

Regional Intermodal Freight Terminals - Investment Assessment Framework



Working Paper for the Provincial Growth Unit

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Executive Summary

In the right location, with the right types of freight - intermodal freight terminals can facilitate employment opportunities in provincial areas, lift productivity and provide wider transport benefits. Around the world, intermodal transport solutions are increasingly being used to improve freight supply chains, lower transport costs and reduce the negative effects of moving freight. The use of inter-modal solutions by the private sector is also increasingly being supported by government investment around the world. This private and public sector response is driven by several disruptive trends, which include:

- businesses, and their customers, wanting to reduce their environmental footprints;
- mitigating the increasing difficulty and cost of road transport from hinterland areas into congested urban areas;
- truck journey delays and queues from congestion within busy ports;
- ports utilising inland terminals to help manage the limited space available on their wharves;
- a growing shortage of suitable heavy truck drivers; and
- opportunities to find supply chain efficiencies by better aligning in-bound/out-bound freight flows and marshalling freight volumes to make use of larger international ships.

Intermodal terminals can respond to these disruptions by providing efficient and effective transfers of freight between different modes – notably between road, rail and ports (to coastal and international shipping). Intermodal terminals include a range of facilities from inland container ports, log hubs, rail-enabled industrial parks, storage and distribution centres, and container transfer (CT) sites. They can serve differing freight supply chains and economic catchment areas. Being largely a private concern, terminals can also compete directly with each other for the movement of similar commodities within similar geographical areas. To better understand these relationships, this paper has developed an initial hub classification system – identifying national, regional and sub-regional hubs by freight type.



Interislander road bridging facility, Wellington: AECOM 2016

In New Zealand's regions there may be opportunities to develop intermodal terminals that benefit provincial economies and provide wider public value benefits. These terminals may not, however, have sufficient commercial viability either for their initial construction or ongoing operation. The case for each intermodal terminal will therefore be different and must be considered on its own merits and the needs of the region. This paper has been developed to provide guidance and a framework for Provincial Growth Fund (PGF) investments in intermodal terminals. To make the best use of the PGF investment in regional intermodal terminals, it is worth considering in the framework:

- the Government's policy approach towards intermodal terminals, including its objectives for the use of rail, ports and freight movements generally;

- the freight and logistics context, notably significant changes underway in the way freight is moved, disruptive trends driving these changes and the impact this has on regional economies;
- the way in which intermodal terminals can add private value, from efficiency and productivity gains across the supply chain; and
- the public benefits that can be generated from developing intermodal terminals, notably the facilitation of new provincial employment and productivity improvements, along with regional and national transport benefits such as:
 - o reduced CO₂ emissions;
 - o crash risk reduction;
 - o decongestion benefits on regional and urban roads and highways;
 - o reductions in road maintenance costs;
 - o improved port (market) access; and
 - o regional resilience, option value and amenity improvements.

Intermodal terminals can create regional employment directly through their construction and operation. They can also facilitate new industrial activity and development through providing more efficient freight access in locations close to markets or raw materials. As 'enabling infrastructure', new intermodal terminals can give the private sector with the confidence they need to invest their money into an area. But determining potential employment growth will often be conditional, estimated from assumed variables and information (sometimes partial and optimistic) received from private sector parties. But where terminals are feasible, the supply chain benefits generated may facilitate improved regional economic performance.

Intermodal terminals, and the greater use of rail and better connectivity to ports, can also reduce negative externalities from the movement of freight and improve productivity. Most of these public benefits can be quantified, with the benefits enjoyed at a local or regional level. This paper suggests that an estimation of these quantifiable benefits is included as secondary benefits, to PGF investment objectives.

The framework has been developed to undertake an assessment of these impacts, compared against PGF investment objectives and broader land transport policy. Drawing on New Zealand and international experience, the framework provides two steps:

- Questions to consider against PGF Assessment criteria;
- Comparative Assessment Matrix (using the information generated from the above).

This assessment framework allows investment in terminal proposals to be compared against each other, and to document in a standardised way the reasons for the investment.

As a working paper, it is envisaged that the material presented here will facilitate further thinking and refinement on how to maximise PGF investments, and potentially funds from other public sources where terminals are co-funded. This approach will allow better alignment with New Zealand's land transport policy objectives as they are further developed and refined.

DISCLAIMER: This report was prepared before the full economic impacts of the COVID-19 global pandemic were known or could be assessed. Based on what is known, the production and importation of goods will likely recover over the short to medium term. As such, what is known about the benefits of intermodal freight terminals may be largely unaffected as freight volumes return to pre-COVID-19 volumes in the short to medium term.

1.0 Introduction

1.1 Purpose of this work

This report was commissioned by the Provincial Development Unit (PDU) to develop an assessment framework, with investment guidance, for intermodal freight terminals in regional New Zealand. This includes providing a better understanding of the different types of intermodal freight terminals that enable the efficient transfer of freight between road, rail and ports (to access coastal and international shipping). This paper examines how freight terminals might add value to regional economies, how this might be assessed and the factors that might make the greater use of intermodal freight terminals more attractive to those that own and move freight.

This paper provides an initial outline of the rationale for investing in intermodal terminals, the main disruptive factors driving intermodal solutions for freight, an initial hierarchy for intermodal terminals in operation, and a framework developed to assess the specific attributes of intermodal terminals against the objectives of the Provincial Growth Fund (PGF). Also provided is a high-level assessment of (based on available information) of potential regional intermodal terminal opportunities that might warrant further investigation. This report is a working paper with further refinement of the framework possible as rail and freight policy is further developed, and investments in terminals are considered.

1.2 Background

Over the last decade intermodal terminals are being increasingly used by industry, internationally and within New Zealand, as an opportunity to better optimise the use of different modes and manage the growing and evolving freight task. This is particularly true for opportunities to use rail, for which intermodal terminals are essential to allow efficient transfers of freight to/from the network. Intermodal terminals, using rail, can also improve connectivity to/from our major import/export ports. This improved connectivity with ports can facilitate better connectivity with domestic and international shipping services. With growing congestion within road networks leading to our main ports, often located at the centre of urban areas, industry and jurisdictions overseas have been encouraged to examine how intermodal terminals and rail can improve port access, efficiency and productivity.

Along with inland ports, the types of intermodal freight terminals in New Zealand are varied and include log transfer yards; rail-enabled distribution and storage terminals; container transfer (CT) sites; and industrial parks with intermodal transfer facilities. What these terminals have in common is that they facilitate connectivity for freight to be moved efficiently and effectively to/from the road, rail and maritime networks.

There has been little public sector investment in intermodal terminals in New Zealand over the last forty years. Without this experience, it is useful to examine how PGF investment in intermodal terminals can progress the Government's objective of revitalising New Zealand's heartland regions through growing employment and economic opportunities.



Whangārei CT Terminal: AECOM 2018

2.0 Provincial Growth Fund (PGF): investment objectives

2.1 Lifting regional economic performance, employment and other beneficial outcomes

The PGF was established by the Labour-NZ First Coalition Government to invest in activities and projects that contribute to the growth of economic activity and employment in regional New Zealand. Specifically, the PGF invests in projects that:

- contribute to the objectives of:
 - o creating jobs, leading to sustainable economic growth;
 - o increasing social inclusion and participation;
 - o enabling iwi Māori to realise aspirations in all aspects of the economy;
 - o encouraging environmental sustainability and helping New Zealand meet climate change commitments alongside productive use of land, water and other resources;
 - o improving resilience, particularly of critical infrastructure, and by diversifying our economy; and
 - o lift the productivity of a region or regions;
- create additional value and avoid duplicating existing efforts
- have a link to the regional priorities and be supported by stakeholders, and
- be well-managed, well-governed and have appropriate trade-offs between risk and reward.

The purpose of the PGF is to enhance economic development opportunities in regional New Zealand and contribute to productive, sustainable and inclusive growth. The PGF invests in projects that deliver public benefits over and above commercial returns.

2.2 Focus of the Provincial Development Unit (PDU)

To achieve the government's regional economic and employment growth objectives, the PDU is tasked with assessing a wide range of investment proposals that include, but are not limited to: road; rail; freight terminal and maritime transport projects. Within the proposed transport activities, intermodal terminals are just one type of project being considered. As a transport investment, these terminals have specific attributes when compared to road, rail or port infrastructure.

To determine how and why these terminals might generate value against the objectives of the PGF, there is value in developing a documented framework to support the PDU to better understand:

- the relationship between different intermodal terminal proposals;
- how they relate to the wider road, rail and maritime networks; and
- how they interact with regional and national supply chains.

The benefits of setting out a framework is to allow better and more consistent decision-making on how and why intermodal terminals might contribute to growing regional economies (as prioritised below).

Table 1. Regions by investment priority

High (Surge)	Medium	Excluded
Tai Tokerau / Northland	Waikato	Auckland
Bay of Plenty	Taranaki	Wellington
Tairāwhiti / East Coast	Wairarapa	Christchurch
Hawke's Bay	Nelson-Tasman	
Manawatū-Whanganui	Marlborough	
West Coast	Canterbury	
	Otago	
	Southland	

2.3 The Government's land transport objectives

While PGF investment has the primary aim of generating increased economic and employment activities in the regions, it is worth examining the wider policy context on intermodal freight investment, specifically as it relates to rail. The Government Policy Statement on Land Transport 2018/19-2027/28 (GPS 2018) sets out key policy objectives (relevant to intermodal terminals) of:

- improving transport access (particularly for regional New Zealand)
- improved mode choice (with a current focus on passenger travel)
- reducing the negative effects of land transport, notably –
 - reducing carbon dioxide (CO₂) emissions; and
 - improving road safety.

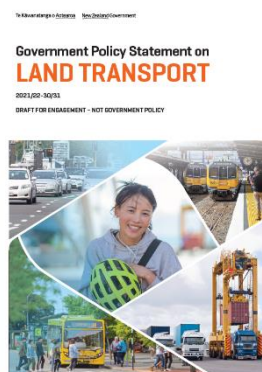


In achieving the above, the GPS 2018 identifies that “supporting the movement of freight through other modes of transport, such as rail and coastal shipping” will have a role.¹ The specifics of this, including the potential for encouraging mode shift from road to rail, and/or to coastal shipping was to be addressed by a second stage GPS – now included in the draft GPS to be released next year.

Broadly the government wants decision-makers across transport to take a “mode-neutral” approach that considers all modes equally. The Government envisages introducing policies that facilitate mode shift at some time in the future, with the GPS commenting that:

“However, moving goods by road may not be the best option. We need to consider providing a higher level of access to markets via rail or coastal shipping”.²

The GPS 2018 also sets out the Government's intention of seeing more investment from the National Land Transport Fund (NLTF) directed towards activities that are a high regional priority.³ This includes land transport activities that benefit freight and tourism movements, and ultimately deliver on the broader national objectives of the Land Transport Management Act 2003. The GPS 2018 also encourages decision-makers to make the best use of the existing network (road, rail, and sea) and services – and to provide new infrastructure or services where necessary to support planned growth.⁴



2.3.1 Draft GPS 2021

The Government's draft GPS for 2021/22-2030/31, recently out for consultation but not yet policy, proposes a focus on mode-shift objectives for government transport investment. The draft GPS (2021) sets the goal of improving road safety reducing travel by road and moving freight volume onto rail.⁵

The draft GPS also has the objective of improving freight connections between regions and ports. These connections are recognised as vital to the economy, particularly to regions that generate primary production. Freight intermodal terminals are not mentioned, however, with the focus being on the delivery of improved freight corridors and increasing resilience.⁶ The draft GPS 2021 also identifies coastal shipping as a potential opportunity to deliver on its mode shift objective, through investment in unspecified infrastructure and research. The key success indicator will be the percentage of mode share across road, rail and coastal shipping (with the latter two increasing).⁷

¹ NZ Government, *Government Policy Statement on Land Transport 2018-2021* (GPS 2018), p.11

² GPS 2018, p.16

³ *Government Policy Statement on Land Transport*, 2018 p.16

⁴ Noting that decisions around road, rail and sea are made separately by a number of public and private parties.

⁵ *Draft Government Policy Statement on Land Transport, 2021/22-2031* (Draft GPS 2021), p.6

⁶ *Draft GPS 2021*, pp.13, 21

⁷ *Draft GPS 2021*, p.21

2.3.2 Draft NZ Rail Plan

The *Draft New Zealand Rail Plan* was released by the Ministry of Transport in December 2019. It sets out the Government's new planning and investment approach for the rail network, which will be given effect by the Land Transport (Rail) Legislation Bill – now before Parliament.⁸ The draft plan sets out the approach of moving the rail network from a state of 'managed decline' (where the economic value of the network is extracted, with the infrastructure and levels of service managed down and progressively closed), to a safe and resilient state.

The draft plan proposes that this improvement in asset condition, through below-rail (aka below-track) renewals and maintenance, will be funded or partially funded from the NLTF. Under the proposed new arrangements, KiwiRail will develop a three-year Rail Network Investment Programme (RNIP), which will be reviewed by Waka Kotahi - the New Zealand Transport Agency (NZTA) and approved by the Minister of Transport.⁹ The RNIP will cover investment in below-rail assets, which include track, sleepers, overhead power supply, signals and platforms. KiwiRail will remain a State Owned Enterprise and operate on a commercial basis. Track Access Charges, collected from all rail users – including KiwiRail, will be paid into the NLTF.



2.3.3 Ten-year rail investment focus (2021-2031)

The next GPS will come into effect in July 2021 and is expected to open investment from the NLTF into rail freight-related activities through the RNIP. The draft plan sets out the scope of this investment, which is focused for the next ten years on maintaining existing levels of service on the national rail network.¹⁰ The focus is on renewing and maintaining the network, likely to require substantial investment over the next ten years. Some improvements may be funded to lift the safety and resilience of the network. The draft rail plan does not envisage substantial new capital investment, network extensions, qualitatively improved levels of service and/or intermodal freight terminals to be funded from the NLTF until after 2031. Substantive improvements to rail's capacity and capability to move freight and boost regional employment will be considered through the PGF.¹¹



Observation: The primary pathway for public investment in intermodal terminal proposals, over the next ten years, will be through the PGF.

2.3.4 Strategic context for PGF investment

New Zealand does not currently have a freight plan, port strategy, or a detailed national land transport strategy that informs investment into the system.¹² The Government did commission the Upper North Island Supply Chain Working Group to undertake a review of current port operations in Auckland, Northland and Tauranga.¹³ The Working Group's report recommends moving the operations of the Ports of Auckland to Northport in Northland, with several consequential investments in rail and intermodal terminals. The report's findings would have a significant impact on the current flow of New Zealand's imports and exports and the infrastructure required to support that, including intermodal terminals. The report's findings are still under consideration among decision-makers in local and central government. The Ministry of Transport has also commissioned additional analysis on the port move question, which is not yet available.

⁸ For details on the Bill see: https://www.parliament.nz/en/pb/bills-and-laws/bills-proposed-laws/document/BILL_93293/land-transport-rail-legislation-bill

⁹ *Draft New Zealand Rail Plan*, 2009, p.22

¹⁰ *Draft New Zealand Rail Plan*, 2009, p.27

¹¹ *Draft New Zealand Rail Plan*, p. 41

¹² The *GPS* and the *National Land Transport Programme (NLTP)* provide some direction in this area.

¹³ UNISCSWG, *Transforming Auckland; Transforming Northland Final Report of the Upper North Island Supply Chain Strategy Working Group*, November 2019

The NZTA has produced Arataki (formerly known as the Long-Term Strategic View), which sets out a 10-year view of “what is needed to deliver on the government’s current priorities and long-term objectives for the land transport system”.¹⁴ The Arataki at this point is being redeveloped following engagement with local government and as the NZTA’s new strategic direction continues to develop and evolve.¹⁵ At this point, the Arataki does not provide enough detailed information to inform PGF investment in intermodal terminals or other freight-related investments. The update planned for August 2020 may include more detail in this regard.



Metroport, Auckland. NZTA 2016

Given the above, PGF investments in intermodal terminals will be made without context from an overarching freight strategy or plan that has been formally adopted by government.¹⁶ This runs the risk of suboptimal or duplicated investment, particularly if a freight plan or port strategy is developed after investments in terminals have been made. The Productivity Commission in its 2012 inquiry into freight services noted that freight planning, particularly through engagement with the private sector, helped reduce this investment risk. The Commission recommended that the government undertake more engagement with the private sector to provide better guidance to decision-makers with respect to freight-related investments.¹⁷

As a result, the NZTA was tasked by Ministers in 2013 to undertake pan-regional freight planning process across the Upper North Island, Central NZ and the South Island.¹⁸ This cross-regional planning approach allowed a better understanding of how supply chains operate across regions, notably the role of import/export ports (and their often inter-regional catchment areas) and the rail and highway networks, which enable inter-regional freight movements.¹⁹



Observation: PGF investments in intermodal freight terminals will be made without reference to an operative freight plan.

¹⁴ See: <https://www.nzta.govt.nz/planning-and-investment/planning/arataki/>

¹⁵ See NZTA, *Statement of Intent 2018-2022*, November 2018 and *Revised Statement of Intent 2018-2022*, July 2019.

¹⁶ Several studies have been done over the last decade to better understand likely private sector-led development of the national supply chain, see for example Ministry of Transport, *Future Freight Scenarios Study*, November 2014

¹⁷ Productivity Inquiry, pp.171ff – see Recommendations R9.1, R9.2 - specifically.

¹⁸ See [Government response to the New Zealand Productivity Commission's recommendations on International Freight Transport Services](#), December 2012. The freight planning work was discontinued in 2016.

¹⁹ See the [Draft South Island Freight Plan](#), 2015.

2.4 Investment pathways for intermodal terminals

Currently investment in intermodal terminals is made through:

- KiwiRail (as a result of direct Crown investment and/or from the State Owned Enterprise's own capital); and/or
- third parties – notably private businesses, including ports, land developers, cargo owners and freight logistic operators; and/or
- the PGF.

Most intermodal terminals built recently in regional areas operate on a commercial basis (both capital and operational costs), such as the log terminals opened at Whanganui and Waingawa in the Wairarapa, or Port of Lyttelton's and PrimePort's inland container terminals at Rolleston. These terminals can generate substantial public value, mainly through transferring freight from road journeys to rail.²⁰ Some intermodal terminal investment proposals, however, have not been viable as fully commercial investments. This was the case for the Tokoroa Road/Rail Terminal in the South Waikato, which was built in 2014 only through a substantial capital investment from the South Waikato District Council.²¹ The NZTA also provided investment for the road connections, reflecting the public value the transfer of freight from road to rail would generate.



Wellsford Log Yard, Photo; AECOM 2018

The draft Rail Plan identifies “logistics terminals” as one of several future rail investment priorities in the second ten-year plan. The draft plan therefore does not suggest that intermodal terminals will be developed through the RNIP before 2031. As such, KiwiRail and the private sector will continue to invest in intermodal terminals on the basis that these investments are a fully commercial proposition. The draft rail plan envisages that any public investment in intermodal terminals, or improvements to intermodal terminals in regional areas would be made through the PGF. The PGF's investment in the capital costs of intermodal terminals would be “focused on opportunities that are sustainable commercially over time”.²² As such, ongoing operational subsidies for intermodal terminals will not be considered.



Observation: Public investment in intermodal terminals will be made on the basis of ongoing commercial viability, without public subsidy.

²⁰ See BERL, *CentrePort Waingawa log hub; Cost savings from a transport mode shift*, 2020

²¹ See SWDC media release, [Council backs terminal in Tokoroa](#), 30 June 2014

²² Draft NZ Rail Plan, p.43

3.0 International comparisons in investment approach for intermodal terminals

3.1 Australia

A review of other jurisdictions was undertaken to compare with lessons learnt from New Zealand investment in intermodal freight transport. In other comparable jurisdictions public investment in intermodal rail terminals is usually an extension of a broader investment approach towards freight and/or the rail network. Australia is useful to compare to New Zealand. Though Australia's larger land mass and considerably larger freight volumes makes rail a more compelling mode choice in some locations – notably for mining. It is worth examining some selected examples of intermodal investment from Australia to inform our work in New Zealand.

The Commonwealth Government and individual States are investing in intermodal terminals to pursue wider freight and/or rail objectives. This is often done with complementary investment in other related infrastructure, either at ports or on the rail network. In accordance with the Australian constitution, States have responsibility for transport matters, including ports and rail. However, over the last three decades the Commonwealth Government has become more involved in transport and particularly freight matters. This began initially with investment in inter-state transport infrastructure and is now a coordinating and co-funding role, notably through Infrastructure Australia.

3.1.1 Australian Government

The Commonwealth Government is increasingly concerned at reductions in freight efficiency and productivity from congestion on national and main highways. This is more for port access in urban areas with Australia's major cities acting as bottlenecks for containerised trade.²³ To enable better co-ordination of effort and investment across Australia, the Commonwealth developed with the States and Territories the 2019 National Freight and Supply Chain Strategy.²⁴ The strategy sees rail as an opportunity to move a larger portion of the freight task, shifting it from road in congested areas. Rail's freight-moving potential is greatest for improved access to/from the main ports and between States.²⁵ In most cases the Australia Government has been co-funding state and territory initiatives, but two projects led from Canberra are worth noting.

The Commonwealth has led the development of the Moorebank Intermodal Terminal on the south western edge of Sydney, linked by rail to New South Wales' main container port at Botany Bay. Moorebank is wholly owned by the Australian Government, with the terminal and surrounding freight precinct designed to attract IMEX containers from road to rail. This mode shift will help manage port access and reduce congestion as Port Botany volumes grow from around 2.5 million containers (twenty-foot equivalent units, or TEU) currently to around seven million by 2030.²⁶

As many of the containers road transported to/from Port Botany are going to/from the south west of Sydney, the terminal is intended to capture onto rail around one million IMEX containers (TEU) annually. A further 500,000 containers (TEU) from inter-state freight moves can also be accommodated at the terminal. This will remove an estimated 3,300 truck movements on Sydney roads each day, reducing movement costs and CO₂ emissions by 19,800 tonnes each year. The terminal will provide an estimated 1,650 full time jobs during construction and 17,000 once it and surrounding warehousing is open. The Commonwealth estimates that Moorebank will provide \$10 billion in economic benefits through improved freight productivity, lower business costs, reduced road congestion and better environmental outcomes.

²³ Infrastructure Australia, *Australian Infrastructure Audit*, 2019, p.327

²⁴ Transport and Infrastructure Council, *National Freight and Supply Chain Strategy*, 2019

²⁵ Department of Infrastructure, Regional Development and Cities, *Inquiry into National Freight and Supply Chain Priorities*, 2018, p.37

²⁶ Standing Council on Transport and Infrastructure, *National Land Freight Strategy, A place for freight*, 2012, p.20

It should be noted that there has been local opposition to the terminal. Liverpool Council and other critics in the local community and industry have opposed the development over concerns about how its operation will impact on traffic in the area and on the M5 South-Western Motorway and on local amenity.²⁷ Despite these concerns, construction began in 2019.

The investment in the Moorebank terminal was also complemented with investment across the New South Wales rail network, including the development of dedicated freight lines within Sydney. As with most busy cities, rail network capacity is increasingly taken up with public transport services with scheduling for freight services a secondary consideration.



As part of the Interface Improvement Programme the Australian Government is making a \$10 billion investment in constructing a new Inland Rail line.²⁸ The new 1700-kilometre rail connection will bypass the congested rail networks along the eastern seaboard, connecting Melbourne with Brisbane. With work underway the line will be delivered in 10 years and provide an alternative to road, and a more efficient rail service for IMEX freight moving from Victoria (and the Port of Melbourne – Australia's largest container port) north up to Queensland and Brisbane.

Inland Rail will also provide high capacity rail freight access into Australia's four richest farming regions in Victoria, New South Wales and Queensland. These inland areas are in decline and have previously relied on road and lower capacity rail access. This new improved access allows for the potential to develop intermodal terminals at key locations across the Inland Rail line, boosting the economic fortunes of some of the towns on the corridor. The Commonwealth has provided \$44 million in 2019 through the Interface Improvement Programme for proposals for branch lines and intermodal terminals along the Inland rail line in regional Australia.²⁹ The goal of the investment is to stimulate economic activity in inland, rural regions as well as increase the utilisation of the Inland Rail line.

3.1.2 New South Wales

The New South Wales (NSW) Government has been investing in intermodal terminals to increase the utilisation of rail to move freight. This mode shift from road is designed to improve access into rural parts of the State, manage congestion in/from ports and reduce the negative effects of moving freight by road.³⁰ A key focus of their plan is to increase the use of rail to and from the state's main container port at Port Botany Bay. This strategy has included developing a network of intermodal terminals within urban Sydney, including Moorebank and others owned and operated by NSW Ports.³¹ The NSW Government is also investing in terminals across inland areas of the State.

One example of the later investment is the upgrade of the West Tamworth to Barraba Rail Line with the aim of then developing the Tamworth Regional Freight Terminal (in Northeast NSW). The terminal is envisaged to improve access for containerised freight to/from Port Botany, particularly as road transport into Sydney becomes more time-consuming due to congestion. The terminal is being developed as a multi-user facility, to allow different companies with smaller volumes of freight to make use of it, thus achieving the scale needed to generate benefits and commercial viability. Along with providing better port access for the area's agricultural goods, the terminal and associated line improvements are expected to reduce truck movements to/from Newcastle and Sydney. The terminal is also expected to create 5000 jobs in the area by potentially attracting businesses to Tamworth.³²

Similarly, the Riverina Intermodal Freight and Logistics (RiFL) Terminal at Wagga Wagga was supported by the Federal and State Government and the Wagga Wagga City Council. The \$35 million investment in the terminal is aimed at five objectives:

- manage the growing freight task - including longer trains (up to 1,800 meters);

²⁷ The approval of the Moorebank Intermodal has its critics coming out swinging, *The Daily Telegraph*, 14 June 2016

²⁸ ARTC, *The Case for Inland Rail*, Summary of the 2015 Business Case

²⁹ <https://www.inlandrail.gov.au/regional-development/interface-improvement-program>

³⁰ Transport for New South Wales, *Freight and Port Plan 2018-2023*, p.35

³¹ NSW Ports, *Port Development Plan 2019-2023*, 2019, pp.12-13

³² Northern Daily Leader, 24 November 2017. It is not clear how this level of employment generation was calculated.

- stimulate regional economic development;
- improving liveability through reduced truck movements within the city;
- reduce CO₂ emissions; and
- improve urban form and amenity value by encouraging freight handling on the edge of town at a zoned business park.

The Riverina terminal project was dependent on enabling road and rail projects to provide efficient connectivity, including rail upgrades and access for high productivity freight vehicles (longer and/or heavier combinations). During the conceptual development concerns were raised about the potential risk of publicly funded inland freight terminals in New South Wales competing against each other. As a result, in 2016 the NSW Government established the Regional Intermodal Taskforce tasked with independently assessing the fitness for purpose, financial viability and sustainability of existing and proposed intermodal terminals.³³

A growing concern for the Australian and NSW Governments is the need to protect rail freight corridors, freight terminals and locations for potential future intermodal terminals from urban encroachment.³⁴ This challenge is being driven by Australia's high levels of freight volume growth and population increase, particularly in and around nationally significant freight precincts. As such a key industry concern, among a number, for the future is government planning and investments considers:

[the] "preservation of transport corridors and protection of access corridors (including shipping channels) and freight precincts from encroachment which reduces efficiency and capacity of key national port, airport and intermodal terminal assets".³⁵

3.1.3 Victoria

The State of Victoria is also working to manage its freight and population growth within Melbourne, Australia's fastest growing city. Victoria's freight plan identifies the growing challenge of moving containers to/from the Port of Melbourne, Australia's largest container port – with volume moved to and from the rest of Australia. Along with supporting the construction of Inland Rail, the plan proposes developing the Western Interstate Freight Terminal at Truganina in Melbourne's west and the Beveridge Terminal about 35 kilometres to the north of the city.³⁶ This would replace the current model where containers bound for redistribution within Melbourne are railed to terminals at Dynon (next to the port) and are then trucked to outer industrial suburbs. The current site at Dynon is space constrained, reduces amenity value in inner Melbourne from the significant road traffic it generates and is not able to handle larger trucks or trains.

Importantly, Port of Melbourne notes that the better utilisation of rail is vital for the future efficient operation of the port and for the Victorian economy. However, it also notes that despite this need, to make full use of rail for the port requires:

"the involvement of many parties and has significant interfaces with the passenger rail network. To move containers from the Port to metropolitan Melbourne destinations it is currently quicker and cheaper to use road transport."³⁷

To address this challenge, Victoria's investment in intermodal terminals is part of a wider programme to increase the use of rail, including developing Inland Rail to Queensland, separating passenger rail and freight lines, infrastructure upgrades to enable high productivity freight vehicles and to subsidise the shift of freight from road to rail through the Mode Shift Incentive Scheme (MSIS). The MSIS has been extended into 2021, with \$4 million used to take 28,000 truck movements off Victoria's roads, specifically to subsidise the additional handling costs of moving containers to/from rail.³⁸ These actions are designed to complement the development of intermodal terminals, recognising that on their own individual interventions are unlikely to enable mode shift.

³³ The final report of the Regional Intermodal Taskforce was not publicly released. However, it is still used by Ministers when considering terminal proposals in NSW.

³⁴ *Freight and Port Plan 2018-2023*, pp.61, 63

³⁵ *Inquiry into National Freight and Supply Chain Priorities*, 2018, p.49

³⁶ Victoria Government, *Delivering the Goods: Victoria Freight Plan*, 2018, p.27

³⁷ Port of Melbourne, *Our Plan for Rail*, 2019, p.13

³⁸ Port of Melbourne, *Our Plan for Rail*, 2019, p.9

3.1.4 Tasmania

In some ways, the State of Tasmania is the most comparable to New Zealand on rail matters in terms of size (being a short-haul operation, narrow gauge), geography and freight task. Due to the State's isolation from the rest of Australia and international shipping services, the federal government has long subsidised freight movements across Bass Strait. This funding support has more recently evolved to support an overall improvement in the State's freight supply chain and economic development. As part of this renewal the Tasmanian Government repurchased the state rail operator (now TasRail), and moved to re-orient Tasmania's freight task around the rail network.³⁹ This includes the large volume of freight that moves North-South between the three main ports in the North (Burnie, Devonport, Bell Bay), with the largest population centre in Hobart in the south of the State.

Investment in the rail network has focused on improving travel time and service reliability on the Burnie-Hobart freight corridor (Northwest-Southeast), to encourage mode shift from road to rail. The State Government has focused its efforts the freight identified as contestable between road and rail, and worked to shift a portion of that.⁴⁰ Tasmania also focuses on where the greater use of rail can generate the most public benefits, namely for reducing:

- road crash risk exposure
- road maintenance costs
- CO₂ emissions.⁴¹

Complementary to that has been the redevelopment of TasRail's intermodal terminals at the three ports in the north of the State, with the Burnie Port Optimisation project completed in 2015. The project improved the operation of rail in Burnie and Devonport, allowing for rail volume growth and reducing the impacts of rail freight movements on the local community.



Toll Terminal, Brighton Transport Hub – AECOM 2016

In southern Tasmania the focus has been on developing a new intermodal freight hub for Hobart, located at Brighton to the north of the city. The new hub location was chosen due to its good rail and highway connections, allowing access for high productivity freight vehicles (HPFVs) and longer trains. Moving the hub to Brighton also improved amenity value within Hobart by reducing truck movements by 250,000 a year. The relocation of the hub also removed the need for trains to come into the city, which was problematic as that section of the rail line had low speeds and 21 level crossings.⁴²

Additionally, the old hub in the central city at Macquarie Point was inefficient (shunting alone added four hours to the transit time of freight trains to the north), which made rail uncompetitive against the road alternative. The old terminal was also in an obsolete location, with the port at Hobart no longer receiving freight. The area around it was developing, meaning there was no space to expand or

³⁹ Infrastructure Tasmania, *Tasmanian Integrated Freight Strategy*, 2016, p.5

⁴⁰ TasRail, *TasRail - Delivering Value for Tasmania*, 2015, p.2

⁴¹ For the estimated value of those negative effects, see TasRail – *Delivering Value for Tasmania - Data Summary Report*, 2015

⁴² Brighton Transport Hub Project, Parliamentary Standing Committee on Public Works, Parliament of Tasmania, 2008, 7

increase warehousing. The removal of the old terminal at Macquarie Point represented an opportunity to make better use of the old hub area to improve the liveability and vibrancy of Hobart.

The \$71 million new build delivered a new purpose-built facility that accommodates larger HPFVs and longer trains. The hub includes several ancillary services such as: a container wash, repair and preparation facilities, a car parking area, stormwater detention basins, water-pollution interception systems, and additional access roads to adjacent properties for future growth. The surrounding land is available for industrial and logistics development, allowing greater use of the terminal. The Commonwealth Government invested most of the funding, recognising the need to support Tasmanian infrastructure to allow for the State to grow its economy and retain its population. Once the initial infrastructure was in place, large freight companies such as Toll had the confidence to invest in their own facilities and relocate there.⁴³



Observation: Investment in intermodal terminals in Australia is part of strategic approach to the rail network and achieving broader freight outcomes.

3.2 United States

The United States is an interesting case study due to its evolution in thinking over the last thirty years and the guidance documents developed by the Federal Government. Since the 1980s the USA has had steady growth in intermodal rail movements, especially long-distance west-east containerised flows. This growth was in part driven by the significant increase in freight movements, especially import/export flows west to east, and along the eastern seaboard as the United States bought and sold more with China.

Most investment in intermodal infrastructure was undertaken by the private sector, or with support from state governments. From the 1990s the Federal Government has become more active in supporting intermodal initiatives, including intermodal terminal development. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) set out the requirement to develop a "National Intermodal System that shall consist of all forms of transportation in a unified, inter-connected manner."⁴⁴ The ISTEA also required a study of freight intermodal policy by the National Commission for Intermodal Transport (NCIT), a specially created body. In its 1994 report, the NCIT argued that federal funding should be used to develop an intermodal system, working with State governments and the private sector. It was explicit that this system should be planned in an integrated way, rather than focusing on individual components in isolation from each other (and potentially excluding some).⁴⁵

Federal government investment in intermodal terminals focuses on projects that are identified as being of "national significance". This is typically being high volume, long-distance containerised international trade, and transshipping of this freight within the United States.⁴⁶ The focus of Federal investment in intermodal terminals then was to reduce the negative environmental impacts of moving freight (namely CO₂ emissions and federal highway congestion).

Projects that fall below this threshold were funded either by state government or local jurisdictions. Local investment also being prompted by local economic development considerations, including improving port access for imports and exports (with most ports owned by states or local authorities). The Transport Research Board (TRB) noted that any investment in terminals had to reflect the relative interests of the federal, state and local parties – as well as private interests.⁴⁷ Importantly, in its 1998 guidance document the TRB noted that:

⁴³ 'Toll's Brighton terminal – a closer look', *Rail Express*, 24 July 2013

⁴⁴ See: Transportation Research Board. *Policy Options for Intermodal Freight Transportation: Special Report 252*. 1998, Washington, DC

⁴⁵ National Commission for Intermodal Transport, *Toward a National Intermodal Transportation System*, 1994, pp.3-4

⁴⁶ TRB. *Policy Options for Intermodal Freight Transportation*, p.6:

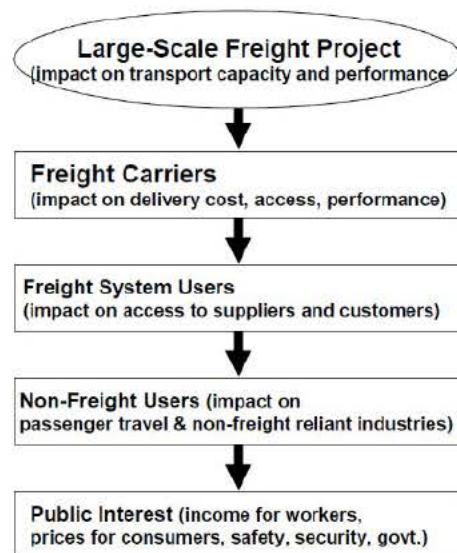
⁴⁷ The TRB's assessment guidance is reflected in the assessment questions set out below.

“An essential criterion for judging public-sector freight transportation programs should be the effect on the efficiency of the freight transportation industry. Projects that enhance freight productivity generally will have the greatest chance of success in attaining other public goals. Such projects will be well-used by carriers, will be viable for the long term, will generate the strongest stimulus for local economies, and will have the greatest effect on pollution, congestion, and accidents.”⁴⁸

A major problem the United States found when it looked to grow intermodal transport was that many terminals faced capacity constraints, had reverse sensitivity impacts on neighbouring residential and recreational areas, or suffered from bottlenecks on connecting roads and railways.⁴⁹ In response, the Department of Transportation assessed all national highways leading to major intermodal facilities to improve access.⁵⁰ Funding was then made available for activities that encouraged inter-modal freight movements including Federal support for “regionally based intermodal gateway responses” and “green” facilities.⁵¹

To assist with intermodal infrastructure investments (and/or loans) the federal Government developed guidance to better understand the proposed activities, most of which provided little detail on the benefits or costs.⁵² This guidance included standardising terminology, distinguishing benefits (such as public versus private, transport companies versus cargo owners, local versus national) and providing categorising affected parties and the impacts on them (see figure - right).⁵³ This approach allowed a ‘whole-of-system’ assessment of how the investment might affect the wider freight supply chain, other transport uses and the public in general.

While this is a departure in traditional cost/benefit analysis, the Department of Transportation believed this approach allowed for a better understanding of the impacts of the investment where there may be substantive private sector benefits (and potentially disbenefits). It also allowed broader impacts to be considered that are difficult to put a value on, such as reliability and resilience. During the Global Financial Crisis, the Federal Government also made investment (or loans) available for the development of intermodal facilities, in order to help stimulate the economy, reduce the cost of moving freight, manage future freight volume growth and reduce negative impacts of moving freight.⁵⁴





Observation: The United States takes a more flexible approach to intermodal investment but has adopted a systemised approach to assessing benefits and costs.

⁴⁸ TRB. *Policy Options for Intermodal Freight Transportation*, pp.16-17:

⁴⁹ Burkhard E. Horn & Toshinor Nemoto, *Intermodal Logistics Policies in the EU, the U.S. and Japan*, The Japan Transportation and tourism Research Institute Vol.7 No.4 2005, p.7

⁵⁰ *Intermodal Logistics Policies in the EU, the U.S. and Japan*, p.7

⁵¹ U.S. Department of Transportation - Federal Highway Administration, *Freight Story 2008*, p.30

⁵² Office of the Secretary of Transportation, U.S. Department of Transportation, *Guide to Quantifying the Economic Impacts of Federal Investments in Large-Scale Freight Transportation Projects*, 2006

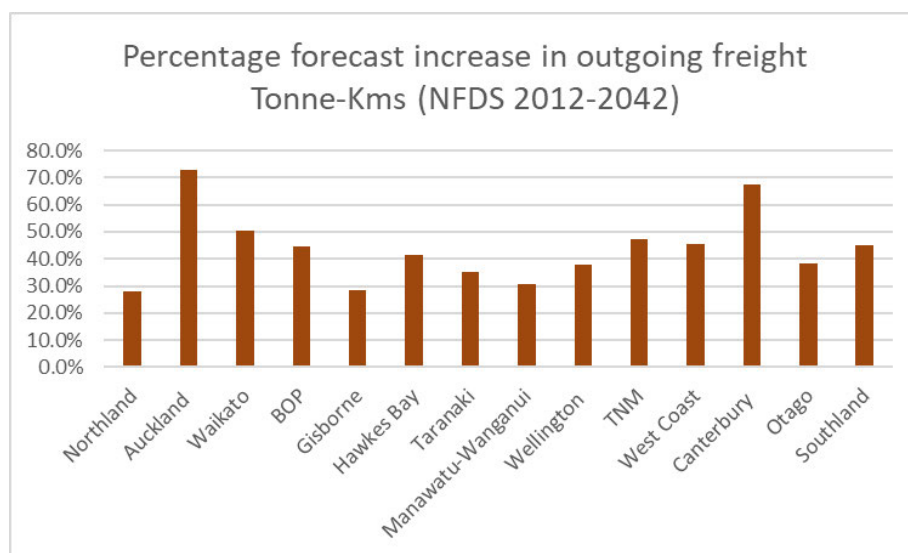
⁵³ *Guide to Quantifying the Economic Impacts*, pp.9ff

⁵⁴ Statement of Roy Kienitz (Under Secretary for Policy U.S. Department of Transportation), Before the Committee on Appropriations Subcommittee on Transportation, Housing and Urban Development, and Related Agencies U.S. House of Representatives, *Strengthening Intermodal Connections and Improving Freight Mobility*, 17 March 2010

4.0 Freight supply chain context for intermodal terminal investment

4.1 Economic importance of New Zealand's growing freight task

This section provides guidance on intermodal transport in New Zealand, primarily rail freight and key points that underscore an assessment framework. Moving freight safely, effectively and efficiently is vital for an exporting country like New Zealand. Each year around 280 million tonnes of freight is moved within the country across all the modes (road, rail, coastal and air). When the distance these volumes are moved is included, this equates to around 30.6 billion tonne-kilometres in freight movements annually.⁵⁵ Of this around 37 million tonnes of exports are moved each year (estimated at around \$50 billion in value) and imports around 22 million tonnes (also valued at around \$50 billion).⁵⁶ These freight movement, including to/from the regions, is a critical function of the transport system.



4.1.1 The growing freight task

The Ministry of Transport forecasts the freight task growing by more than 55% by 2042 (from 237 million tonnes in 2012/13 to 366 million tonnes by 2042/43). In terms of movements (using tonnes-kilometres - the total volume of freight multiplied by the distance it is moved), this would see the freight task grow from 26.3 billion tonnes-kilometres (in 2012) to 39.27 billion tonne-kilometres by 2042.⁵⁷

The freight moved by road nationally is forecast to increase from 18.41 billion tonnes-kilometres movements (in 2012) to 27.79 billion tonnes-kilometres each year by 2042.⁵⁸ This significant increase in demand for road freight will require additional trucks, drivers and significant productivity gains (assuming no new game-changing technology is in place by this time). This increase in road freight, along with growth in demand from other road users, will place greater pressure on regional highway networks and key urban networks that are the origin/destination for regional freight.

4.1.2 Importance of the upper North Island in the national supply chain

Around 56% of all freight in New Zealand is currently moved within the upper North Island – Northland, Auckland, Waikato and the Bay of Plenty. Freight growth to/from and within the upper North Island will be disproportionately higher with forecast increases in Auckland of around 78% (50 million to 88 million tonnes per year by 2042), Waikato 54% (32 million to 49 million tonnes), the Bay of Plenty 41% (25 million to 35 million tonnes) and Northland 50% (13 million to around 20 million tonnes).⁵⁹

⁵⁵ National Freight Demand Study, 2017/18

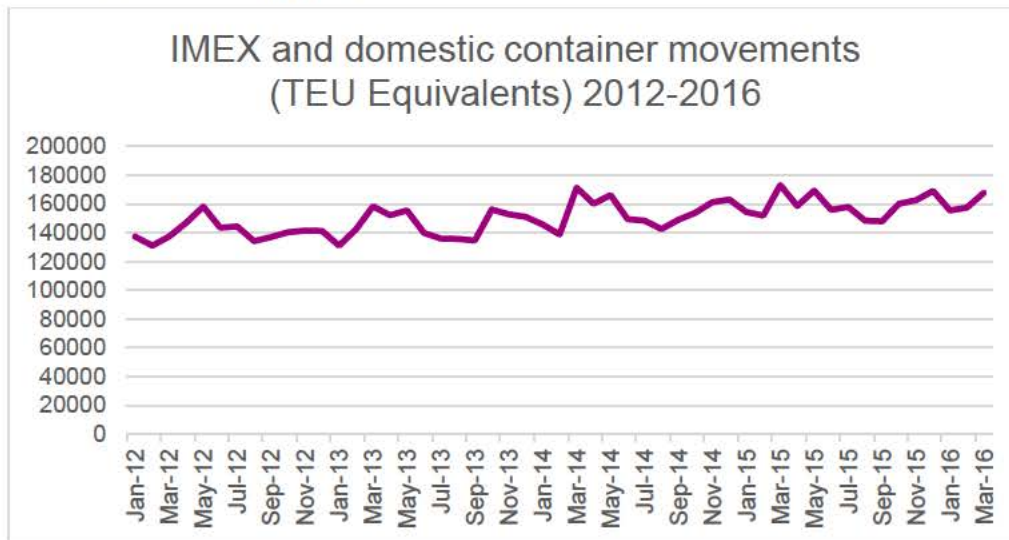
⁵⁶ Statistics NZ/customs data

⁵⁷ National Freight Demand Study, 2014

⁵⁸ National Freight Demand Study, 2014, pp.7, 277

⁵⁹ National Freight Demand Study, 2014

Containerised freight movements through New Zealand ports has grown at an even higher rate of 14% between 2012-2016 (see graph below). This growth is being driven by increases in population and consumption due to the increases in production and the trend towards consolidating more freight volumes from other regions into the upper North Island. Most import and export (IMEX) containers are handled through the ports of Auckland and Tauranga, making these important origin/destination points for New Zealand's national supply chain.



Freight Information Gathering System (FIGS) – Ministry of Transport

4.1.3 Role of rail in the national supply chain

Within the wider freight transport system, the national rail network plays an important role in moving large volumes of freight over longer distances. In 2017/18 rail hauled 3.47 billion tonne-kilometres of goods, which represents around 12% of the national freight task by tonnes-kilometres.⁶⁰ As one of its business goals, KiwiRail is looking to increase its share of all freight moved to 20% by 2042 (tonne-kilometres). Rail moves around 30% of all exports, including a large proportion of high value goods moved in containers and around 10% of export logs.

In terms of the growth forecasts for freight, if the rail network was to continue to operate at its current market share of 12% (by tonne-kilometres), it would need to accommodate 1.88 billion tonne-kilometres of additional freight movements by 2042. An additional 1% of market share would mean accommodating 156 million tonne-kilometres of freight movements annually. All this freight volume, current and future, would need to be served by intermodal freight terminals.



Observation: New Zealand's freight task, including to and from the regions, is substantial and growing.

4.2 Role of rail in moving regional commodities

New Zealand is a long, narrow and thinly populated country that is distant from many of our key export and import markets. We face the additional challenge of moving large volumes of primary produce long distances from dispersed regional areas of production to processing facilities and busy ports. This challenge is greatest for some of our largest regionally sourced export commodities such as logs, milk and processed dairy products, coal and export meat. Over the last twenty years an increasing number of cargo owners, logistics operators and port companies have looked at how rail might play a greater

⁶⁰ National Freight Demand Study, 2017/18

role in moving some of this freight. Due to factors such as the limitations of regional highway networks, availability of suitable heavy truck drivers and changing logistics costs, rail has become more economically viable in moving some types of freight in certain situations and locations.

Table 2. below sets out the current freight moved by rail and its proportion of the total moves across all modes. It is a useful indicator of the types of freight that can be effectively moved by rail in New Zealand. Most opportunities for moving more rail by freight will likely be for these commodities, particularly if containerised.

Table 2. Freight moved by rail (all NZ 2012) and forecast all-mode volume growth by 2042 (MoT NFDS 2014).⁶¹

Commodity Group	Billion tonne-km	Current rail mode share (tonne-km)	Estimated Commodity Growth by 2042
Retail & manufacturing	1.47	19%	48%
Coal	0.94	91%	47%
Dairy	0.47	75%	49%
Logs (all)	0.36	11%	-33%*
Iron, steel and aluminium	0.21	64%#	37%
Milk	0.19	4%	60%
Pulp & paper	0.17	27%	28%
Meat	0.11	51%	5%
Limestone, cement & fertiliser	0.07	5%	118%
Other minerals	0.05	42%	109%
Grain	0.05	5%	111%
Horticulture	0.04	1%	61%
Panel	0.03	15%	86%
Sawn timber	0.02	5%	50%
Wool	0.01	15%	0%
Fish	0.01	7%	25%

Note: #Iron and steel only. *Log exports will decline after years of significant volume growth and then recover.

Along with containerised goods generally, the main specific commodities moved by rail are:

- Dairy products (mostly for export)
- Coal
- Metals
- Pulp and paper
- Retail and manufactured goods (including distributed imports)
- Logs
- Raw milk
- Meat (mostly containerised for export).



Observation: rail can be an effective way of moving certain types of freight.

⁶¹ Interpreted from *National Freight Demand Study*, 2014, pp.196, 273

4.3 Rail's geographical coverage

As a fixed network, rail is only able to cater for goods that can be practically and efficiently transferred on and off the rail network. This transfer can only be effective at fit-for-purpose intermodal terminals. With some exceptions, such as Nelson, the rail network was constructed to connect the main centres, ports and some hinterland areas. A few regions such as Gisborne, Taranaki and Northland have lost rail connections, or have reduced connectivity as a result of storm damage, managed decline of network infrastructure and the move to close commercially unviable minor lines as part of KiwiRail's Turnaround Plan approved under the previous Government.⁶²

In the distant past, new industrial developments and processing sites would be planned around the rail network to allow freight access to it. This proximity enabled efficient access for freight to and from the rail network, namely through avoiding the significant cost of double handling from road to rail and back again. Even today the rail network has many of these factories and industrial areas that are adjacent to the rail network and which have redundant rail connections. The freight once moved by rail has moved predominantly to road transport due to its flexibility in allowing multiple origins and destinations, lower cost and greater responsiveness.

Map of the rail network



4.4 Role of intermodal freight terminals

Intermodal terminals are critical infrastructure to allow the transfer of freight on and off the rail network. Terminals range from transshipment facilities like container transfer (CT) sites and log hubs; to inland ports, cross-docking facilities (moving smaller parcels of freight between trucks and trains) and industrial parks or freight precincts where several businesses are co-located with rail access. To efficiently access the rail network today, cargo owners and freight operators will need either:

- direct access to the rail network through a private rail siding; or
- access by way of a terminal where multiple businesses can use a third party to transfer their freight to/from the rail network.

Intermodal terminals, using rail, can be an effective way of providing access to ports for freight producers, receivers and operators in inland areas or on the edges of urban areas. Terminals can enable existing businesses to find efficiencies in their wider supply chain, depending on the type of freight and the origin and destination of the moves. New businesses can also be attracted to the area around intermodal freight terminals, where a local market or supply of raw materials for production exists. Intermodal terminals are most effective when its road and rail connections provide effective access to key origins/destinations – such as an export port. Where the cost of moving freight is reduced, terminals can help create and/or retain regional employment. In some cases, the retention of employment from new infrastructure can be a significant benefit for struggling regional economies. The objective of retaining employment through improved transport connections and reduced freight costs,

⁶² See [KiwiRail Group Turnaround Plan](#), Cabinet Paper, 14 April 2010

for example, was a factor in Land Transport NZ's (now the NZTA) investment in the Tiwai Bridge renewal in Southland during 2009.⁶³

The development of intermodal terminals can also be integrated into district and regional plans, with businesses encouraged to develop adjacent to, or close by the terminal. This proximity can significantly reduce the transfer costs ("drayage") of moving freight on and off the rail network, increasing the terminal's value proposition.

For those businesses that do not have direct access to the rail network, the use of terminals is essential for them to efficiently access rail services. These terminals require efficient first and/or last mile connections by road transport (either by public or private road). Efficient road transport connections can manage the total cost of the freight trip (including the transfer between road to rail) so it is as cost effective as the alternative of simply using road transport for the entire journey.

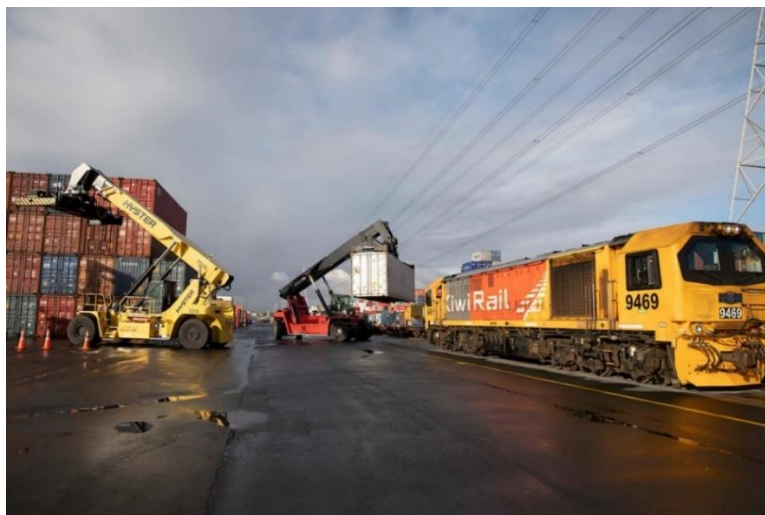
The operation of intermodal terminals also requires long-term operational confidence in the rail network. This includes its ability to respond to growth in demand from increased services and/or longer trains. The development of intermodal terminals may require additional investment elsewhere in the rail network to cater for additional freight movements. Most importantly, a key success factor for intermodal terminals is that the connecting rail journeys is reliable and provides businesses with confidence in delivery.⁶⁴ The considerations above are included in the assessment framework, to allow for these factors to be identified and quantified for each terminal proposal.



4.5 Different types of intermodal terminals

As the function of rail has evolved, the role of inter-modal terminals has changed and become more important to enable rail access for businesses. Many intermodal terminals now provide storage, marshalling, consolidation and deconsolidation functions. The use of rail is often complementary to these functions.

While rail is only suitable for sections of most logistics chains, using rail can provide significant value if its use is part of a wider logistics strategy such as marshalling and consolidating volume across large distances to reduce costs on international shipping. As each commodity and supply chain is different, so the use of intermodal terminals will differ across geographical areas and supply chains.



MetroPort, Auckland. Photo: KiwiRail 2019.

⁶³ See Repair bill for Tiwai bridge expected to be about \$11.5m, [Southland Times](#), 31 January 2009

⁶⁴ See for example Department of Infrastructure and Regional Development, "Future of Intermodal terminals", May 2017, p.83ff

Therefore, you could have a regional intermodal log terminal operating next to an inter-regional import/export (IMEX) terminal. As they support different supply chains, they do not compete. In some cases, however, intermodal terminals directly compete to attract freight. An example of this is Midland Port (owned by Port of Lyttelton) and MetroPort Christchurch (owned by the Port of Tauranga). Both terminals are IMEX container terminals adjacent to each other in Rolleston and competing in the same catchment area for containerised IMEX freight. One terminal is designed to send freight to/from Lyttelton with the value proposition of being able to bypass Christchurch's road network. The other offers services to/from PrimePort in Timaru, with a value proposition of connecting to the Port of Tauranga's network – including access to larger ships and lower shipping costs.



KiwiRail's Whāngarei Container Transfer (CT) Site. Photo: AECOM 2018

4.5.1 Servicing distinct, but overlapping supply chains

Freight moved by rail in New Zealand includes lower-value bulk commodities and higher-value goods, such as processed chilled export meat and dairy. For example, around 30% of New Zealand's containerised exports (some of our highest-value products) are moved to port by rail. A large volume of consumer goods, including imports unloaded and repacked in Auckland, are also distributed by rail through the country.

Today rail-enabled intermodal terminals play a role in the following supply chains types:

- regional bulk (such as logs);
- inter-regional bulk (such as logs and coal);
- regional containerised imports and exports (IMEX);
- inter-regional containerised imports and exports (IMEX);
- inter-regional domestic break-bulk, including imported goods (curtain-sided); and
- inter-regional import/export break-bulk (curtain-sided, not containerised).



Observation: intermodal terminals may compete, depending on freight types and location.

4.5.2 Categorising rail-enabled intermodal terminals

One approach to better understand the value of intermodal terminals in supporting freight movements, is to categorise them by form and function. Intermodal terminals could be broadly categorised by the type of supply chain they serve, their geographical catchment areas and the scale of the freight they move – by volume and/or value.⁶⁵ It should be noted that such classification is no comment on their economic value or commercial effectiveness, but rather their transport function (broadly) within the national supply chain. Intermodal freight terminals in New Zealand could therefore include:

- **National strategic - IMEX/domestic** - handling high volumes and/or values of imported and export goods from across multiple regions and/or ports.
- **Regional strategic – IMEX/domestic** - catering for medium volumes and/or values of freight moved across several regions, to/from a single regional port or to/from a national terminal.
- **Regional strategic – bulk** - catering for high volumes of bulk commodities, such as coal, moving them across regions and/or to a single port.
- **Sub-regional – IMEX/domestic** - catering for lower volumes/values of freight moved within or to a neighbouring region, often to a single regional port or to/from a national terminal.
- **Sub-regional – bulk** - catering for lower volumes and/or values of freight moved to/from a single region, a port or to/from a national terminal or processing location.

An indicative classification of a selection of existing, or proposed, intermodal terminals is provided in Table 3. below.



KiwiRail Freight – CT Sites

Whangārei
 Auckland
 Hamilton
 Tauranga
 New Plymouth
 Napier
 Whanganui
 Palmerston North
 Masterton
 Wellington
 Blenheim
 Ashburton (set to close)
 Timaru
 Oamaru
 Dunedin
 Invercargill

⁶⁵ A 2006 report for the Department of Transport and Regional Services (Australian Government) classified any rail terminal handling more than 10,000 containers (or equivalent) as “intermodal terminals of national significance”. National Intermodal Terminal Study, 2006, p.1

Intermodal Freight Terminal Types (indicative illustration only - not to scale).

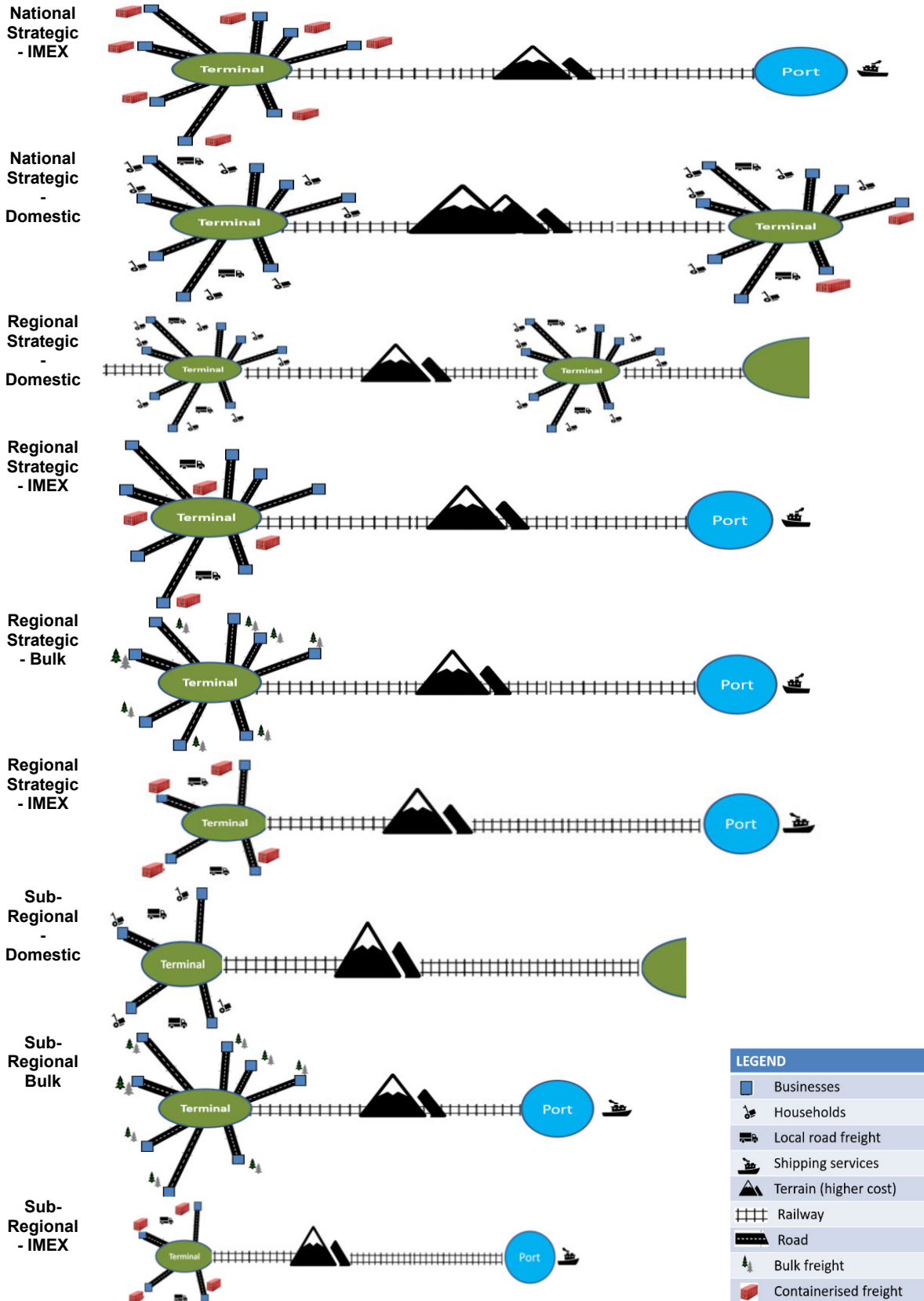


Table 3. Indicative categorisation of a rail-enabled intermodal freight terminals (sample of current, proposed and approved).⁶⁶

<i>Terminal Type</i>	<i>Name</i>	<i>Catchment</i>	<i>Region</i>	<i>Freight Type</i>
National strategic - IMEX/domestic	Kumeū (proposed)	Upper North Island, NZ	Auckland	Handling IMEX cargo to/from Northport and Auckland, including imports for distribution across Auckland and NZ.
	Toll NZ (Onehunga)	Upper North Island, NZ	Auckland	Domestic (including repositioned imported goods), curtain-sided freight
	Mainfreight (Otahuhu)	Upper North Island, NZ	Auckland	Domestic (including repositioned imports), curtain-sided freight
	Hall's Intermodal (Takanini)	Upper North Island, NZ,	Auckland	Handling chilled and frozen, high-value domestic freight, to/from Auckland with distribution throughout the country.
	Coda Group intermodal freight terminal, Savill Drive	North Island	Auckland	Export freight from across the North Island (delivered in curtain-sided units, packed into containers for export). Domestic (including repositioned imports), curtain-sided freight delivered back throughout the North Island.
	MetroPort (Southdown) - Port of Tauranga	Auckland and wider Upper North, NZ	Auckland	IMEX containers moved between Auckland and Port of Tauranga, road catchment in southern Auckland
	Wiri, Ports of Auckland	Upper North Island	Auckland	IMEX containers to/from Ports of Auckland with road catchment within southern Auckland and rail connections to the lower North Island.
	Ruakura, Tainui Group Holdings Ltd (Under development)	Upper North Island, NZ,	Waikato	IMEX freight within the upper North Island (exports from central and lower North Island and imports), to other regions and to/from the Port of Tauranga/Ports of Auckland. ⁶⁷
	Longburn Ports of Auckland, Port of Napier, Icepack	Lower North Island, to/from Auckland	Manawatū-Whanganui	IMEX freight, to/from Auckland and Ports of Auckland with distribution throughout the lower North Island.
	KiwiRail Palmerston North intermodal terminal and rail hub (Under investigation)	Lower North Island, to/from Auckland, South Island	Manawatū-Whanganui	(handling domestic and import/export freight within the lower North Island and to/from Auckland).
Regional strategic – IMEX/domestic	Waikato Freight Terminal (Horotiu) Ports of Auckland	Waikato	Waikato	IMEX containers moved to/from Ports of Auckland. Road catchment around Hamilton.
	Fonterra Cool-store (Horotiu)	North Island	Waikato	Containerised dairy exports from the Wa kato and wider North Island, warehoused for shipment.
	Kawerau (proposed)	Onsite production and Eastern Bay of Plenty	Bay of Plenty	IMEX containers to/from the Port of Tauranga.
	Izone Industrial part (includes MetroPort)	Onsite production, Canterbury	Canterbury	Multi-user industrial park, with rail access for domestic, import/export (including IMEX) movements.
	Midland Port (Rolleston), Port of Lyttleton	Canterbury	Canterbury	IMEX and domestic containerised freight railed to/from Port of Lyttleton, delivered by truck from the surrounding south and mid-Canterbury areas.
	MetroPort Christchurch (Rolleston) and	Canterbury	Canterbury	IMEX and domestic containerised freight railed to/from PrimePort Timaru, delivered by truck from the surrounding south and mid-Canterbury areas.
	Fonterra cool-store (Mosgiel)	Otago, Southland	Otago	Containerised dairy exports trucked/railed from Otago/Southland, railed to Port Chalmers and/or other ports for export.
Most of KiwiRail's Container Transfer (CT) Sites	Various local areas (see map)	various	Containerised freight, including IMEX containers transferred directly between road and rail and moved to various destinations.	

⁶⁶ A full and comprehensive assessment would require volume and/or value data from the businesses involved, which is likely to be commercially sensitive and inaccessible.

⁶⁷ See Aurecon (for Waikato Regional Council), 'Research into freight hub/inland port development in the Wa kato Region', 2013

Regional strategic – bulk	Ngākawau	Stockton Mine	West Coast	Bulk coal shipments to Port of Lyttleton for export.
Sub-regional – IMEX/domestic	Smaller KiwiRail CT sites such as Ashburton, Whangārei.	Various local areas (see map)	various	Containerised freight, including IMEX containers moved to various destinations.
	Tokoroa intermodal terminal, South Waikato District Council - RJ Lincoln's	South Waikato	Waikato	IMEX shipments to/from South Waikato - Port of Tauranga. ⁶⁸ Warehousing and local road distribution.
	Rangiora (proposed)	Eastern Bay of Plenty	Bay of Plenty	IMEX containers to/from Port of Tauranga.
	CentrePort New Plymouth (with Direct Connect, KiwiRail)	Taranaki	Taranaki	IMEX containers to/from CentrePort or other destinations.
	CentrePort Whanganui	Whanganui	Manawatū-Whanganui	IMEX containers to/from CentrePort or other destinations.
	CentrePort, Mar borough	Upper South Island	Mar borough	IMEX containers to/from CentrePort or other destinations.
	CentrePort, Palmerston North	Manawatū	Manawatū-Whanganui	IMEX containers to/from CentrePort or other destinations.
Sub-regional – bulk	Rapahoe	Strongman Opencast Mine	West Coast	Bulk coal exports through Port of Lyttleton.
	Stillwater	ROA Mine	West Coast	Bulk coal exports through Port of Lyttleton.
	Waingawa (near Masterton), CentrePort	Wairarapa	Wairarapa	Export logs transported to Wellington. ⁶⁹
	Whanganui Eastown, Port Taranaki	Whanganui	Manawatū-Whanganui	Logs transported to New Plymouth for export
	Dannevirke (approved)	Taranua	Manawatū-Whanganui	Logs transported to Napier and/or Wellington
	Woodville, CentrePort	Taranua, Southern Hawke's Bay	Manawatū-Whanganui	Logs transported to Wellington
	Marton CentrePort, (proposed)	Rangitikei District	Manawatū-Whanganui	Logs transported to Wellington

Understanding the place of intermodal freight terminals in the supply chain, and how these terminals relate to others is an important component of an investment framework. The concept of a terminal hierarchy has been incorporated into the framework to make it clearer how the development of new intermodal facilities may impact on the wider supply chain, including the operations of other terminals and the businesses they serve.



Observation: it is important to understand how new terminals may impact on the wider supply chain.

⁶⁸ South Waikato District Council, Proposal to Develop an Intermodal Road/Rail Terminal in Tokoroa, 2014.

⁶⁹ See BERL, 'CentrePort Waingawa log hub, Cost Savings from a transport mode shift', 2020

4.6 Changing role of rail in the national supply chain

Understanding why intermodal solutions might be appropriate, as change from road transport, is an important part of the assessment process. This section provides some guidance on several disruptive trends that are making intermodal transport more attractive, compared with a road-only option. This is not an exhaustive list, but provides an illustration of the type of information that might be relevant when considering investment proposals using the framework.

Over the last 20 years rail in New Zealand has undergone an evolution. The Government's repurchase of the rail network in 2004 and the establishment of KiwiRail in 2008, provided industry with more confidence in rail as a more reliable option. KiwiRail has developed much closer commercial relationships with ports and some of New Zealand's largest exporters, as the national supply chain evolved. KiwiRail has also looked to consolidate the access points to the rail networks – with multiuser or larger scale terminals being developed, rather than multiple sidings for single users.

4.6.1 Emerging strategic drivers / disrupters for greater use of rail

Due to several disruptive influences, some of New Zealand's largest companies now make greater use of rail as part of their supply chain arrangements. The use of rail, and therefore intermodal terminals, is often only part of the total logistics chain. Industry are also looking to better optimise their freight supply chains across road, rail, coastal shipping and air. In some places, and for many freight types, rail is not a practical option. Where rail can be used effectively to provide value, for some parts of the supply chain, has been due to considerations around:

- opportunities to reduce overall supply chain costs by achieving greater scale, such as using rail to marshal freight to single locations to reduce international shipping costs;
- a desire to reduce environmental impacts, specifically CO₂ emissions – which is an increasing feature in freight delivery contracts and consumer expectations;
- more efficiently managing pressure on available storage space within ports, notably for logs;
- enabling greater competition among New Zealand's main import/export ports by expanding their economic catchment areas using rail and intermodal terminals, specifically in the movement of IMEX containers but also logs in some regional areas;
- lifting productivity by loading export containers to their maximum gross weight (and achieving savings across the international shipping component of the supply chain);
- better managing the arrival and departure of freight consignments, allowing for better utilisation of staff and assets (such as reducing truck queues at port gates);
- mitigating the increasing cost and price volatility of diesel, particularly where freight movements travel through hilly terrain;
- mitigating the increasing cost and delays from truck travel to/from and within congested urban networks surrounding the main ports; and
- mitigating the decreasing availability of suitable Class 5 heavy vehicle drivers, with greater rail use allowing heavy truck drivers to be used on parts of the supply-chain where rail is not an option (such as the first and/or last mile).



Observation: There are more opportunities for using rail, and intermodal terminals, in supply chains than there were twenty years ago.

4.6.2 Drivers of mode choice and viability of intermodal terminals

When considering using rail (and therefore a rail-enabled intermodal freight terminal), cargo owners and freight logistics businesses will examine the whole supply chain benefits and costs of this option.

This will include whether rail represents better value for money overall than the road (or coastal) alternative. It will also include the level confidence the supply chain decision-makers have in the future of rail services and the rail network. The drivers of mode choice include commercial benefits, as well as other considerations – based primarily on customer requirements. When looking at the viability of using regional terminals, several considerations are made about the costs and benefits of using rail instead of road. Some of the main mode choice considerations are outlined below in Table 4.

Table 4. Mode choice decision-drivers – Summary

	Drivers of Mode Choice
	<p>Reliability</p> <p>Supply chains are built around seamless connections between a range of components (such as production sites, warehouses, trucks, ports and trains) that allow freight to arrive at the required time, place and in good condition. Failure to deliver or receive goods within the specified timeframe can result in disruption of production and the potential loss of customer trade.</p>
	<p>Product care</p> <p>Goods must arrive in good condition and in full. Damage or loss to a product may result in reduced value of the goods, lost time in production or the loss of sale. The care of the product in storage and while being moved is particularly important for perishable or fragile products.</p>
	<p>Safety</p> <p>Safe handling is important for products where mishandling poses a danger to staff, the transport operator or the wider public. Examples include hazardous goods such as petroleum, because of the risk involved with transporting the product.</p>
	<p>Punctuality</p> <p>This is a specific dimension of reliability, where the delivery is required in short, specific timeframes. Many businesses now operate on a "Just-In-Time" delivery" basis. This requires, as an integral part of their value proposition, offering delivery anywhere in New Zealand within 24 hours or less. With few retailers now storing much stock in-store, shelves are replenished as quickly as they are emptied.</p>
	<p>Cost</p> <p>Customers and businesses are constantly looking to minimise their costs, either through improved efficiency and/or productivity gains across their entire supply chain. For an increasing number of companies cost can also now mean costs met more widely, such as negative environmental impacts.</p>
	<p>Connectivity</p> <p>Single movements of freight are often only one component of a supply chain, which can include warehousing, distribution, consolidation, exporting and importing. Mode choices are often linked to arrangements made across the supply chain that are designed to deliver on wider objectives (such as reliability and reduce costs). Good connectivity to reliable and cost-effective modes of transport are critical.</p>

4.6.3 Potential value proposition of intermodal terminals – commodity and volume

Intermodal terminals work when it makes commercial sense to transfer goods between modes. As discussed above this will include the viability of the freight-type to be moved by rail, and the volume of freight to be transferred. Each terminal is different, depending on the size and scale of its catchment area and the value proposition of the transfer between modes. The alternative options, such as using road transport only, will also have costs and benefits specific to the location and the supply chain(s)

involved. In Australia, for example, freight terminals there are of very different sizes from 600,000 containers (TEU) per year at Port Botany in New South Wales, to only 20,000 containers (TEU) at Gillman in South Australia.⁷⁰ It is the effectiveness of the terminal that is important, not its size.

Assessing the suitability of the commodity and volumes involved will include determining the sustainability of the freight flow through the year, including how seasonal the goods are and backloading opportunities. Important considerations will include:

- providing a high degree of certainty about the volume of freight available, including:
 - seasonal impacts;
 - price and market impacts on freight volumes (especially for more price-sensitive commodities like logs or coal); and
 - realistic growth potential of the freight;
- the commercial benefits of transferring freight to/from rail, including:
 - formal undertakings from cargo owners;
 - support of the rail service provider (KiwiRail) to service the freight volumes; and
 - viability of the catchment area, including from competing operations.



Observation: The freight being moved, its volumes and the terminal's commercially viable catchment area, must be identified and assessed.

4.6.4 Potential value proposition of intermodal terminals – distance

To make rail connections from an intermodal terminal viable, the distance of the road trips connecting it to/from its catchment area will need to be relatively short, usually around 20-30 kilometres (even less for some freight types). The rail trip will need to be lengthy enough, or bypass high-cost terrain or road networks, to provide value for money against the road alternative (on a tonne-kilometre cost basis). A key consideration is the cost of handling and transferring the freight between road and rail, including the efficiency of terminal in undertaking the transfer task. 'Double handling' can add considerable cost that can make simply continuing the journey by road the most economic option.⁷¹ These cost factors are indicatively illustrated below.

Indicative representation of a commercial assessment of road versus rail journey



⁷⁰ PWC, Future of Intermodal Terminals, Department of Infrastructure and Regional Development, May 2017, p.28

⁷¹ For a useful discussion on the characteristics of these costs see: Wiegman, B., & Behdani, B. (2018). "A review and analysis of the investment in, and cost structure of, intermodal rail terminals." *Transport Reviews: a transnational, transdisciplinary journal*, 38(1), 33-51.

Depending on the commodity and its origin/destination, around 100-150 kilometres is the approximate average distance where rail trips in New Zealand can breakeven commercially against the road alternative. This distance can be more or less, depending on the specifics of move and supply chain. The costs per tonne-kilometre being a critical determining factor, with indications that some viable distances are decreasing. Increasingly the cost of truck travel in urban areas, mainly lost productivity from congestion, means that much shorter journeys are viable for containerised IMEX freight. In some cases, an import/export port may also cover the handling costs of moving containers from an inland port. This is often part of a wider strategy to grow market share and reduce truck queues at the port gate, and the operational cost of that congestion to the port and the road transport industry.

Table 5. below provides a breakdown of average trip distances in New Zealand for road and rail against commodity type. The table suggests the types of distances required for rail, using intermodal terminals, become more efficient after reaching the breakeven point. This breakeven point is influenced by several factors, however, so every location and supply chain will be different – and each case will require a specific assessment.

Table 5. New Zealand's estimated average haul (kilometres) by commodity and mode - 2012.⁷²

Commodity	Road	Rail	Coastal
Logs	111	124	-
Pulp & paper	272	146	-
Dairy	57	180	-
Panel	147	184	-
Milk	84	237	-
Fish	41	239	-
Wool	350	246	-
Limestone, cement & fertiliser	85	246	380
Meat	138	259	-
Coal	47	309	-
Retail & manufacturing	162	362	1040
Horticulture	90	369	-
Sawn timber	127	418	-
Iron, steel	39	437	-
Other minerals	108	495	-
Grain	132	669	-
Petroleum	90	-	966

4.6.5 Potential value proposition of intermodal terminals - time

The economics of road transport (compared to rail where it is a feasible alternative) is also influenced by the travel time required to undertake each trip, and how many return trips can be made in a working day. This travel time depends on:

- the route being used (length and topography);
- loading and unloading time (booking slots, queues); and
- traffic conditions on the route (road speed and congestion).

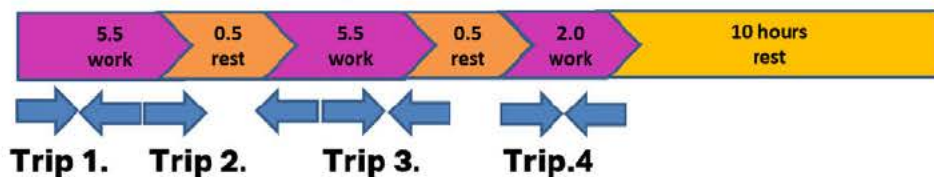
Trucks like all heavy vehicles are limited to 90 kilometres per hour (kph) as their maximum open-road speed, including on high-speed (110kph) sections of motorway. It is also best practice for heavy trucks to negotiate corners at 10kph below any advisory speed. Trucks take longer to accelerate from a

⁷² Adapted from *National Freight Demand Study* (2014), p.198

standing position and take longer to decelerate. As such trucks will on average travel slower on national and regional highways than other vehicles.

Truck drivers can also work up to 13-hour days, punctuated by two half hour rest breaks (see diagram below). This worktime includes picking up and dropping off the vehicle, driving, loading and off-loading time, sitting in traffic and any other task associated with the job. Within this worktime, the freight operator will try to make as many deliveries as is feasible. If the driver runs out of their worktime, recorded in their worktime log books, then the vehicle must be parked up until the driver has rested 10 hours, or if another driver comes in to take over.

Example of heavy vehicle drivers' work day (hours)



For moving freight like logs, the commercially optimal approach is to undertake as many round trips as possible within the 13 hours of allowed worktime. However, with growing traffic volumes in and around the main ports, the time needed for road trips are increasing. This ability to undertake fewer trips per shift is increasing the cost of road transport. Intermodal terminals offer the potential, for some freight moves, to get better utilisation out of trucks and their drivers by making multiple local trips. Rail is then used to move the accumulated volume to the destination by bypassing the road network.



Ports of Auckland, Photo: Ministry of Transport 2006

In the absence of ongoing public subsidies, industry will only use rail to move freight if it provides better value for money overall than the road (or coastal shipping equivalent) across the entire freight move. In assessing the potential for intermodal terminals, the feasibility of the road/rail trip needs to be compared against the cost of a truck continuing the whole delivery journey. This option will have commercial costs and benefits, as well as public costs and benefits – which can be assessed.

These commercial distances will mean that intermodal terminals will have their own natural economic 'hinterland' or catchment area, which depending on the commodity will need to be determined and assessed in proposals. Some of these catchment areas will not be viable as they contain insufficient freight volume suitable for movement by rail, are too close to the destination or overlap with the hinterlands of other terminals that cater for the same type of freight.



Observation: The total cost of the movement options, including handling costs and distances travelled, is critical to determining intermodal terminal viability.

4.6.6 Potential value proposition of intermodal terminals – truck driver availability

Another disruptive factor is the declining availability of heavy commercial vehicle (HCV) drivers. The shortage is greatest for Class 5 licence holders, who can operate combination heavy vehicles (such as B-Trains, Truck & Trailers). These combination vehicles compete more directly with rail, where the freight task is contestable between the modes. The workforce for this industry is aging and the industry is also struggling to recruit, train and retain enough new drivers to replace those that are retiring from the industry. The average age of New Zealand's Class 5 license holders is around 57 years and getting older each year, due to the small number of younger recruits joining the industry. The average age in provincial New Zealand is even older.

Table 6. Change in heavy truck driver availability (Class 5, ages 20-69) by region of residence 2012-2017, compared against regional freight volume.⁷³

Region	Reduction in heavy truck drivers	Percentage of 2012 total	Estimated change in regional freight volumes (million tonnes, 2012-2017/18)
Northland	-97	2%	-1.8%
Auckland	-940	5%	+55%
Waikato	-993	6.5%	+12.2%
Bay of Plenty	-586	6.2%	+1.6%
Gisborne	-11	0.6%	+31.6%
Hawke's Bay	-480	9%	+8.8%
Taranaki	-334	8.5%	+2.6%
Manawatū-Whanganui	-443	5.8%	27.4%
Wellington	-552	8.8%	+33.3%
Tasman-Nelson	+5	0.2%	
Marlborough	-110	5.7%	0%
West Coast	-203	12%	+43.6%
Canterbury	-671	4%	+23.2%
Otago	-96	1.6%	-1%
Southland	-214	4.2%	+3.4%

Due to this shortage, and the increasing number of truck drivers now in their 60s and 70s (with many of this age still working), several larger freight and cargo-owning companies are seeing how rail could mitigate the driver shortage for some parts of their supply chain. This driver shortage is starting to affect the economics of road transport and as more drivers leave the industry, the problem will only get worse. To illustrate, since 2012 New Zealand has 'lost' around 6,000 Class 5 drivers, despite the growing freight task (see Table 6 above). Some fleet owners have had, by their account, to park trucks up (effectively not using them and turning business away), as a result of the driver shortage.⁷⁴ Intermodal hubs and the greater use of rail can in some places help mitigate the driver shortage, including freeing up truck drivers to undertake non-contestable freight moves.

5.0 Rationale for PGF investment in intermodal terminals

5.1 Intermodal terminals as enabling infrastructure for regional development

The primary objective of the PGF is to invest in infrastructure and other activities that facilitate regional economic growth and employment opportunities. The framework reflects the importance of this goal in the assessment process, noting that it is through more efficient supply chains that usually provides the greatest localised economic benefit.⁷⁵ Where the conditions are right, intermodal terminals can support regional development and employment growth as enabling infrastructure that stimulates new

⁷³ Interpreted from NZTA Driver Licence data, *NFDS* 2014, 2017/18

⁷⁴ See: NewsHub, [Truck Company owners says Kiwis won't work](#), 19 April 2017; [Difficult and dangerous – why truck drivers are quitting](#), Radio New Zealand, 25 November 2018

⁷⁵ Professor Ian Gray & Associate Professor Philip Laird, "Rail freight for regional development", Paper presented at the SEGRA Conference, Bathurst NSW, 21st October 2015

businesses and employment. Improvements in access to raw materials and markets and reductions in transport costs, will support industries in regional areas to continue operating, reinvest in their businesses and/or attract new industries into a region. Located in the right location, in an economically viable freight catchment area terminals can provide efficient and effective access to local and international markets for certain types of freight.

These terminals can be built to respond to current freight volumes, or to enable and attract the establishment of new businesses and production in regional areas. As 'lead infrastructure', intermodal terminals and associated transport infrastructure, can be provided ahead of demand in areas of high production potential. These areas have effective access to raw materials and efficient multimodal connections to markets. Having this infrastructure in place can attract new businesses that are unwilling (due to risk), or unable, to provide the capital cost for the terminal development themselves.

5.1.1 Employment growth

While the operation of the terminal itself will provide some direct employment opportunities, terminals can also attract new businesses in the right location. These new businesses are looking to take advantage of new transport connections and the market or raw material opportunity provided in the local catchment area. In some cases, the jobs created may be transfers from other places or industries. This includes the movement of production, distribution or storage from one area to another, or truck driving jobs that are no longer required as freight is transferred to rail. Given the declining availability of heavy vehicle drivers generally (see Table 6. above), any surplus drivers are likely to be redeployed quickly to other jobs in the area.⁷⁶

The extent of employment creation (or retention) will depend on the attributes of the terminal itself and the businesses that will use it. Determining the potential for employment will require identifying 'anchor' customers for the terminal, and potential other businesses that may invest in the area once the new transport link is in place and 'proven'. Where possible the potential number of new full-time employees generated by the rail development should be quantified in the assessment process.

5.1.2 Productivity improvements

As discussed above, an increasing number of businesses are considering using rail to drive productivity gains in their businesses. This includes developing more scale (to reduce the cost of storage (per unit stored)), consolidation and/or distribution, reducing diesel consumption in their supply chain (due to rising costs and price volatility), reducing their carbon footprint, and freeing up truck drivers to be redeployed elsewhere in the supply chain.

Productivity gains can free up resources to allow money to be reinvested back into the business. Improvements to productivity can also reduce prices to end customers that may encourage greater demand for the goods of that business. In regional areas intermodal terminals can allow several businesses to cluster. Even on a small scale, this clustering and sharing of transport links achieve cost-savings in transport costs (such as sharing the cost of a container lift). This productivity savings is greatest when terminals can achieve a balance of flow between in-bound and outgoing freight, allowing for backloaded trips. Being able to achieve backloaded trips can provide significant productivity benefits and cost savings for businesses. Several New Zealand businesses, such as Coda, are seeking to establish this backloading model using intermodal terminals.⁷⁷ This backloading can be achieved by road and rail, through using a common freight terminal.

Intermodal terminals can also be very effective to achieve productivity gains from improved export container loading. To manage the impact of heavier axle loads on New Zealand's road network, the NZTA limits the allowable gross mass (weight) of IMEX containers.⁷⁸ These weight limitations, calculated on the carrying capability of the truck moving the containers, can be less than the maximum gross loading capacity of the container (including the capability of the rail and maritime networks to carry it). Due to the mass constraints on the road network, several New Zealand exporters (such as

⁷⁶ In the case of high productivity motor vehicles (HPMVs, including 50MAX), the improvement in productivity from the use of these longer and/or heavier trucks reduced the number of truck trips required for some company. In the case of PanPac in Napier, replacing standard B-Trains with Super-B HPMVs reduced truck trips so that two drivers were freed up and immediately redeployed to logging trucks where there is a shortage of suitable drivers. See [Hawke's Bay Today](#), 6 June 2017

⁷⁷ See 'Savill Drive adds rail to Network', *New Zealand Shipping Gazette*, 28 May 2016

⁷⁸ For detail see NZ Transport Agency, *VDAM Permitting Manual vol. 1, part B, Overweight*, August 2017, Page B3-12ff

Commercial Information are unable to completely fill their containers to the maximum container carrying weight. This unused container capacity results in significant productivity loss across the export supply chain. Intermodal terminals with direct access to rail can offer exporters, for some freight types, the opportunity to fully load containers. This may require the intermodal terminal to have private road access where public road weight restrictions do not apply. The feasibility of this arrangement will depend on the rail network's carrying capability for the container weights and the handling costs.



*Container loaded in the Far North District – Northland
Trucked to Whāngarei, transferred to rail and railed to the Port of Tauranga. Photo: AECOM 2018*

5.1.3 Reduced negative effects

A secondary purpose of the PGF is to provide other regional and national benefits, such as improved safety and reduced CO₂ emissions. This purpose also aligns with broader government land transport objectives for reducing the negative effects of moving freight, and so is reflected in the framework to allow a value assessment for terminal proposals. In enabling the transfer of freight from road to rail, terminals can contribute to reduced negative effects (negative externalities). These negative effects include reductions in:

- CO₂ emissions (and other harmful emissions);
- crash risk reduction (which could lead to a reduction in crashes involving trucks);
- congestion (on busy highways and in the main urban areas); and
- road maintenance costs (notably on highways that would have carried the freight).

Current economic evaluation procedures developed by the NZTA provides economic values for the non-commercial externalities generated by the movement of freight by road.⁷⁹ The economic value to the public of these reduced negative effects can be assessed using the NZTA's procedures. The NZTA's procedures regard the benefits as 'national' in their effect, but the transfer of freight from road to rail will also have ongoing benefits in specific locations. As an inter-regional network, the transfer of freight from road to rail can also have public benefits across several regions.

⁷⁹ See NZ Transport Agency, *Economic Evaluation Manual* (EEM). These procedures are widely used by local and central government to assess land transport proposals. Note: NZTA is currently reviewing its investment procedures.



Tokoroa Intermodal Terminal, Container Lift. 2015 Photo: NZ Transport Agency

As an example, the \$17 million Tokoroa road-rail terminal built in 2014 provided public benefits by transferring 2,000 containers (TEU) from road to rail each year. With containers forecast to grow to 5,000 per year, the main benefits of the terminal were:

- road safety benefits from reduced truck travel on SH1 in the South Waikato and SH29 into the Bay of Plenty;
- decongestion benefits within Tauranga, notably on the heavily congested roads to the container terminal at Sulphur Point;
- CO₂ reduction benefits; and
- productivity benefits for local companies located around the terminal (allowing job creation in an area of high unemployment and deprivation); and
- the establishment of a transport and employment hub in the south of the district's main town (also to encourage employment and training possibilities through ancillary investment).

Considered separately, these benefits are modest. However, the South Waikato District Council and the NZTA decided to invest \$3 million into the terminal based on the sum of these benefits, over the capital costs of the project.⁸⁰ A local road transport company investment in the freight facilities adjacent to the terminal, and a container lift that it operates under contract, allowing other companies to access rail services. This shared investment also reflected the local, regional and national benefits from the terminal development.



Observation: Intermodal terminals can attract new industries to regions, they can also help retain industries in these areas.

5.1.4 Improved amenity, resilience and option value

Also reflected in the framework is that the development of rail hubs can provide local amenity, or liveability value. This is particularly true when terminals are built on the fringe of urban areas, to attract freight activities out of sensitive areas – freeing up the land for alternative developments. This was the case for the Brighton Bypass and Transport hub in Tasmania (discussed above in 3.1.4). Funded by

⁸⁰ South Waikato District Council, Proposal to Develop an Intermodal Road/Rail Terminal in Tokoroa, 22 May 2014

the State and Commonwealth Government's in 2009, the intermodal terminal moved freight handling, along with rail and truck movements out of central Hobart.

Intermodal terminals can also provide some resilience to regional transport systems by improving connectivity with the rail network. While the benefits of this cannot be quantified, the value of this additional transport connectivity can be included in the qualitative analysis. Option value may also be a factor where it is not proposed that rail be used in the short-term. However, ensuring the intermodal hub is developed with the potential for connectivity to the rail network provides the option (and therefore potential value) of using the mode to move freight. This benefit will be nominal but should be noted and described.

5.1.5 Commercial versus non-commercial benefits

As demonstrated in the international examples, determining who benefits (and how they do) are important steps in the evaluation process. As terminals can provide private benefits to cargo owners and freight and logistics operators, the framework includes steps to identify these benefits and recipients. Moving freight is a private sector activity, which the government supports through providing land transport infrastructure and regulator services (to prevent harms such as loss of life and limb, and unfair market competition). Most intermodal terminals are fully commercial, owned and operated by private companies – whether for their own freight and/or that of other companies and supply chains. Several proposed or potential terminals in provincial areas are likely to be not fully commercial – either for the initial capital cost and/or for ongoing operations.

Potential public investment in these terminals and the ongoing ownership arrangements, therefore, has the potential to 'purchase' benefits for the public. This investment also has the potential to provide direct benefits to private interests. In some cases, these benefits might be at the expense of other businesses and intermodal terminals, if the proposed terminal substantially competes for the same freight. In some jurisdictions the risk of providing public investment towards private sector benefits has been mitigated through the public having an ownership stake in the terminal, usually the land and built infrastructure.⁸¹

Given its role as the main commercial rail operator in New Zealand, KiwiRail should provide a determination of the commercial merits of any proposed intermodal terminal. This includes ongoing operational costs and whether KiwiRail will serve the site. It is assumed that an ongoing subsidy for the operation of intermodal terminals, where there are net public benefits, will not be available in the new planning and investment framework for rail. As such, the terminal proposal will need to demonstrate that it is commercially viable.



Observation: Public investment in intermodal terminals can create benefits for private companies, and potentially disbenefits for others competing for the same freight.

⁸¹ National Intermodal Terminal Study, 2006 report for the Department of Transport and Regional Services

6.0 Review of potential future intermodal terminal investments

6.1 Initial identification of potential new rail enabled intermodal terminals

Several potential locations for possible terminals have been identified as part of this project, drawn from the literature reviewed. Without detailed proposals or business cases the information available is insufficient to make a detailed assessment of the merits of these terminals. Therefore, the information below should not be considered as a full assessment of the merits of each proposal and whether they would help advance PGF objectives. The information available has been recorded, with more information required for the potential terminals to be assessed using the framework.

Possible new freight intermodal terminals (indicative only)

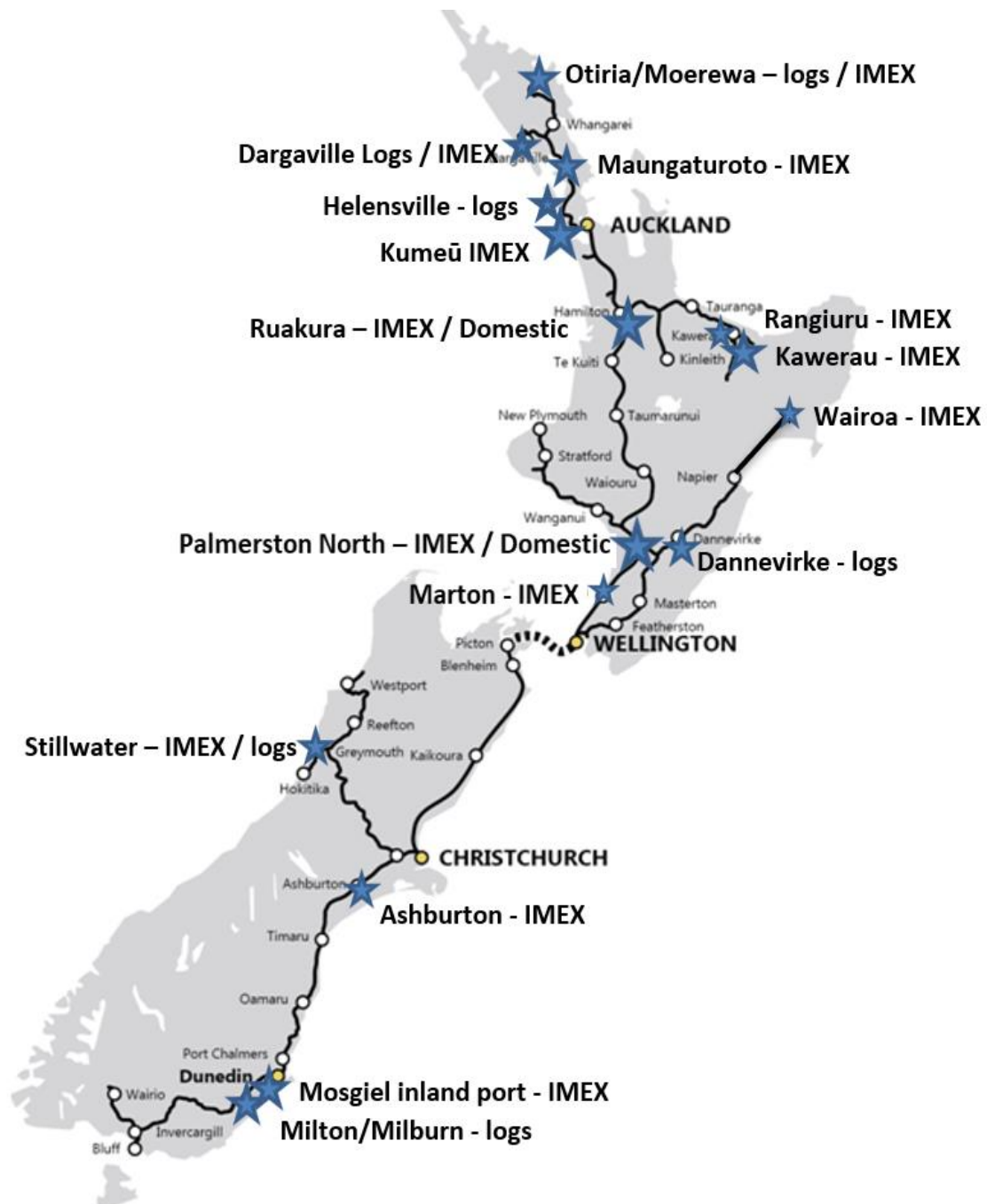


Table 9. Potential Future Intermodal Terminal Investments	
Name / location / type / status	Description
Otiria / Moerewa Sub-regional Logs AND/OR IMEX APPROVED	<p>Otiria-Moerewa is located between two freight catchment areas of logs – to the west around the Hokianga and containerised exports (such as dairy, kiwifruit, processed wood and refined clay) to the north, west and east. These IMEX containers (including the returning empties) are currently trucked to Whangārei or Auckland (220km 3.5hours – one way approximately). The Otiria log yard operated until around ten years ago until the line to Kauri was mothballed.⁸² The freight in the mid-north is growing, with maturing forests around the north and south of the Hokianga and increasing agricultural and horticultural production around the Bay of Islands. The terminal could include scaling and debarking facilities, as well as a rest-stop for truck drivers.</p> <p>A freight terminal in Otiria was included in the recent Northland Rail investment package. The reinstatement of rail services on the North Auckland Line (NAL) between Otiria and Kauri will have an impact on level crossing safety, including at two locations on 100kmph stretches of SH1 (at Towai and Hukerenui) – mitigation for which is not currently funded. Reopening the terminal will also change log truck operations with local roads to/from the terminal becoming qualitatively busier.</p>
Dargaville Sub-regional Logs AND/OR IMEX APPROVED	<p>To the west of Dargaville there is substantial forestry that is coming into maturity, with much of the log volume currently road transported to Northport. Dargaville also is host to a meat processing plant that exports chilled produce, currently road transported to Auckland.</p> <p>Any potential terminals would need to be placed in the west of the town, where the rail line terminates. IMEX containers would need to then be trucked to there for loading, as the Silver Ferns Farms plant is on the eastern side of town.</p> <p>Building of the terminals, however, would require the substantial renewal and restoration of the Dargaville Branch Line. The Northland Rail Business case found that the costs of this work, likely outweighed the benefits in the short to medium term.⁸³ The relative distances from Dargaville to Northport are short (84km, 1 hour, 10 minutes – one way), and the containers from the Silver Fern Plant could be road transported to another terminal (such as the CT site in Whangārei) for transfer to rail.</p> <p>The reopening of the Dargaville Line is envisaged by the Upper North Island Supply Chain Strategy, a rationale for this could not be located.⁸⁴</p> <p>The Dargaville Line is also currently used by an adventure tourism operation, which maintains the line and pays KiwiRail a modest rental. Reopening the line would likely cease the operations of this local business.⁸⁵</p>
Maungaturoto IMEX / bulk	<p>Fonterra has a dairy processing site at Maungaturoto, which though not rail enabled has, a short drive away, a redundant cool store site with a rail siding. Fonterra has considered rebuilding those facilities</p>

⁸² AECOM/Deloitte, *Northland Rail Business Case*, 2019

⁸³ AECOM/Deloitte, *Northland Rail Business Case*, p.81

⁸⁴ UNISCSWG, *Transforming Auckland; Transforming Northland Final Report of the Upper North Island Supply Chain Strategy Working Group*, p.2, p.33

⁸⁵ AECOM/Deloitte, *Northland Rail Business Case*, pp.158ff.

<p>POTENTIAL</p>	<p>and moving the dairy volumes to rail, which are currently trucked to Auckland.</p> <p>The Co-operative would be incentivised to move from road transport to rail if KiwiRail increased services on the NAL and high-cube containers could be moved through to Auckland. Currently the NAL is unable to accommodate these taller containers. The Government recently announced that these 'height-deficient' tunnels will be upgraded, through the PGF, to allow for high-cube export containers to move to/from Northland.</p> <p>The Maungaturoto site could also become more economically viable if other local businesses moving goods in containers considered using the terminal. This could potentially include containers trucked from Dargaville (63km, 1 hour – one way approximately).</p> <p>The terminal could also be used for milk during the peak of the season during the 'flush'. During this time Northland can produce more milk than can be processed within the region, with significant milk volume road transported to Horotiu in the Waikato for processing.</p>
<p>Helensville Sub-regional Logs</p> <p>POTENTIAL</p>	<p>The area to the east and west of Helensville includes large areas of plantation pine forests that are coming into production in the next ten years. Currently much of these logs are road transported to Northport via SH16/SH1 (120km, 2 hours – one way approximately). These movements will increase as more forestry reaches its harvest age.</p> <p>While the log terminal would be within Auckland Region, and therefore out of scope for the PGF, many of the benefits potentially could be realised within Northland. The Northland Rail Business Case also included freight from the southern Kaipara catchment area in determining the benefits of investment in the renewal of the North Auckland Line.</p>
<p>Kumeū National Strategic IMEX</p> <p>PROPOSED</p>	<p>The Upper North Island Supply Chain Study envisages moving containerised imports and exports from Ports of Auckland to Northport. As most of this freight will continue to be moved to/from Auckland City, these IMEX containers will be brought into Auckland using the NAL – and transferred off rail at a terminal in north-western Auckland. From there they will be road transported to destinations across Auckland – specifically to the 'logistics belt' in South Auckland via SH20.</p> <p>Kumeū has been mentioned as a possible site due to the railway land area available and its good proximity to SH16, leading to SH20. Kumeū is also outside the rail network used by Auckland's metro rail services. The terminal is on the current edge of suburban Auckland.</p>
<p>Ruakura National Strategic IMEX AND/OR domestic</p> <p>IN DEVELOPMENT</p>	<p>Tainui Group Holdings Limited established the Ruakura development on land returned to the iwi as a result of their Treaty of Waitangi settlement. The land is adjacent to the East Coast Main Trunk Line (to Tauranga) and the path of the Waikato Expressway (SH1). This proximity provides access to Auckland by road (116km, 2 hours – one way approximately), and highway and rail access to the rest of the country. Within the development 192 hectares is earmarked for logistics and industrial uses including the planned 30-hectare inland port – for IMEX operations.</p> <p>Tainui is looking to establish a multi-user industrial park and inland port to attract cargo-owners, producers and freight logistics operators to establish themselves at this strategic location. Ruakura Inland Port recently signed a long-term partnership agreement with Port of Tauranga to run train services to and from the site.</p>

<p>Kawerau Regional strategic MEX</p> <p>APPROVED</p>	<p>This project is being considered for PGF investment.</p> <p>It will provide container loading/unloading facilities for current and future production adjacent to it or nearby. Scion estimates that around 30,000 IMEX containers could be available for transfer through the terminal from the eastern Bay of Plenty.⁸⁶</p> <p>Containers would be moved from the terminal to the Port of Tauranga for export, with empty containers and potentially imports returned (92km 1h 20m – one-way trip approximately).</p> <p>The anchor customer for the terminal would be Oji Fibre Solutions Tasman, with the expectation that additional manufacturing companies would establish themselves at the site.</p> <p>The terminal provides the opportunity for businesses located at the site to achieve maximum export container loadings, as well as avoid growing congestion within Tauranga City.</p>
<p>Rangiuru Sub-regional IMEX</p> <p>PROPOSED</p>	<p>This project is being considered for PGF investment. Its construction would represent lead infrastructure to attract businesses into an established site. Construction of the industrial area has long been part of local and regional plans and was included in the business case for the Tauranga Eastern Link.</p> <p>The terminal at Rangiuru is proposed to serve an industrial park, based around one anchor tenant (Seeka) and potentially a kiwifruit packhouse. The terminal is unlikely to service IMEX containers from the wider area by rail, due to its close proximity to Tauranga (40km, 40mins – one way approximately). Containers from the area to the east of Rangiuru would likely be either transferred at Kawerau or road transported to Sulphur Point in Tauranga directly. The terminal provides the opportunity for businesses located at the site to achieve maximum export container loadings, as well as avoid growing congestion within Tauranga City.</p>
<p>Wairoa Sub-regional IMEX</p> <p>POTENTIAL</p>	<p>There is potential for some of the containers currently road transported from Gisborne to Napier to be moved by rail. The main commodities would be gold kiwifruit (an emerging crop on the east coast), sawn timber, apples, wine, vegetables and squash. The containers could be moved on same train as logs, to improve the economics.</p> <p>BERL (economic consultancy) estimates that around 400-500 containers a month could be moved by rail (outbound) during the January-July peak of production, and 200-250 during the off-peak from August to December.⁸⁷</p> <p>Given the distance between Gisborne and the nearest container export port at Napier – (215km, 3.5 hours – one way approximately), it could be viable to road transport containers to Wairoa and then railed to Napier (120km, 2 hours – one way approximately). Alternatives to this would be to continue road transport, reinstatement of the rail line to Gisborne or coastal shipping the containers from Gisborne to a larger container port.</p>
<p>Palmerston North National Strategic IMEX, domestic</p>	<p>Initial stages of this project have been favourably considered for PGF investment.</p> <p>A significant inland freight facility and rail hub has been talked about for the lower North Island for some time. Over the last twenty years the</p>

⁸⁶ A copy of the [Scion](#) report could not be sourced.

⁸⁷ BERL *Tūranga ki Wairoa Rail: Feasibility study into reinstatement of rail line*, 2019, p.72

<p>Stage 1 APPROVED</p>	<p>freight logistics and storage operations in the Wellington area have increasingly consolidated to the area in and around Palmerston North. This consolidation has reflected a desire to reduce warehousing and distribution centre costs and to take advantage of the improving road links between Palmerston North and Wellington, as well as using SH3 to supply and receive freight across the wider lower North Island – Whanganui, Wairarapa, Tararua and Hawke’s Bay.</p> <p>Rail would also be available to provide mainline access for high volumes of containerised and curtain-sided freight to and from Auckland and the South Island. Improvements to the Wellington region’s rail network, notably double tracking from Otaki into the city, has allowed freight trains greater access in between metro services.</p> <p>A new Palmerston North intermodal terminal would also allow for servicing facilities for locomotives and rolling stock. A new terminal would also potentially provide significant amenity benefits to the Milson area of urban Palmerston North, as freight activities are reduced in that area.</p>
<p>Marton Sub-regional IMEX, domestic AND/OR Logs POTENTIAL</p>	<p>Rangitikei District Council has proposed the zoning and establishment of an industrial area to the south of Marton, near to SH1 and the North Island Main Trunk.</p> <p>The proposed amendment to the District Plan has been consulted on and adopted by the Council. The Council has now issued a public notice under the Resource Management Act, with the deadline for submissions closing at the end of January 2020.⁸⁸</p> <p>Information on the potential tenants of the site, or its freight potential are not available. An intermodal terminal at the site would likely serve businesses located there, mainly production, and the immediate surrounding area.</p> <p>A log intermodal terminal was proposed in the district a decade ago but did not eventuate.⁸⁹</p>
<p>Dannevirke Sub-regional Logs APPROVED</p>	<p>A business case is currently being prepared by Tararua District Council, by Deloitte and WSP, into the feasibility of this terminal. The Tararua District and northern Wairarapa and Southern Hawke’s Bay have large maturing pine plantations forecast for the next 10-20 years. The distance and cost of travel between Dannevirke and Napier Port (124km, 2 hours – one way approximately), may make an intermodal terminal viable if volumes were significant enough over a long period of time.</p> <p>The intermodal terminal may have amenity impacts on the town and impact on the local road network due to increases in logging truck travel on local roads. Due to the construction of local roads compared to the heavier-built State highways, heavy trucks will cause disproportionate wear and tear to the Council-owned road network. This will potentially create an additional cost to ratepayers.</p>
<p>Stillwater (West Coast) Sub-regional</p>	<p>Logs from this part of the West Coast are currently moved to Port of Lyttleton by road, some by rail. Limitations at the Stillwater and the lack of rolling stock limit the use of rail. A study commissioned by Environment Canterbury estimates that 30,000 tonnes of logs a year</p>

⁸⁸ See <https://www.rangitikei.govt.nz/council/publications/district-plan/proposed-plan-change-1165-1151-and-1091-state-highway-1-marton>

⁸⁹ “Marton set to become rail terminal for logging trader”, *Whanganui Chronicle*, 1 April 2009.

<p>Logs AND/OR IMEX</p> <p>POTENTIAL</p>	<p>could be moved to rail (representing around 7.3 million tonne-kilometres – or 1030 equivalent heavy truck trips – one way).⁹⁰</p> <p>Additionally, there is potential to develop an IMEX terminal either at Greymouth or Stillwater. The South Island Freight Study identifies a water bottling plant that is considering establishing a plant in the area that could generate export container moves of 1,800 a year initially and up to 20,000 containers over a 5-8 year period.⁹¹ An IMEX terminal in this area could also provide some resilience for containerised dairy movements for Westland Milk Products at Hokitika in the event the line north has closed.</p>
<p>Ashburton Sub-regional IMEX</p> <p>POTENTIAL</p>	<p>KiwiRail currently operate a CT site at Ashburton, located in the middle of the town. This CT terminal is set to be closed this year. The Ashburton District and the surrounding areas are increasing their production of several agricultural crops that are exported through the Port of Lyttleton and in some cases through Port of Tauranga and Ports of Auckland.</p> <p>There have been discussions locally on the potential viability of developing a new rail enabled terminal, on the edge of the town. The district produces significant volumes of freight, which are forecast to grow substantially.</p>
<p>Mosgiel (Otago inland port) Regional strategic IMEX</p> <p>PROPOSED</p>	<p>Port Otago has been considering developing an inland port to move current volume off SH88 and onto rail, due to the problematic nature of the route including amenity loss and safety.⁹²</p> <p>The potential location of this terminal, currently in the conceptual stage, is not determined. The potential container throughput for the terminal is not known, with further investigation required. The main value proposition for the terminal is likely the reduction of negative externalities within the Dunedin urban area, including road safety risk and CO₂ emissions – rather than the creation of employment opportunities. The construction cost is estimated to be around \$3 million.</p>
<p>Milton/Milburn Sub-regional Logs</p> <p>PROPOSED</p>	<p>Located either at Milton, or nearby at Milburn, the South Island Freight Study estimates that an intermodal terminal there could handle around 50,000 logs a year (9 million tonne-kilometres of movements, or the equivalent of 1720 one-way truck and trailer trips a year). The intermodal terminal would allow rail access to Port Otago or Bluff.⁹³ KiwiRail are undertaking a more detailed investigation of the concept.</p>

⁹⁰ ECAN, *South Island Rail Freight Report*, 2019, pp.88ff

⁹¹ *South Island Rail Freight Report*, pp.104ff

⁹² *South Island Rail Freight Report*, pp.116ff

⁹³ *South Island Rail Freight Report*, pp.104ff

7.0 The proposed Assessment Framework

7.1 Detailed assessment approach

This section sets out the proposed framework, made up of two parts:

- Intermodal terminals: Questions to consider against PGF Assessment criteria, and the
- Comparable Assessment Matrix.

7.1.1 Looking at intermodal terminals against PGF assessment criteria

Like other proposals put forward for PGF investment, intermodal terminals as a type of infrastructure have their own attributes that need to be considered on their own merits. Each proposal for an intermodal terminal should be able to address the questions set out below – against the PGF assessment criteria. This will allow for better decision-making, for PGF investment and for the work of other interested parties (and potential co-funders) such as KiwiRail, NZTA, regional and local councils. Note there is some overlap across the PGF criteria and the questions posed.

Table 7. Intermodal terminals: Questions to consider against PGF Assessment criteria

PGF Assessment Criteria	Intermodal terminal assessment questions
<i>Productivity potential and wider economic benefits to the region</i>	Supply chain rationale
	What is the supply chain challenge being addressed?
	How will a move to intermodal logistics address this challenge?
	Does the intermodal terminal provide productivity impacts, particularly for terminal users and local businesses?
	What are these productivity impacts, and can they be quantified?
	What is the freight type?
	Is the use of rail feasible?
	What are the projected freight volumes (including sustainability of the volume over the investment period)?
	What is the frequency of moves and the value proposition of using rail, such as travel time saved?
	What are the merits of alternative options – namely road, but also coastal shipping where that is a realistic alternative.
	Is the freight flow balanced, with volume in both directions?
	How does the proposed intermodal terminal relate to other operating or proposed terminals?
	Is there a formal commitment from private sector participants for freight volumes during the start-up phase?
	What is the growth forecast (including HML scenarios)?
Employment:	
To what degree does the terminal create new employment opportunities in an area? (This includes direct and indirect employment effects.)	
How will this employment opportunity be generated?	
Will the terminal provide training opportunities, or benefits from the clustering of businesses – such as skills and knowledge exchange.	

	<p>Will the terminal also have a role in assisting to retain jobs in an area, from improved transport links and reduced costs of freight logistics?</p> <p>To what degree will jobs be transferred from one area to another?</p> <p>What is the effect of this transfer?</p> <p>Is this transfer beneficial?</p>
<i>The regional or sub-regional priority and need for investment.</i>	<p>Logistics context, including challenges and opportunities</p> <p>What is the terminal's envisaged catchment area and market?</p> <p>What would be the function of the terminal within national/regional, and/or local supply chains?</p> <p>How might the terminal relate to other freight facilities (in operation or proposed)?</p> <p>How might the proposed terminal relate to national or regional freight plans or strategies?</p> <p>Would the terminal improve resilience and provide option value?</p>
	<p>Commercial considerations</p> <p>To what degree will the terminal be able to operate commercially? (i.e. Non-commercial, Quasi-commercial or Commercial.)</p> <p>Would it proceed without government funding support?</p> <p>What would be the funding gap to make it feasible?</p> <p>What is the allocation of commercial risk and rewards?</p> <p>Who will own the terminal and related facilities?</p> <p>As the main commercial operator of rail services, what is KiwiRail's assessment of this viability? (This will likely include an assessment of cartage rates, which are likely to be commercially sensitive.)</p> <p>Will KiwiRail provide sufficient services to/from the terminal?</p>
	<p>Improved connectivity and access to markets</p> <p>Does the proposed terminal have efficient road, rail and maritime connections?</p> <p>How will the intermodal terminal improve connections to key freight origins and destinations?</p> <p>Can the improvement in access be quantified?</p>
<i>Regional support for the project</i>	<p>Local and regional government alignment</p> <p>What is the relationship of the proposed terminal to the local, regional and central government plans, policy statements and economic strategies?</p> <p>This includes regional policy statements, land use considerations (such as zoning), freight strategies and investment in connecting infrastructure (such as State highways).</p> <p>Is the terminal investment aligned with these plans?</p>
	<p>Support from other parties</p> <p>Is there support from those not direct associated with the intermodal terminal, such as other businesses, Iwi Māori, port companies.</p> <p>Is there opposition to (or concerns with) the proposed terminal, including from parties potentially competing with it?</p>

<p><i>Rationale for Government intervention</i></p>	<p>Public versus Private benefits?</p> <p>What is the private sector benefit for the proposal?</p> <p>Are the private sector's benefits sufficient to support investment in the terminal without government support?</p> <p>What is the 'market failure' that might require government support for the terminal?</p> <p>Is the infrastructure 'lead investment', to encourage businesses to establish in an area to take advantage of markets and resources?</p> <p>If the intermodal terminal requires public investment, how will that investment be protected?</p> <hr/> <p>Enabling infrastructure</p> <p>Does the terminal reduce the cost of access for local and regional communities?</p> <p>What are the impacts of the terminal (positive and negative externalities) including those factors that can have an economic value placed on them?⁹⁴ This includes the potential impact on:</p> <ul style="list-style-type: none"> - CO₂ emissions; - crash risk (road and rail); - road maintenance costs; - rail maintenance costs, and - congestion impacts (urban, peri-urban, rural highway).
<p><i>Additionality of the investment</i></p>	<p>Employment impacts</p> <p>How would construction impact local employment?</p> <p>What would be the medium to longer-term employment impacts within the local area?</p> <p>Could the terminal be the base for education and training opportunities?</p>
<p><i>Opportunity / cost</i></p>	<p>Infrastructure costs</p> <p>What are the terminal costs and how are the costs allocated to the interested parties?</p> <p>Are there additional infrastructure costs (such as to the road and rail networks) directly resulting from the construction and operation of the terminal?</p> <p>Will there be ongoing unmet operational costs?</p>
<p><i>Risk</i></p>	<p>Road and Rail network impacts</p> <p>Does the new rail-enabled terminal significantly change transport demand?</p> <p>What are the impacts on the road, rail and maritime networks? (Impacts may include increases in heavy vehicle traffic in some areas where previously trucks had not travelled, resulting in potential road safety and maintenance impacts.)</p> <p>If there are negative impacts, how might these be managed or mitigated?</p>

⁹⁴ The NZTA's [Economic Evaluation Manual](#) (EEM) can be used to calculate values.

	<p>Are there wider rail network impacts that may be directly or indirectly attributable to the development of the terminal? (Changes in rail demand, such as increased frequency and/or length of freight trains, may have safety impacts on level crossings, and/or require additional line capacity such as construction or extension of passing loops to allow other services to operate. It may put service pressure on some parts of the rail network, which will then need to be reflected in the Rail Network Investment Programme.)</p>
	<p>Market risk</p> <p>What possible disruptive events could impact on the viability of the intermodal terminal and the freight volume moved through it? (This includes changes in market price of commodities, supply and production disruption.)</p>
	<p>Local amenity impacts</p> <p>Will the terminal impact on the liveability of the local area, including the terminal's operations and increased movements of trains and trucks? (This may include visual or noise impacts on local liveability or other reverse sensitivity affects. The establishment of an intermodal terminal may, for example, significantly reroute truck traffic from one area to another.)</p> <p>Is the terminal proposal aligned with local council aspirations and plans regarding urban form and amenity?</p>
	<p>Ongoing support</p> <p>What is the risk that the intermodal terminal will require ongoing public subsidies to remain viable?</p> <p>Has KiwiRail undertaken an assessment of the viability of the service to the terminal?</p> <p>What was the result of this assessment?</p>
	<p>Network and safety impacts</p> <p>Will the investment create consequential investment required to manage or mitigate impacts on the road, rail or maritime networks? (This could include the need to upgrade connecting roads, increased capacity on the rail network, or mitigate increased safety risks on the road and/or the rail network.)</p> <p>Are these consequential impacts significant enough to be included as part of the investment case for the intermodal terminal?</p>

7.2 Comparing intermodal terminal investments

To determine the viability and priority of an investment, a simple assessment matrix could be used to allow for PGF investments in intermodal terminals to be compared against each other. This would include and compare qualitative and quantitative factors used to determine an assessment.

Table 8. Comparable Assessment Matrix

HML	Region (where most benefits are experienced)	Employment and productivity (Commercial benefits)	Regional and National transport benefits (BCA - Quantitative Impacts)	Resilience, Amenity and Option value (Qualitative Impacts)
High	Surge Region	New, permanent employment, significant productivity/efficiency improvements.	BCR >2 <ul style="list-style-type: none"> • emissions: CO₂ reductions • crash risk reduction • decongestion (urban/rural) benefits • road/highway maintenance reduced cost • Other factors 	Provides significant resilience and/or amenity benefits and/or option value.
Medium	Provincial Region	Improved productivity/efficiency and potential retention of employment, better utilisation of workforce	BCR 1-2	Provides some resilience and/or amenity benefits and/or option value.
Low	Metro area	Initial construction employment only	BCR <1	Provides marginal resilience and/or amenity benefits and/or option value.

8.0 Conclusions

8.1 Potential of intermodal freight terminals

In the right location, with the right freight task, intermodal freight terminals can facilitate new commercial activity and employment opportunities, improve regional freight productivity, unlock efficiencies and reduce some of the negative effects of moving freight. Intermodal terminals provide the infrastructure to allow for the transfer of freight between road, rail and sea (for international and coastal shipping) through improved port access.

As freight task grows in New Zealand's regions, and the way freight is moved changes, intermodal solutions (and the terminals that support them) may become more attractive to cargo owners and companies moving freight. These intermodal solutions may require public investment support in regional areas to become established. But before such investment is made, careful analysis and thought is required to determine where these terminals will add value, and where they will not. Moving freight is a private sector concern, so the question as to why public investment is required must be addressed.

In regional New Zealand there are opportunities for the PGF to invest in intermodal terminals that are not fully commercial, but could potentially generate employment, productivity and wider public value benefits. These opportunities include terminals of different scale, operating within differing supply

chains and supporting a variety of different industries. Any assessment of these intermodal terminals against PGF investment criteria, therefore, must consider the specifics of the supply chain concerned, the rationale for and benefits of adopting an intermodal approach – including the local conditions in which the terminal would operate.

8.2 Recommendations

To allow for a consistent investment approach, and to better understand and describe the reasons for investment, it is recommended that the framework developed in this report is applied using the:

- Questions to consider against PGF Assessment criteria', and applying the
- Comparable Assessment Matrix.

It is also recommended that further amendments to this framework are made, when more information becomes available or when required by changes in investment priority and/or government policy.



SH1-North Auckland Line Towai level crossing, Photo: NZRail Photos