

Waikato & Bay of Plenty Freight Action Plan 2022



Anga Whakamua Waikato

Waikato Economic Development Agency

A message from Te Waka

The Waikato & Bay of Plenty Freight Action Plan is the first report of its kind to bring together perspectives from the region's major freight and logistics industry players on the actions needed to support the sector's growth and progress. The freight and logistics sector is already one of the key drivers of economic development in our region and we anticipate strong future growth as freight volumes increase and key industry investments come onstream in the coming months and years.

Te Waka is proud to have led the development of this action plan, in partnership with Priority One and a wide range of key industry stakeholders.

Our purpose is to lift economic performance across the Waikato region and to improve the wellbeing of Waikato people and communities. Supporting business and industry growth is a key part of achieving this purpose, and we believe that adopting a 'by industry, for industry' approach is vital to ensure we identify and support pragmatic, focused solutions that deliver on the region's growth potential. This means anything we do in a particular sector must be informed by engagement with industry to connect leaders, identify and prioritise opportunities and issues, and to develop an action plan which is supported by Te Waka but led with deliberate and vital industry participation.

The *Waikato & Bay of Plenty Freight Action Plan* accordingly reflects areas of industry consensus. We believe this will create a strong foundation for ongoing collaboration between industry, local government, and central government as we move towards implementation of the action plan. However, it also acknowledges wider areas that will continue to be important to the sector, but where views currently differ.

The key themes are unlikely to come as a surprise – with network capacity, supply chain resilience, skills shortages and new technologies all top of mind for the industry.

What is unique about this plan is the focus and commitment from all parties to work together on defining the vision for the region and delivering tangible action points that will help us make progress towards unleashing the growth potential in this sector.

We chose the words 'action plan' very deliberately. The messages and needs from industry are clear, and our next step will be to work with wider stakeholders, including local and central government partners, to deliver on the priority actions.

We hope that you will join us on this journey, alongside the core industry group that has co-funded and supported this work to date, without whom we could not have produced this action plan.

In particular we would like to thank Tainui Group Holdings, Fonterra, KiwiRail, Port of Tauranga, Netlogix, Mondiale, Priority One and the broader group of industry participants who worked together with us and EY to deliver *the Waikato & Bay of Plenty Freight Action Plan*.

The hard work starts now – let's make it happen, together.



Hamish Bell | Chair
Te Waka

The background of the entire page is a close-up, black and white photograph of intricate Maori wood carvings (whakairo). The carvings feature complex, swirling patterns and stylized figures, typical of traditional Maori art. A bright yellow rectangular box is overlaid on the left side of the image, containing the title and date.

Waikato & Bay of Plenty Freight Action Plan

June 2022



Building a better
working world

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The results of EY's work, together with the assumptions and qualifications made by EY, are set out in EY's report dated April 2022 (collectively, the "Report"). The Report should be read in its entirety including this notice, the applicable scope of the work and any limitations. A reference to the Report includes any part of the Report.

Our work commenced on 15 April 2021 and was completed on 9 June 2022. No further work has been undertaken by EY since the date of the Report to update it, and EY has no responsibility to update the Report to take account of events or circumstances arising after that date. Therefore, our Report does not take account of events or circumstances arising after 9 June 2022.

EY has prepared the Report on the instructions and for the benefit of Te Waka and has considered only the interests of Te Waka. EY has not been engaged to act, and has not acted, as advisor to any other party for this Report. Accordingly, EY makes no representations as to the appropriateness, accuracy or completeness of the Report for any other party's purposes.

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1. Executive Summary

EY was engaged by Te Waka to develop an action plan for the future of the logistics and distribution industry for the Waikato and Bay of Plenty regions. This report summarises the findings from a number of stakeholder engagements and desktop research before detailing the final action plan. What the sector views as challenges and aspirations for the future are at the core of this action plan.

The production of this report was co-funded by industry representatives, Te Waka and Priority One. A list of the funding partners and other stakeholders interviewed is included in Appendix A.

Key trends

Several key trends were identified by stakeholders. These trends highlight the key external factors that are likely to have a profound impact on the freight and logistics sector in future.

Organic growth will likely drive increased freight volumes in the Waikato and Bay of Plenty

Bay of Plenty's population is expected to grow from 331,240 to 366,780 (10.7%) between 2020 and 2030 and the Waikato region will grow from approximately 489,680 to 545,020 (11.3%).¹ As the population increases, congestion is likely to grow and freight flows are likely to be altered.

Additionally, Auckland's population growth is causing land prices to increase, and areas previously known for their commercial and industrial activity are being developed into residential areas. As a result, industrial activity is incentivised to relocate. The combination of the Waikato and Bay of Plenty region's proximity to Auckland and its aggregation of strategic assets (such as the Waikato Expressway, Port of Tauranga and multiple inland ports etc.), makes the region appealing for relocation of logistics and distribution organisations.

The expected increase in population in Waikato, Bay of Plenty and Auckland is likely to cause organic growth in the freight and logistics sector in Waikato and Bay of Plenty. In these two regions, it is predicted that there will be an increase in freight growth of ~45-65% between 2020-2030.

Larger freight carriers increase efficiencies but can have flow on consequences for infrastructure

All transport modes are experiencing a drive towards larger cargos as a means to increase efficiencies. Some selected examples at a national level include:

- ▶ Growth in use of high productivity motor vehicles (HPMV) trucks.
- ▶ In 2012, 2% of shipping vessels exceeded 4,000TEU (twenty equipment unit), while in 2021, 63% exceeded this level.²
- ▶ In 2019, KiwiRail added an additional 15 wagons per day to transport logs from the Wairarapa to CentrePort. This change increased the quantity of transported freight from 267,000 tonnes to 370,000 tonnes, increasing capacity by approximately 40%.³

Larger carriers present efficiencies but also put pressure on existing infrastructure. For example, larger trucks can increase wear and tear on existing road networks and larger ships necessitate increased capital expenditure at seaports.

¹ Statistics NZ, "Subnational population projections 2018(base)-2048"; EY Analysis

² ANZ, "NZ Insight: Freight Challenges"

³ KiwiRail, "Extended log trains will take more trucks off roads"

Key challenges and opportunities

In addition to key trends, five key themes were identified by stakeholders as the most significant opportunities and challenges for the freight and logistics sector in the Waikato and Bay of Plenty now and into the future.

Further investment in infrastructure capacity

Demand for freight movements is increasing and all sector participants have plans to increase capacity across the network. Key planned investments are listed below:

- ▶ In the Waikato and Bay of Plenty regions combined, there is planned expenditure of \$88.69m on rail between FY22 and FY24.⁴
- ▶ Completion and use of Ruakura inland port to create efficiencies and aggregate freight flows.
- ▶ Planned roading investments through the Waikato and Bay of Plenty Regional Land Transport plans are approximately \$800m and \$400m p.a. respectively.⁵⁶ In the National Land Transport Plan proposed and approved National Land Transport Fund investments for the Bay of Plenty and Waikato regions come to a combined total of \$2.6b.⁷

Despite these investments, predicted freight volume increases in the regions are likely to create additional bottlenecks, and further investment will to be required. Understanding these bottlenecks, and potential capacity improvements, would be beneficial.

Renewed focus on asset management and resilience

Asset management refers to the development, operations and maintenance of assets in the region, while resilience is the ability to continue the movement of freight following a disruption to its preferred route. Continued investment in maintenance to keep pace with freight growth is seen as critical.

According to stakeholders, there are several assets that would cause significant disruption to freight movements if they were unavailable (due to a natural hazard event, for example). The Kaimai Tunnel was a commonly cited example, but other examples including the Port of Tauranga also exist. Disruption would be both local and national, and efforts to better understand mitigation plans would be beneficial.

In terms of asset management, stakeholders highlighted the poor conditions of the State Highway over the Kaimai Ranges and SH27 as 'hot spots'. It is estimated that 9,000 vehicles travel over the Kaimai Ranges every day and 1,300 of these are heavy vehicles.⁸ Due to its terrain, the trucking route over the Ranges is costly and is known to have large safety issues. SH27 is also recognised by many as a challenging road due to the deterioration of the pavement and congestion.

Treatment of rail

The majority of stakeholders interviewed could see wider benefits in more freight being moved via rail than current state, including travel time reliability, environmental and health and safety benefits.

All stakeholders acknowledged that many types of freight are not suitable for rail and therefore road freight would and should continue to be a significant modal option for freight. However, they

⁴ Data provided by KiwiRail on 2 December 2021

⁵ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

⁶ Bay of Plenty Regional Council, "Te Mahere Waka A Rohe o Toi Moana 2021-31 Bay of Plenty Regional Land Transport Plan 2021-31"

⁷ Waka Kotahi, "National Land Transport Programme Regional and activity tables"

⁸ Waka Kotahi, "Kaimai weather activated variable speed limit trial"

also acknowledged that some freight that is currently transported by road could sensibly shift to rail if key barriers (perceived and real) were addressed.

Growth in skills

Recently, 37% of industry operators reported a shortage of truck drivers and within the next five years, it is expected ~20% of truck drivers will retire / leave the sector.⁹ Throughout the transportation sector there is a large skill shortage of manual labour, and the shortage of truck drivers in particular is of increasing concern.

To address this shortage, Ia Ara Aotearoa Transporting New Zealand has collaborated with various parties to develop a programme called Te ara ki Tua | Road to Success. The programme connects potential truck drivers and employers to enable trainees to complete a 12-month training course with a mixture of online and paid on the job training. Launched in April 2021, the initiative relies on employers getting involved and taking on new trainees. This programme was strongly supported by stakeholders interviewed.

At present, Immigration New Zealand has placed truck drivers on the construction and infrastructure skills shortage list and the skill level classification list whereby overseas workers can apply for an essential skills temporary work visa. However, for the construction and infrastructure skills shortage list, the visa is limited to the those who will choose Canterbury as their principal place of work.¹⁰ These settings should be continually revisited to enable the supply of truck drivers to meet demand - and that a Waikato and Bay of Plenty regional lens could be considered.

Drive towards aggregation

Aggregation involves the combining of multiple services to maximise utilisation. Aggregation can support the reduction in carbon emissions, costs (particularly for smaller organisations) and provide a means to grow in scale. For example, collaborating inter-regionally and across organisations to manage the use of trucks would reduce empty running or the use of partially full vehicles. Subsequently, national carbon emissions and congestion would also decrease.

The Bay of Plenty and Waikato regions are actively encouraging opportunities for aggregation where feasible, for example, in the development of Ruakura. These regions are also ready to accommodate any national aggregation and will support national work in this area.

Technological change has the potential to enhance efficiencies and sustainability

Electric heavy vehicles can be accessed in the New Zealand market with the first hydrogen powered fuel cell truck having arrived in New Zealand in November 2021 and the first hydrogen filling station in operation at the Ports of Auckland. However, growth in electric heavy vehicles and hydrogen powered fuel cell trucks will require significant investment in infrastructure and will pose policy and regulatory challenges that need to be considered.

'Green' hydrogen is produced by separating water into oxygen and hydrogen using renewable electricity. This process is zero carbon, and with the only emission at the point of use in a fuel cell is water vapour. However, there are still a possibility of nitrogen oxide emissions (NOx) release due to combustion. Due to the extensive renewable energy sources in New Zealand, there is a great opportunity to use 'green' hydrogen as a zero-emission alternative in all modes of transport.

⁹ Road Transport Forum NZ, "Training the road to success"

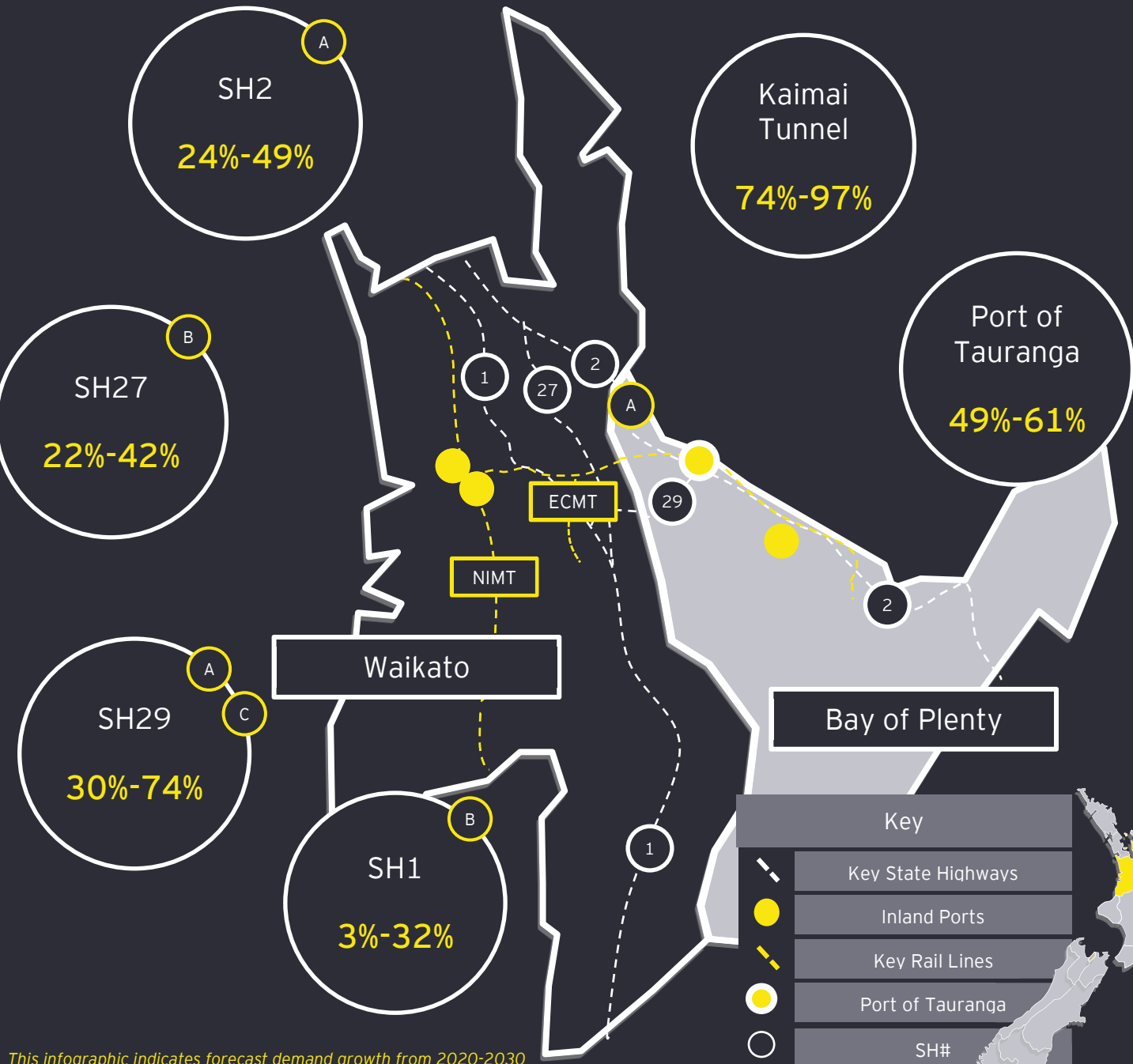
¹⁰ New Zealand Immigration, "Skills shortage list checker"

Action Plan

Following the analysis of these trends, opportunities and challenges, eight key actions for the Waikato and Bay of Plenty freight and logistics sector were identified. Some of these actions are continuation of support for existing initiatives (to prevent backsliding) while others are proposing new activity. All are important to ensure the region can respond to the observable freight growth. The below infographic highlights key assets, forecast growth trends and details of the action plan.

Waikato & Bay of Plenty Freight Action Plan - Regional Summary

Freight volumes in the Waikato and Bay of Plenty are expected to grow significantly to 2030 based on forecast export growth and interregional demand. Using the average of a range of estimation approaches, the overall growth could be as much as 47-65% on current volumes.

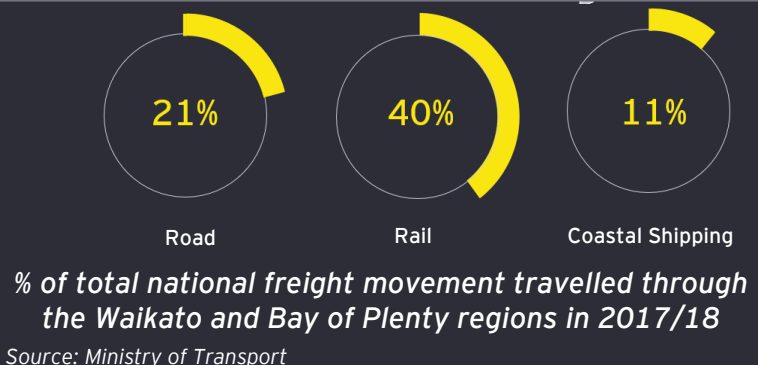


This infographic indicates forecast demand growth from 2020-2030
Forecast Growth Source: KiwiRail, Port of Tauranga, Waka Kotahi; EY Analysis

Key Statistics

Population	2020	2030 Forecast	% Growth
Waikato	489,680	545,020	11.3%
Bay of Plenty	331,240	366,780	10.7%

Source: StatsNZ; EY analysis



Waikato & Bay of Plenty Freight Action Plan - Action Plan

To meet this demand, stakeholders across the industry are investing in the freight and logistics sector. This action plan shows the additional investments and initiatives that would further support the industry in the Waikato and Bay of Plenty regions.

Challenge / Opportunity	Action	Map Reference
Increase capacity of the network	Advocate for and participate in a study that takes a system-wide view of capacity across the Waikato and Bay of Plenty regions, including key links to Auckland, with bottlenecks / constraints identified and prioritised.	-
Improve supply chain resilience	Advocate for and participate in a study that assesses the resilience of critical network assets, and identifies mitigation plans to limit potential disruption, including the Kaimai Tunnel, and SH29 (Kaimai Ranges).	-
	Encourage the completion of regionally significant road capital projects - including SH1, SH2, SH29 and the Southern Links projects.	A
	Support the continuation of expenditure on road maintenance, to maintain the assets we currently have in the Waikato region.	B
	Support the continuation of expenditure on road maintenance, to maintain the assets we currently have in the Bay of Plenty region.	C
Continue to mitigate current and expected skills shortages	Accelerate the Road to Success Programme for the Waikato and Bay of Plenty regions by socialising the programme and advocating for more funding / support.	-
	Provide support for truck drivers to be on the New Zealand immigration skill shortage list for the Waikato / Bay of Plenty region.	-
Embrace new technologies	Take a leadership position in the roll out of hydrogen infrastructure in New Zealand.	-

The above action plan does not consider activities that should be completed beyond 2030.

2. Introduction

EY was engaged by Te Waka to develop an action plan for the future of the logistics and distribution industry for the Waikato and Bay of Plenty regions. The production of this report was co-funded by industry representatives, Te Waka and Priority One (The Steering Group). A list of the funding partners can be found in Appendix A.

This report summarises the findings from a number of stakeholder engagements and desktop research before detailing the final action plan. What the sector views as challenges and aspirations for the future are at the core of this action plan.

2.1 Methodology

The agreed geographic scope of this engagement is the entire Waikato and Bay of Plenty areas including wider Bay of Plenty; Kawerau, Ōpōtiki etc. (as seen in Figure 1). These areas may be referred to as 'the region' in some sections of this report.

Figure 1: Map of Waikato and Bay of Plenty



1. Stakeholder interviews

In the development of this plan, EY and Te Waka placed great value on using stakeholders experience and views to ensure its outcomes are designed by and for the region. Stakeholder engagement was used to build a picture of what the future should look like and identify actions to make this future a reality. Consequently, stakeholder interviews were completed prior to / in conjunction with any desktop review and have formed an integral part of our approach.

The first set of interviews were completed in July 2021 with representatives from multiple areas of the freight and logistics industry. After these were completed, gaps were identified in our research and another set of interviews were completed in September 2021. A detailed list of these stakeholders can be found in Appendix A.

In interviews, stakeholders were asked a range of questions based on their view of potential

strategic objectives for the region, the opportunities they see and challenges they experience, and any possible actions that may aid the region to realise the identified opportunities or solve current issues. Interview outcomes led to the emergence of key themes and ideas which formed the basis of the desktop research. Where possible, the action plan states stakeholders' views and uses evidence to portray their significance. Where quantitative evidence is not available, anecdotes and case study examples are highlighted.

Following the completion of all interviews, detailed discussions with the Steering Group took place over several months to make sure that the findings were balanced in their presentation.

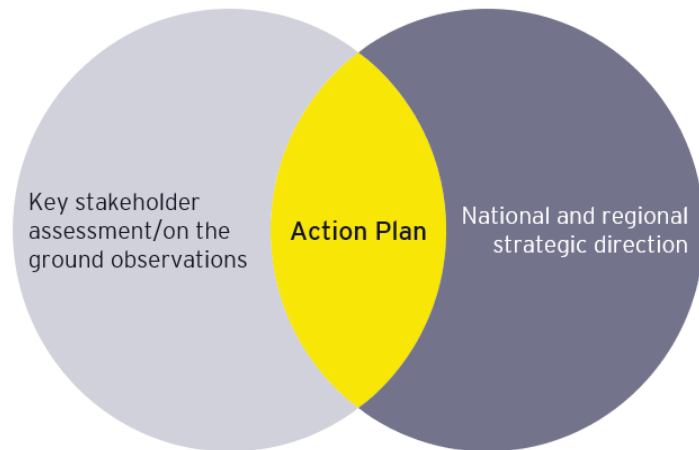
2. Desktop review

There is a considerable amount of evidence that exists detailing data, evidence and insights into the freight and logistics sector in the Waikato / Bay of Plenty. Rather than summarise this information, the insights and opinions of stakeholders were used to identify themes. These themes have then been evidenced through desktop review where relevant.

The presence of national and regional freight and logistics strategies were also used to help shape the nature of stakeholder interviews.

It is this blend of top-down national / regional strategic direction and on the ground observation that establishes the foundations of this work.

Figure 2: Report foundations



3. Action plan

This report outlines the findings from the approach outlined above, in particular, the desired strategic objectives of the region, themes identified in stakeholder interviews and their associated opportunities / challenges. Each challenge / opportunity drove the actions and likely key parties listed in the action plan.

4. Prioritisation framework

Following the identification of the high priority actions, a prioritisation framework was developed to categorise proposed actions. Each action was assessed against three factors: its ease of implementation, expected cost, and the impact of its expected value of benefits. Based on the outcomes of this assessment, actions were placed in one of three categories: quick wins, medium term goals, or long-term visions.

2.2 Limitations and assumptions

This Action Plan is a point-in-time estimate of the regions vision for the future and relied heavily on the views of stakeholders. Statements included in this report are either consolidated voice, or evidence based. Areas where there was no consensus or broad disagreement between stakeholders have been excluded from the main body of this report to ensure that each statement represents a consolidated voice of the region.

We would like to acknowledge all those who were involved in this process, their contribution is greatly appreciated and formed the basis of this action plan. This includes all 14 stakeholders interviewed and the Te Waka Action Plan Steering Group. More detail on these personnel can be found in Appendix A.

3. Background

The Waikato and Bay of Plenty regions are located in a nationally significant junction for the movement of freight across New Zealand, and to the world. This section provides the current state of the freight and logistics sector in these regions.

3.1 Context

In 2017 / 18, 68m tonnes of freight travelled through the Waikato region and 56.1m through Bay of Plenty (total movement can be found in Table 1).¹¹ To continue to support our national and international distribution network, it is essential that the region provides an efficient and reliable freight system.

Table 1: Total movements by each mode in 2017/18 (m tonnes)¹²

Freight Mode	Waikato	Bay of Plenty	Net Total for the regions ¹³	Total NZ	Share of national total
Road	65.1	45.5	61.7	258.5	21%
Rail	2.9	9.6	8.2	15.6	40%
Coastal Shipping	0	1	1	4.6	11%
Total	68	56.1	70.9	278.7	

3.2 Regional strategic advantages

3.2.1 Strategic assets

Key strategic assets in the area have been established over time to support the movement of freight across the country. Each of these assets provides the region with the means to meet the demands of distribution across New Zealand. The following provides a brief summary of the key strategic assets of the Waikato and Bay of Plenty region, as mapped in Figure 3.

The Port of Tauranga is New Zealand's largest export port, handling 37% of the country's exports, and 41% of all shipping containers.¹⁴ The port relies on both rail and road transport to connect freight across New Zealand and internationally, with 40% of its imports, and 50% of exports travelling out / into the port via rail.¹⁵ As a critical asset in New Zealand's freight and logistics sector, the port attracts large volumes of freight moving in and out of the Waikato and Bay of Plenty regions.

Within the Waikato and Bay of Plenty regions there are two established inland ports and one under active development. Tainui Group Holdings and Port of Tauranga are in the process of developing the Ruakura inland port located in the middle of the Golden Triangle (Auckland, Waikato and the Bay of Plenty). This inland port will have access to 70% of New Zealand within one day of travel and aims to be New Zealand's largest integrated commercial hub. The Ruakura vision is to aggregate the three areas of the supply chain: exports, imports and domestic flows. Subsequently, the port will be connected to high volume rail and road networks and be in partnership with the Port of Tauranga.

¹¹ Ministry of Transport, "National Freight Demand Study 2017/18"

¹² Ministry of Transport, "National Freight Demand Study 2017/18"

¹³ Note that the 'net total for the regions' figure does not correspond to an addition of the Waikato and Bay of Plenty freight volumes as this would include the traffic between and within the two regions twice. This is also the reason the share of national total does not directly equal the percentage of 'net total for the regions' in 'total NZ'.

¹⁴ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

¹⁵ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

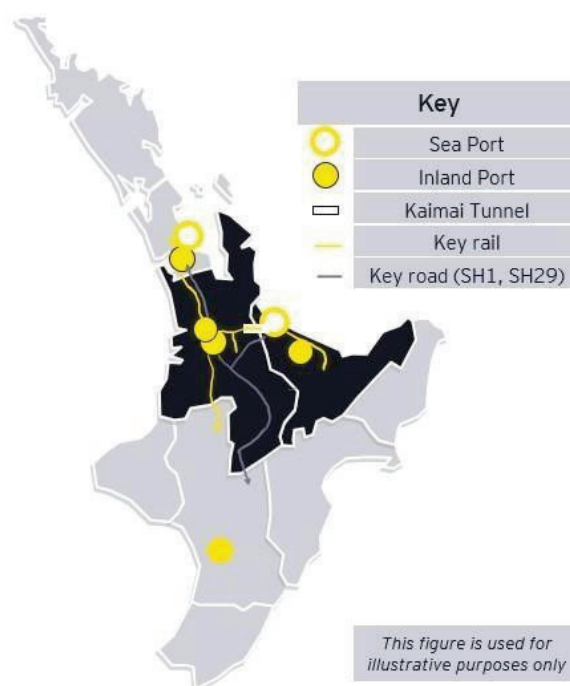
In addition to the Ruakura inland port, the region is also home to the Bay of Plenty freight hub and the Port of Auckland's Waikato freight hub in Horotiu. There are also plans to develop an intermodal business park at the existing Tokoroa Road / Rail Terminal.

The Waikato Expressway connects Auckland with the Waikato and Bay of Plenty regions. Its completion is expected to reduce travel times by 35 minutes from Auckland to Tirau, improve safety outcomes and increase travel capacity.¹⁶

Finally, the Kaimai Tunnel encompasses a rail connector between the Port of Tauranga and Waikato / Auckland regions, stretching 8.9km. When it was originally constructed, it was calculated to reduce the journey through the Kaimai Ranges by 85km.¹⁷ Currently, more than 37 freight trains travel through the tunnel per day.

The above strategic assets are those mentioned by stakeholders and are just a handful of those that support the movement of freight. Across Waikato and Bay of Plenty, state highways 1, 2, 27 and 29 are the key roading networks that experience an average of up to 4,644 annual heavy vehicles counts per day.^{18,19} Both the regions and the country rely heavily on each of the region's assets to enable efficient freight flows.

Figure 3: Map of key strategic assets



3.2.2 Production

The combination of the region's natural resources and current business environment has produced a thriving exports industry in both the Waikato and Bay of Plenty. The largest export industries in the region includes that of forestry, aquaculture, agribusiness, horticulture and agriculture.^{20,21}

Key export producers and key strategic freight and logistics assets also provide the Waikato and Bay of Plenty regions with a unique set of characteristics that are critical to New Zealand's export sector and support a significant freight and logistics sector.

¹⁶ Waka Kotahi, "Waikato Expressway"

¹⁷ Engineering New Zealand, "Kaimai Tunnel"

¹⁸ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

¹⁹ Bay of Plenty Regional Council, "Te Mahere Waka A Rohe o Toi Moana 2021-31 Bay of Plenty Regional Land Transport Plan 2021-31"

²⁰ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

²¹ Bay of Plenty Regional Council, "Te Mahere Waka A Rohe o Toi Moana 2021-31 Bay of Plenty Regional Land Transport Plan 2021-31"

4. Strategic Objectives

Six strategic objectives were identified by the involved stakeholders as areas of focus for the freight and logistics sector in the Waikato and Bay of Plenty regions. These are aligned to national and regional objectives and signal the aspirations of the region.

Table 2 outlines each strategic objective, details what they represent in the freight and logistics sector, and summaries any relevant regional or national policies.

Table 2: Strategic objectives

Strategic Objective	Description	Existing Policies/Targets
Drive economic prosperity	To support economic development by improving freight connections across the region, New Zealand and the world.	Regional <ul style="list-style-type: none"> ▶ Waikato Regional Land Transport Plan (RLTP) - invest into key economic development priorities²² ▶ Bay of Plenty Freight Logistics Strategy - create a competitive advantage in logistics as an attraction for investment and growth²³ National <ul style="list-style-type: none"> ▶ Government Policy Statement - improve freight connections for economic development²⁴ ▶ National Land Transport Programme (NLTP) - Improving freight connections for economic development²⁵ ▶ NLTP - Providing people with better transport options to access social and economic opportunities²⁶
Improve freight reliability	To improve the predictability of freight movements, timings and freight dependability.	Regional <ul style="list-style-type: none"> ▶ Bay of Plenty RLTP - maintain/improve time predictability of movement by rail and road from 2020 to 2030²⁷ ▶ Waikato RLTP - maintain travel time predictability of 88% on key strategic corridors²⁸
Increase freight resiliency	To ensure that the transport system can respond to, adapt, and rapidly recover from unplanned events and hazards.	Regional <ul style="list-style-type: none"> ▶ Bay of Plenty RLTP - by 2030 sections on strategic roads to be closed for less than 60 hours per year²⁹ ▶ Waikato RLTP - a vision to be a resilient transport system³⁰ National <ul style="list-style-type: none"> ▶ Waka Kotahi - Increasing resilience by managing risks and challenges³¹ ▶ Rail Network Investment Programme - increase resilience of the network through investment into resilience works³²

²² Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

²³ Bay of Connections, "The Future of Freight Logistics"

²⁴ New Zealand Government, "Government Policy Statement on Land Transport"

²⁵ Waka Kotahi, "2021-24 National Land Transport Programme"

²⁶ Waka Kotahi, "2021-24 National Land Transport Programme"

²⁷ Bay of Plenty Regional Council, "Te Mahere Waka A Rohe o Toi Moana 2021-31 Bay of Plenty Regional Land Transport Plan 2021-31"

²⁸ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

²⁹ Bay of Plenty Regional Council, "Te Mahere Waka A Rohe o Toi Moana 2021-31 Bay of Plenty Regional Land Transport Plan 2021-31"

³⁰ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

³¹ Waka Kotahi, "Resilience"

³² KiwiRail, "Rail Network Investment Programme"

Strategic Objective	Description	Existing Policies/Targets
Maintain and improve asset condition	Maintaining existing transport assets and maximising their usage to achieve greater efficiency across the transport system.	Regional <ul style="list-style-type: none"> ▶ Waikato RLTP - investment into strategic corridors³³ ▶ Bay of Plenty Freight Logistics Strategy - increase efficiency by intelligently using existing assets³⁴ National <ul style="list-style-type: none"> ▶ GPS - maintain networks to the standard required to achieve safe, resilient and accessible networks across New Zealand³⁵ ▶ Rail Network Investment Programme - improved asset condition / service level ratings
Transition to a low carbon economy	To minimise the environmental effects, particularly carbon emissions, from the use of the movement of freight.	Regional <ul style="list-style-type: none"> ▶ Bay of Plenty RLTP - decrease carbon emissions by at least 25% from 2020 levels by 2030³⁶ ▶ Bay of Plenty RLTP - net carbon zero by 2050³⁷ ▶ Waikato RLTP - by 2030 decrease carbon emissions by 30% from the 2018/19³⁸ ▶ Waikato RLTP - net carbon zero by 2050³⁹ ▶ Waikato Regional Council - Climate Action Roadmap⁴⁰ National <ul style="list-style-type: none"> ▶ Achieve zero net emissions for all greenhouse gases (except biogenic methane) by 2050⁴¹ ▶ Rail Network Investment Programme - increase from 236k CO2 emissions avoided per annum to 306k by 2030⁴²

³³ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

³⁴ Bay of Connections, "The Future of Freight Logistics"

³⁵ New Zealand Government, "Government Policy Statement on Land Transport"

³⁶ Bay of Plenty Regional Council, "Te Mahere Waka A Rohe o Toi Moana 2021-31 Bay of Plenty Regional Land Transport Plan 2021-31"

³⁷ Bay of Plenty Regional Council, "Te Mahere Waka A Rohe o Toi Moana 2021-31 Bay of Plenty Regional Land Transport Plan 2021-31"

³⁸ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

³⁹ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

⁴⁰ Waikato Regional Council. "Waikato Climate Action Roadmap"

⁴¹ Climate Change Response (Zero Carbon) Amendment Act 2019

⁴² KiwiRail, "Rail Network Investment Programme"

Strategic Objective	Description	Existing Policies/Targets
Improve health and safety outcomes	To directly reduce the number of people killed or harmed due to the movement of freight.	<p>Regional</p> <ul style="list-style-type: none"> ► Bay of Plenty RLTP - looking to implement road to zero strategy, 40% reduction in deaths and serious injuries from 2020 levels by 2030 on road⁴³ ► Waikato RLTP - Road to Zero 40% reduction in deaths and serious injuries from 2018 by 2030 with a vision to achieve zero deaths and serious injuries⁴⁴ <p>National</p> <ul style="list-style-type: none"> ► Vision Zero - no deaths or serious injuries on New Zealand roads by 2050⁴⁵ ► Road to Zero - achieve no more than 250 deaths and serious injuries in 2030⁴⁶, 40% reduction by 2030 from 2018 levels⁴⁷ ► Rail Network Investment Programme and NLTP - reference to having no-one killed or seriously injured ⁴⁸⁴⁹

⁴³ Bay of Plenty Regional Council, "Te Mahere Waka A Rohe o Toi Moana 2021-31 Bay of Plenty Regional Land Transport Plan 2021-31"

⁴⁴ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

⁴⁵ Auckland Transport, "Vision Zero for the greater good"

⁴⁶ Auckland Transport, "Vision Zero for Tāmaki Makaurau"

⁴⁷ New Zealand Government, "Road to Zero"

⁴⁸ KiwiRail, "Rail Network Investment Programme"

⁴⁹ Waka Kotahi, "2021-24 National Land Transport Programme"

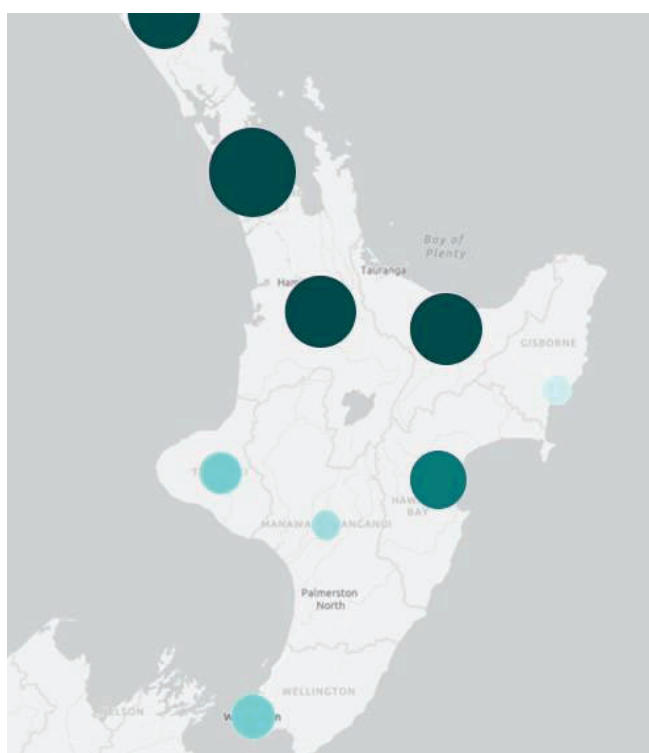
5. Key trends

Key trends impact the freight sector in the Waikato and Bay of Plenty but are outside of the control of the sector.

5.1 Organic growth

All stakeholders agreed that organic growth in the Auckland, Waikato and Bay of Plenty regions is already occurring and will continue to occur into the future. Reasons for growth in the Waikato and Bay of Plenty are varied, but generally rest on locational advantages, increased population growth in the region, and Auckland's expansion. This particular trend presents opportunities and challenges for the Waikato and Bay of Plenty regions to manage growth effectively.

Figure 4: Projected Population Growth 2023-2048



Push Factor - Population demographics

According to Statistics New Zealand, Bay of Plenty's population is expected to grow from 320,800 to 404,300 between 2018 and 2048. In the same timeframe, the Waikato region's estimated growth is from 475,600 to 615,100. Meanwhile, Auckland's population is projected (medium projection) to grow from 1.6m to just over 2.3m from 2018-2048.⁵⁰ In 2019, the Waikato and Bay of Plenty population growth rates (2.1 and 2.0 percent respectively) were higher than the national average.⁵¹

Based on 30 June 2018 data, the Auckland, Waikato and Bay of Plenty populations are expected to continue growing. The projected population growth between 2023-2048 in these regions is forecast to be 29%, 20% and 17% respectively as seen in Figure 4.

As the population in Auckland, Bay of Plenty, and Waikato grows, changes in the

patterns of freight flow are to be expected and each region will need to be supported by inbound and outbound volumes.

Table 3: Population Forecast estimates⁵²

Area	2022	2030	2048	2022 - 2048 CAGR
Bay of Plenty	341,680	366,780	404,300	0.65%
Waikato	503,760	545,020	615,100	0.77%
Total	845,440	911,800	1,019,400	0.72%

⁵⁰ Statistics New Zealand, "Subnational population projections 2018(base)-2048"

⁵¹ Statistics New Zealand, "Estimated population up in all regions"

⁵² Statistics New Zealand, "Subnational population projections 2018(base)-2048"

Push Factor - Land use planning and forecasting spatial growth

Despite a significant surge in activity in the last ten years, Auckland is struggling to fund and develop the infrastructure necessary to support urban growth. As a result, land prices in Auckland have continued to increase - affecting the value of industrial land⁵³. Industrial vacancy rates continue to be low - 1.5% for secondary vacancies and 1.6% for prime vacancies (2019).⁵⁴ As Auckland begins to de-industrialise to make way for residential dwellings, it forces the movement of commercial and industrial activities out. Commercial and industrial activities are moving to areas outside of the Auckland region. Of particular interest to this report, growth is visible through fringe areas such as Drury, Pokeno and Mercer - down into the Waikato / Bay of Plenty.

Pull Factors - Assets and characteristics

In conjunction with the push factors driving commercial and industrial activities out of Auckland, there are a range of inherent advantages to the Waikato and Bay of Plenty that serve as pull factors for the freight and logistics businesses entering the region. The following list summarises the locational advantages of the Waikato and Bay of Plenty regions:

- ▶ The Port of Tauranga - the Port of Tauranga can accommodate larger container vessels than any other port in New Zealand⁵⁵
- ▶ Inland Ports - Ruakura, the Bay of Plenty freight hub, and the Port of Auckland's Waikato freight hub
- ▶ Proximity to export producers
- ▶ Existing expertise from the sector creating collaboration opportunities
- ▶ Proximity to Auckland.

According to stakeholders there is no doubt industrial production and warehousing will continue to move toward the fringes of the region and increasingly out of the region, but there is a question of how far they will go before it is too expensive to transport goods back to Auckland. The Waikato and Bay of Plenty regions have a large opportunity to encourage and plan for effective growth before it occurs.

5.2 Forecast Demand

Understanding the potential growth in freight for the region is important to gauge the readiness to respond from an infrastructure or system perspective. There is no perfect science to freight forecasting, however these forecasts use a top-down 'average of a range of approaches' to determine what a plausible view of forecast growth could look like.⁵⁶

The forecast demand analysis in this section is high-level and simplistic in nature with the intention of providing contextual backdrop to trends affecting the sector. It is calculated for the main freight transport modes: road, port, and rail. For each mode of transport, a key node (or nodes) has been selected to be demonstrative of each mode, as seen in Table 4.

Table 4: Key node definition for demand forecast

Freight Mode	Key Node	Data measurement
Road	SH1, SH2, SH27, SH29	Average Annual Traffic Count (ADDT) for heavy vehicles
Rail	Kaimai Tunnel	Annual freight tonnages
Sea	Port of Tauranga	Annual cargo tonnages

⁵³ Colliers, "Auckland Industrial Colliers essentials 1H 2019 Market Snapshot"

⁵⁴ Colliers, "Auckland Industrial Colliers essentials 1H 2019 Market Snapshot"

⁵⁵ Port of Tauranga, "2020 Annual Report"

⁵⁶ The approach taken is a high-level assessment and it is probable that a detailed sector, by sector analysis incorporating detailed capacity constraints, would yield a different outcome.

Data limitations and consistency make it challenging to show a granular level of freight movement (spatially, by commodity, etc). Therefore, aggregated data by nodes is used to develop demand forecasts. Consistent with our analysis, all major indicators show growth every year.

5.2.1 Forecast Methodology

For each node, several different forecast techniques have been applied:

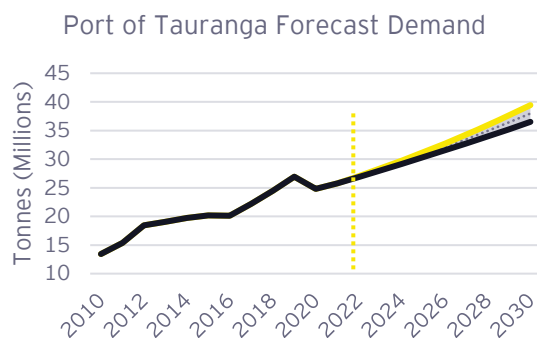
- ▶ Historical data is used to calculate the 'simple' average growth rate and 'compound average growth rates' (CAGR) for all nodes.
- ▶ Export forecasts from the Ministry for Primary Industries combined with historical data are used to estimate export growth rates. Note these forecasts are based on revenue forecasts rather than volumes.
- ▶ For road, population growth forecasts from Statistics New Zealand are also used as a supplement to estimate a road freight forecast.

Rail and Port forecasts do not use the population estimates as export forecasts are considered to have a larger influence on these modes.

Each of the defined forecasts provide differing estimates for forecast demand. The average of the three / four growth rates forms an estimate demand forecast line. The midpoint between this line and the top / lower forecast creates the upper and lower boundaries these boundaries are used to form an estimate range for forecast demand.

5.2.2 Port

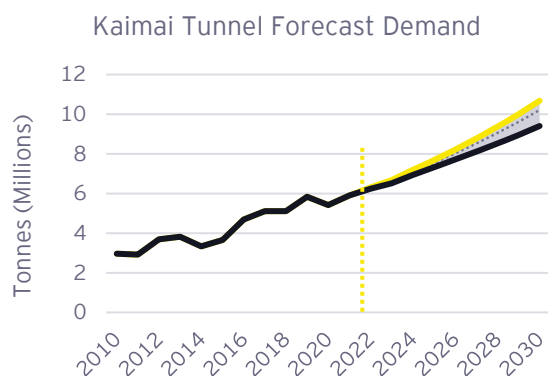
Figure 5: Port Demand Forecast to 2030



Historic demand for Port of Tauranga was calculated using annual cargo tonnage from the past ten years. During this time, freight movement through the Port has increased by 67%.⁵⁷

As indicated by Figure 5, demand for the Port is estimated to increase between 49% and 61% from 2020 to 2030. These forecasts are calculated using the methodology described above.

Figure 6: Rail Forecast Demand to 2030



5.2.3 Rail

Historic data used in the rail forecasts are from KiwiRail statistics. According to this data, freight movement through the Kaimai Tunnel has more than doubled over the past ten years.

Estimates using the methodology described above suggest that demand for rail through the Kaimai Tunnel could increase between 74% and 97% from 2020 to 2030 (as seen in Figure 6).

⁵⁷ Port of Tauranga, "Port Trade and Statistic Information"

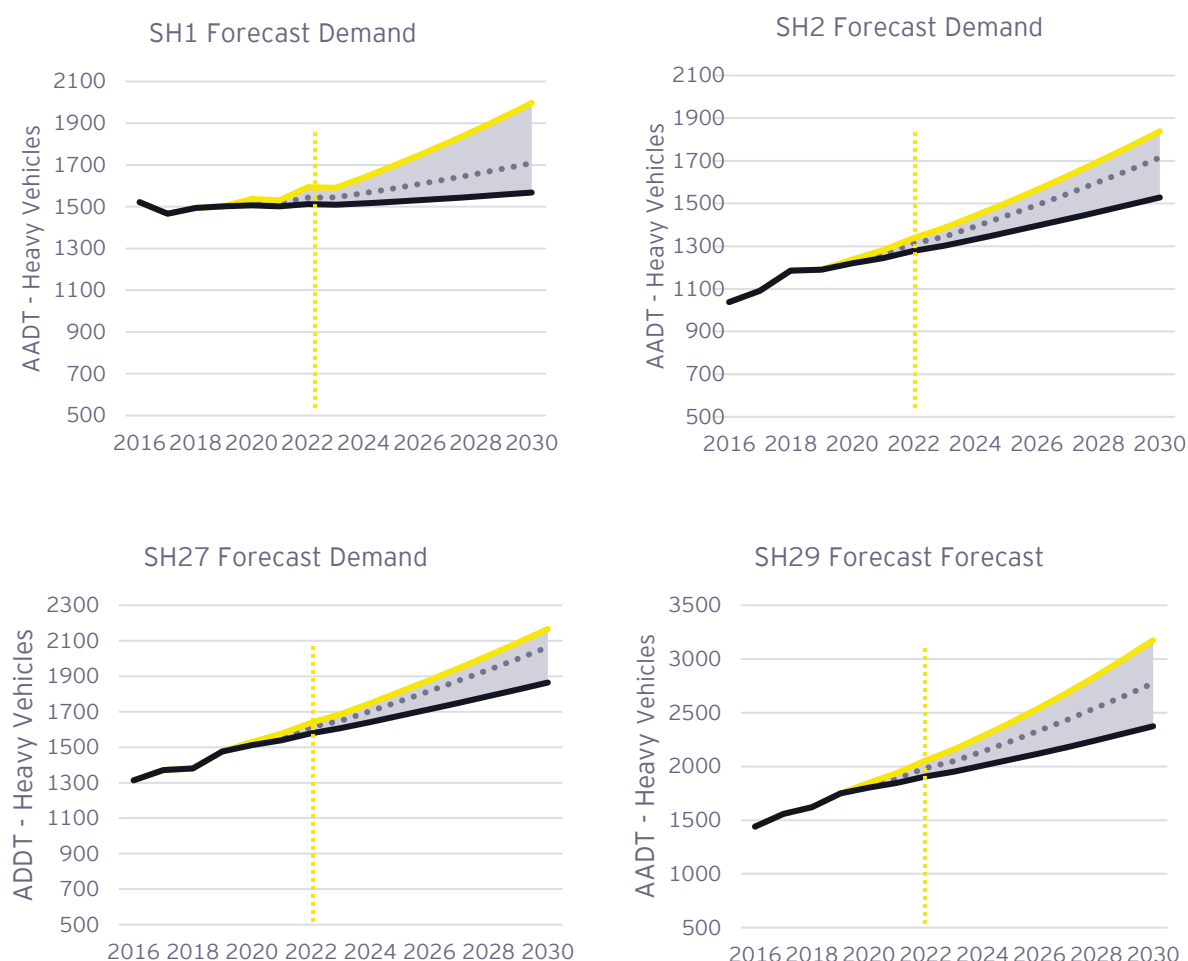
5.2.4 Road

Forecast road demand was determined using annual average daily traffic (AADT) data. In this forecast, all count sites on state highways 1, 2, 27 and 29 in the Bay of Plenty and Waikato region were accumulated between 2016 and 2020. Historical estimates were calculated by deriving an average of the count sites to best reflect the demand across the relative state highways. Waka Kotahi also provides a percentage of heavy vehicles at each count site, which was used to provide a 'heavy vehicle count'.⁵⁸

In 2020, demand decreased significantly. This is likely due to the lockdowns experienced across New Zealand as a consequence of COVID-19. As a result, 2020 data is excluded from forecast calculations. The following provides an indicative demand forecast for the key state highways in the region.⁵⁹

Figure 7 suggests state highways 1, 2, 27, and 29 could have growth rates that range between 3%-32%, 24%-49%, 22%-42% and 30%-74% respectively for the years 2020-2030. For state highway 29 (SH29), the estimation interval significantly exceeds other state highways. This is likely due to the high increase in heavy vehicles in recent years. According to AADT data, the average number of heavy vehicles crossing the highway per day increased from 1,440 to 1,750 between 2016 and 2020 – an increase of 22% in just 4 years.⁶⁰

Figure 7: SH1, 2, 27, 29 Forecast Demand 2020-2030



⁵⁸ Note, this evaluation assumes that the percentage of heavy vehicles remains constant for each year.

⁵⁹ Due to the exclusion of 2020 data and absence of data in the following years, demand forecasts start from 2019

⁶⁰ Waka Kotahi, 'Resources'

5.3 Larger and more efficient freight carriers

5.3.1 Road

The aggregation of freight movement across the globe is a macro trend that is expected to continue to evolve in New Zealand. On the road, large trucks are increasing their presence across the country.⁶¹ In 2013, the 50MAX HPMV was introduced to New Zealand, to increase potential efficiencies on the road transport sector. This drive for greater carrying weights has a number of advantages including a reduction in per unit emissions and the mitigation of driver shortages. However, larger trucks cause more damage to roads and as the number of heavy trucks expands, there will be increasing maintenance costs for existing roads.

5.3.2 Sea

In New Zealand, the demand for larger container ships has increased significantly. In 2012, 2% of vessels exceeded 4,000TEU (twenty equipment unit), while in 2021, 63% exceeded this level.⁶² This trend shows no sign of abating and New Zealand must be ready to accommodate it. Constant analysis of global trends and capital investment is required to ensure New Zealand is able to access larger vessels when required.

Since 2016, the Port of Tauranga has regularly serviced larger vessels with nominal capacities of between 7,500 and 11,300 TEU. Modelling also suggests they could accommodate 13,500 TEU Edinburgh class vessels. On a global scale, the largest vessels currently used are 24-25,000 TEUs (400 x 61m) and 24 containers wide. All investments at the Port of Tauranga to date have begun to address planning for larger vessels, for example, the Port is currently seeking consent to extend their container berths up to 380m at the south of the existing wharves. Although the Port of Tauranga cannot justify any capacity expansion for the largest vessels just yet, they are aware of these trends and remain observant of any changes that may require greater investment in the future.

Additionally, as vessels begin to get larger, freight is being transported in larger volumes creating an inconsistent flow of freight. If this trend continues it might be that landside supply chain logistics becomes more 'peaky' which will put pressure on when and how operators can use transport networks.

5.3.3 Rail

KiwiRail is adding more wagons on trains to increase the volume of freight transported by each individual train. For example, in 2019, KiwiRail added an additional 15 wagons per day to transport logs from the Wairarapa to CentrePort. This change increased the quantity of transported freight from 267,000 tonnes to 370,000 tonnes, increasing capacity by approximately 40%.⁶³

⁶¹ Ministry of Transport, "Annual fleet statistics 2018"

⁶² ANZ, "NZ Insight: Freight Challenges"

⁶³ KiwiRail, "Extended log trains will take more trucks off roads"

6. Key Challenges and Opportunities

This section highlights the most significant opportunities and challenges currently facing the Waikato and Bay of Plenty logistics and distribution sector. These findings form the basis of the strategic objectives and action plan.

6.1 Infrastructure Capacity

Historic investment across the Waikato and Bay of Plenty generally exceeds that of most other regions. For example, in 2019 / 20 the Waikato and Bay of Plenty total expenditure on road maintenance per km was amongst the highest of the country, alongside Auckland, Wellington, and Gisborne.⁶⁴ However, given the large amount of freight travelling through the Waikato and Bay of Plenty regions, investment in infrastructure should be expected to keep pace with freight (and population) growth.

Across all modes of transport, stakeholders recognise the need to invest in greater capacity as demand increases and have future plans to do so. A number of the current and planned investments in the Waikato and Bay of Plenty region are detailed below.

6.1.1 Planned investment

Rail

In the Waikato and Bay of Plenty regions combined, there is a planned \$88.69m expenditure on rail between FY22 and FY24. Part of this investment has indicatively been allocated to the North Island Main Trunk (NIMT) and all lines east of Hamilton - mainly the East Coast Main Trunk (ECMT) as seen in Table 5. An additional \$676m of unallocated network-wide expenditure is also available for investment across New Zealand. These investments will involve renewals, maintenance / operations costs and upgrades and are likely to support capacity and maintenance requirements across the network.⁶⁵

Table 5: Rail planned investments for Waikato and Bay of Plenty

	NIMT	EMCT
Planned expenditure (\$m)	39	50
Type of investment	Renewals	Renewals
Region	Waikato	Waikato / Bay of Plenty

Port of Tauranga

The Port of Tauranga is a critical asset for New Zealand's freight and logistics sector. As demand increases it will need supply side responses to reduce the risk of major supply chain constraints.

At the time of writing, some stakeholders believed that demand and congestion constraints at the Port of Tauranga are growing and could negatively impact the movement of containers in and out of the Port. The area surrounding the Port is gradually becoming congested, with an increase in the population in Tauranga City of 19.1% from 2013-2018⁶⁶ adding to the number of private vehicles on the road. Additionally, Port of Tauranga recorded an increase in trade (increase of 3.8%) in 2021.⁶⁷

⁶⁴ Waka Kotahi, "Road Controlling Authority Reports"

⁶⁵ Data provided by KiwiRail on 2 December 2021

⁶⁶ Tauranga City Council, "Tauranga City Statistical Information Report"

⁶⁷ Port of Tauranga, "Taking care of tomorrow, Port of Tauranga Limited Integrated Annual Report 2021"

In recent years, Port of Tauranga's growth in the use of rail has exceeded that of road. As of January 2022, the Port of Tauranga ran a ~93 train programme per week (~46 trains each way) - a third more trains than the previous year. This trend is expected to continue into the future with the Ruakura Inland Port strategy focusing on the use of rail. In Stage One of the Ruakura development, there will be two 800m rail sidings that will service greater than 80 trains per week.⁶⁸ Due to the growth in the use of rail, the Port of Tauranga has not had to correspond to growing road transport constraints such as increased congestion.

At the Port, berth availability, storage yard space, productivity and dwell time dictate container terminal capacity.⁶⁹ In January 2021, the Port of Tauranga increased capacity by growing their 5-lane truck exchange to a 10-lane truck exchange and operating a third more trains than the previous year.

To meet future demands, the Port plans to undertake investment required to support future capacity including, but not limited to the list below.

1. Port of Tauranga is currently seeking consent to extend their container berths up to 380m at the south of the existing wharves. This will create an opportunity to grow container throughput from 1.2m - 1.4m TEU per year to ~2.8m - 3m TEU.⁷⁰ Stakeholders noted that failure to grant this consent would threaten the ability of the region to manage forecast freight volumes.
2. Introduction of automated stacking cranes. These cranes can stack containers six high, increasing container throughput to above 3m TEU per year.
3. Use of Ruakura inland port to increase efficiencies for importers and exporters.

Roading network

The most recent Waikato and Bay of Plenty Regional Land Transport Plans imply that there will continue to be sustained and significant roading investment throughout the next ten years. Total planned roading investments for Waikato and Bay of Plenty are approximately \$800m and \$400m p.a. respectively.⁷¹⁷² Both of these Plans register an increase in planned expenditure from the 2018 Regional Land Transport Plans.

In the National Land Transport Plan proposed and approved National Land Transport Fund investments for the Bay of Plenty and Waikato regions come to a combined total of \$2.6b.⁷³

Key regional investments include the following as detailed in section 6.2. Each of these projects have varying levels of funding signalled or committed to the project.

1. SH29 Piarere to Tauriko
2. Tauriko Network
3. SH2 Waihi to Tauranga Corridor Programme
4. SH1 Cambridge to Piarere
5. Southern Links

⁶⁸ Ruakura Superhub, "Ruakura Inland Port"

⁶⁹ Port of Tauranga, "Taking care of tomorrow, Port of Tauranga Limited Integrated Annual Report 2021"

⁷⁰ Port of Tauranga, "Taking care of tomorrow, Port of Tauranga Limited Integrated Annual Report 2021"

⁷¹ Waikato Regional Council, "Waikato Regional Land Transport Plan 2021-2051"

⁷² Bay of Plenty Regional Council, "Te Mahere Waka A Rohe o Toi Moana 2021-31 Bay of Plenty Regional Land Transport Plan 2021-31"

⁷³ Waka Kotahi, "National Land Transport Programme Regional and activity tables"

Further to these listed investments, Waka Kotahi has recently commenced the development of a business case for the key section of SH2 known as the Hewletts Road sub area. This corridor is key to accessing the Mount Maunganui side of the Port of Tauranga and currently experiences high levels of congestion.⁷⁴

Similar to the Port of Tauranga, if the outlined planned investments are to go ahead, stakeholders believe the roading network will continue to meet freight movement across Waikato and Bay of Plenty. More investment is always welcomed by the sector, but there are no obvious additional investments identified that would materially make a difference to capacity.

6.1.2 Additional investment

We asked stakeholders for a view about potential investments that could either improve capacity or remove bottlenecks on the system. The investments below were examples provided and form a starting point for the eventual recommendation for a technical study into ways of increasing capacity across the road and rail network (or relieving bottlenecks).⁷⁵

- ▶ **Rail:** Southbound connection from ECMT onto the NIMT railway line. This investment would provide more efficient and effective connectivity between Waikato and Bay of Plenty and the lower half of the North Island.
- ▶ **Rail:** More rail capacity at Port of Tauranga or Sulphur Point.
- ▶ **Road:** Investment at the Northern end of SH29 should be prioritised and fast tracked.

6.1.3 Utilisation

Greater utilisation of assets provides another means for the logistics and freight sector to meet growing demands. Currently, all infrastructure assets used by the freight and logistics sector could be operating 24 hours a day. However, noise limitations given effect through the Resource Management Act and the identified skills shortages create large barriers to achieving this level of utilisation.

6.2 Asset management

Asset management refers to the development, operations and maintenance of assets in the region. Throughout stakeholder engagements, the sector emphasised that asset management is critical for continuous and efficient freight movement. In particular, stakeholders mentioned the below projects as key investments that will support a safe, efficient and reliable roading network.

Kaimai Ranges / Piarere to Tauriko

In 2015, approximately 9,000 vehicles travel over the Kaimai ranges per day, 1,300 of these are heavy vehicles.⁷⁶ Due to its terrain, the road through the Kaimai ranges is extremely slow for trucks and thus becomes costly for freight distribution.

The ranges are also known to have large safety issues. From 2015-2019 (used as a baseline due to COVID-19 impacts in 2020 / 21) there were 13 fatal crashes and 33 crashes causing serious injury on SH29 (this state highway travels from Tauranga across the Kaimai ranges). Of the 46 combined

⁷⁴ Bay of Plenty Regional Council, "Te Mahere Waka A Rohe o Toi Moana 2021-31 Bay of Plenty Regional Land Transport Plan 2021-31"

⁷⁵ Please note this is a sample of what stakeholders mentioned. These examples have not been verified and it may be that a more fulsome study would conclude that the above are not viable, not needed, or do not represent good value for money investments.

⁷⁶ Waka Kotahi, "Kaimai weather activated variable speed limit trial"

fatal and serious accidents, 19 involved at least one truck.⁷⁷ Accidents are a common cause for the Kaimai ranges to be closed, resulting in delays.

The idea of investing in a more efficient and safer route for freight movement through the Kaimai ranges has been discussed by the region for numerous years. In 2016, a programme business case was written by Waka Kotahi whereby multiple investments were proposed to increase safety, efficiency and economic outcomes. The chosen programme is comprised of \$330-530m worth of improvements across 20 years.⁷⁸

The Bay of Plenty regional transport plan for 2021-31 has identified investment areas for improvements to SH29 Piarere to Tauriko based on the original 2016 business case. Prior to 2031, the plan suggests activities including the development of more detailed programmes to invest in SH29 Piarere to Te Poi, Te Poi to Kaimai Summit and Kaimai Summit to Tauriko will be complete.⁷⁹

Tauriko Network

The Tauriko project is comprised of investments from Omanawa Road SH29 intersection through to the SH29 / SH36 / Takitimu Toll Road intersection or onto the SH29a / Barkes corner roundabout. This section of road is not included in the Piarere to Tauriko business case but is a part of SH29 and is also a key route for freight distribution between the Bay of Plenty and Waikato.

The Tauriko Network programme business case written in 2016 states that the investment will support the region to effectively plan for projected traffic growth and developments. In 50 years' time (from the time of writing the business case) it was predicted that there will be an additional 179,000 journeys per day on this corridor, impacting travel times, reliability and efficiency.⁸⁰ Furthermore, the poor layout of roading is already causing a number of road deaths and serious injuries.⁸¹ From 2013-2017 there were 262 crashes on the Western corridor resulting in 14 deaths or serious injuries.⁸² The corridor's safety star rating is 2.7 - the recommended rating is at least 4.⁸³

This investment is being investigated by Waka Kotahi and a detailed business case is in development. There is currently no confirmed funding however the emerging preferred option will reduce safety risks and provide additional capacity for road users.

SH2 Waihi to Tauranga Corridor

SH2 from Waihi to Tauranga has been identified as one of the key sections of road in the region that will require maintenance to increase safety and efficiency. In 2016 a business case was developed for the programme of work and it has since been added to the regional land transport plans as a key interregional investment.

This investment includes five key packages of work focused on improving road safety, providing more reliable journey times and supporting growth along one of New Zealand's highest risk and fastest growing travel routes. This is inclusive of the following activities: SH2 Paeroa to Tauranga Safer Corridor, SH2 Waihi to Ōmokoroa Safer Corridor, Katikati Urban, SH2 Te Puna to Ōmokoroa, Tauranga Northern Link.

⁷⁷ Waka Kotahi, "Crash Analysis System (CAS)"

⁷⁸ Waka Kotahi, "SH29 Piarere to Tauriko programme business case"

⁷⁹ Bay of Plenty Regional Council, "Te Mahere Waka A Rohe o Toi Moana 2021-31 Bay of Plenty Regional Land Transport Plan 2021-31"

⁸⁰ Waka Kotahi, "Tauriko Network Programme Business Case"

⁸¹ Waka Kotahi, "Tauriko Network Programme Business Case"

⁸² Waka Kotahi, "TAIP Re-evaluation: SH29 Western Corridor"

⁸³ Waka Kotahi, "TAIP Re-evaluation: SH29 Western Corridor"

The SH2 Waihi to Tauranga Corridor Programme is currently underway with safety improvements between Waihi and Omokoroa and discussion of the development of a median barrier for a 14km section of SH2.

SH1 Cambridge to Piarere

Waka Kotahi has identified the state highway 1 (SH1) corridor as a nationally significant connection for freight and tourism and SH29 for freight as it connects the Bay of Plenty and Waikato regions to Auckland. The corridor connects to the Waikato Expressway and is utilised by 20,000 vehicles per day and is expected to take 26,000 vehicles per day by 2046.⁸⁴ However, the detailed business case of SH1 Cambridge to Piarere long term improvements suggests that this corridor is not fit-for-purpose with multiple safety, resilience and travel speed issues. For the period between 2015-2019, it is estimated that there were 147 crashes along this corridor resulting in 27 deaths and serious injuries.⁸⁵

The business case suggests a build of a 16km four lane expressway between the end of the Cambridge section of the Waikato Expressway and intersection of SH1 and SH29 at Piarere. Upon completion, this project will improve travel times, reduce safety concerns, and improve access.⁸⁶ Several safety improvements have been completed along this corridor however, at the time of writing, the 16km extension was yet to receive funding.⁸⁷

Southern Links

As previously mentioned, demand and use of the roading network in the region is projected to significantly increase. As such, the Southern Links project aims to support Hamilton's planned growth and be a key part of the city's urban arterial network in alignment with the Hamilton City Council Access Hamilton Strategy. The project involves the development of a transport network comprised of well-integrated state highways and urban arterial routes that are cognisant with planned residential and industrial developments. In particular, the project will support growth in the Peacocke, Tamahere, and Hamilton Airport areas.⁸⁸

Upon completion, the Southern Links project will improve freight reliability through a reduction in congestion, improved safety (particularly on parts of SH1 and SH3) and create more efficient freight flows.⁸⁹ At this stage, routes have been designed, several land purchases have been made and construction of a new bridge over the Waikato River has commenced.⁹⁰

Road Maintenance and roading improvements

The Waikato and Bay of Plenty regions have seen significant expenditure on road maintenance. Waikato and Bay of Plenty spent approximately \$20,000 and \$21,000 respectively on road maintenance per kilometre of road in the year 2019 / 20. This places them in the top five of the 14 regions in New Zealand for road maintenance expenditure per kilometre.⁹¹ However, road maintenance must continue to increase in conjunction with growth.

According to the Road Efficiency Group, out of the 13 councils in the Waikato and Bay of Plenty with available information on sealed road maintenance targets (2 councils did not record this information), 8 are yet to achieve their 2018 - 2028 long-term plan targets for 2019 / 20.⁹² As the

⁸⁴ Waka Kotahi, "SH1: Cambridge to Piarere (C2P) Long Term Improvements, Detailed Business Case"

⁸⁵ Waka Kotahi, "SH1: Cambridge to Piarere (C2P) Long Term Improvements, Detailed Business Case"

⁸⁶ Waka Kotahi, "SH1: Cambridge to Piarere (C2P) Long Term Improvements, Detailed Business Case"

⁸⁷ Waka Kotahi, "SH1 Cambridge to Piarere"

⁸⁸ Waka Kotahi, "Southern Links"

⁸⁹ Waka Kotahi, "Southern Links"

⁹⁰ Hamilton City Council, "Southern Links"

⁹¹ Waka Kotahi, "Road Controlling Authority reports"

⁹² Waka Kotahi, "Road Controlling Authority reports"

sector increases the use of greater carrying weights and HPMVs, it is likely that road surfaces will deteriorate more rapidly. As a result, there is a need for increased expenditure on road maintenance and improvements.

6.3 Resilience

Resilience is the ability to continue the movement of freight following a disruption to its preferred route. For example, if a key asset were damaged following a natural disaster, alternative freight routes would be required.

The following were identified by stakeholders as critical assets of the freight and logistics sector. If a natural disaster were to occur and closure of these assets were necessary, there would be major delays causing repercussions across the sector.

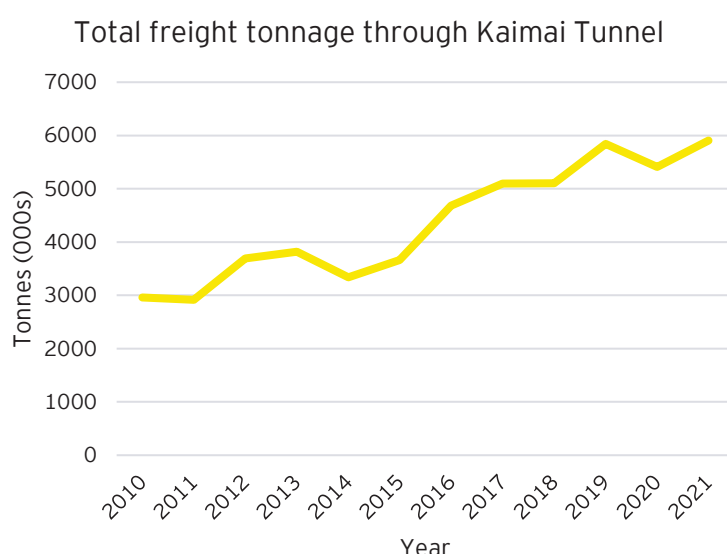
State Highway 29 (Kaimai Ranges / Piarere to Tauriko)

SH29 is the key road that links Bay of Plenty and in particular the Port of Tauranga to the Waikato and upper North Island regions (including Auckland). In 2019, the average annual daily traffic count for heavy vehicles reached 1,750.⁹³ If this access route were blocked, these vehicles would be required to re-route to state highway 2 / 27.

Kaimai Tunnel

The Kaimai Tunnel is a critical strategic corridor between the Port of Tauranga and the Waikato / Auckland region via rail. It runs greater than 37 freight trains per day and lack of access to the asset would cause major freight delays throughout the region and the country.⁹⁴ Detail of tonnage volumes through the Kaimai Tunnel can be found in Figure 8.

Figure 8: Total tonnage moved through the Kaimai Tunnel from 2010 to 2021



According to the 2016 SH29 Piarere to Tauriko Programme Business case, the tunnel is structurally sound and will continue to be for the next 60-80 years. The business case also suggests that the tunnel does not have any capacity constraints and won't for the foreseeable future.⁹⁵

However, stakeholders noted that inability to use this asset (due to a natural hazard event, for example) would cause significant supply chain disruption both in the region and around the country.

In follow up discussions with the Steering Group it was acknowledged that there are other critical nodes across the network (for example the Port of Tauranga) that would also be susceptible to natural hazard events (or other forms of disruption). It is believed that a study should be commissioned that assesses the resilience of critical network assets, and identifies mitigation plans to limit the potential disruption.

⁹³ Waka Kotahi, "Resources"

⁹⁴ New Zealand Government, "The New Zealand Rail Plan"

⁹⁵ Waka Kotahi, "SH29 Piarere to Tauriko Programme Business Case."

Network Preservation

In the Waikato and Bay of Plenty regions a multi-modal approach is used to transport freight through the use of road, rail and sea. This approach adds significant value and resilience to the network as demonstrated by the Kaikōura earthquake. This event caused damage to the main north line railway and state highway one - two corridors heavily used for freight movement. In this example, coastal shipping was able to support a lot of the impacted freight movements.

Protecting and preserving this optionality through continued and increased investment in Coastal Shipping is critical to uphold the resilience of the sector.

6.4 Treatment of rail

The majority of stakeholders interviewed could see wider benefits in more freight being moved via rail than current state, including travel time reliability, environmental and health & safety benefits.

In 2019, it was estimated that the total value of rail in New Zealand, including externalities such as greenhouse gases, was \$1.7b-\$2.1b. This encompasses five key expected benefits areas as detailed in Table 6.⁹⁶

Table 6: Net benefits of rail and their monetised value⁹⁷

Benefit	Monetised impact (\$million)
Time (and congestion) savings	\$939-\$1,054
Reduced air pollution	\$170-\$1,474
Reduced fuel use and maintenance costs	\$315-\$329
Reduced greenhouse gas (GHG) emissions	\$171-\$182
Safety	\$94-\$98
Total	\$1,695-\$2,137

All stakeholders acknowledged that many types of freight are not suitable for rail and therefore road freight would and should continue to be a significant modal option for freight. However, they also acknowledged that some freight that is currently transported by road could sensibly shift to rail if key barriers (perceived and real) were addressed.

Key barriers referenced by stakeholders that prevent more freight being moved via rail included the perceived price competitiveness relative to other options (e.g., road) and perceived capacity constraints on the rail network.⁹⁸ There is therefore an opportunity for the government to consider changes to policy settings that would make it more attractive for more freight to be moved via rail, in order to realise wider environmental and health & safety benefits for New Zealand.

Stakeholders had a range of views on potential policy settings that could be considered, including:

- ▶ Changing KiwiRail's pricing model (may be challenging within an SOE framework);
- ▶ Providing subsidies for containers to cover the additional cost of movement via rail relative to alternatives (e.g., the Mode Shift Revenue Support Scheme in the UK)⁹⁹;
- ▶ Additional funding to support transfer facilities/private sidings.

⁹⁶ KiwiRail, "The Value of Rail in New Zealand"

⁹⁷ KiwiRail, "The Value of Rail in New Zealand"

⁹⁸ Please note that perceived barriers and suggestions are discussed in more detail in the 'divergent comments' section.

⁹⁹ UK Department for Transport, "Guide to the Mode Shift Revenue Support (MSRS) Scheme"

The report authors pass no judgement on the above suggestions but acknowledges that any Government intervention to encourage modal shift towards rail would need to be justified by positive externality benefits from a modal shift, such as environmental or health & safety benefits, to ensure that alternative modes (like roading) are not unfairly penalised.

Additionally, it was noted that passenger and freight trains operate on the same railway tracks. When demand for both the movement of passengers and freight is high it creates competition for scarce capacity, inevitably one will need to give way to the other. Some stakeholders noted that despite the presence of a rail scheduling committee, this competition between passenger and freight movements might become more problematic in the longer term with population growth.

6.5 Skills

Recently, 37% of industry operators have reported a shortage in truck drivers and within the next five years it is predicted that approximately 20% of truck drivers will retire / leave the sector.¹⁰⁰ Stakeholders in the Waikato and Bay of Plenty regions echoed this concern. In particular, one of the heavy users of the transport system stated they have recently operated with a national deficit of 30-40 drivers. This also becomes a greater constraint during peak times as numerous commodities peak periods are blended together.

The skill shortages in the trucking industry are due to a combination of issues. The most pressing being the aging workforce. Currently, 25% of truck drivers are over 60 years old and are likely to soon retire.¹⁰¹ Stakeholders also emphasised that possible younger drivers are disincentivised by the nature of the work such as the long hours and night shifts. These challenges can be remedied through supply side solutions as noted below, but may trigger demand side responses, for example through automation.

To address the shortage, la Ara Aotearoa Transporting New Zealand have collaborated with government agencies such as Waka Kotahi, the Ministry of Business, Innovation and Employment (MBIE), Tertiary Education Commission, as well as Iwi Māori representatives, labour supply groups and training organisations to develop a programme named Te ara ki tua | Road to Success. This programme was recently launched in April 2021 and in October 2021, la Ara Aotearoa Transporting New Zealand are said to have undertaken workshops for the sector to provide feedback.¹⁰² The key expected outcomes from the programme are highlighted in Figure 9. Each trainee will complete a 12-month training course with a mixture of both online and paid on the job training. After the course is completed, it is expected that the trainee will be employed by their trainer. Otherwise, Road to Success will find an alternative source of employment.¹⁰³

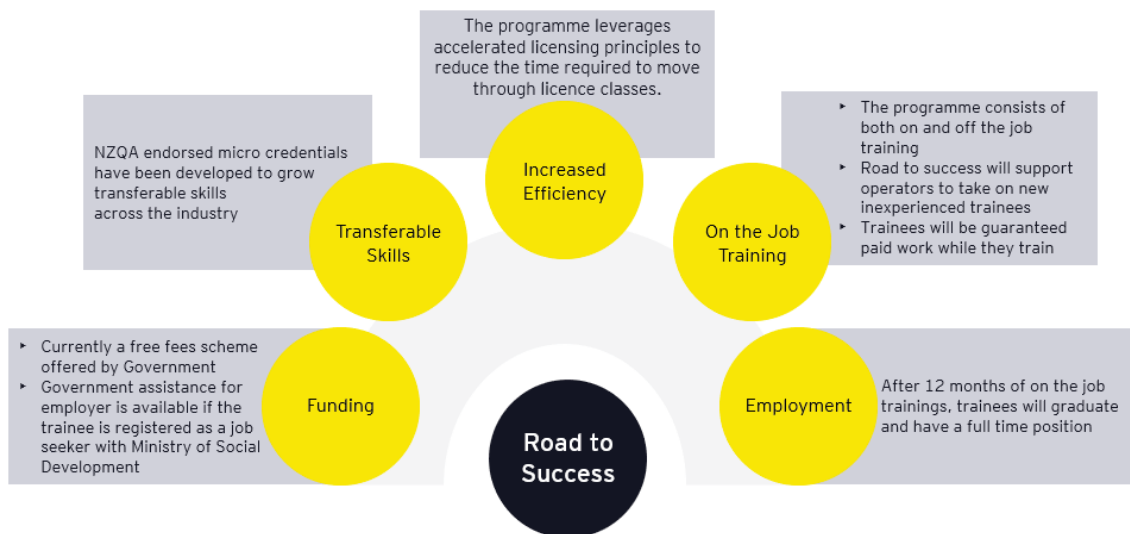
¹⁰⁰ Road Transport Forum NZ, "Training the road to success"

¹⁰¹ Road Transport Forum NZ, "Training the road to success"

¹⁰² Road Transport Forum NZ, "Training the road to success"

¹⁰³ National Road Carriers, "Te Ara Ki Tua - Road to Success"

Figure 9: Road to Success outcomes^{104 105 106}



Te Waka was recently appointed to be a part of the new Waikato Regional Skills Leadership Group (RSLG) and Priority One is a member of the Bay of Plenty RSLG. These groups are a collation of business representatives, worker representatives, local government, iwi / Māori representatives, community representatives and a regional public service lead. Each group will use workforce, education and immigration systems to support the region to meet future workforce and skill needs. Both groups are tasked with developing a Regional Workforce Plan that will forecast labour supply needs and a plan to meet these needs and skills through informing government activities, decisions and influencing local initiatives. Participation in these groups provides Te Waka and Priority One the opportunity to voice the concerns of the region and make change.

In addition to the truck driver shortage, stakeholders suggest that there is an overarching shortage in all labour-intensive jobs in New Zealand. In most logistics and distribution organisations there is an opportunity to increase the use of technology, reducing the need for employees. As technology develops organisations will look to utilising its efficiencies to help solve staff shortages.

6.6 Role of seaports in the supply chain

6.6.1 Need to continue New Zealand Ports competitive advantage

If New Zealand Ports are inefficient or unable to service larger ships, international shipping companies will likely view the trip to New Zealand as a low priority. At present, New Zealand ports are equally as efficient as their nearest competitor. The average Australian port crane rate (crane lifts per hour) for 2019-2020 was 30.7¹⁰⁷ while the Port of Tauranga was 34.3 (from March 2019 - September 2020)¹⁰⁸ and ship rates (containers / hour) in Australia were 64.8 while Port of Tauranga was 84.1.

To incentivise international shipping companies to come to New Zealand, New Zealand ports must continue to build a reputation of being an efficient location to import / export to and from. Ports should continue to focus on the broad goal of efficiency through all means necessary (continued automation, greater use of well-connected in land ports, investment in more efficient cranes etc.) and must be supported by landside investment and efficient network management through the likes

¹⁰⁴ Road Transport Forum NZ, "Road to success traineeship"

¹⁰⁵ National Road Carriers, "Te Ara Ki Tua - Road to Success"

¹⁰⁶ New Zealand Trucking, "Road to Success there for the taking"

¹⁰⁷ Australian Competition & Consumer Commission, "Container stevedoring monitoring report"

¹⁰⁸ Deloitte, "Connecting to industry insights"

of KiwiRail, Waka Kotahi and local authorities. New Zealand cannot afford to be perceived as inefficient else larger international ships are unlikely to make the trip.

6.7 Drive towards aggregation

6.7.1 Value of a national view to aggregation

Aggregation involves the combining of multiple services to maximise utilisation. A national approach to aggregation would enable businesses to co-operate for the purpose of creating greater efficiencies. Aggregation can support the reduction in carbon emissions, costs (particularly for smaller organisations) and provide a means to grow in scale. For example, collaborating inter-regionally and across organisations to manage the use of trucks would reduce empty running or the use of partially full vehicles. Subsequently, national carbon emissions and congestion would also decrease.

The Bay of Plenty and Waikato regions are actively encouraging opportunities for aggregation where feasible, for example, in the development of Ruakura. These regions are also ready to accommodate any national aggregation and will support national work in this area.

6.7.2 Collaboration for SMEs

Organisations in New Zealand rely heavily on the international supply chain to connect them to the world. However, small and medium sized enterprises (SMEs) face barriers that other organisations may not. As a consequence of their size, SMEs are unable to use economies of scale to drive the competitive rates from shipping companies and have limited economies of scope, restricting their capabilities to fully understand the market. Due to the geographical location of New Zealand, local SMEs are also disadvantaged compared to their international competitors. The increased distance to and from final destinations fosters higher costs and reduced quality of service.

SMEs contribute to 28% of New Zealand's GDP and employ greater than 29% of all New Zealand employees.¹⁰⁹ According to stakeholders, SMEs are required to focus on day-to-day activities and do not have time to investigate other opportunities such as collaboration. If SMEs were to seek opportunities to consolidate, it is likely that they would gain greater bargaining power, reducing the cost of exporting and importing goods.

6.8 Technological Change

6.8.1 Progression of hydrogen and battery use

Across the coastal shipping, road and rail freight network there is consensus regarding the need to decrease carbon emissions and all options remain 'on the table'.

6.8.1.1 Battery Use

A battery electric heavy vehicle (BEV) produces zero tailpipe emissions and, in conjunction with renewable electricity, can be used to reduce carbon emissions generated through freight transport. However, the battery / powertrain of an electric truck creates additional weight to vehicle tare, reducing the truck's payload. Additionally, users of the vehicles note that electric trucks are currently unsuitable for long line hauls due to their limited range, long recharging time, recharging challenges (heavy trucks cannot use light electric vehicle charging infrastructure) and high cost.

Electric locomotives will not experience payload penalties as the battery weight is not stored in the wagon but in the locomotive where it aids traction. KiwiRail has the opportunity to expand their electric locomotive fleet to continue to decrease carbon emissions.

¹⁰⁹ New Zealand Foreign Affairs & Trade, "Supporting SMEs"

6.8.1.2 Hydrogen Use

'Green' hydrogen is produced by separating water into oxygen and hydrogen using renewable electricity. This process is zero carbon, with the only emissions when used in a fuel cell being water vapour. Due to the extensive renewable electricity sources and potential in New Zealand, there is a great opportunity to use 'green' hydrogen as a zero-emission alternative.

Conceptually, a hydrogen fuel cell electric vehicle (FCEV) truck can be considered as being the same as a BEV with the 'battery' being provided by hydrogen stored in tanks. As a comparator to electric vehicles, hydrogen powered vehicles have a much longer range, a refuelling time of three to five minutes and does not have the penalty of the battery weight - reducing the risk of lost cargo capacity. There is also potential to use Hydrogen Direct Injection trucks, where hydrogen is used as an additive to a conventional internal combustion engine (ICE) vehicle. The addition of hydrogen in the precombustion stage of the fuel train increases efficiency of the diesel engine and reduces emissions.¹¹⁰ An ICE truck using only hydrogen is also technically possible and under development.¹¹¹ While use of hydrogen in ICE vehicles removes carbon emissions, there are still nitrogen oxide emissions (NOx) released due to combustion which have an impact on air quality.

In 2020 TR Group Ltd announced a partnership with Hiringa Energy - a green hydrogen production and refuelling company. This partnership will introduce hydrogen fuel cell electric vehicles into the New Zealand truck fleet. Hiringa Energy are building the re-fuelling stations (in partnership with Waitomo Energy), which will open in 2022. TR Group will own and operate 20 FCEVs, which were ordered in November 2021. These trucks are being sourced through Hyzon Motors who have a partnership with Hiringa Energy to deliver 1,500 FCEV trucks by 2026.¹¹² In 2021, the first FCEV truck arrived in New Zealand - imported by Hyundai Motors.

Forecasting when and if hydrogen vehicles will enter the market on cost and energy efficiency parity is challenging. As a relatively new technology, stakeholders expect that hydrogen heavy vehicles will require additional infrastructure and are more costly from a capital perspective. Due to efficiency losses during hydrogen production, a greater amount of electricity is required in comparison to direct electrification of the vehicle. On the other hand, International Energy Agency (IEA) analysis suggest that on total cost of ownership basis FCEVs are currently on a par with diesel vehicles but for the costs of refuelling infrastructure. As refuelling infrastructure becomes common and carbon costs increase, the TCO will decrease below that of a diesel vehicle. Moreover, and in common with BEVs, maintenance requirements for FCEVs are lower during to lower mechanical wear in an FCEV than an internal combustion engine (ICE).¹¹³

In addition to truck usage, there is also a large opportunity to use hydrogen to power trains. Numerous pilots are ongoing globally with major locomotive producers - such as Siemens and Alstom - having trains in use in Spain and Germany.

Numerous coastal shipping companies are investigating the use of hydrogen, ammonia and methanol for the expansion of their fleet. Hydrogen can be used to produce methanol and ammonia derived from green hydrogen can be used as a shipping fuel. These emerging technology pathways will develop further over the coming decade as the hydrogen economy develops globally.

Priority One, an economic development agency in the Western Bay of Plenty (and co-sponsor of this report) is already heavily involved in a forum that looks to support the integration of hydrogen into the freight and logistics sector. For the Waikato region, there remains an opportunity to drive decarbonisation of NZ freight.

¹¹⁰ HYDI Hydrogen, "Home"

¹¹¹ Nedim Husomanovic, "Trucks on hydrogen, could be possible with internal combustion engine"

¹¹² Hiringa Energy, "Hyzon Motors and Hiringa Energy advance partnership to decarbonize heavy road transport in NZ"

¹¹³ International Energy Agency, "The Future of Hydrogen - Seizing today's opportunities"

6.8.2 Data use

The collection and analysis of data allows for the identification of patterns to help predict the future. In the freight and distribution industry, this helps to realise large efficiencies. For example, accurate collection and effective use of data such as traffic volumes and patterns, road conditions, and delivery areas has the potential to decrease time travelled. As a result, there are less demands on truck drivers, less carbon emissions per axle load and more efficient freight movement.

In New Zealand, the majority of imports are transported to the Port of Auckland to service the largest market in New Zealand. Yet, the Port of Tauranga is the country's largest export port due to its proximity to significant export loads. This geolocation of import / export ports inevitably leads to empty running. Where empty running occurs, companies are required to pay for empty containers to be transported, carbon emissions increase, and more trucks are on the road; increasing safety concerns and quickly damaging the quality of our roads.

According to stakeholders, the collection of accurate data regarding the whereabouts of empty containers would support better network planning and could also be used to encourage better collaboration within the sector. In addition to the whereabouts of empty containers, stakeholders suggested that data displaying vehicle flows through real time GPS could support better traffic management - although the extent of this improvement was not quantified through interviews.

7. Divergent Comments

This section outlines the comments made in stakeholder interviews that were not classified as the 'consensus view'.

The purpose of this report is to reflect the consensus view of stakeholders in the freight and logistics sector. Thus far, all topics have been broadly agreed upon by all stakeholders. However, throughout interviews, individual stakeholders mentioned additional challenges and opportunities that were not necessarily discussed or agreed with by others. Without there being large consensus, these ideas are excluded from the core of this report.

Although there is no definitive unanimity on these topics, these ideas are still valid, and for this reason will be detailed in this section.

For completeness, if stakeholders have differing views, the bookend comments are detailed in the sections below.

7.1 Inland Ports and other freight aggregators

Inland ports allow for the aggregation of differing areas of the supply chain; import flow, export flow and domestic flow. This can generate greater efficiency, opportunities for growth, waste reduction, and as a result, greater outcomes for productivity and sustainability.

In recent years, the number of inland ports has been increasing in the Waikato and Bay of Plenty region, and there are plans to establish an additional business park at the existing Tokoroa Road / Rail Terminal (Maraetai Road Intermodal Business Park).

Ultimately the advantages of inland ports were not debated in detail between stakeholders but there are differing views on how many inland ports are desirable, their location, and ownership structures, as noted in the divergent comments below.

1. Too many inland ports can reduce efficiencies and does not allow each individual seaport to fully utilise their location.
2. Many inland ports allow for competitive prices and greater aggregation.
3. For an inland port to be fully efficient it should be located nearer to Auckland. Here it will have the ability to reduce empty running with modes of transport swapping imports and exports from the two major import and export ports.
4. Inland ports should be located within close proximity to the region's seaports. This will reduce congestion and increase efficiencies at the seaport.
5. An inland port needs to commercially connect all parties. Currently many inland ports are owned by seaports. If there is rivalry between ports and regions, this could hinder the efficiencies gained from inland ports. Alternatively, inland ports should be owned by a party that has a national perspective of the sector.
6. Collaboration between seaports and inland ports is key to increasing aggregation and efficiencies.

7.2 Seaports

The Port of Tauranga is New Zealand's largest export port and is the only seaport located in the Waikato and Bay of Plenty regions. Differing opinions from multiple stakeholders are noted below regarding the location and service offering.

1. In New Zealand there are three seaports in close proximity (Tauranga, Auckland and Northland). Consequently, there are a high number of capital-intensive assets serving a comparatively small population. Rationalising these to two (or one super port) would promote efficiencies.
2. With evolving technologies and room for expansion, both the Port of Auckland and Port of Tauranga have opportunities to expand and support larger ships / growth.
3. Some stakeholders suggest that Sea Ports should not attempt to service all variations of types of freight and sizes of vessels. Alternatively, each Port should have a capital discipline that they are held accountable for. For example, it is not a requirement that all Sea Ports are capable of servicing larger vessels. Rather, greater efficiencies could be created through greater use of Coastal Shipping and a hub and spoke model within New Zealand.

7.3 Price competitiveness of rail

Ultimately, all stakeholders support a mode shift to rail for the appropriate freight. However, a number of stakeholders perceive the price of rail to be expensive in comparison to alternative modes of transport. It is always expected that there will be differences of opinion about 'cost competitiveness' depending on the side of the transaction a party sits on.

1. New Zealand should investigate the use of a subsidy scheme for rail (and coastal shipping) that encompasses the wider social benefits of using these modes of transport. This will involve amending the state-owned enterprise charter to enable KiwiRail to price for externalities and support a modal shift. This approach has been used in other places such as the UK as seen in its Guide to the Mode Shift Revenue Support Scheme.¹¹⁴
2. A free competitive market will effectively allocate a market price.

¹¹⁴ UK Department for Transport, "Guide to the Mode Shift Revenue Support (MSRS) Scheme"

8. Action Plan

The below Action Plan links the identified key challenges and opportunities to potential actions for the region. The actions identified below were consolidated from stakeholder interviews and represent the consensus view of those involved.

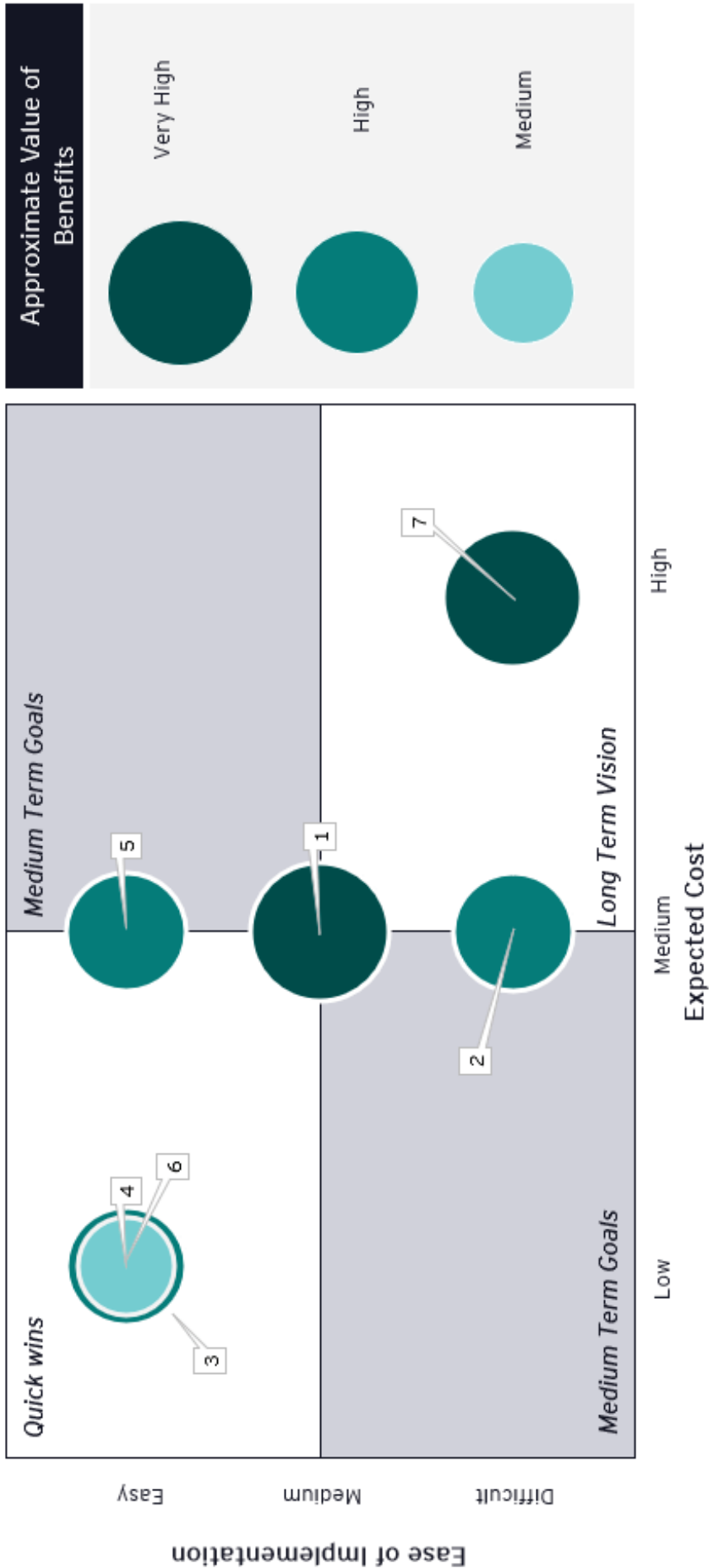
Table 7: Action Plan

Challenge / Opportunity	Action	Strategic Objectives	Key parties
Increase capacity of the network	[1] Advocate for and participate in a study that takes a system-wide view of capacity across the Waikato and Bay of Plenty regions, including key links to Auckland, with bottlenecks / constraints identified and prioritised.	<ul style="list-style-type: none"> ▶ Drive economic prosperity ▶ Improve freight reliability ▶ Increase freight resiliency ▶ Maintain and improve asset condition ▶ Transition to a low carbon economy ▶ Improve health and safety outcomes 	[1] The Steering Group, Waka Kotahi, Waikato Regional Council, Bay of Plenty Regional Council
Improve supply chain resilience	<p>[2] Advocate for and participate in a study that assesses the resilience of critical network assets, and identifies mitigation plans to limit potential disruption, including the Kaimai Tunnel, and SH29 (Kaimai Ranges).</p> <p>[3] Encourage the completion of regionally significant road capital projects - including SH1, SH2, SH29 and the Southern Links projects.</p> <p>[4a] Support the continued expenditure on road maintenance, to maintain the assets we currently have in the Waikato region.</p> <p>[4b] Support the continued expenditure on road maintenance, to maintain the assets we currently have in the Bay of Plenty region.</p>	<ul style="list-style-type: none"> ▶ Drive economic prosperity ▶ Improve freight reliability ▶ Increase freight resiliency ▶ Maintain and improve asset condition ▶ Transition to a low carbon economy ▶ Improve health and safety outcomes 	<p>[2] The Steering Group, Waka Kotahi, Waikato Regional Council, Bay of Plenty Regional Council</p> <p>[3] The Steering Group, Waka Kotahi</p> <p>[4a, 4b] The Steering Group</p>
Continue to mitigate current and expected skills shortages	<p>[5] Accelerate the Road to Success Programme for the Waikato and Bay of Plenty regions by socialising the programme and advocating for more funding / support.</p> <p>[6] Provide support for truck drivers to be on the New Zealand immigration skill shortage list for the Waikato / Bay of Plenty region.</p>	<ul style="list-style-type: none"> ▶ Drive economic prosperity ▶ Improve freight reliability ▶ Increase freight resiliency ▶ Improve health and safety outcomes 	<p>[5] Te Waka, Waikato RSLG, BOP RSLG, Priority One</p> <p>[6] Te Waka, Waikato RSLG, BOP RSLG, Priority One</p>
Embrace new technologies	[7] Take a leadership position in the roll out of hydrogen infrastructure in New Zealand	<ul style="list-style-type: none"> ▶ Drive economic prosperity ▶ Increase freight resiliency ▶ Maintain and improve asset condition ▶ Transition to a low carbon economy ▶ Improve health and safety outcomes 	[7] Te Waka, Priority One

9. Prioritisation Framework

The following prioritisation framework outlines each action in relation to its ease of implementation, level of control for Te Waka and its projected benefits.

Figure 10: Prioritisation Framework



9.1 Prioritisation Assessment

Explanations of each action's position in the prioritisation framework are described below.

The prioritisation framework developed by EY is a qualitative assessment used to categorise each action into one of three groups: quick wins, medium term goals, or long-term visions. To group each action, each one is assessed against three factors, its ease of implementation, expected cost, and the impact of its expected value of benefits, as detailed below. It should be noted that many of the proposed actions are to support and advocate for others to complete an action. Therefore, the upfront cost is relatively minor, but the potential benefits are large. For the purposes of this analysis, we have assumed that the costs and benefits relate to the action (i.e., completion of the study) however a description of the expected impacts of the potential investment is included for reference.

- ▶ **Ease of Implementation** - Ease of implementation is calculated by analysing the complexity of the required process for each action, in addition to the level of control of Te Waka and the Steering Group.
 - ▶ Level of control is deciphered by evaluating what proportion of each action is to be completed by Te Waka and / or the Action Plan's Steering Group members.
 - ▶ To classify 'ease of implementation' a high-level analysis of each action's complexity is completed. The combination of both level of control and ease of implementation placed each action in one of the difficult, medium or easy categories.
- ▶ **Expected Cost** - This includes the cost of the action, for example, the completion of a study. Depending on the expected cost, actions will be classified as holding a low, medium, or high cost.
- ▶ **Value of Benefits** - The combination of the actions outcomes and their strategic alignment provide insight into their potential impact. Each action is analysed at a high-level to conclude the size of its impact. These are quantified into an 'opportunity size', very high, high, medium or low. Additionally, strategic alignment is assessed by the number of strategic objectives each action strives to achieve. Table 8 provides a matrix of the method to calculating the value of benefits based on its opportunity size and strategic alignment.

Table 8: Value of Benefits Matrix

Opportunity Size	Number of Strategic Objectives Achieved			
		1-2	3-4	5-6
	High	High	Very High	Very High
	Medium	Medium	Medium	High
	Low	Low	Low	Medium

Based on the results of these three assessments, the action will be categorised into their group.

9.1.1 Advocate for and participate in a system-wide study of capacity

Ease of Implementation

Level of Control

With visibility of the majority of the freight and logistics sector in the Waikato and Bay of Plenty region, the Steering Group are in a position to advocate for a capacity study. Te Waka and Priority One would lead the development of the study (assuming funding for this work is identified) which is likely to be produced with support from Waka Kotahi and both Waikato and Bay of Plenty regional councils.

Complexity

A study of capacity will involve assessing key assets across the freight and logistics sector in the Waikato and Bay of Plenty regions. The assessment should include key rail lines or rail lines surrounding critical infrastructure, the roading network around critical infrastructure, and consideration of utilisation rates.

Ease of Implementation	Medium
------------------------	--------

Expected Cost

It is assumed that the level of detail, and therefore cost, for the study would be similar to the Joint Officials Group analysis of rail capacity in 2008. In comparison to other actions that are purely to support or accelerate other programmes, this action is expected to have a 'medium' cost.

Expected Cost	Medium
---------------	--------

Value of Benefits

This action will be completed with a view that the major bottlenecks identified in the study are addressed. As such, the network will have limited capacity constraints, and greater freight reliability and economic prosperity.

Strategic Alignment

Strategic Objective	Addressed
Drive economic prosperity	✓
Improve freight reliability	✓
Increase freight resiliency	X
Maintain and improve asset condition	✓
Transition to a low carbon economy	✓
Improve health and safety outcomes	✓

Benefits summary

Outcomes	High
Strategic alignment	6
Value of Benefits	Very High

9.1.2 Advocate for and participate in a study that assesses resilience of critical network assets

Ease of Implementation

Level of Control

For this action, all parties across the infrastructure network in Waikato and Bay of Plenty will need to collaborate to develop a system wide view of the response to an asset failure. Numerous parties including those within the Steering Group could oversee this action.

Complexity

The process of developing a system level response is likely to take time given it will need to align with differing stakeholders funding cycles and strategic priorities. The technical challenge will be to firstly identify all hotspots, then to determine whether robustness, redundancy or response measures are most appropriate.

Ease of Implementation	Difficult
------------------------	-----------

Expected Cost

The cost of the project itself is dependent on what the response is. As a result, the potential cost is difficult to assess in lieu of completing analysis. Due to the level of involvement required from multiple stakeholders, this action is ranked 'medium' for cost.

Expected Cost	Medium
---------------	--------

Value of Benefits

Below is an example of the impact this study could have. Please note the Kaimai Tunnel may not be identified as a single point of failure in this study and is purely used as an example.

The Kaimai Tunnel supports the movement of over 37 freight trains per day. If the tunnel were blocked, this freight would need to be transported via the nearby roading network and is likely to have a large effect on the road through the Kaimai Ranges or Rotorua. Moreover, this scale of freight transfer would create significant logistical challenges as some freight currently moved by rail would require planning to move by road.

In 2021 approximately 5.9m tonnes of freight were moved through the Kaimai Tunnel (excluding container and wagon tare). The increased value (including externalities) of transporting this freight via road rather than rail would be at least \$200m per year.¹¹⁵¹¹⁶ This is due to the cost of increased emissions, reduced safety, operating costs and additional maintenance.

¹¹⁵ KiwiRail, "The Value of Rail in New Zealand"

¹¹⁶ This statistic is not stated in the report but is derived from a prorated calculation of headline findings in the report. It also excludes congestion impacts and price differentials.

Strategic Objective	Addressed
Drive economic prosperity	✓
Improve freight reliability	✓
Increase freight resiliency	✓
Maintain and improve asset condition	✓
Transition to a low carbon economy	✓
Improve health and safety outcomes	✓

Strategic Alignment

Benefits summary

Outcomes	Medium
Strategic alignment	6
Value of Benefits	High

9.1.3 Regionally significant road programmes

The critical road programmes include: SH29 Piarere to Tauriko, Tauriko Network, SH2 Waihi to Tauranga route, SH1 Cambridge to Piarere, and the Southern Links project.

Ease of Implementation

Level of Control

All of the identified roading investments will be owned by Waka Kotahi and the relevant councils. Those within Te Waka, Priority One and the rest of the Steering Group also have the ability to support both of these investments and hold both the Waikato and Bay of Plenty regional councils accountable for the completion of the projects and their regional land transport plan (in that actions of some of the mentioned programme business cases are listed).

Complexity

These actions will involve the Steering Group supporting and encouraging the completion of the projects in addition to those expected under the regional land transport plans. For those that may own one of the projects under these programmes such as Waka Kotahi, the action will involve developing any additional project business cases and completing the work required to realise the benefits of the preferred option.

Ease of Implementation	Easy
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Expected Cost

The expected costs of each of the identified road programmes are listed below:

- ▶ SH29 Piarere to Tauriko: \$330m - \$530m¹¹⁷
- ▶ Tauriko Network: 1.2b (emerging preferred option as noted by stakeholders)
- ▶ SH2 Waihi to Tauranga corridor: \$1b¹¹⁸
- ▶ SH1 Cambridge to Piarere: \$635m¹¹⁹
- ▶ Southern Links: \$600m¹²⁰

However, as this action is to purely 'encourage' the completion of actions the expected cost is rated 'low'.

Expected Cost	Low
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Value of Benefits

The value of benefits for each identified project / programme are described below.

1. Piarere to Tauriko

The original Piarere to Tauriko business case from 2016 suggests the recommended programme has a BCR of 0.9-1.4.¹²¹ In 2018, Waka Kotahi completed a re-evaluation of the possible outcomes of the SH29 Piarere to Tauriko programme business case which suggests placing a greater weight

¹¹⁷ Waka Kotahi, "SH29 Piarere to Tauriko Programme Business Case."

¹¹⁸ Waka Kotahi, "SH2 Waihi to Tauranga Corridor"

¹¹⁹ Waka Kotahi, "SH1 Cambridge to Piarere"

¹²⁰ Waka Kotahi, "Southern Links"

¹²¹ Waka Kotahi, "SH29 Piarere to Tauriko Programme Business Case."

on safety concerns.¹²² Both its findings and the findings of the original business case suggest that the programme will foster the following benefits:^{123 124}

- ▶ Improved safety – For the identified section of SH29 between 2012 and 2017 there were 328 crashes resulting in 11 deaths 54 serious injuries. Over this period the total cost to society from these crashes was calculated to be \$88.5m. The programme is expected to result in 24 fewer deaths and serious injuries every 5 years.¹²⁵
 - ▶ Increased reliability – by reducing unplanned road closures by 20% and reduced length of average closure by 30% there is expected to be 10 hours of savings per year from unplanned incidents.
 - ▶ Increased efficiency – 3.5min travel saving for all road users.
2. Tauriko Corridor expected freight benefits (noting the preferred option is not confirmed and may change as the detailed business case evolves)¹²⁶
- ▶ Reduced injury crashes by 30%
 - ▶ Reduction of death and serious injury on transport networks in the Western Corridor by 50%
 - ▶ Predictable freight travel time of 10 mins (5mins variability) on SH29 and Takitimu Drive from Omanawa Road to SH2 during the AM and PM peak periods
3. SH2 Waihi to Tauranga¹²⁷
- ▶ Reduced deaths and serious injuries by 45% along the corridor.
 - ▶ Reduced the risk of crashes by increasing the KiwiRAP rating from 2 to 3 stars.
 - ▶ Increased reliability – reduce from +/- 4 minutes during morning peak to +/-1.5 minutes between Omokoroa and Bethlehem.
 - ▶ Increased efficiency – reduced by 4 minutes in the short term.
4. SH1 Cambridge to Piarere
- ▶ Reduced in travel time on opening for the next 20 years (13%)
 - ▶ Improved resilience via reducing risk or consequence of unplanned road disruptions on opening for the next 20 years (13%)
 - ▶ Improved local access and distance travelled to key community features by all transport modes
 - ▶ Reduced number of deaths or serious injuries on opening (15%)
 - ▶ Reducing the number of high severity crashes per km per road to no more than a medium on opening for the next 20 years (7.5%)

¹²² Waka Kotahi, “TAIP Re-evaluation: SH29 Piarere to Tauriko”

¹²³ Waka Kotahi, “SH29 Piarere to Tauriko Programme Business Case.”

¹²⁴ Waka Kotahi, “TAIP Re-evaluation: SH29 Piarere to Tauriko”

¹²⁵ Waka Kotahi, “TAIP Re-evaluation: SH29 Piarere to Tauriko”

¹²⁶ Waka Kotahi, “TAIP Re-evaluation: SH29 Western Corridor”

¹²⁷ Waka Kotahi, “SH2 Waihi to Tauranga Corridor – Corridor Business Case”

- ▶ Maintained low personal risk (high severity crashes by 100m vehicle km travelled) on opening (7.5%)

5. Southern Links

This programme of work has not identified value of benefits but a broad range of benefits have been defined as below.

- ▶ Congestion reduction
- ▶ Improved safety
- ▶ Improved freight flows
- ▶ Provision of the main southern access linking Hamilton City and the Expressway

Strategic Objectives

Strategic Objective	Addressed
Drive economic prosperity	✓
Improve freight reliability	✓
Increase freight resiliency	✓
Maintain and improve asset condition	✓
Transition to a low carbon economy	X
Improve health and safety outcomes	✓

Benefits summary

Outcomes	Medium
Strategic alignment	5
Value of Benefits	High

9.1.4 Support the continuation of expenditure on road maintenance

Ease of Implementation

Level of Control

Te Waka and Priority One have full control over this action. Each of the Steering Group members can also play a role in encouraging road maintenance in any work they are involved in. Each region's RLTP is the key document to guiding land transport planning and investment and is the primary document to influence a change to road maintenance rather than capital investment. The RLTP is written by each region's regional council and the contents of its final release is ultimately their decision. However, Te Waka and the Steering Group members are stakeholders within each region and can encourage / support regional councils to consider investment into current assets. Te Waka, Priority One and other stakeholders can also encourage government agencies and Ministers to take urgent action to bring forward the timing of SH29 improvements.

Complexity

Te Waka and Priority One will need to contribute to the writing of the RLTP, write a submission after the draft regional land transport plan is published or make public comments based on the findings of this action plan.

Ease of Implementation	Easy
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Expected Cost

Contribution to the RLTP will require a written submission, this will be at the cost of the contributor i.e., Te Waka and Priority One.

Expected Cost	Low
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Value of Benefits

According to the Road Efficiency Group, out of the 13 councils in the Waikato and Bay of Plenty with information on sealed road maintenance targets, 8 are yet to achieve their 2018-2028 long-term plan targets for 2019/20.¹²⁸

Strategic Objectives

Strategic Objective	Addressed
Drive economic prosperity	✓
Improve freight reliability	✓
Increase freight resiliency	✓
Maintain and improve asset condition	✓
Transition to a low carbon economy	X
Improve health and safety outcomes	✓

Benefits summary

Outcomes	Low
Strategic Alignment	5
Value of Benefits	Medium

¹²⁸ Waka Kotahi, "Road Controlling Authority reports"

9.1.5 Accelerate the Road to Success Programme for the Waikato and Bay of Plenty regions

Ease of Implementation

Level of Control

Te Waka / Priority One have a platform and a respective voice at the table of the Waikato / Bay of Plenty Regional Skills Leadership Groups. Te Waka and Priority One are in full control of how they use their voice to promote and socialise the programme and advocate for more funding / support.

Complexity

To accelerate the Programme, Te Waka and Priority One should look to socialising the programme and advocating for more funding / support. Due to the reach of both organisations, this should be relatively easy.

Ease of Implementation	Easy
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Expected Cost

Negligible costs will be encountered by Te Waka, Priority One and the rest of the Steering Group to promote the programme. Costs will include the time necessary to advocate and support the programme.

Expected Cost	Medium
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Value of Benefits

37% of industry operators have reported a shortage in truck drivers and through stakeholder engagements we have heard anecdotes of large organisations operating with a national deficit of 30 - 40 drivers. This equates to tonnes of freight not transported in a timely fashion. In addition to the impacts on organisations efficiencies, stakeholders suggested that having a limited number of truck drivers has resulted in those in the occupation working long hours. In truck driving this is a large safety concern. In the Waikato and Bay of Plenty region there were 90 fatal crashes on the roads with a combined 118 deaths (18 of these incidents involved a truck) and 443 serious incidents (44 involving a truck) in 2019.¹²⁹

Strategic Alignment

Strategic Objective	Addressed
Drive economic prosperity	✓
Improve freight reliability	X
Increase freight resiliency	X
Maintain and improve asset condition	X
Transition to a low carbon economy	X
Improve health and safety outcomes	✓

¹²⁹ Waka Kotahi, "Crash Analysis System (CAS)"

Benefits summary

Outcomes	High
Strategic alignment	2
Value of Benefits	High

9.1.6 Provide support for truck drivers to be on the immigration skills shortage list for the Waikato / Bay of Plenty region

Ease of Implementation

Level of Control

New Zealand Immigration invite employers, trade unions and industry training bodies to provide evidence before determining any updates / additions to the immigration skills shortage lists. As respective members of the Waikato and Bay of Plenty Regional Skills Leadership Group, Te Waka and Priority One are likely to have some influence over the evidence presented. However, it should be noted that New Zealand Immigration will make the final decision.

Complexity

Continuing support for truck drivers to be on the immigration skills shortage list will involve providing evidence to New Zealand Immigration. The evidence will exemplify the challenges the sector faces in light of the skills shortage.

Ease of Implementation	Easy
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Expected Cost

The cost of this action will be the time to assess the skills shortage and provide this evidence to MBIE and New Zealand Immigration

Expected Cost	Low
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Value of Benefits

The value of benefits in this section are the same as those in section 9.1.5 as both actions impact the supply of truck drivers. 37% of industry operators have reported a shortage in truck drivers and through stakeholder engagements we have heard anecdotes of large organisations operating with a national deficit of 30-40 drivers. This equates to tonnes of freight not transported in a timely fashion.

In addition to the impacts on organisations efficiencies, stakeholders suggested that having a limited number of truck drivers has resulted in those in the occupation working long hours. In truck driving this is a large safety concern, just in the Waikato and Bay of Plenty region there were 90 fatal crashes on the roads with a combined 118 deaths (18 of these incidents involved a truck) and 443 serious incidents (44 involving a truck) in 2019.¹³⁰

Strategic Alignment

Strategic Objective	Addressed
Drive economic prosperity	✓
Improve freight reliability	✓
Increase freight resiliency	✓
Maintain and improve asset condition	X
Transition to a low carbon economy	X
Improve health and safety outcomes	✓

¹³⁰ Waka Kotahi, "Crash Analysis System (CAS)"

Benefits summary

Outcomes	Medium
Strategic alignment	4
Value of Benefits	Medium

9.1.7 Take a leadership position in the roll out of hydrogen infrastructure in New Zealand

Ease of Implementation

Level of Control

This action will involve Te Waka proactively engaging with the work that is already occurring in this space and advocating for the integration of hydrogen in the Waikato region. Te Waka will join the forum / working group that Priority One is leading. The leadership role in the region will include encouragement for organisations to use hydrogen as an energy vector, creation of a value chain ecosystem to promote viability and work with the Government to support this change.

Complexity

In advocating and supporting the use of hydrogen, Te Waka and Priority One will need to work with industry to support its use. This includes actions such as: working with industry users and infrastructure providers to enable viability of hydrogen supply, working with industry users to promote adoption of hydrogen vehicles.

Ease of Implementation	Difficult
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Expected Cost

The cost of this action would be linked to the number of resources and time that can be committed by Te Waka and Priority One within baselines.

Expected Cost	High
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Value of Benefits

Outcomes

Hydrogen represents a significant opportunity to reduce carbon emissions for heavy transport and industrial uses. Presently, battery electric vehicles are not viable as alternatives. In addition to investing in hydrogen powered heavy vehicles, consideration needs to be given to the ability to convert existing vehicles to either Hydrogen Fuel Cell Vehicles or Hydrogen Direct Injection vehicles.

The application of hydrogen in fuel cells can be utilised by all sectors but long-haul trucks are one of its largest beneficiaries. Hydrogen fuel cell electric trucks emit water and heat and produce no harmful tailpipe emissions - reducing emissions to zero when renewable electricity is used in hydrogen production. Hydrogen Direct Injection vehicles represent an opportunity to reduce emissions with a lower capital cost to convert. In comparison to the electric vehicles, hydrogen fuel cell trucks can be refuelled in three to five minutes and can hold three times the energy of one kilogram of crude oil.¹³¹ Consequently, they have larger driving distance range between refuelling stops.

As a nationally significant area for the movement of freight, the benefits for New Zealand as a whole gained through the use of hydrogen in the Waikato, and Bay of Plenty are expected to be high.

Hydrogen fuel cell electric trucks are part of the solution for New Zealand to achieve net zero emissions by 2050. A reduction in air pollution decreases the number of deaths caused by its inhalation and deters / eliminates the occurrence of climate change and its effects.

¹³¹ Hirling Energy, "Why hydrogen"

Strategic Objectives

Strategic Objective	Addressed
Drive economic prosperity	✓
Improve freight reliability	X
Increase freight resiliency	X
Maintain and improve asset condition	X
Transition to a low carbon economy	✓
Improve health and safety outcomes	✓

Benefits summary

Outcomes	High
Strategic alignment	3
Value of Benefits	Very High

Appendix A Involved Personnel

Insights gained from key stakeholder engagements are at the core of the findings highlighted in this report. We are extremely grateful for the contributions of all involved personnel and the time they invested in this action plan.

Stakeholder interviews have formed an integral part of our approach and are the driver behind each focus area, theme and action. Table 9 identifies each interviewee by organisation. Following the development of the initial versions of the Action Plan, stakeholders from the Waikato and Bay of Plenty local governments also provided comments and input.

Table 9: List of interviewees

Sub-category	Interviewees by Organisation
Shipping	Swire Shipping
Trucking	Carr & Haslam Transport
Rail	KiwiRail
Logistics solutions provider	Netlogix
	Coda Group
Transport system	Waka Kotahi
	Ministry of Transport
Economic development agency	Te Waka
	Priority One
	Bay of Connections
Ports	Port of Tauranga
	Tainui Group Holdings
Transport system customer	Fonterra
	FoodStuffs

The Project Steering Group provided financial contribution to the development of this report. Following the completion of stakeholder interviews, the Steering Group guided the finalisation of the action plan. This group is detailed in Table 10.

Table 10: Steering Group

Steering Group (and co-funders)
Te Waka
Priority One
KiwiRail
Port of Tauranga
Tainui Group Holdings
Netlogix
Mondiale Freight
Fonterra

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&a%5B23%5D=1&r%5B21%5D=1&r%5B22%5D=1

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