous areas.

The corridor has a significant number of out of context curves requiring careful navigation, which together with steep and winding topography, create a challenging journey.

Figure 9 - Corridor characteristics

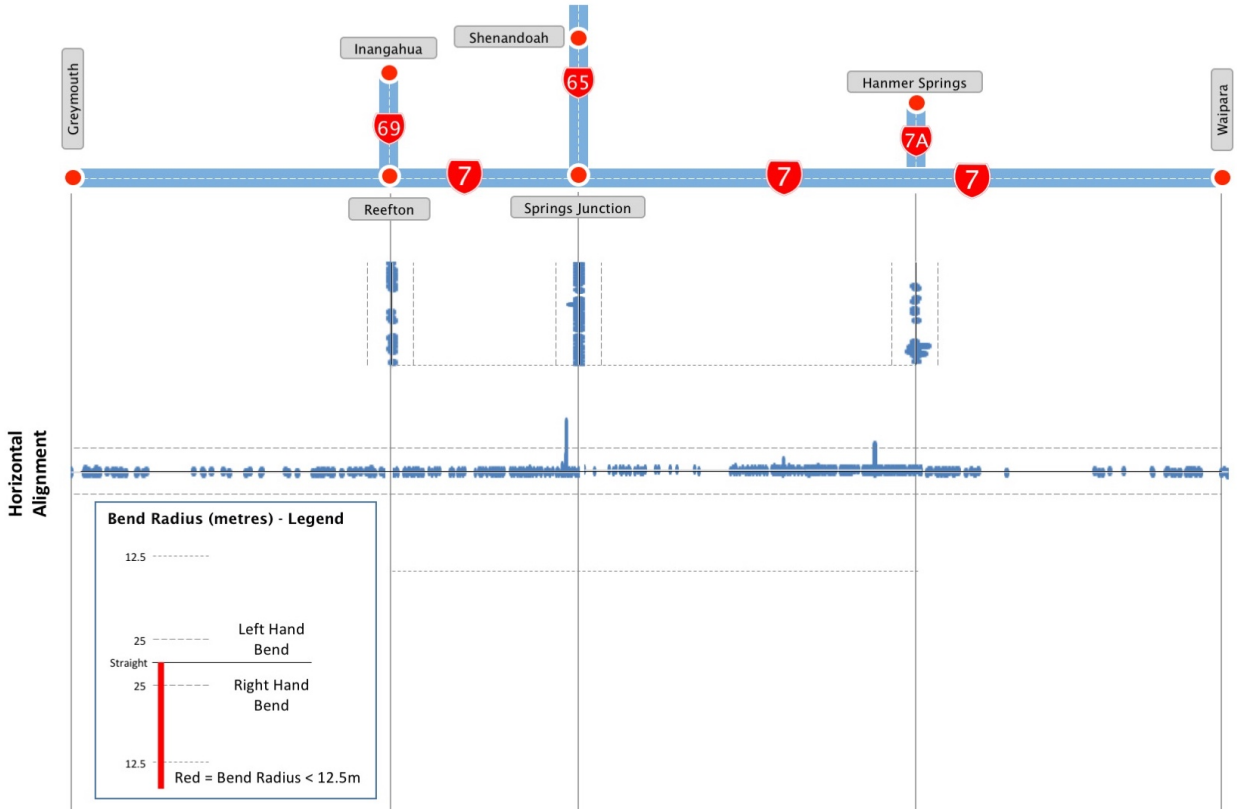


Horizontal alignment

The infographic shows the location and extent of the out of context curves along the corridor. The height of the bar is an indication of the severity of the curve calculated as $\frac{1}{radius^2}$, meaning the taller the bar, the smaller the radius of the curve. Note: Unlike other infographics, the horizontal alignment infographics are drawn in proportion to the length along the corridor. As such they are not shown in context with the intermediate points which have been excluded.

The corridor contains a regular occurrence of larger radius curves, with higher concentrations along SH7 between Reefton and Springs Junctions and in between Lewis Pass and Hanmer Springs (SH7A), and SH65. There are two sharp bends with a radius below 25m on the corridor at Island Hills and west of Springs Junction at the start of the Rahu Saddle.

Figure 10 - Horizontal alignment



Volumes

Traffic volumes are typically low along the entire corridor. Traffic volumes are highest between SH7A intersection with SH7 and Waipara, representing domestic and tourist activity which is prominent between Hanmer Springs and Christchurch. Heavy vehicle volumes are also most notable on SH7 between Waipara and its intersection with SH7A resulting from dairy movements associated with the milk transfer facility just south of Culverden. Heavy vehicle movements are also prominent between Ahuara and Greymouth as dairy farms on the corridor connect to the Hokitika processing plant south of Greymouth.

A temporary significant increase in traffic has affected the corridor as it operates as the SH1 alternative route.

HPMV routes

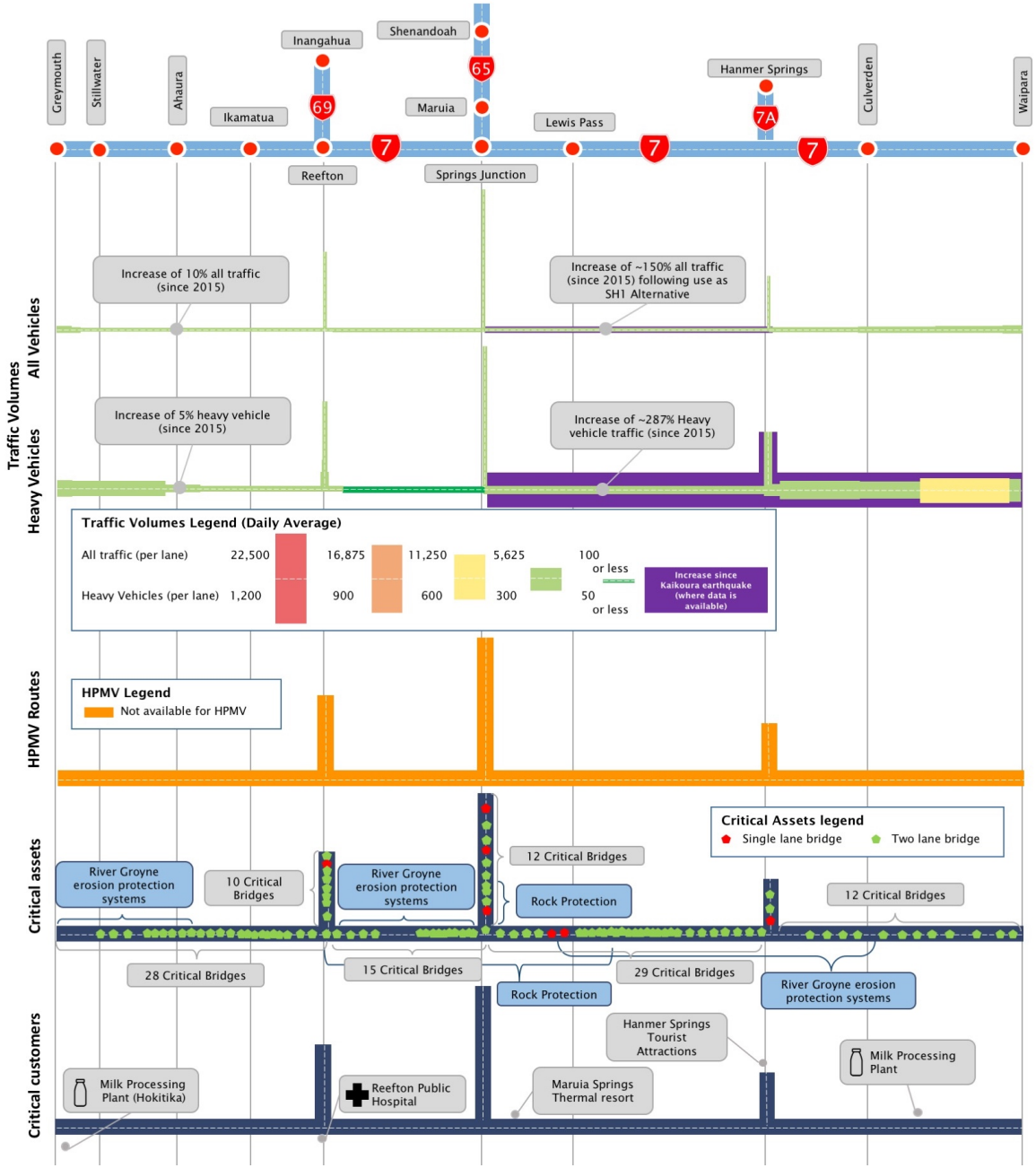
The corridor is not typically available for HPMV, however as a temporary measure following the closure of SH1, the corridor is facilitating HMPVs including 50MAX where geometry and structures allow. Monitoring and management regimes are in place to ensure that the assets can accommodate the increased requirements in the short term. The corridor is also the only state highway over dimension route between Picton and the West Coast to Christchurch accommodating around 1800 of these vehicle movements annually.

Critical customers and assets

There are critical customers adjacent to the corridor that rely on the corridor to be open 24/7. They are vulnerable to having interruptions which may impact productivity and services. Critical customers include Reefton Public Hospital and Hanmer Springs tourist village.

There are 109 bridges along the route which are critical. These are critical in some places where there are no alternative routes (Waiau Ferry Bridge). Also, many of the bridges carry the key fibre cables supplying the South Island's communication connections.

Figure 11 - Corridor capacity



Pressures

The pressures on the corridor that are resulting in increased demand or a reduction in levels of service for Access are the following:

- **Passing opportunities:** A lack of passing opportunities and slow vehicle bays on the corridor impacts journey times and can lead to driver frustration. This issue has been exacerbated by increased traffic volumes following use of the corridor as SH1 Alternative route, use by slow moving agricultural vehicles and over dimension vehicles.
- **Narrow road widths:** Narrow road widths and a lack of shoulders result in constraints for two-way heavy vehicle traffic passing on challenging sections of the corridor (Lewis Pass, Rahu Saddle). This is also a constraint for the route as an over dimension route.
- **Managing safe and appropriate speeds:** Reduced speed limits have been put in place due to increased traffic and safety concerns following use of the route as the SH1 Alternative route. These are currently temporary, but may be appropriate as permanent speed limits.
- **Lack of cycle access:** Increasing cycling popularity in Nelson-Tasman and West Coast Regions may encourage use of the route by cyclists given its mountainous nature. There is little scope, due to topography constraints, to provide for cycle facilities in a safe way.
- **Over-dimension**: SH7 is the only over-dimension route from Picton/Marlborough to Canterbury and the West Coast. SH1 route is constrained at a few locations – bridges that have overhead members restricting height to about 4.4m and similar restrictions both in height and width of the very short and very narrow road tunnels near Kaikoura (SH1).

Future considerations

The future considerations relating to corridor pressures, intervention triggers and appropriate levels of investment related to Access are as follows:

- **Additional passing opportunities:** Areas between Springs junction and Reefton are currently being investigated for slow vehicle bays. A corridor/ user journey centric investigation to identify where further additional pull over areas and passing opportunities may be of benefit to increase the LoS for road users and ensure a consistent and corridor wide approach to passing lane provision would be of benefit. Consideration of signage to advise unfamiliar drivers of distance to next passing opportunity.
- **Formal stopping places:** Review stopping places as part of the Visiting Drivers Strategy. It has also been discussed nationally to provide fewer but higher quality rest/stopping areas adjacent to state highways, therefore stopping places along the corridor should be reviewed for appropriateness and safety in line with this direction.
- **Review impact by HPMV use:** Enhanced ongoing maintenance investment is likely for structures and pavements on the corridor used by HPMV and consideration of the impact to asset renewal given the criticality of some of these structures. Consider investment to strengthen areas most vulnerable to provide a more robust alternative route in future and consider technologies to assist in defining the asset deterioration to better inform future maintenance programmes.
- **Review appropriateness for over dimension vehicles:** Given the corridor is the only state highway over dimension route between Picton and Christchurch, constraint points on the corridor should be considered for improvement (widening and straightening road geometry) in a prioritised manner to accommodate potential future increases in this type of movement on the route.

Resilience

The corridor serves an important network resilience role as the alternative route for SH1 and SH73. The corridor connects remote communities and lack of mobile coverage is an issue given potential long distances to travel for assistance and aid.

Unplanned incidents resulting from floods, snow and crashes cause prolonged closure of the route. Significant sections of the corridor suffer from a lack of mobile phone coverage which may prolong incident response times and delay hazard warning advice to drivers.

Vulnerabilities

The corridor is susceptible to slips, rockfall and flooding. Flooding events have previously closed sections of the corridor at Stillwater and Lewis Pass on SH7. Some sections of SH7 in the West Coast region are also vulnerable to scour.

During winter, the corridor is susceptible to snow and ice which closes significant sections of SH7 between SH7A intersection and Springs Junction. In the event of snow closures of Lewis Pass, heavy vehicles often stack at Springs Junction until the road is opened. In extreme events, there are limited facilities to cater for customers' welfare arrangements.

Alternative routes and diversion lengths

The corridor itself acts as an alternative route to other higher classification state highways. There is a lack of alternative routes available along the corridor resulting in long diversion routes, in some cases more than 500km. There is no alternative route for SH7A connecting Christchurch to Hanmer Springs.

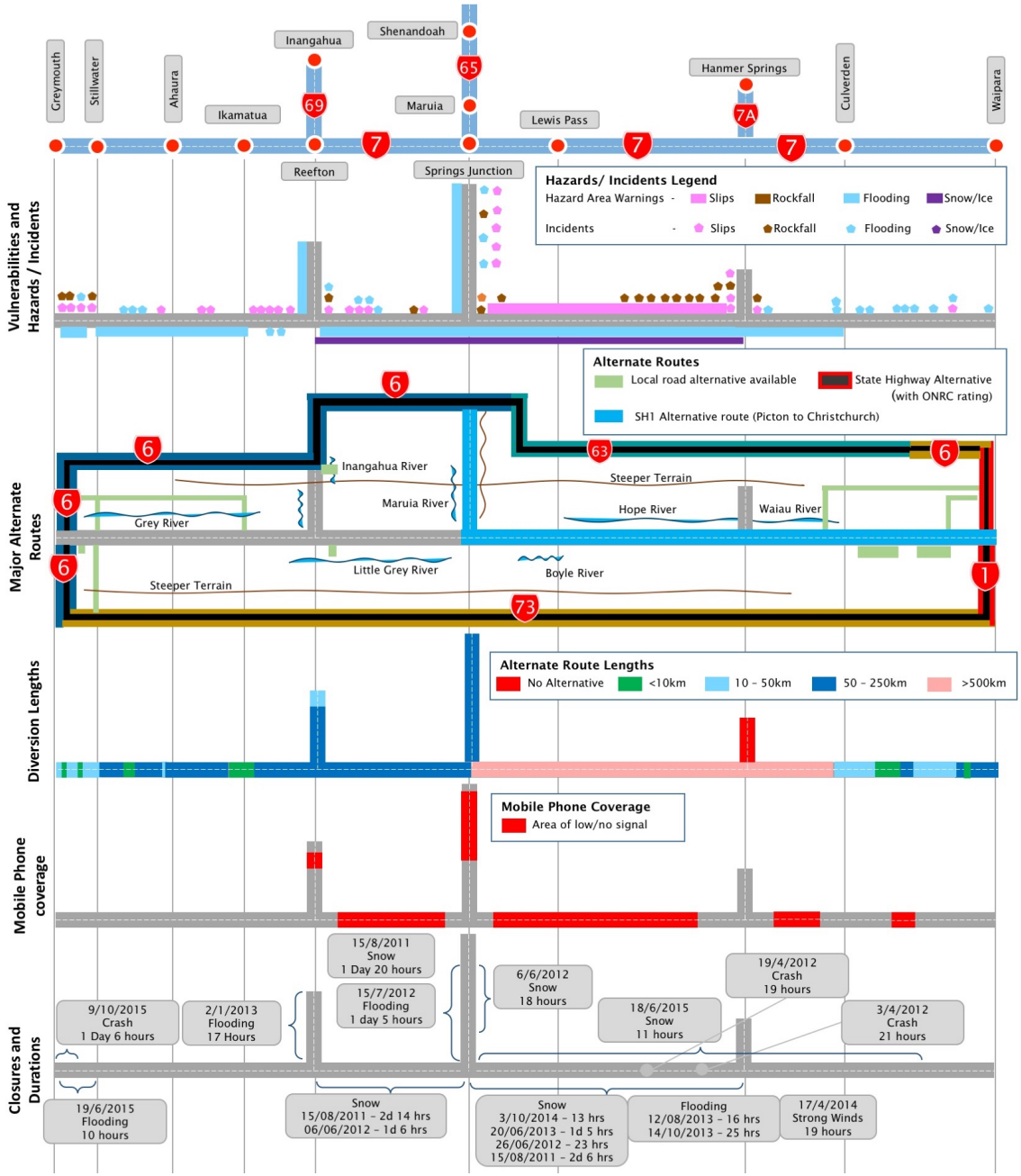
Mobile phone coverage

There is a lack of mobile phone coverage along large sections of the route as depicted in Figure 12.

Closures and duration

The major unplanned road closures and duration of interruption along the corridor in the last 5 years are shown in Figure 12.

Figure 12 – Resilience



Pressures

The pressures on the corridor that are resulting in increased demand or a reduction in levels of service for Resilience are as follows:

- **Lack of alternative routes:** A closure on this route such as SH7, SH7A, SH69 would have significant disruptions on surrounding population centres. In the event of a flood, snow or slip events, sections of the corridor may be closed for extended periods of time. This corridor is a critical link and any road closures will have a large impact on the servicing of local towns and population centres of the upper South Island. Snow may be a significant issue for the SH1 alternative section of the corridor through winter. A lack of suitable alternatives reduces the resilience of the community to disruption on SH7A.
- **Mobile phone coverage:** Lack of mobile phone coverage along sections of the route. When customers/ Transport Agency maintenance staff encounter issues or incidents, they may be unable to contact the relevant incident responders immediately due to areas of the corridor having no/ little mobile phone coverage. This can result in a delayed response to an incident.
- **ONRC classification:** Classification of some of the corridor does not consider its role as an alternative for major state highways. Therefore, the provision for maintenance and upgrades to ensure the overall resilience of the corridor may not be given appropriate priority for its function.
- **No alternative for over dimensional vehicles**: The corridor provides the only over dimension route by road from Picton to Christchurch. If the corridor becomes unavailable for over dimensional vehicles, there are currently no alternative roads to facilitate movement of these vehicles.
- **Unpredictable significant traffic volume increases**: As a key alternative route, the corridor may experience long periods of sustained significant traffic increases which puts pressure on the asset and customer LoS.

Future considerations

The future considerations relating to corridor pressures, intervention triggers and appropriate levels of investment related to Resilience are as follows:

- **ONRC classification:** Review the classification of sections of the corridor used as alternative routes to consider appropriate LoS when operating as the diversion route.
- **Invest in technology**: Investment in improved innovation in technology and practices. Resilience is a focus for this corridor, therefore it will be increasingly important to ensure that new technologies are employed and best practices are utilised for winter maintenance and incident response to maintain optimum LoS.
- **Continue to plan for over dimension vehicles along the corridor:** Rapid response time to incidents to allow for over dimension vehicles to continue to use the route. Appropriate traffic management in association with over dimension vehicles.

Flooding on SH7 near Stillwater

Reliability and efficiency

Efficiency

The corridor generally performs well for travel time reliability. Localised sections of the corridor have lower LoS due to challenging topography and single lane bridge constraints. These require reduced speeds to navigate, although delays to customers are minimal. There are also steep ascents and descents through Lewis Pass and Boyle Hill which can cause slower speeds for heavy vehicles.

Travel time LoS can reduce between Waipara and Hanmer Springs over weekend and holiday periods. Traffic volumes on the corridor increase and have a more pronounced tidal effect on Friday and Sunday evenings as recreational users travel to and from Hanmer Springs for the weekend.

Travel time reliability LoS on SH7 (between Waipara and Springs Junction) and SH65, is considerably impacted in the short term following significant traffic volume increases. Operation of some of the corridor as the SH1 alternative route has led to sections of the corridor operating near capacity, creating congestion and queuing traffic around the frequent constraint points.

Temporary traffic signals installed at Maruia Bridge, north of Springs Junction assist in managing the flow of traffic across the single lane bridge. These are monitored by WTOC.

Variability

There is no variability data available for the corridor.

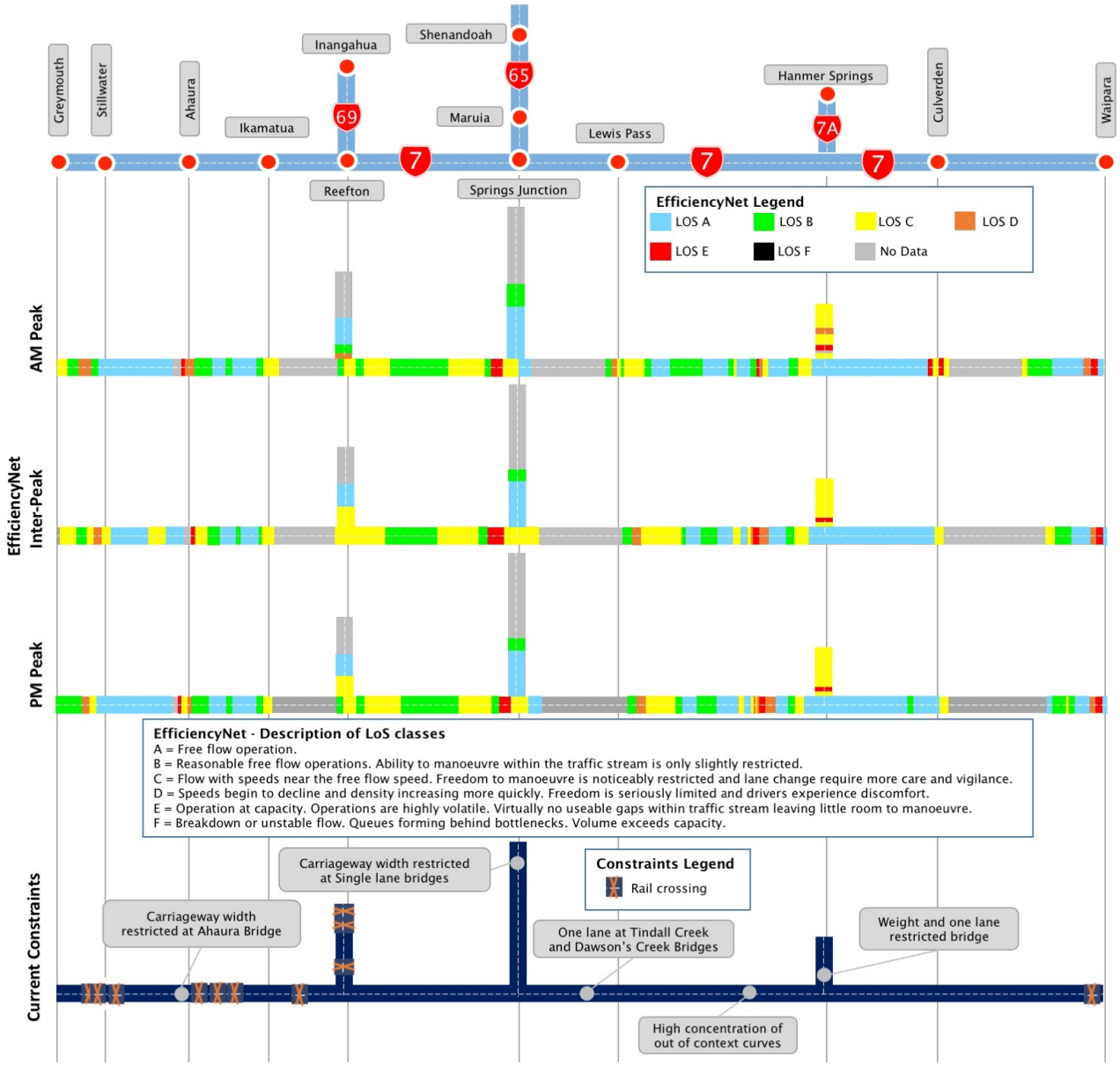
Commercial vehicle average speed

There is no commercial vehicle average speed data available for the corridor.

Current constraints

The major current constraints on the network affecting journey reliability and efficiency are shown in Figure 13. These typically relate to single lane bridges, narrow carriageway widths and rail crossings.

Figure 13 - Reliability and efficiency



Pressures

The pressures on the corridor that are resulting in increased demand or a reduction in levels of service for **Reliability and Efficiency** are as follows:

- **Traffic volume fluctuations:** There has been a temporary increase in travel time following the Kaikoura earthquake November 2016 with significant traffic volume increases whilst parts of the corridor operate as the SH1 alternative route. This is resulting in traffic queues and congestion at constraint points such as the Lewis Pass, Tindall Creek Bridge Dawson's Creek Bridge and other one lane bridges.
- **Limited passing opportunities:** Lack of suitable pull-over areas, passing lanes and slow vehicle bays along the corridor limit safe opportunities to pass slower vehicles. This results in queuing traffic and congestion.
- **Incomplete data sets:** There are considerable sections of missing data, including variability and speed data which does not provide a complete or accurate measure of the LoS.
- **Managing customer expectations:** Whilst sections of the corridor are being used as the SH1 alternative route, managing expectations of customers whilst LoS are reduced is critical.
- **Lack of mobile phone coverage**: Lack of mobile phone coverage in large sections of corridor may impact incident response times. This leads to increased delays for other customers if passage over the corridor is affected.
- **Single lane bridges:** There are several locations where single lane bridges restrict travel speeds on the corridor. Particularly Tindall Creek Bridge and Dawson's Creek Bridge.
- **Use as an over dimension route:** The corridor serves as the only over dimension vehicle route between Picton and Christchurch and West Coast and Christchurch. These slow-moving vehicles impact reliability of the journey for other users of the corridor. Other customers may follow an over dimensional vehicle for long periods of time which could result in significant delay to journey times, and driver frustration.

Future considerations

The future considerations relating to corridor pressures, intervention triggers and appropriate levels of investment related to **Reliability and Efficiency** are as follows:

- **Passing opportunities**: Investment in regular and consistent pull-over areas, passing lanes and slow vehicle bays on SH7 between Waipara and Springs Junction. This will improve journey time LoS and reduce driver frustration.
- **Driver behaviour education**: Working with customers to improve behaviours such as pulling over to let vehicles pass, appropriate speeds and driving appropriately for road conditions.
- **Incident response**: Responding quickly and efficiently to incidents on the network is important to maintaining reliable and efficient journeys for customers. A robust monitoring and response regime over the corridor supported by technology would provide additional levels of service to customers (i.e. rock fall barriers linked to activated signage).
- **Provision of information:** Provision of information to inform customers of delays, road conditions, incidents and journey times on the route will become increasingly important. Having permanent variable messaging signs (VMS) in place including mobile VMS will allow customers to get real-time information on road conditions, enabling them to make suitable amendments to their journey, particularly in advance of areas with no alternative routes. Supporting this information with spatial GIS data will also be a benefit to assist customers less familiar with the route since it is more readily understandable.
- **Strategy to upgrade one lane bridges:** Given the corridor serves as an alternative to SH1 and SH73, significant investment to upgrade these structures to provide a suitable LoS to accommodate periods of increased traffic volumes may be considered. A strategy for upgrading these over the long term may be appropriate.

Safety

Collective risk

Collective risk along the corridor is generally rated low, however there are sections with medium-low and medium ratings along SH7. The medium-low and medium areas are concentrated around the intersections of SH7 and SH7A, SH7 and SH69, and Lewis Pass.

There are no high collective risk sections along the corridor. Given the length of the corridor and the number of fatal and serious injury crashes which occur, no areas are identified as having a high collective risk.

Personal risk

Personal risk rating is generally high from the approach to Reefton through to Hanmer Springs including the Lewis Pass. Hanmer Springs to Culverden has a medium-high personal risk. There is a section between Stillwater and Ahaura with medium-high personal risk. The areas of high and medium high personal risk do not have a high collective risk rating.

Star rating

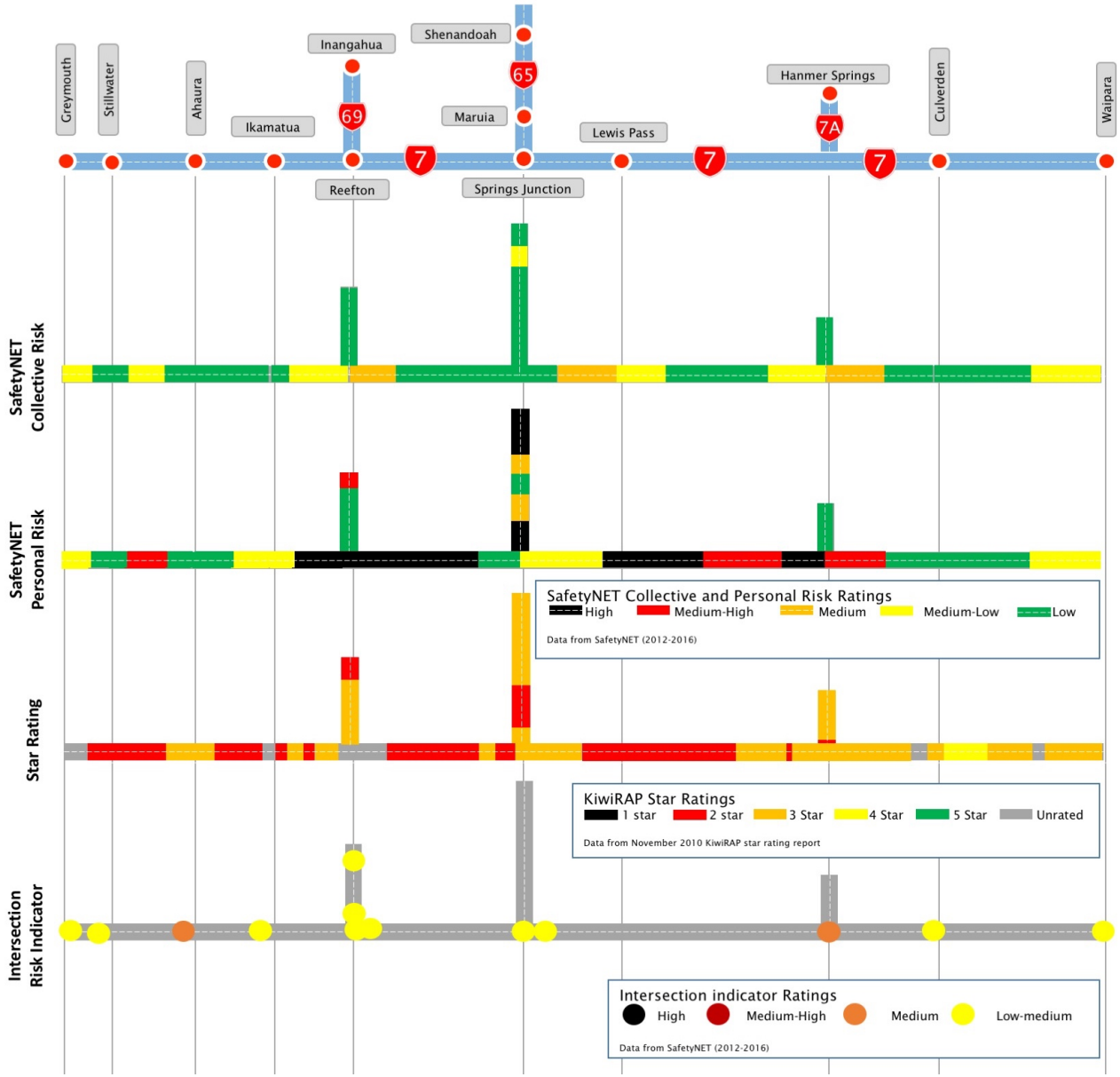
The star rating is varied along the corridor. The corridor has a 2 or 3-star rating indicating some deficiencies in the road features. Five segments of the corridor are unrated. Lewis Pass has a 2-star rating.

The areas of greatest risk crash (2-star rating) correlate to the areas of high personal risk.

Intersection risk indicators

There are no high-risk intersections along the corridor. There are two intersections rated medium risk, the SH7/7A intersection and SH7/Ahaura intersection. Low-medium risk intersections occur along the corridors entirety.

Figure 14 - Safety



Pressures

The pressures on the corridor that are resulting in increased demand or a reduction in levels of service for Safety are as follows:

- **High personal risk**: between Ikamatua and Hanmer Springs there is high and medium high personal risk along the corridor. This section has a high prevalence of fatal and serious crashes relative to the vehicle kilometres travelled.
- **Driver fatigue**: Fatigue is a contributory factor to crashes. Long travel times for key journeys and lack of stopping facilities contribute to fatigue. This is exacerbated when travel time is longer due to the temporary increase in traffic.
- **Speed management**: Drivers are not driving to the conditions and use excessive speed for the road geometry and topography. Drivers also use excessive speed to pass vehicles which often results in dangerous manoeuvres.
- **Lack of passing opportunities**: Limited passing opportunities and slow vehicles result in unsafe passing manoeuvres.
- **Out of context curves**: The terrain and topography of the corridor results in a tortuous road environment in places, and out of context curves, requiring lower speeds and careful navigation when driving.
- **Managing driver expectations**: Some sections of the corridor have a low KiwiRAP star rating (2-star). For some corridor customers (SH1 alternative route traffic) used to higher star rated routes with more guidance, these customers may have higher expectations of the provision of safety information provided to customers.
- **Increasing maintenance burden**: Safety improvements may involve new safety barrier systems and frangible assets along the route. Additionally, implementation of the safe and appropriate speeds framework may lead to supplementary speed signage. Additional assets on the route will increase the maintenance burden.
- **Mix of agricultural activities with traffic**: Due to the proportion of agricultural vehicles used along the corridor, together with a lack of pull off places or slow vehicle bays, drivers may be surprised by sudden low moving vehicles, or stock movement along the corridor, particularly in winding areas where visibility is restricted.
- **Rail crossings**: Rail level crossings appear frequently on the corridor on SH7 between Reefton and Greymouth and on SH69.
- **Increasing demand for cycling**: Increasing numbers of cyclists using the route is likely to impact road safety as there are inadequate road widths and a lack of shoulders along the route to provide adequate facilities. High proportions of heavy vehicles on the route also increase the risk to cycle users.

Future considerations

The future considerations relating to corridor pressures, intervention triggers and appropriate levels of investment related to Safety are as follows:

- **Safety improvements**: Investment in widening the road in key areas where it is practicably possible. Invest in safety barriers, road user safety signage, widening shoulders in areas of high risk between SH7A intersection and Reefton and also where star rating falls below the 3-star. Investment in low cost safety improvements under the GAP programme is required to improve the customer LoS.
- **Speed limits**: Review speed limits along the corridor to ensure alignment with the speed management guidelines and safe and appropriate speed guidelines. This may also include threshold treatments to better define the boundary between rural and small townships.
- **Passing opportunities**: Planned investment on the corridor will improve passing opportunities between Springs Junction and Reefton on SH7 and on SH65. Consider investment for other areas of the corridor, from Greymouth to Reefton and Springs Junction to SH7A intersection to ensure consistency across corridor.
- **Information provision**: Through VMS signage and mobile phones, communicate winter hazards on the corridor to road users. Ensure appropriate level of investment in winter maintenance to maintain LoS. Monitor and maintain winter roads accordingly to enable safe conditions for customers. This may also require investment in technologies to assist with communications.
- **Stopping places**: Review the appropriateness of rest and heavy vehicle pull over areas along the corridor to encourage drivers to stop for a break. Incentives such as food and beverage or Wi-Fi connections may assist in increasing use of these areas.
- **Improving driver behaviour**: Ensuring heavy vehicles and slow vehicles pull over at appropriate locations to let traffic past. Working with customers to educate drivers to only use appropriate passing opportunities on the route will assist in this and also provision of signage to assist customers on corridor.

People, places and environment

Natural environment

The corridor traverses rural highway and forest landscape along much of its length. Lewis Pass is the saddle between the valleys of the Maruia and Waiau rivers, which constrains the road geometry and characterises the road topography. Trees along the route are managed through regular thinning maintenance and the dangerous trees programme.

River catchments navigate adjacent to the corridor, contributing to the risk of flooding. Rivers also cause scour and slumping of the road between Greymouth and Reefton. Gorse and broom requires management and control around Lewis Pass. DoC manages 85% of land on the West Coast.

Noise, vibration and air quality

Due to low traffic volumes, noise and vibration is not typically an issue. Temporary traffic volume increases and heavy vehicle use has led to complaints about noise in Culverden and Hurunui.

Reefton is low lying and sometimes is affected by fog, however this is not vehicle related.

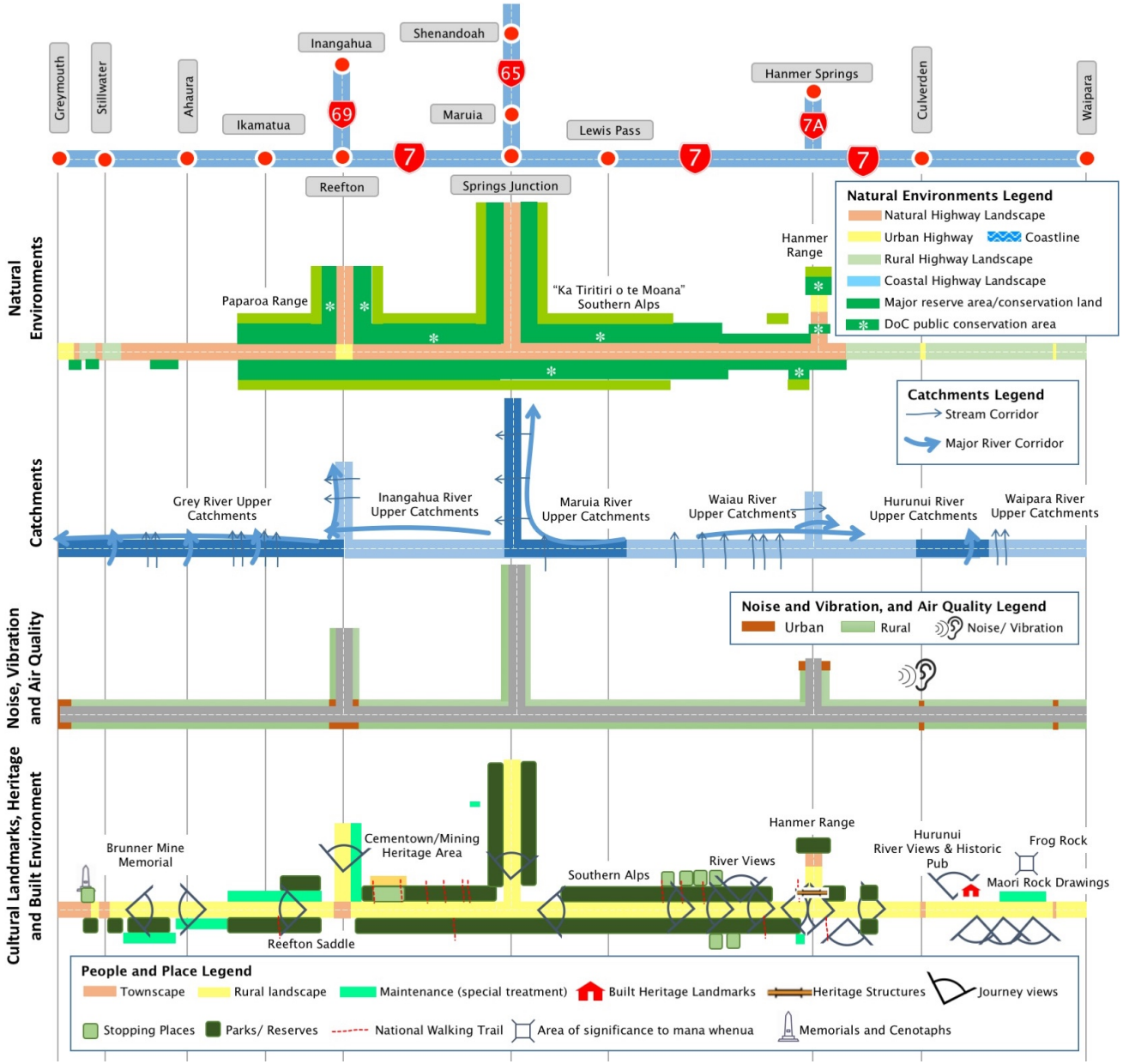
Cultural landmarks, heritage and built environment

The visual amenity of the corridor contributes attractiveness to journeys. Whilst there are no national cycle trails and walking trails along SH7 and SH65, these routes facilitate access to several popular trails in Nelson-Tasman Region. The Brunner mine memorial is accessed from the corridor and is a popular attraction around Greymouth. Recreational use of SH7A is high with its access to jet boating, camping and adventure activities. There is an area close to Culverden of significance to mana whenua.

Waiau Ferry Bluffs Bridge is a heritage structure having special maintenance requirements.

Urban areas along the corridor form useful stopping places with facilities Hanmer Springs, Springs Junction and Reefton are key places. Outside these areas there are little other facilities.

Figure 15 – People, places and environment



Pressures

The pressures on the corridor that are resulting in increased demand or a reduction in levels of service for **People, Places and Environment** are as follows:

- **Environmental impact of visitors:** Increase in tourists may increase pressure on existing tourist facilities such as restrooms.
- **Stopping places and tourism access:** There is minimal provision of appropriate facilities in recreational areas for road users to pull over and enjoy the views. An increase in tourism is resulting in additional demand for access to conservation/ recreational areas and a lack of stopping places, access and facilities is resulting in inappropriate stopping along the corridor.
- **Vegetation management:** Ongoing maintenance investment is required to manage the impact of trees adjacent to the network.
- **Proximity of rivers to the corridor:** Rivers are located adjacent to the corridor from Greymouth to Reefton, and from Culverden to Waipara. In some areas erosion and scour impact the road pavement, requiring significant investment to remedy (Sylvia Flats).
- **Noise management:** Continuing use of parts of the corridor as SH1 alternative route may increase pressure within Culverden and Hurunui to reduce the impact of increased vehicle noise.
- **Substandard access to increasingly popular facilities:** Access to walking tracks such as St James walkway, Lake Sumner national park from SH7 and Hanmer forest and Victoria forest park from SH7A are likely to increase in popularity as recreational use and tourist use increase over the corridor. Where these accesses are substandard this may present lack of appropriate facilities for customers and could present a hazard to other road users.

Future considerations

The future considerations relating to corridor pressures, intervention triggers and appropriate levels of investment related to **People, Places and Environment** are as follows:

- **Review stopping places:** All stopping places along the corridor should be reviewed for appropriateness and safety. It has been discussed nationally to provide fewer but higher quality rest/stopping areas adjacent to state highways. This may also mean tourist numbers are monitored and appropriate facilities provided accordingly. Include a review of signage that details the kilometres to the next café, toilets, and driver reviver locations.
- **Consolidate/rationalise resource consents:** Consider opportunities to consolidate/rationalise resource consents, particularly for regular maintenance activities.

Understanding the infrastructure assets

The following sections contain information about the condition and performance of the state highway assets within the corridor. This information is necessarily complex and therefore challenging to communicate simply. Every effort has been made to explain the base data inputs and what the information is describing in as simple terms as possible, however full comprehension does require some technical knowledge of the terms used.

Corridor asset base

The state highway system is a significant national asset, made up of 11,412km of roads and associated assets. This corridor contributes approximately 384km of road network which reflects 3.4% nationally. The total value of the assets along the corridor is $435M.

The corridor assets have been divided into eight groups as shown in Figure 16 which directly support the access, reliability and efficiency, safety, resilience and people, places and environment outcomes on the network.

Asset condition and performance summary

The infographic shows the summary score the entire corridor achieves for each of the eight measures used in this document to assess the condition and performance of the assets. These measures are assessed in more detail along the corridor in the following sections of the document.

Figure 16 – Corridor asset base

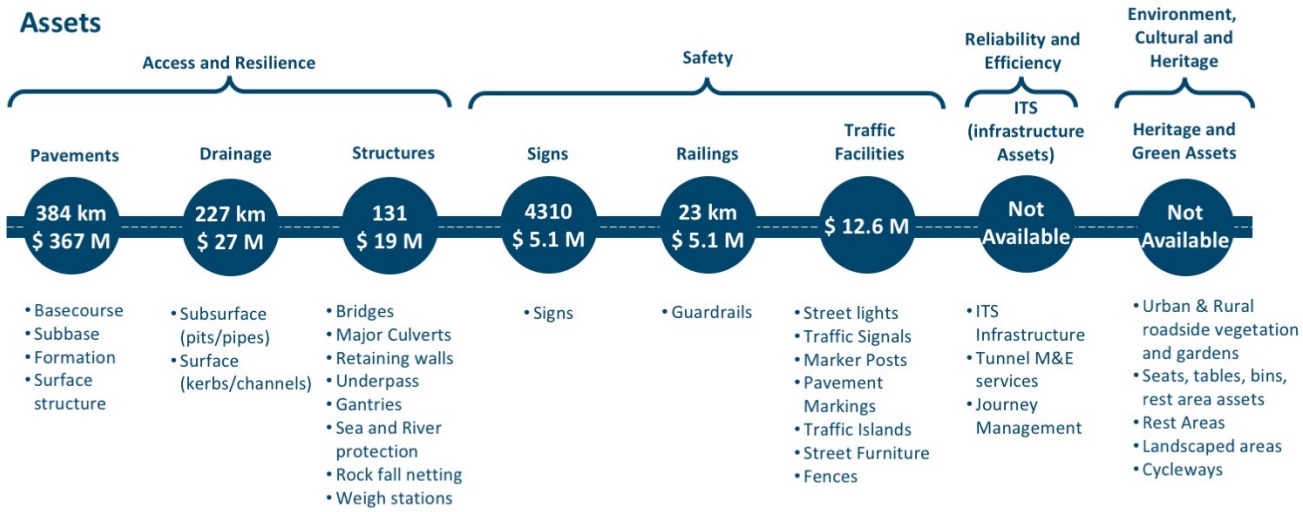
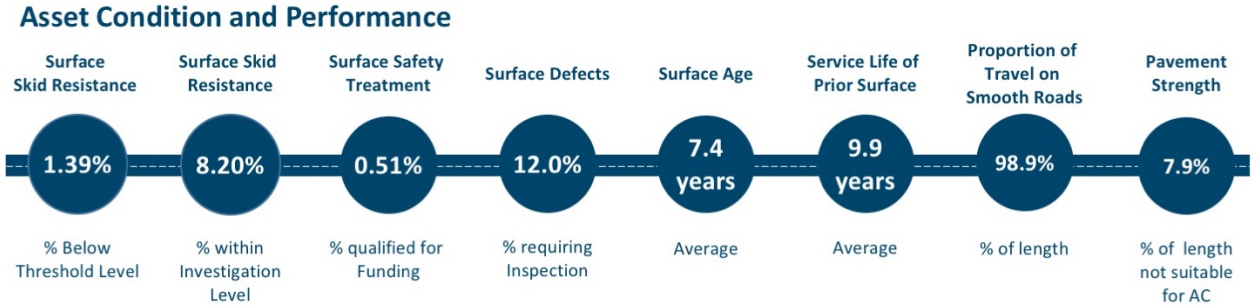


Figure 17 - Asset condition and performance



Asset condition and performance

Surface skid resistance

The infographic shows the proportion of the Route Section, as a percentage, that falls within the two levels of either threshold limit or investigation level. The change in Surface Skid Resistance infographic shows the change in the levels from the 2014 survey to the 2016 survey, as either an improvement or degradation.

The information is derived from inspection data that records a value every 10m in each direction. Each 10m length is rated as to whether it is within one of the bands: below threshold limit; within investigation limits; or above Investigation limits. The proportion is then the number of 10m lengths in that section as a percentage of all 10m lengths in that section.

Sections SH7/28 has shown a marked increase in the amount of skid resistance below the threshold limit over the last 3 years. Otherwise, the level of surface skid resistance below the threshold limit is relatively low across the corridor.

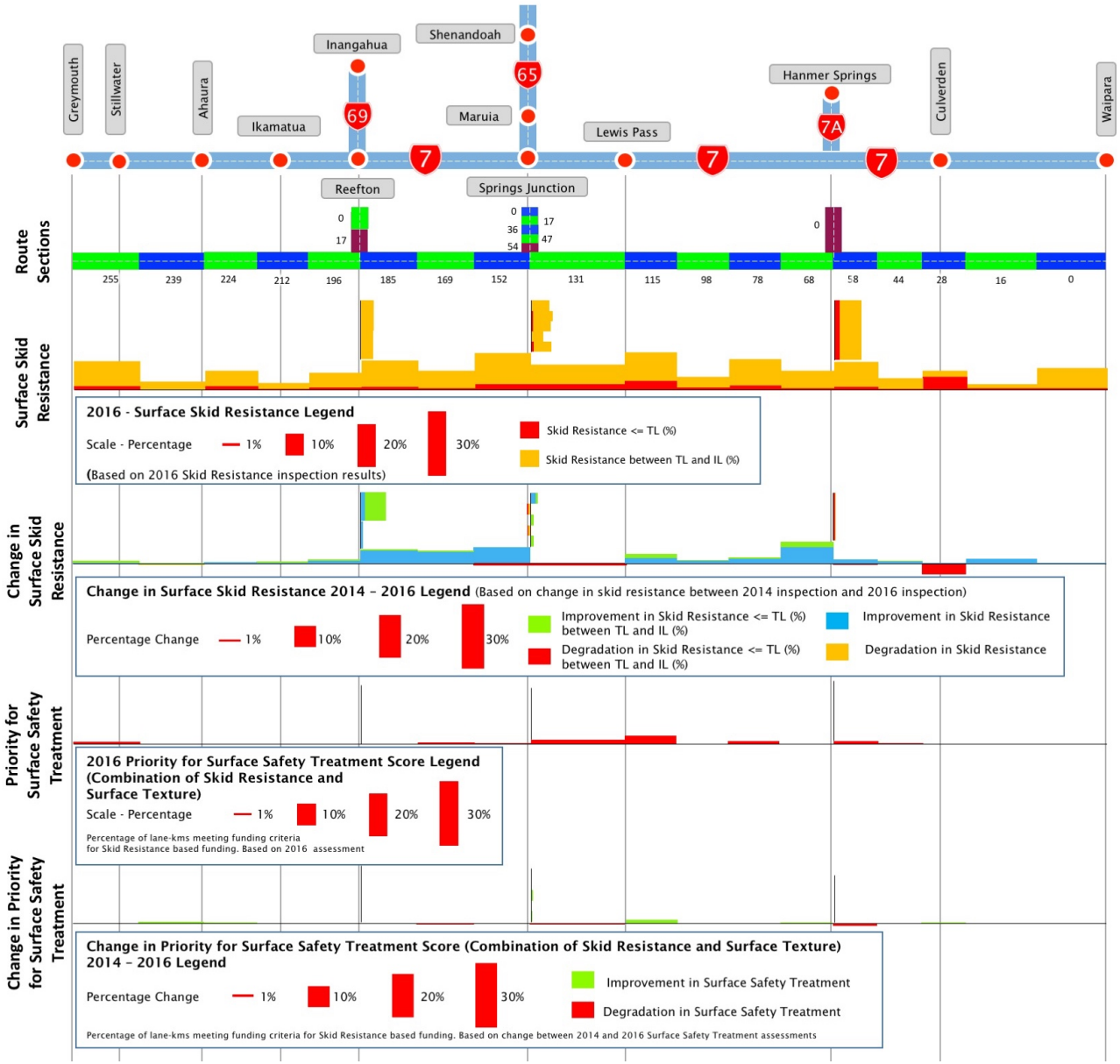
Priority for surface safety treatment

The infographics show the proportion of the Route Section that has a Priority for Surface Safety Treatment (Skid Assessment Length) that would qualify for funding, i.e. a score >140. The second infographic shows the change in these levels from the 2014 survey to the 2016 survey, as either an improvement or degradation.

Taken from inspection data that is normally recorded every 100m in each direction. Each 100m assessment length is rated and if it achieves a score over 140 it qualifies for funding. The proportion is then the length of route section that qualifies for funding as a percentage of the total length of that section.

A very low percentage (0.51 %) of the corridor achieved Skid Assessment Length that qualifies for funding. This equates to only 3.94 lane-km of the 772 total lane-km of the corridor. While insignificant, the section with the highest priority for surface safety treatment qualifying for funding is SH7/115 Lewis Pass, although the priority for surface safety treatment in this section improved overall in the last three years.

Figure 18 – Asset condition



Surface defects

The infographics show the proportion of the Route Section that has a Surface Defects (100m Priority) score that would signal the need for further investigation, i.e. a score >20. The second infographic shows the change in these levels from the 2014 survey to the 2016 survey, as either an improvement or degradation, as well as the three-year trend.

The Surface Defects score is made up of a number of measures which all contribute to the overall score including: roughness, rutting, shoving, flushing, and design life. Any 100m section achieving a score over a total of 20 rates as flagged for inspection. The proportion is then the length of corridor that is flagged for inspection as a percentage of the total length of that section.

Overall, 12% of the corridor achieves a score above which inspection is required. Sections with significant lengths of surface requiring inspection include: SH65/0, SH65/17 and SH65/36 at the northern end of SH65. These sections also show a significant level of degradation in score over the last three years.

Surface age

The infographic shows the weighted average age of road surface, and the proportions of surface age that fall within the three age bands.

The base data is all the seal lengths and their age from RAMM. Then a weighted average is then calculated. Overall, all sections add up to 100%. The proportion is the length of corridor in a particular age band as a percentage of the total length of that section.

The sections of corridor with the oldest age profile are SH69/17 south of Inangahua, SH7/16 north of Waikari, and, SH7/68 west of SH7A.

Service life of prior surface

The infographic shows the weighted average age achieved for the sections of road surface that were resurfaced in the last financial year (2015-16). The infographic only shows sections where re-surfacing work was undertaken in the 2015/16 season. The value is derived from the weighted average age of the sections of seal that were overlaid by a new first coat seal. This is a standard ONRC measure.

Overall the re-surfaced sections achieved an average service life of 9.9 years, with sections SH7/44 north of Culverden, SH7/115 Lewis Pass,

Figure 19 – Asset condition 2

SH65/0 north of Shenandoah, and, SH7/255 East of Greymouth achieving a service life in excess of 10 years.

Resurfacing

The infographics show the proportion of Route Sections planned for resurfacing in the 2016/17 and 2017/18 approved annual plans, confirmed through the RAPT tour, as an indication of the response to the surface condition described previously, and current surface condition.

The major resurfacing works are planned for sections SH7/196 and SH7/212 between Reefton and Ikamatua.

Proportion of travel on smooth roads

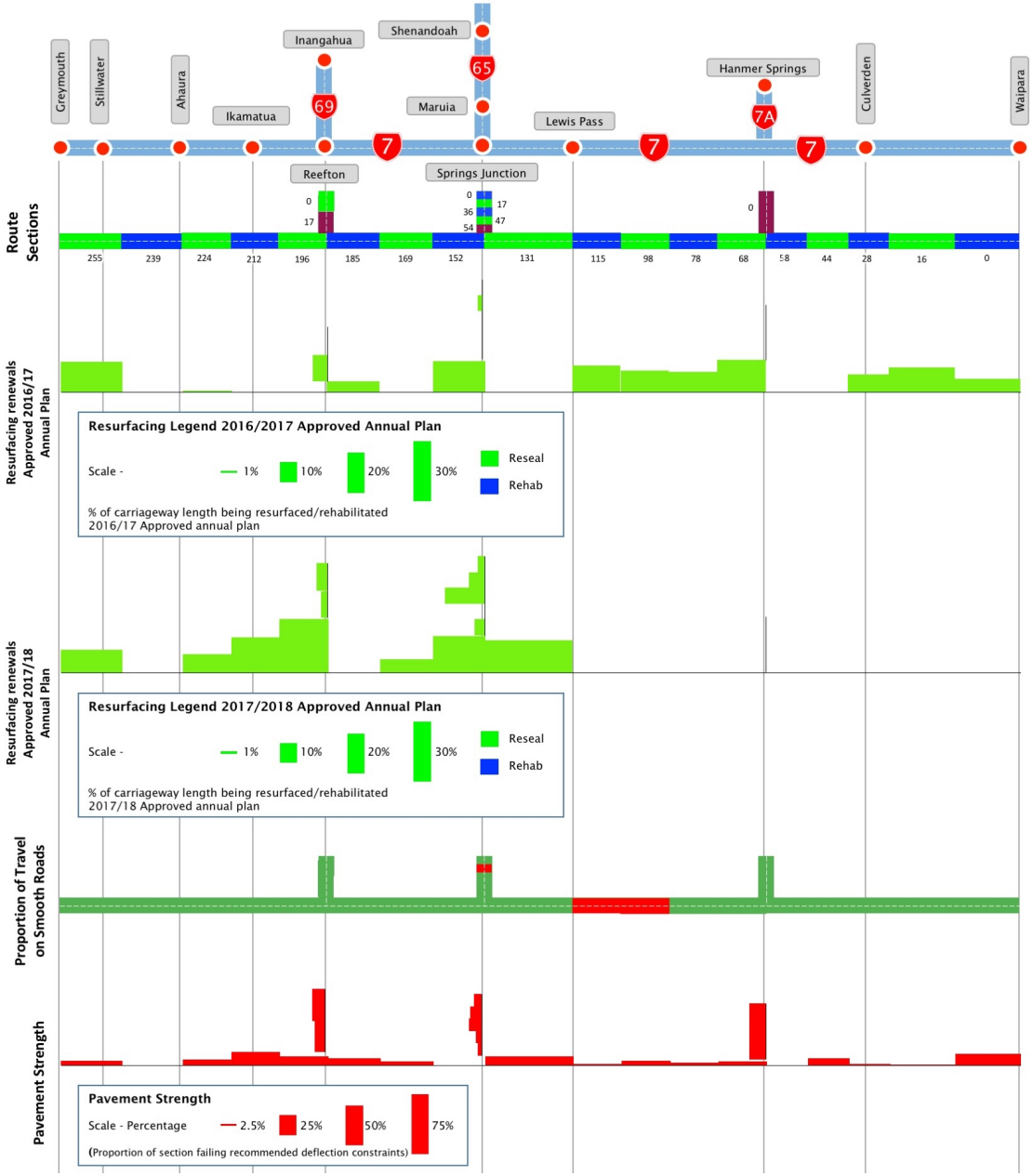
The infographic shows whether the route section passes the ONRC standard for Proportion of Travel on Smooth Roads (Smooth Travel Exposure). 97% is the ONRC target for proportion of travel on smooth roads. The infographic simply shows whether the route section achieves this level or not.

Pavement strength

Recommended deflection constraints for thin asphaltic surface is used as a measure of pavement strength. The infographic shows the proportion of the Route Section that fails to achieve the recommended deflection constraint for the classification of road, based on lane-km.

The sections of corridor with the highest proportion of pavement failing to meet the deflection constraints occur around Ikamatua on SH7, all along SH7A to Hanmer Springs and on the eastern end of SH7 at Waipara.

Figure 20 – Asset condition 3



Asset condition and performance pressures

The pressures on the corridor that are resulting in increased demand or a reduction in levels of service for **Asset Condition and Performance** are as follows:

- **Road width:** Much of this corridor has very narrow alignments, which are generally manageable while opposing traffic volumes are low.
- **Freight demand:** The style and demand of freight movement between West and East coasts is greater than the original design of these pavements. Maintenance and needs are high on the pavements through SH7.
- **Winter maintenance**: Winter maintenance regime applies to the alpine passes (Lewis Pass to Greymouth has 50% of its length covered by snow and ice). These measures can increase surface roughness from grading or vehicle chains, reduce overall surface life and increase travel times due to the need for reduced travel speed. Lewis Pass (SH7) provides a strategic access across the Southern Alps, and is regularly subject to closure caused by extreme weather conditions with steep grades and winding geometry.

Asset condition and performance future considerations

The future considerations relating to corridor pressures, intervention triggers and appropriate levels of investment related to **Asset Condition and Performance** are as follows:

- **Long term impact of the alternative route traffic**: The existing pavement was not designed for the current heavy vehicle loads. It is of limited depth and showing signs of distress. It will soon need more maintenance with consequential disruption to traffic, unless a renewal can be justified.

SH7 VMS chains signage

Investing in the corridor

The **Customer Levels of Service** shapes our response to our investment in maintenance, renewals and improvements. The NZ Transport Agency must consider the impact we have on our customers, the environment, communities, iwi, and the NZ economy in everything we do.

Decisions must be evidence based, informed and transparent with investment targeted to the right treatment, in the right place, at the right time while considering a range of competing priorities for investment. This requires significant analysis of various alternatives and options and expertise in applying appropriate judgement in collaboration with our service delivery partners.

Right treatment, right place, right time

A range of factors have been considered to determine the best point at which to intervene with maintenance and/or renewal treatments and improvements along the corridor.

Intervention works will be programmed to ensure:

- The right treatment,
- At the right place, and,
- At the right time.

Interventions will:

- Be based on minimising whole of life, whole of system costs and be underpinned by facts derived from enhanced asset information and modelling
- Define the most appropriate approach to asset maintenance, inspection and renewal, supported by reliability, availability, maintainability and safety specifications
- Use a risk-based approach to determine the intervention requirements to specified levels of reliability
- Use resilience requirements to a specified range of weather conditions, considering climate change
- Define how sustainable development requirements are to be addressed

Summary investment

The proposed investment in the corridor is as follows:

Table 1- Summary Corridor Investment ($000)

Outcome	Expenditure Category	2018-2021	2021-2024	2024-2028
Access and Resilience	Maintenance and Operations	$4,150	$4,481	$6,647
	Renewals	$4,868	$6,056	$8,551
	Improvements	$18,708	$3,000	$0
Reliability and Efficiency	Maintenance and Operations	$1,445	$1,549	$2,296
	Renewals	$88	$82	$145
	Improvements	$4,642	$0	$0
Safety	Maintenance and Operations	$3,198	$3,414	$5,059
	Renewals	$1,136	$1,272	$1,883
	Improvements	$3,500	$0	$0
People, places and Environment	Maintenance and Operations	$822	$896	$1,315
	Renewals	$43	$32	$48
	Improvements	$0	$0	$0
	Total	**$42,599**	**$20,781**	**$25,942**

Figure 21 – Corridor investment

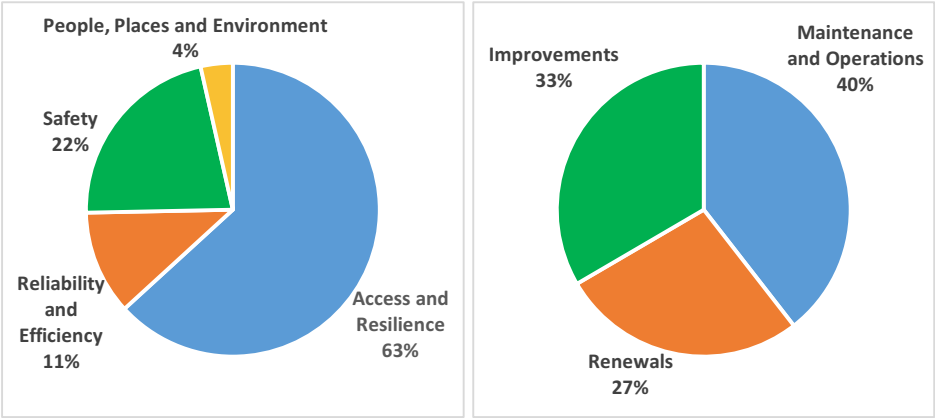


Table 2 - Summary investment by work category ($000)

Outcome	Work Category		2018-2021	2021-2024	2024-2028
Access and Resilience	111	Sealed Pavement Maintenance	$606	$671	$978
	112	Unsealed Roads	$0	$0	$0
	113	Drainage Maintenance	$258	$270	$409
	114	Structures Maintenance	$946	$1,003	$1,498
	121	Environmental Maintenance	$1,256	$1,358	$1,993
	122	Traffic Services Maintenance	$17	$30	$45
	124	Cycle Path Maintenance	$5	$4	$7
	151	Network & Asset Management	$853	$918	$1,379
	161	Property	$210	$226	$339
	211	Unsealed Road Metalling	$0	$0	$0
	212	Sealed Road Resurfacing (excl. surface skid resistance)	$2,885	$3,737	$4,414
	213	Drainage Renewals	$166	$177	$261
	214	Pavement Rehabilitation	$1,026	$1,374	$2,643
	215	Structures Component Replacements	$754	$723	$1,161
	222	Traffic Services Renewals	$37	$46	$71
	321 - 341	Improvements	$18,708	$3,000	$0
Reliability and Efficiency	121	Environmental Maintenance	$593	$628	$919
	123	Operational Traffic Management	$581	$634	$951
	151	Network & Asset Management	$232	$246	$365
	161	Property	$38	$41	$61
	222	Traffic Services Renewals	$88	$82	$145
	321 - 341	Improvements	$4,642	$0	$0
Safety	111	Sealed Pavement Maintenance	$774	$811	$1,166
	112	Unsealed Roads	$0	$0	$0
	113	Drainage Maintenance	$187	$220	$331
	114	Structures Maintenance	$105	$122	$184
	121	Environmental Maintenance	$109	$127	$191
	122	Traffic Services Maintenance	$1,281	$1,367	$2,036
	124	Cycle Path Maintenance	$0	$0	$0
	151	Network & Asset Management	$653	$668	$1,003
	161	Property	$90	$99	$148
	212	Surface Skid Resistance	$895	$968	$1,454
	214	Pavement Rehabilitation	$7	$14	$22
	215	Structures Component Replacements	$98	$110	$165
	222	Traffic Services Renewals	$136	$180	$243
	321 - 341	Improvements	$3,500	$0	$0
People, places and Environment	111	Sealed Pavement Maintenance	$63	$68	$102
	121	Environmental Maintenance	$646	$706	$1,030
	151	Network & Asset Management	$91	$98	$147
	161	Property	$22	$24	$36
	221	Environmental Renewals	$43	$32	$48
	321 - 341	Improvements	$0	$0	$0
		Total	**$42,599**	**$20,781**	**$25,942**

Investing in access and resilience

Operations and maintenance

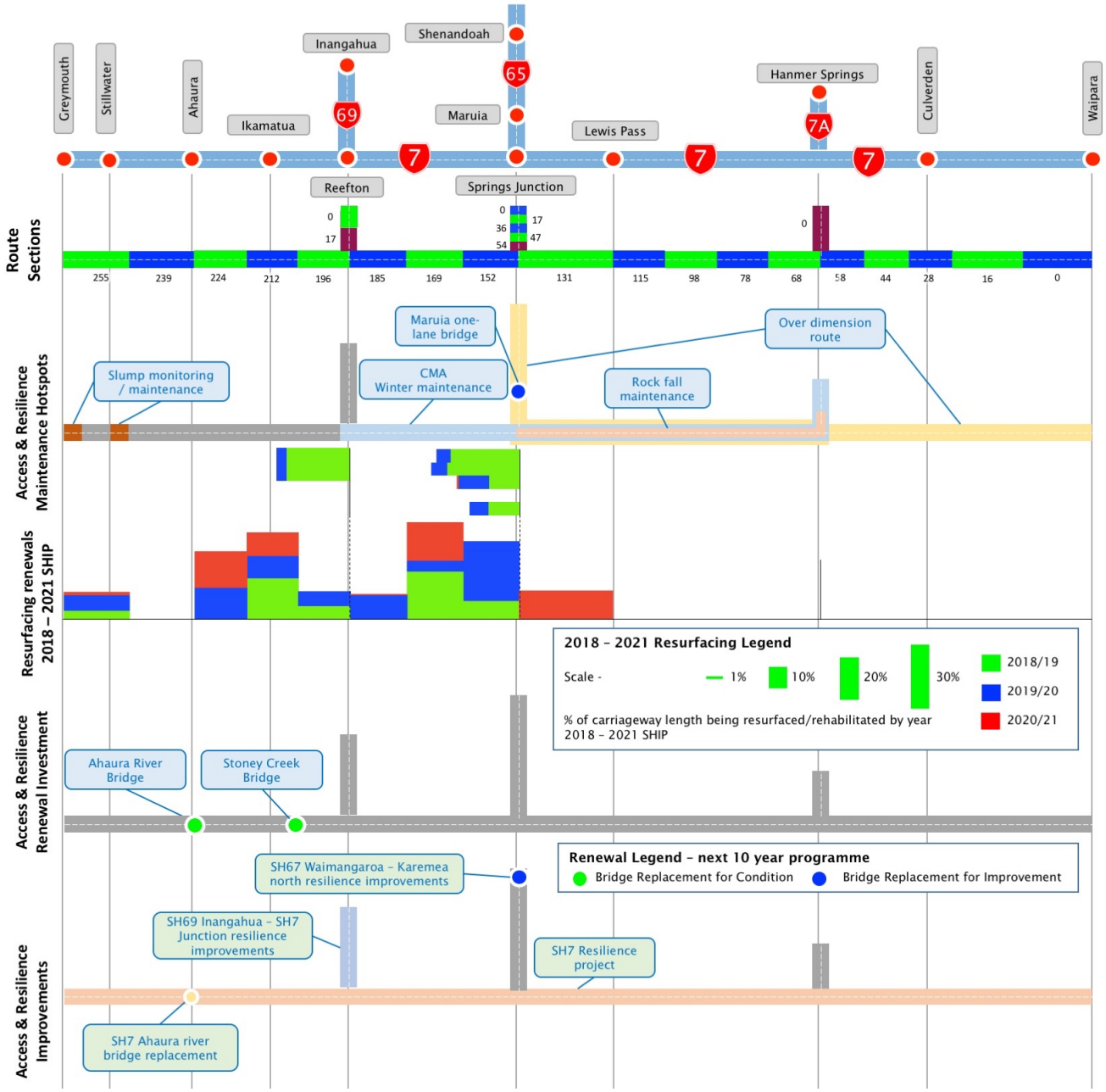
The main areas of investment to provide and preserve access and resilience are drainage maintenance, sealed road surfacing and structural component replacements and vegetation control. A key focus is to realign the base preservation quantities toward increased preventive maintenance and to slow pavement deterioration specially through improved drainage.

Maintenance hot spots

The following maintenance 'hotspots' require additional monitoring or cause an increased maintenance burden along the corridor:

- **Road slumps** by 50mm every 6 months with no identified way of stopping it, prior to Greymouth and to Stillwater.
- **Rockfall maintenance** is required on SH7 between Springs Junction and Hanmer Springs.
- **Winter maintenance** between Reefton and Springs Junction (SH7).
- **Over-dimension**: Additional maintenance is required as the only over-dimension route from Picton/Marlborough to Canterbury.
- **Maruia one-lane bridge**: There are ongoing maintenance cost considerations under the alternative route function.

Figure 22 – Access and resilience investment



Renewals

Resurfacing

The infographic shows the proportion of route section by carriageway length planned for resurfacing within the period 2018/19 to 2020/21, the three-year span of the SHIP. This is also broken down in to the individual years to indicate the timing of expenditure over the three-year period.

Significant investment in resurfacing is planned for sections: 7/152 and 7/169 north of Springs Junction, 7/212 and 7/224 through Ikamatua to Ahaura.

Structure Renewal

The renewal investment infographic shows the planned bridge replacements along the corridor. Two bridges are planned for replacement due to asset condition, at a total estimated cost of $12.3M.

Improvements

Structure Renewal

Two bridges are scheduled to be replaced for improvement reasons, at an estimated cost of $1.2M.

Planned

There are no currently planned access and resilience related improvements underway on this corridor.

Draft Regional Land Transport Programme considered for the SHIP

The following table shows the list of projects being considered through the Draft Regional Land Transport Programme through the SHIP, and cover the next 10 years.

Table 3- Draft regional programme considered for SHIP

Project	Funding Status	Description
SH7 Resilience project		Proposed resilience improvements at locations along the SH7.
SH7 Ahaura river bridge replacement		SH7 Ahaura River Bridge replacement to ensure security of route through replacement of an at-risk bridge.
SH69 Inangahua – SH7 Junction resilience improvements		Resilience improvements on SH69. Shows Red rating in ONRC LoS Performance for Resilience within CMP.

Investing in reliability and efficiency

Operations and maintenance

The main areas of investment to provide and preserve reliability are environmental maintenance through keeping potential obstruction clear of the highway, wayfinding signage, and operational traffic management.

Maintenance hot spots

No reliability and efficiency related maintenance hot spots were identified for this corridor.

Renewals

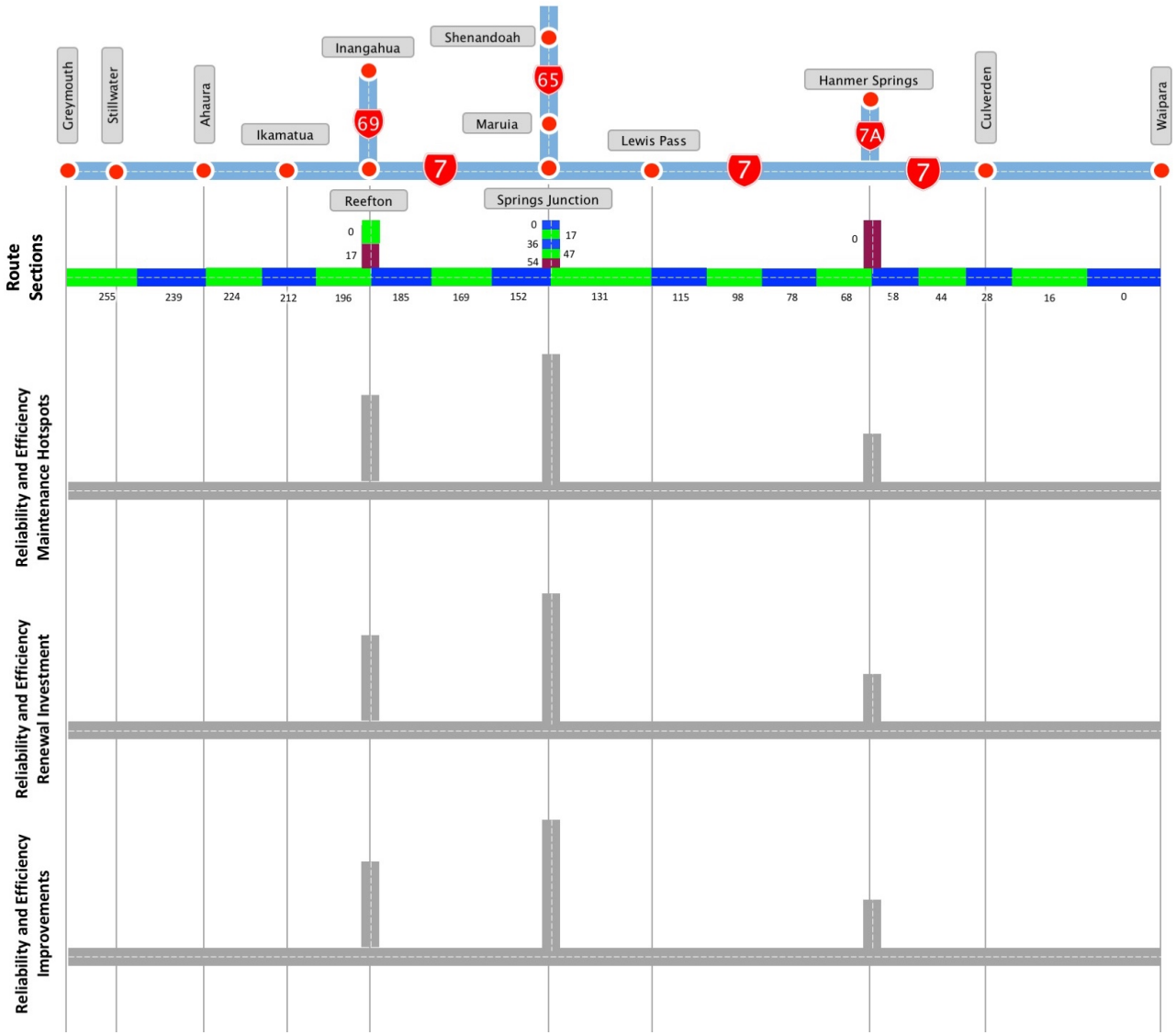
There are no reliability and efficiency related renewals planned for the corridor.

Improvements

Planned

There are no reliability and efficiency related improvements planned for the corridor.

Figure 23 – Reliability and efficiency investment



Investing in safety

Operations and maintenance

Safer Journeys Goal 2016 to 2020 is to reduce the likelihood of crashes occurring and to minimise the consequences. The main areas of investment into ensuring safer journeys include: specialist pavement treatments, road marking including audio-tactile markings (ATP), signage, edge markers, safety barriers, speed limits, roadside vegetation control, and, street lighting.

Maintenance hot spots

The following maintenance 'hotspots' require additional monitoring or cause an increased maintenance burden along the corridor:

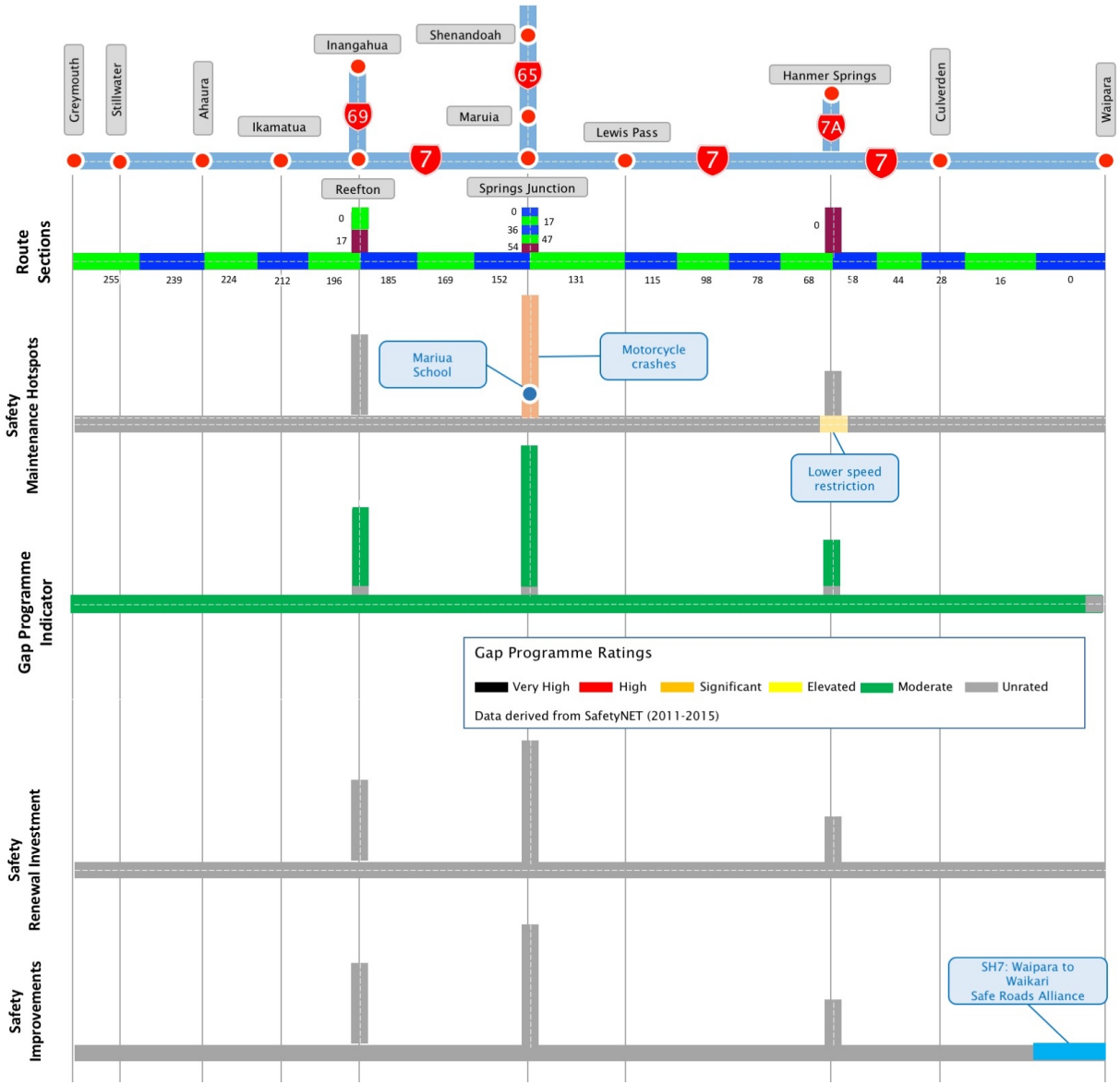
- **Speed limit** restriction on SH7 (RS58) to 80km/h.
- **Maruia school** is in a 100km/h area without any safety factors, no temporary reduction or school zone. The alternative route is creating safety concerns for the communities as the traffic greatly increased.
- **Motorcycle crashes:** There has been an increase in motorcycle crashes along SH65 in the recent years. The use as an alternative route is exacerbating this issue.

Gap programme indicators

The potential for reducing fatal and serious injuries across the corridor has been assessed under the Gap programme. The Gap programme looks at the collective risk rating, likely level of intervention and the potential reduction in death and serious injury that may be achieved to determine a possible treatment approach. For instance, a road segment rated 'Very High' could potentially achieve a 50-70% reduction in fatal and serious injuries with the application of high cost improvements. Alternatively, if the risk level is 'Elevated' a 10-20% reduction may be realised through targeted low cost, high coverage treatment improvements.

The whole corridor is identified as having a low potential for preventing fatal and serious injuries and would benefit from targeted low cost high coverage improvements.

Figure 24 – Safety investment



Renewals

There are no planned safety related renewals for the corridor.

Lewis Pass

Improvements

Planned

SH7 – Waipara to Waikerie

Description: This project will improve road and roadside safety on State Highway 7 between Waipara and Waikari. Improved safety features will include side barriers, rumble strips, upgrade of existing barriers on three bridges, improved signage and high-performance road markings along the whole route.

Draft Regional Programme considered for SHIP

There are currently no safety related projects being considered through the Draft Regional Programme for SHIP for the next 10 years.

Investing in people, places and environment

Operations and maintenance

The main areas for investment into people, places and environment are pavement rehabilitation to ensure a high proportion of travel on smooth roads, control of litter, provision of rest areas and stopping points, landscape areas maintenance and, environmental compliance.

There is limited visibility for communities along SH6 (Maruia School). Since it is used as the alternative route, the traffic is much greater, increasing concerns for local communities.

The introduction of road side protection (barriers) reduced the number of informal pull-off areas increasing the pressure on the others either by endangering the vegetation or in dangerous spots. Localised widening for passing trucks is underway.

The number of tourists using this corridor is much greater since the alternative route is in place and is putting lots of pressure on the limited amenities to provide a greater level of service. The focus is on the funding and maintenance of toilets in collaboration with DoC.

Maintenance hot spots

No people, places and environment related maintenance hot spots were identified for this corridor.

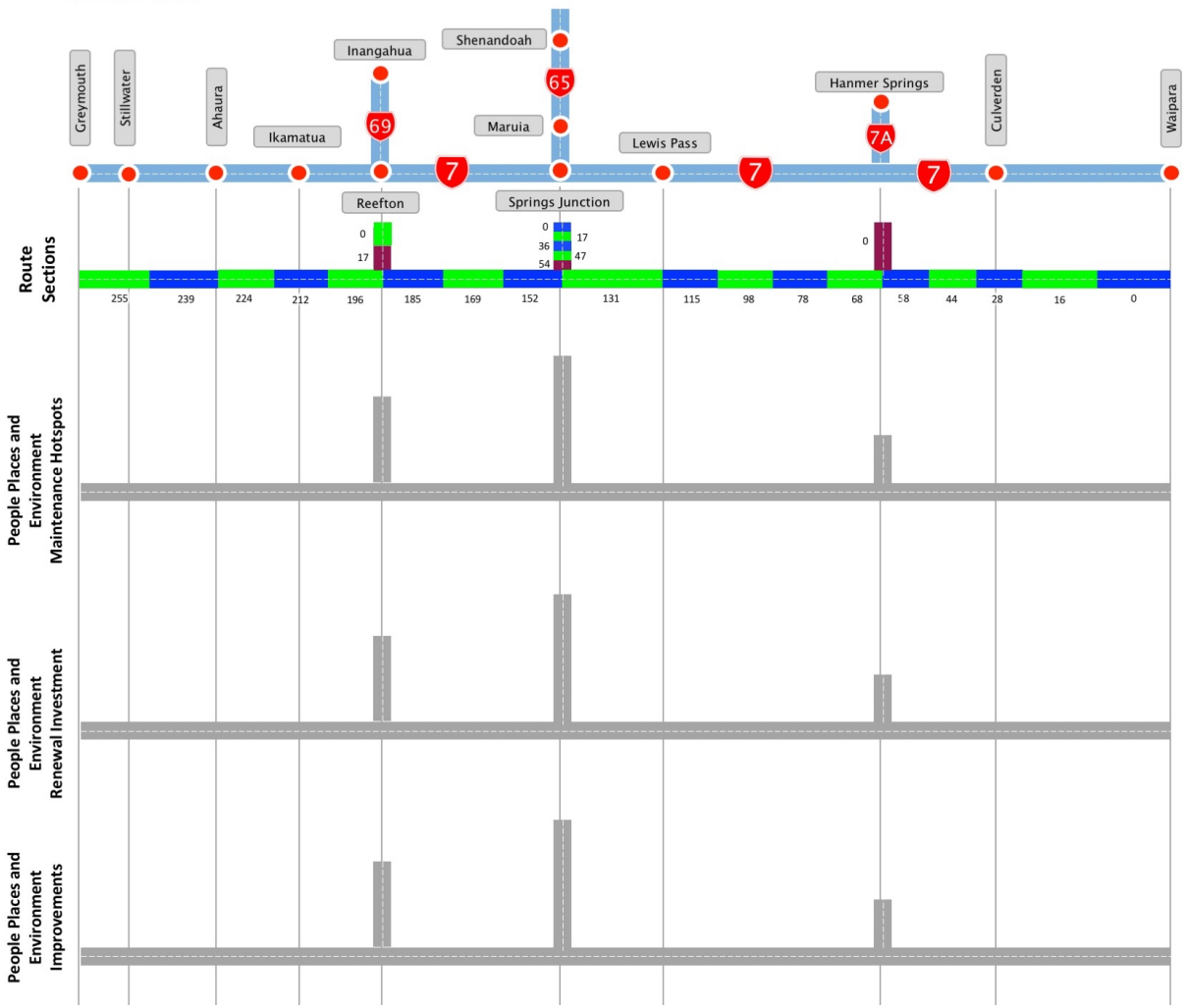
Renewals

There are no people, places and environment related renewals planned for the corridor.

Improvements

There are no people, places and environment related improvements planned for the corridor.

Figure 25 – People, places and environment investment



Investment pressures

Access and resilience

The following concerns excerpt pressure on the investment in **Access and resilience** on the corridor:

- **Temporary significant traffic volume increase:** The corridor has insufficient capacity and geometry to sustain long periods of use as the SH1 Alternative route without significant reduction in LoS. Geography and topography constrain the carriageway and limit improvements that could help cater for higher traffic volumes.
- **High number of critical assets:** Many critical assets along this corridor require significant ongoing maintenance investment to protect. Critical assets under increased pressure since HPMVs using the alternative route consuming asset life faster than anticipated.
- **Substandard access to adjacent land and parks:** A large portion of the area adjacent to the corridor is DoC land, parks and reserves. Increased demand to access these areas may require more formal and standard access areas from the corridor.
- **Response time to crashes:** Prompt response to crashes to ensure continuity of service is essential. The NZ Transport Agency is working with their partners to minimise disruption because of the limited alternative routes and a lack of mobile phone coverage.
- **Scour and slumping:** Insufficient investment to reduce scour may result in road closures.
- **Higher priced and more frequent treatments:** Required in winter to keep the route open by ensuring less interruption.
- **Snow and ice impacts:** Winter weather can cause road closures due to snow and ice for prolonged periods. Since the corridor is often the most resilient route, it is usually open longer than other alternative routes. Since it is already being used as an alternative there is additional pressure to ensure the route remains open, particularly through winter when the corridor can become more vulnerable.

Reliability and efficiency

The following concerns excerpt pressure on the investment in **Reliability and efficiency** on the corridor:

- **Lack of passing lanes:** Due to a lack of passing lanes along the entire corridor, it is not as efficient as it might be, especially when being promoted as an alternative route to SH1.
- **Unreliable journey times:** The corridor serves as the only over-dimension vehicle route between Picton Christchurch and the West Coast. These slow-moving vehicles impact reliability of the journey for other users of the corridor.
- **Traffic volume fluctuation:** Additional traffic resulting from the Kaikoura earthquake is creating queues and congestion at constraint points and one-lane bridges.

Safety

The following concerns excerpt pressure on the investment in **Safety** on the corridor:

- **Increasing maintenance burden:** Safety improvements may involve new safer barrier systems and frangible assets along the route. Additionally, implementation of the safe and appropriate speeds framework may lead to supplementary speed signage. Additional assets of the route will increase the maintenance burden.
- **Temporary speed reduction**: When the corridor is used as an alternative route, during holiday and long weekends, the speed limit along this corridor is reduced to 80km/h.
- **Safety pressure on local communities**: Maruia school is in a 100km/h area without any safety factors, no temporary reduction or school zone.
- **Increased motorcycle crashes** along SH65 in the recent years. The alternative route is only making the issue worse.

People, places and environment

The following concerns excerpt pressure on the investment in **People, places and environment** on the corridor:

- **River proximity:** In some areas, erosion and scour impact the road pavement, requiring significant investment to remedy.
- **Stopping places and tourism access:** There is minimal provision of appropriate facilities in recreational areas for road users to pull over and enjoy the views. An increased in tourism is resulting in additional demand for access to conservation and recreational areas.
- **Limited visibility for communities** along SH6 (Maruia School). Since it is used as the alternative route, the traffic is much greater, increasing concerns for local communities.

Investment future considerations

Consideration of investment in the corridor in future should take account of the following:

- **Levels of service (ONRC classification):** Increasingly operational constraints and Level of Service decisions may determine the type and nature of works applied to the corridor, not necessarily the conventional least cost outcomes. The choice of treatment applied is increasingly dictated by the constraints of time on the network – how rapidly can we get in and out, how often we need to revisit, how quickly we can remediate, and how robust the treatment is. Improving and maintaining appropriate LoS as traffic volumes increase substantially due to the use of the corridor as alternative routes will require ongoing investment. Firstly, to provide an acceptable LoS as a primary collector route, but also to meet its function for detouring users of higher classified routes. The challenging topography of the route may be prohibitive in some areas therefore other measures such as ITS, enhanced service provision, rapid incident response times and greater provision of information may assist.
- **Stopping places:** Review stopping places as part of the Visiting Drivers Strategy. It has also been discussed nationally to provide fewer but higher quality rest/stopping areas adjacent to the state highways, therefore stopping places along the corridor should be reviewed for appropriateness and safety in line with this direction.
- **Provide more robust alternative route:** Enhanced ongoing maintenance investment is likely for structures and pavements on the corridor used by HPMV and consideration of the impact to asset renewal given the criticality of some of these structures. Consider investment to strengthen areas most vulnerable (**over-dimensions, passing opportunities, one-lane bridge,** etc.) and consider technologies to assist in defining the asset deterioration to better future maintenance programmes.
- **Timeliness of incident response:** Responding quickly and efficiently to incidents on the network is important to maintaining reliable and efficient journeys for customers. A robust monitoring and response regime over the corridor supported by technology (mobile phone coverage).
- **Provision of information:** Providing high quality and timely information to customers. Proactive messaging using variable message signs providing real time information. This is especially important for customers already travelling on the corridor in case of a hazard or incident, particularly where flooding or rockfall can occur rapidly with little warning.
- **Communication and mobile phone coverage.** Improved mobile phone coverage along the route will allow quicker response times. Working with telecommunications companies to improve this will improve resilience; helping reduce the length of closures, facilitating the implementation of technologies to allow the ongoing movement of people and goods.
- **Review winter maintenance arrangements:** Continue to ensure that appropriate winter maintenance budgets and arrangements are in place during use of the corridor as the SH1 alternative to ensure the unfamiliar drivers have an appropriate LoS when navigating a challenging route in conditions they may not be competent to. Develop a proactive strategy to minimise and prevent closures of the corridor (particularly those parts operating as the SH1 alternative route) due to snow or ice events and to ensure contractors are equipped with appropriate additional resource and technology to maintain LoS through the winter period.
- **Enhanced monitoring regimes:** Maintain and invest in protecting the corridor from further erosion and slumping. Monitor conditions and road impacts to ensure that appropriate measures are being undertaken to protect the state highway and road users. Keep river groynes up to standard to mitigate any impact of river catchments on the quality of the corridor.
- **Investment in accurate and complete data sets:** Investment in measuring travel time and speeds, which may also require investment in communications and technology. Travel time and speed information will be particularly important for freight and commercial vehicles who rely on reliable journey times. It is also important to measure LoS so that appropriate investment can be allocated to improve or maintain LoS. It will also provide accurate information to inform future investment decision making
- **Tree maintenance:** To ensure customer LoS are improved or maintained investment in ongoing tree thinning on the corridor will be required (Lewis Pass) to ensure mitigation of tree shadowing impacting on winter conditions and causing ice.
- **Scour:** Invest in repairing areas of scour and enhance monitoring regimes to ensure erosion damage by rivers adjacent to the road is detected ahead of road failure and reduced LoS. Ongoing maintenance and repairs of sections of road and infrastructure such as River Groynes.
- **Collaborating with affected and interested parties:** There are many parties with vested interests along the corridor including Department of Conservation. Collaboration with these parties to reduce/ agree maintenance procedures to target areas of concern in a consistent manner across the corridor, this may include providing adequate parking and access facilities on site for example.

Appendix A – Information sources

Section	Infographic	Information Source	Date
Introduction	Corridor Overview Map	The Road Efficiency Group https://www.nzta.govt.nz/roads-and-rail/road-efficiency-group/onrc/	2013
Understanding our Customers			
Key Customers	Key journeys	Network Manager and Regional Staff	2016
	Daily commuters	Network Manager and Regional Staff	2016
	Freight	Network Manager and Regional Staff	2016
	Tourism and recreation	Network Manager and Regional Staff	2016
	Demographics and population centres	MBIE Regional Economic Activity Report Web Tool http://www.mbie.govt.nz/info-services/business/business-growth-agenda/regions	2015
Understanding Customer Levels of Service on the Corridor			
Customer Levels of Service	Corridor classifications	The Road Efficiency Group ONRC -right-road-right-value-right-time-combined-poster.pdf https://www.nzta.govt.nz/roads-and-rail/road-efficiency-group/onrc/	2015
Current Levels of Service Performance	Current ONRC Levels of Service Performance	Network Manager and Regional Staff	2016
Improving the Customer Experience	Significant planned improvements	Network Manager and Regional Staff NZTA Projects web page: https://www.nzta.govt.nz/projects/ NZTA Safe Roads web page: https://www.nzta.govt.nz/safety/our-vision-vision-of-a-safe-road-system/safe-roads/ Submitted Regional SHIP programmes	2017
Access	ONRC classification	The Road Efficiency Group https://www.nzta.govt.nz/roads-and-rail/road-efficiency-group/onrc/	2013
	Carriageway configuration	Network Manager and Regional Staff Corridor drive-over Highway information Sheets	2016
	Posted speed limit	NZTA – MapHub Speed Limits on NZ Road Network	2016
	Topography	Elevations derived from Google Earth™	2016
	Geography	Network Manager and Regional Staff Corridor drive-over	2016
	Traffic volumes – heavy vehicles	RAMM Carriageway Table – December Traffic Estimates	2015
	Traffic volumes – all vehicles	RAMM Carriageway Table – December Traffic Estimates	2015
	HPMV routes	NZTA – MapHub High Productivity Freight Network	2016
	Critical Customers	Network Manager and Regional Staff	2016
	Critical Assets	Network Manager and Regional Staff	2016
Resilience	Vulnerabilities	NZTA – MapHub Hazard Incidents and Area Warnings	2016
	Major Alternate Routes	Network Manager and Regional Staff Desktop analysis Corridor drive-over	2016
	Diversion Lengths	NZTA StateHighways.pptx Diversion Routes	Unknown
	Closures	NZTA 2011-2015_Treis_incidents_by_region.xlsx	2015
Reliability and efficiency	Efficiency	NZTA – MapHub EfficiencyNet	2016

Section	Infographic	Information Source	Date
	Variability	NZTA / Beca Dwg No. GIS-3391515-500-4 Network Performance - Attachments.pdf March 2012 eRUC Commercial Vehicle Data – State Highway Austroads Variability Assessment	2012
	Commercial Vehicle Average Speed	NZTA / Beca Dwg No. GIS-3391515-500-5 Network Performance - Attachments.pdf March 2012 eRUC Commercial Vehicle Data – State Highway Average Speeds	2012
	Current Constraints	Network Manager and Regional Staff Corridor drive-over	2016
Safety	KiwiRAP Collective Risk	https://nzta.abley.com/SafetyNET_2017 SafetyNET	2016
	KiwiRAP Personal Risk	https://nzta.abley.com/SafetyNET_2017/ SafetyNET	2016
	KiwiRAP Star Rating	http://www.kiwirap.org.nz From 2010 KiwiRAP star rating report.	2010
	Intersection Risk Indicator	https://nzta.abley.com/SafetyNET_2017/ SafetyNET	2016
	Gap Programme Rating	https://nzta.abley.com/SafetyNET_2017/ SafetyNET	2015
Environment Culture and Heritage	Natural Environment	NZTA - Environment and Urban Design Team	2016
	People and Place: Journeys	NZTA - Environment and Urban Design Team	2016
	People and Place: Landmarks and Heritage Places	NZTA - Environment and Urban Design Team	2016
	Noise and Vibration	NZTA - Environment and Urban Design Team	2016
	Drainage Catchments	NZTA - Environment and Urban Design Team	2016

Section	Infographic	Information Source	Date
Understanding the Infrastructure Assets			
Overview	Corridor Asset Base	NZTA_ 2017 Values by Corridor.xlsx complied by Opus International Consultants from RAMM and other asset information sources	
	Asset Condition and Performance	Summarised from the data sets described below	
Asset condition and performance	Surface Skid Resistance	SCRIM data derived from RAMM by NZTA Data Quality and Access team	2016
	Surface Safety Treatment	SAL data derived from RAMM by NZTA Data Quality and Access team	2016
	Surface Defects	100m Priority data derived from RAMM by NZTA Data Quality and Access team	2016
	Surface Age	Surface Age data derived from RAMM by NZTA Data Quality and Access team	2016
	Service life of Prior Surface	Surface Age data derived from RAMM by NZTA Data Quality and Access team	2016
	Resurfacing	Resurface data derived from forward works programme	2016
	Proportion of Travel on Smooth Roads	STE data derived from RAMM by NZTA Data Quality and Access team	2016
	Pavement Strength	Deflection data derived from RAMM by NZTA Data Quality and Access team	2016
Investing in the Corridor			
Summary Investment	Summary Corridor Investment	2028-21 SHIP programme funding requests 2017/18 Annual Plans	2017
	Summary investment by work category	2028-21 SHIP programme funding requests 2017/18 Annual Plans	2017
Investing in access and resilience			
Investing in access and resilience	Maintenance Hot Spots	Network Manager and Regional Staff	2017
	Resurfacing 2018 - 2021	Resurface data derived from forward works programme	
	Renewal Investment	National Bridge Replacement Programme National bridge replacement programme 2017 LCMP data.xlsx	

Section	Infographic	Information Source	Date
	Improvements	Network Manager and Regional Staff NZTA Projects web page: https://www.nzta.govt.nz/projects/ Submitted Regional SHIP programmes	
Investing in reliability and efficiency	Maintenance Hot Spots	Network Manager and Regional Staff	2017
	Renewal Investment		
	Improvements	Network Manager and Regional Staff NZTA Projects web page: https://www.nzta.govt.nz/projects/ Submitted Regional SHIP programmes	
Investing in safety	Maintenance Hot Spots	Network Manager and Regional Staff	2017
	Renewal Investment		
	Improvements	Network Manager and Regional Staff NZTA Projects web page: https://www.nzta.govt.nz/projects/ NZTA Safe Roads web page: https://www.nzta.govt.nz/safety/our-vision-vision-of-a-safe-road-system/safe-roads/ Submitted Regional SHIP programmes	
Investing in people places and environment	Maintenance Hot Spots	Network Manager and Regional Staff	2017
	Renewal Investment		
	Improvements	Network Manager and Regional Staff NZTA Projects web page: https://www.nzta.govt.nz/projects/ Submitted Regional SHIP programmes	

If you have any further queries, call our contact centre on 0800 699 000 or write to us:

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This publication is also available on NZ Transport Agency's website at www.nzta.govt.nz

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