

Independent Technical Ports Study Final Report

Glossary

Auckland Council	(AC)
Auckland Transport	(AT)
City Rail Link	(CRL)
New Zealand Transport Agency	(NZTA)
Port of Auckland Limited	(POAL)
Port of Auckland	(PoA)
Port of Tauranga	(PoT)
Pricewaterhouse Coopers	(PwC)
Request for Proposal	(RFP)
Twenty-Foot Equivalent Unit	(TEU)
Upper North Island	(UNI)
Upper North Island Strategic Alliance	(UNISA)

Introduction

The UNISA comprises AC, Bay of Plenty Regional Council, Northland Regional Council, Waikato Regional Council, Hamilton City Council, Tauranga City Council and Whangarei District Council. UNISA has commissioned a joint technical study undertaken by PwC about current and future freight demand for ports and ports-related infrastructure in the UNI.

The study contains analysis, modelling and data about current and future freight demand for ports and ports-related infrastructure in the UNI, incorporating scenarios to meet that demand (in the context of various constraints) and the potential implications of these scenarios.

The study findings were informed by interviews with key stakeholders, including port companies, major importers and exporters and transport operators.

The study was reported to the AC Regional Development and Operations Committee on 6 December (Executive Summary as Attachment 1).

Recommendations

It is recommended that the Board:

- i). Note the findings of the independent ports technical study by PricewaterhouseCoopers, which has been sponsored by the Upper North Island Strategic Alliance (the Executive Summary is provided as Attachment 1).
- ii). Receive the final report of the Independent Ports Technical Study by PricewaterhouseCoopers provided as Attachment 2.
- iii). Note the Upper North Island seaports, including the associated road, rail and logistics network, are vitally important to the current and future economic prosperity of the Upper North Island and New Zealand.

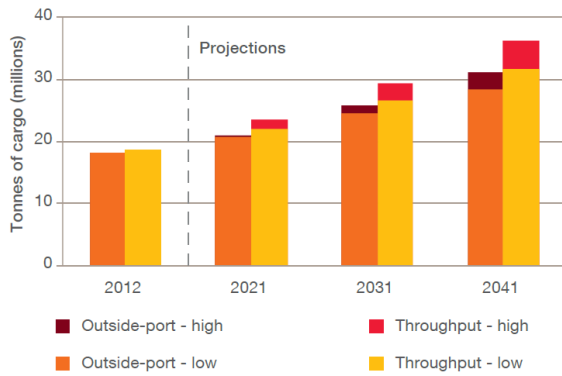
Study Findings

The study has concluded that:

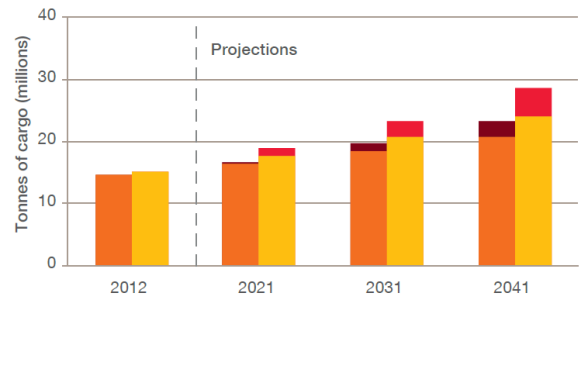
Demand

- There is strong growth projected for the three UNI ports over the next 30 years

UNI outward cargo movements: outside-port and throughput



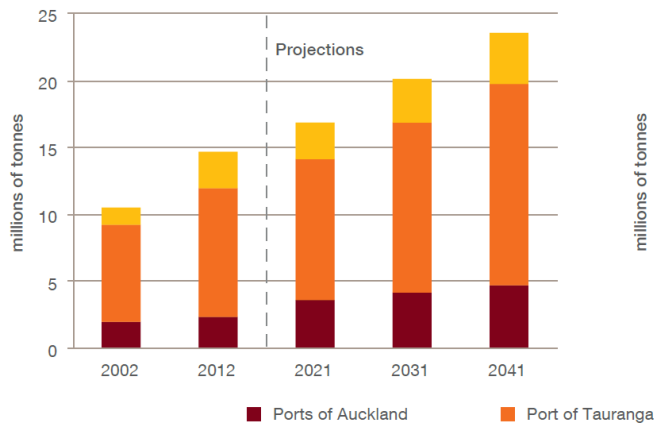
UNI inward cargo movements: outside-port and throughput



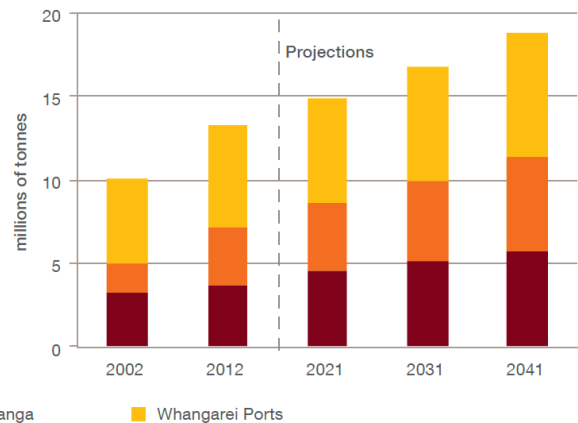
Source: PwC analysis

- All three UNI ports (covering the Port of Auckland, Port of Tauranga and the Whangarei Ports) will be required to meet the projected freight task

Export weights



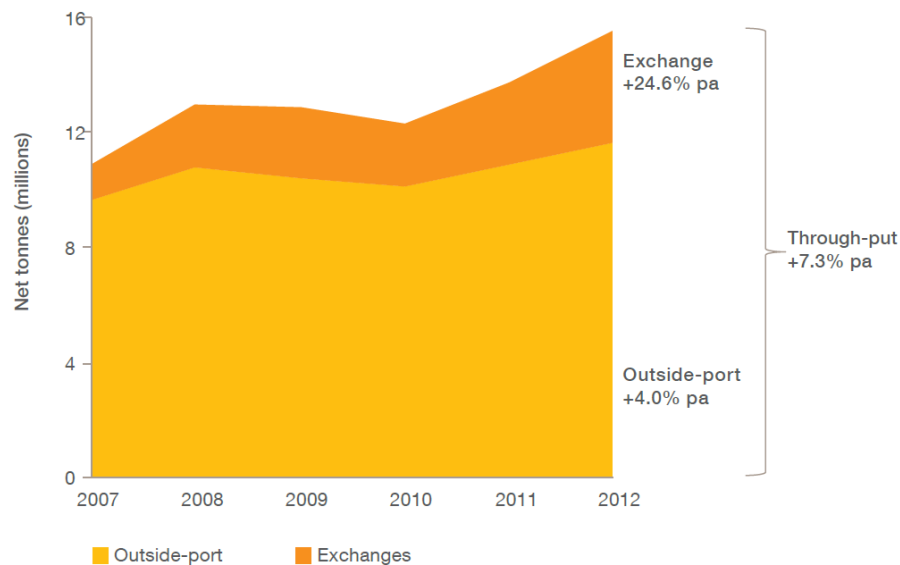
Import weights



Source: PwC analysis

- Cargo throughput will grow more rapidly than outside-port cargo, and containerised cargo will grow more rapidly than bulk cargo – in line with recent trends
- A rapid growth in volumes of transshipped cargo will place more pressure on port infrastructure than on distribution networks and land transport infrastructure to service the ports. Likewise, container handling facilities will be expected to handle more growth than bulk cargo facilities.

2007-2012 Growth in UNI container volumes



Source: POA, POT

- Pressure on land transport infrastructure is likely to be driven by non-port traffic, competing land uses, and (potentially) reverse sensitivity. General congestion may be a factor in the medium to longer term from about 2030 onwards, which will impact ports as users of the network.

Capacity

- The UNI port network has the capacity to meet the projected freight task, provided that efficiency gains, incremental investments in infrastructure and the uptake of already consented works are undertaken in a planned and timely manner. The greatest opportunities for efficiency gains to access additional capacity are in relation to container trade.

Constraints and Options

- In a properly functioning market, prices charged at different ports can play a role in directing customers to where spare capacity exists in the UNI ports system, and in prioritising investment choices. Furthermore, the development of inland ports can help drive efficiencies in the distribution network, and aid competition and substitutability between ports.
- A third rail line between Southdown and Wiri (dedicated to freight) is at the planning stage and when implemented will provide additional capacity to address emerging rail congestion issues. This portion of the network is currently under pressure as it must cope with rail freight between the Port of Auckland and Wiri, Port of Tauranga and Metroport, as well as commuter traffic from both branches of the Southern Line.

Future Capacity

- Substantial change to the UNI port system within the next 30 years (for example, establishing a new UNI port) is likely to be significantly less cost effective than incremental change.
- Over the next 30 years, the most efficient and cost effective options for meeting the projected freight task are likely to be based around improved efficiency, incremental growth at each port, planned improvements in the land transport system, complemented by changes in relative prices that direct customers to where spare capacity exists in the UNI port system.

Land Transport Infrastructure

- Land transport infrastructure will be under less growth pressure than port infrastructure (as outside-port growth rates are lower). Pressure on land transport infrastructure will be driven by non-port traffic, competing land uses, and (potentially) reverse sensitivity. There are however opportunities for efficiencies relating to port-traffic including; increasing the number of TEUs per truck, reducing one-way cargo trips and greater use of off-peak windows.
- The land transport network's current infrastructure can accommodate the projected growth in port traffic across the study period without a material increase in congestion attributable to that port traffic. However, general congestion on the road and rail network may be a factor in the medium to longer term, which will impact ports as users of the network. It will therefore be vital that the necessary capacity is provided to support the contribution of the port to economic development.
- From a rail perspective, Southdown to Wiri is the main issue for the network. This portion of the network is under pressure as it must cope with rail freight between PoA and Wiri, PoT and Metroport, as well as commuter traffic from both branches of the Southern Line. A third line for freight from Wiri to Southdown is at the strategic planning stage, and when implemented will provide additional capacity to address these congestion issues. Improvements to the East Coast main trunk line between Auckland and Tauranga will also most likely be required, including possible double tracking.

Auckland Specific Findings

- The PwC study has concluded that the POAL can meet projected freight demand over the next 30 years through efficiency gains, some additional berth and storage development, including some reclamation, although this would not need to be to the extent previously contemplated. When this infrastructure is required is dependent on the timing of any operating efficiencies, the timing of any release of Captain Cook and Marsden wharfs, and spikes in demand.
- The report notes the PoA container berth and container storage areas are currently operating well below potential technical capacity. The current container infrastructure together with operating efficiencies should be sufficient to cater for future growth out to 2041.
- A key issue for PoA is storage space. At the current level of productivity, it is almost fully utilising its storage space, and this usage is also constraining its ability to increase its bulk berth occupancy. This makes it more difficult to achieve efficiencies.
- PwC's report considers it is likely that even with very significant operational efficiencies, PoA will still require additional berth and storage space before 2041 if it is to cater to the projected trade task. This will most likely involve some additional reclamation.

- PwC's report concludes the main pieces of road and rail infrastructure used by PoA traffic will have difficulty accommodating port traffic by the end of the 2041 projection period. If the suggested port traffic efficiencies are achieved (such as those outlined below), this will be driven more by increases in non-port traffic that also uses the same corridors, than by increases in port traffic.
- However, general congestion on the road and rail network will be a factor in the medium to longer term from 2030 onwards, which will impact ports as users of the network.
- The report does note options for accommodating the growth in port traffic. The options in PwC's report include:
 - 1) More efficient use of trucks and trains
Trucks and trains transport the same amount of cargo over fewer trips (e.g. by reducing one way trips, increasing the number of containers that trucks are permitted to carry, or deploying longer trains). They can also travel at less congested periods. The achievement of some of these efficiencies may not be straightforward.
 - 2) Providing more capacity on the road and rail network

In Auckland's case, AT and NZTA are currently investigating options to address concerns around future congestion on the Auckland traffic network. In relation to this:

- NZTA and AT are investigating the relative costs and benefits of various short and long term roading improvements along the SH16 corridor, including grade separation options, and their preferred timing and form to support port and surrounding land use.
- A third rail line between Southdown and Wiri (dedicated to freight) is currently at the planning stage. This is a critical piece of infrastructure which will be necessary to allow the rail network to meet demands from freight growth from both PoA and PoT and increasing frequencies for passenger movements arising from CRL.
- In addition land along the Eastern Line rail corridor from Westfield to the Port via Panmure and Glen Innes) has been protected and new station designs have been future proofed to allow for the extension of this third track to the port. The need and timing for this will be depend on the actual growth in demand for freight by rail and the ability to accommodate this while also accommodating the increasing frequency of passenger services once CRL is implemented. Its implementation would also facilitate track maintenance with limited disruption to services.

Next Steps

- Further work by AC is proposed, involving a review of the provisions in the Unitary Plan for activities within Port Management Area 1A, in particular as they relate to potential reclamation, and any relevant landward zonings. This process would ask POAL, once they have considered the independent port technical study by PwC, to present to AC on potential options for port development within Port Management Area 1A, including as they relate to any potential reclamation activities, over the next 30 years.
- AC would then work with POAL on a mutually agreed Port Development Plan for PoA, which would take into account the conclusions of the PwC independent technical study and AC's response to the potential options presented by POAL
- The results of the process outlined above would then be included in the notified Unitary Plan for formal public consultation in September 2013.
- In addition AT and NZTA are jointly investigating short and long term requirements to support continued access to the port and surrounding land use development.

Attachments

Attachment 1 – Executive Summary - AC Regional Development and Operations Committee report

Attachment 2 – Executive Summary - Final Report on The Upper North Island Port Study prepared by PWC

WRITTEN by	Don Munro Transport Planning and Policy Manager	
RECOMMENDED by	Peter Clark General Manager Strategy and Planning	
APPROVED FOR SUBMISSION by	David Warburton Chief Executive	

Report Name: Independent ports technical study final report

File No.:

Purpose

1. The purpose of this report is to set out:
 - the findings from the independent ports technical study final report, produced by PwC (PricewaterhouseCoopers), and sponsored by the Upper North Island Strategic Alliance (UNISA). The findings specific to the Port of Auckland and the Auckland region are also outlined.
 - proposals for some further work that include a review of the provisions in the Unitary Plan for activities within the Port Management Area 1A, and in particular as they relate to potential reclamation.

Executive Summary

2. The independent ports technical study conducted by PwC has concluded that:
 - There is strong growth projected for the Upper North Island (UNI) ports over the next 30 years. All UNI ports (covering the Port of Auckland, Port of Tauranga and the Whangarei Ports) will be required to meet the projected freight task.
 - A rapid and ongoing increase in transshipping means that pressure is likely to be more on port infrastructure than on distribution networks and land transport infrastructure to these ports.
 - Pressure on land transport infrastructure is likely to be driven by non-port traffic, competing land uses, and (potentially) reverse sensitivity. General congestion may be a factor in the medium to longer term, which will impact ports as users of the network.
 - The UNI port network has the capacity to meet the projected freight task, provided that efficiency gains, incremental investments in infrastructure and the uptake of already consented works are undertaken in a planned and timely manner. The greatest opportunities for efficiency gains to access additional capacity are in relation to container trade.
 - In a properly functioning market, the prices charged at different ports can play a role in directing customers to where spare capacity exists in the UNI ports system, and in prioritizing investment choices. Furthermore, the development of inland ports can help drive efficiencies in the distribution network, and aid competition and substitutability between ports.
 - A third rail line between Southdown and Wiri (dedicated to freight) is at the strategic planning stage and if it were to proceed could provide additional capacity to address emerging rail congestion issues. This portion of the network is currently under pressure as it must cope with rail freight between the Port of Auckland and Wiri, Port of Tauranga and Metroport, as well as commuter traffic from both branches of the southern line.
 - Substantial, systemic change to the UNI port system within the next 30 years (for example, establishing a new UNI port) is likely to be significantly less cost effective than incremental change.
 - Over the next 30 years, the most efficient and cost effective options for meeting the projected freight task are likely to be based around improved efficiency, incremental growth at each port, planned improvements in the land transport system, complemented by changes in relative prices that direct customers to where spare capacity exists in the UNI port system.

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3. The independent port technical study by PwC has concluded that the Port of Auckland can meet projected freight demand over the next 30 years through efficiency gains, some additional berth and storage development, including some reclamation, although this would not need to be to the extent previously contemplated. When this infrastructure is required is dependent on the timing of any operating efficiencies, the timing of any release of Captain Cook and Marsden wharfs, and spikes in demand.
 4. Further work by the council is proposed, involving a review of the provisions in the Unitary Plan for activities within Port Management Area 1A, in particular as they relate to potential reclamation, and any relevant landward zonings. This process would ask POAL, once they have considered the independent port technical study by PwC, to present to the Council on potential options for port development within Port Management Area 1A, including as they relate to any potential reclamation activities, over the next 30 years.
 5. Officers would then work with POAL on a mutually agreed Port Development Plan for the Port of Auckland, which would take into account the conclusions of the PwC independent technical study and Council's response to the potential options presented by POAL.
 6. The results of the process outlined above would then be included in the notified Unitary Plan for formal public consultation in September 2013.

How can we meet increasing demand for ports in the Upper North Island?

A report for the
Upper North Island
Strategic Alliance

November 2012

A technical study of the supply and demand for ports and port-related infrastructure in the Upper North Island

27 November 2012



Executive summary

Executive summary

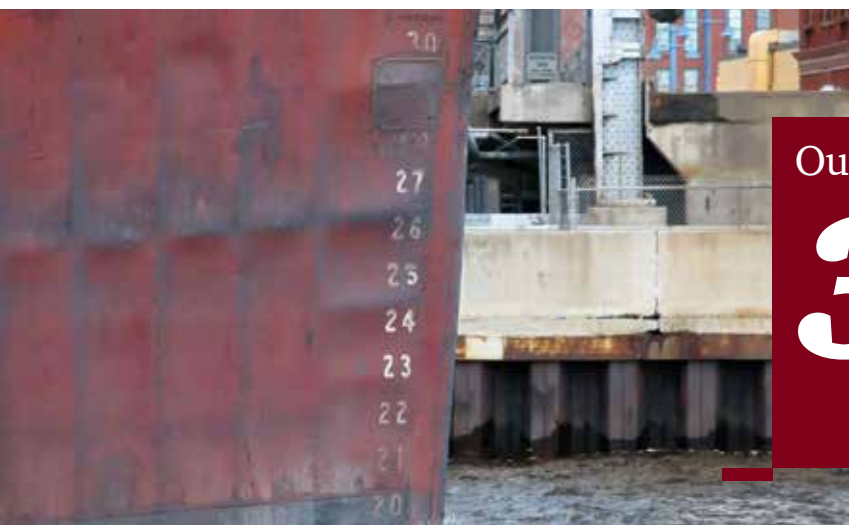
Introduction

This report was commissioned by the Upper North Island Strategic Alliance (UNISA) to determine trends in demand for merchandise trade through the Upper North Island (UNI) ports, the capacity of key port and port related infrastructure to manage this demand, and to form a view of potential infrastructure investment requirements.

This report examines future freight demand and infrastructure supply at the Ports of Auckland, Port of Tauranga, and Whangarei seaports¹ over a study period of 30 years. It includes projections of future freight to 2041 based on analysis of trade patterns and port throughput over the last ten years, supplemented by: qualitative information from industry participants; high level forecasts of economic growth in the UNI, New Zealand and amongst key trading partners; expected demographic changes; and physical constraints in respect of agricultural production in New Zealand.

Our primary historical data source is Customs/Statistics New Zealand data on export and import weights and volumes, by product, by port and by origin-destination between 2002 and 2012. We have also relied heavily on data compiled by the ports, particularly with respect to domestic coastal shipping, domestic and international transshipping – none of which are discernible from the Customs/Statistics New Zealand data.

In making our projections we have separately considered two components of total throughput: ‘port exchanges’ and ‘outside-port’ volume. Port exchanges include domestic and international transshipping, which involves the unloading and loading of ships at the port, but where products do not leave (or enter from outside) the port gates. Outside-port volume involves inward or outward movement of goods, which leave or arrive from outside of the port gates. Importantly, outside-port volume has an impact on both land transport and port infrastructure, while port exchanges impact port infrastructure only.



Our projections cover the next

30 years

1. The Whangarei ports are: Northport, the New Zealand Refining Company’s Marsden Point wharf, and Golden Bay Cement’s Portland wharf. Airports have not been included in the study, as they service a low volume of high-value or time-sensitive cargo that would not otherwise move through the ports.

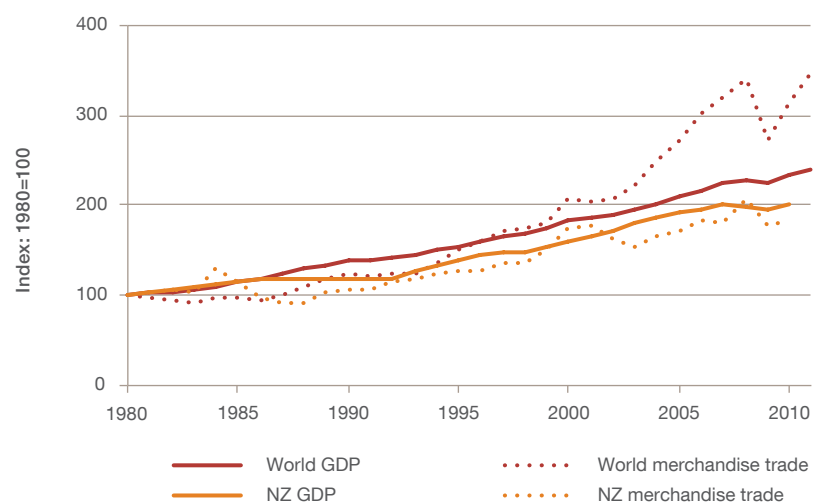
Context

World trade has grown markedly over the last 30 years as the impact of globalisation has re-shaped the way the world has structured itself economically. This is a consequence of a number of underlying drivers including:

- the removal of trade barriers
- relatively stable political environments the mobility of capital
- the emergence of China and other emerging nations as sources of cheap labour (and the subsequent shift of lower skilled manufacturing into these countries)
- technological advances in shipping, including containerisation, which have significantly reduced the costs of trade.

Overseas trade plays a critical role in the New Zealand economy. As a small, remote nation with limited domestic markets and significant agricultural capacity, trade underpins our economy. It opens up overseas consumers and supply chains for New Zealand businesses. This enables us to specialise in agricultural products, which serve as the backbone of our exports and provide the income to purchase the manufactured and consumer products we import. It also enables New Zealand businesses to specialise in innovation-intensive market niches in the global economy.

NZ and world growth in GDP, merchandise trade value, 1980-2011



Source: World Bank

In terms of economic growth, exports are fundamental to our future prosperity, and export growth has been identified as a key priority both at a national and local government level (see the UNI local governments' economic development strategies and the government's Business Growth Agenda).

To support these aspirations, ensuring the country has a robust transport and distribution network is key, and the country's port and port related infrastructure represents an important component of this supply chain. The UNI will continue to play an important role in all of these aspects, as it accounts for a large and growing share of New Zealand's overall GDP, population and international merchandise trade.

At the same time, there is a perception of growing pressure on these infrastructure assets, particularly in Auckland, where concerns have been raised in relation to increasing competition with other users on the road and rail networks. In addition, there are growing questions about the appropriateness of having a port in central Auckland, and whether this is the best use of downtown waterfront land given the city's aspiration to be the world's most liveable and the fact that most of Auckland's manufacturing and distribution facilities are in south Auckland.

This report seeks to develop a better understanding of the demand for ports and port related infrastructure in the UNI over the next 30 years. It also investigates the constraints on the ability of this infrastructure to cope with projected demand, and the kind of infrastructure investments likely to be required to meet growth.

Executive summary continued

Recent trade growth

Over the last decade the UNI has experienced strong growth in both imports and exports, and even faster growth (at least since 2007) in port exchanges.

Growth in trade

Over the last decade, the weight of UNI exports grew at an average rate of 3.4% per annum, increasing from 10.5m tonnes to 14.6m tonnes. About half of this growth was in log exports which grew by 2.1m tonnes. Over the same period, UNI imports grew at an average rate of 2.8% per annum, increasing from 10.0m tonnes to 13.2m tonnes. Import growth was dominated by 2.1m tonnes of growth in mineral fuels and 1.0m tonnes of growth in animal feed & pet food (ie palm kernels for cow feed).

The role of the three ports varies. Ports of Auckland (POA) handles a relatively more diverse range of exports compared with the Port of Tauranga (POT) and Northport, which are more focussed on bulk agricultural products. Dairy products account for the largest portion of exports through Auckland - 21% of total exports, or 473,000 tonnes, in 2012 - followed by wood, iron and steel, and beverages. There are also significant exports of a variety of other commodities.

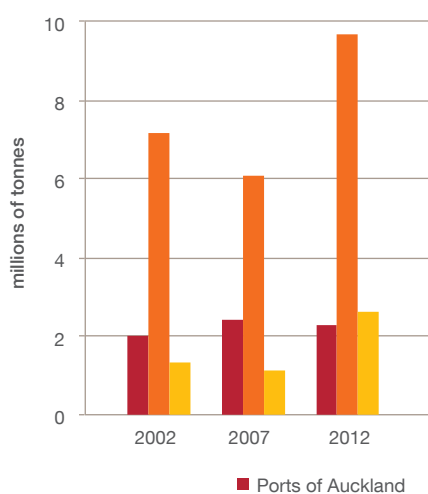
Exports from Tauranga and Northport are dominated by a few major commodities. Nearly 90% of export weights through Northport (2.26 million tonnes) are of wood products, along with 56% of exports through Tauranga (5.43 million tonnes). Dairy plays a far smaller role in Tauranga, while Northport also exports significant quantities of fuels.

Comparing our measures of port task with government and council objectives

Central government and councils have set strategies for driving economic development through export growth (see eg the Government's Business Growth Agenda and the Auckland Plan).

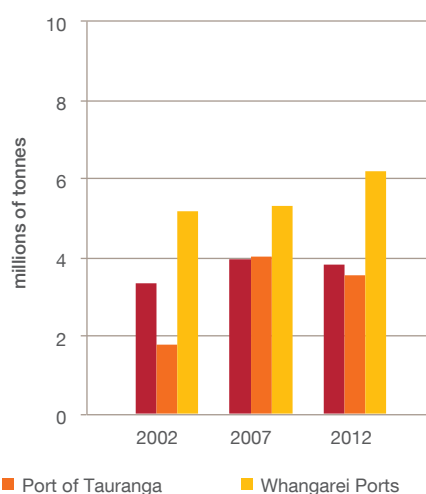
1. our analysis is based on weight not value
2. we exclude all exports through airports, which accounted for 17% of export value in 2012
3. we consider merchandise trade only and exclude service exports, which accounted for 21% of exports in 2011 according to World Bank statistics
4. the relationship between trade weights and trade values may change over time, as trade in high-value/low-weight products grows.

Export weights



Source: Statistics NZ, PwC analysis

Import weights

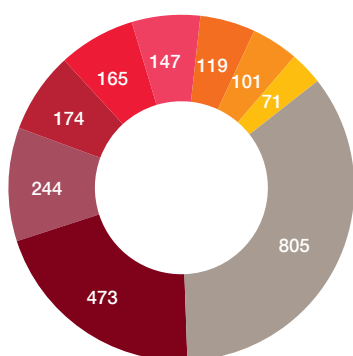




Executive summary continued

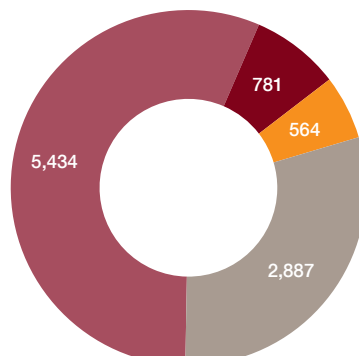
The Upper North Island ports have varied export profiles

Ports of Auckland Exports, 000 tonnes, (2012)



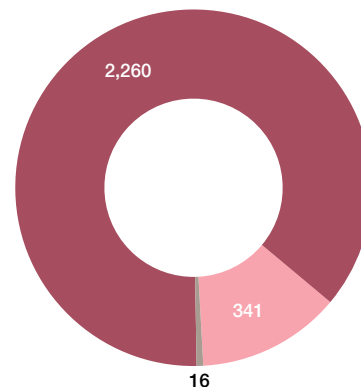
- Other products
- Dairy products
- Wood and articles of wood
- Iron and steel

Port of Tauranga Exports, 000 tonnes, (2012)



- Beverages, spirits and vinegar
- Mineral fuels and oils
- Salt, lime, stones, cement

Whangarei Ports Exports, 000 tonnes, (2012)



- Meat and edible meat offal
- Pulp of wood
- Fruit and nuts

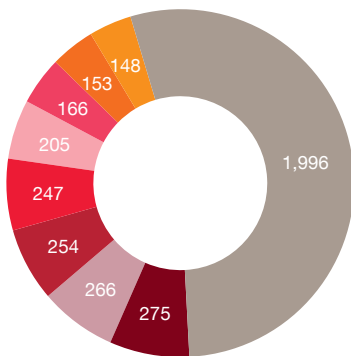
Source: Statistics NZ, PwC analysis

Similarly, POA handles a far wider range of imported products than the other ports. The eight most important import products, in terms of weight, account for just 46% of Auckland’s total imports (1.72 million tonnes). In Tauranga, on the other hand, animal feed and pet food alone account for one-quarter of import weights (838,000 tonnes), followed by salt and building materials, fuels, fertilisers, and cereals, collectively weighing 1.55 million tonnes.

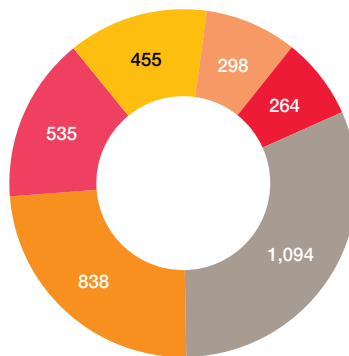
In Whangarei, mineral fuel (crude oil) imports to the Marsden Point refinery account for nearly all imports. Marsden Point, which is distinct from Northport, handles 5.87 million tonnes of fuel imports, which account for 44% of all import weights through the UNI ports. Building materials such as gypsum, which are mostly imported directly to the Golden Bay cement factory at Portland, account for much of the remainder of Whangarei’s imports.

Tauranga and Auckland have more varied import profiles

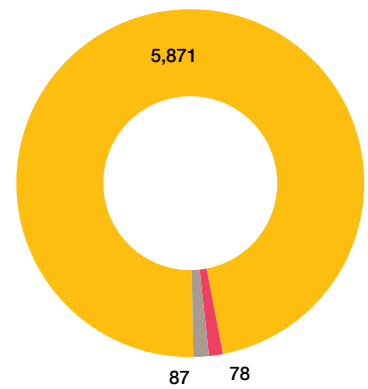
Ports of Auckland Imports, 000 tonnes, (2012)



Port of Tauranga Imports, 000 tonnes, (2012)



Whangarei Ports Imports, 000 tonnes, (2012)



- Other products
- Paper, paper pulp and paperboard
- Sugars and sugar confectionery
- Vehicles (excl railway or tramway)

- Plastics and articles thereof
- Cereals
- Salt, lime, stones, cement
- Iron and steel

- Fertilizers
- Animal feed & pet food
- Mineral fuels and oils

Source: Statistics NZ, PwC analysis



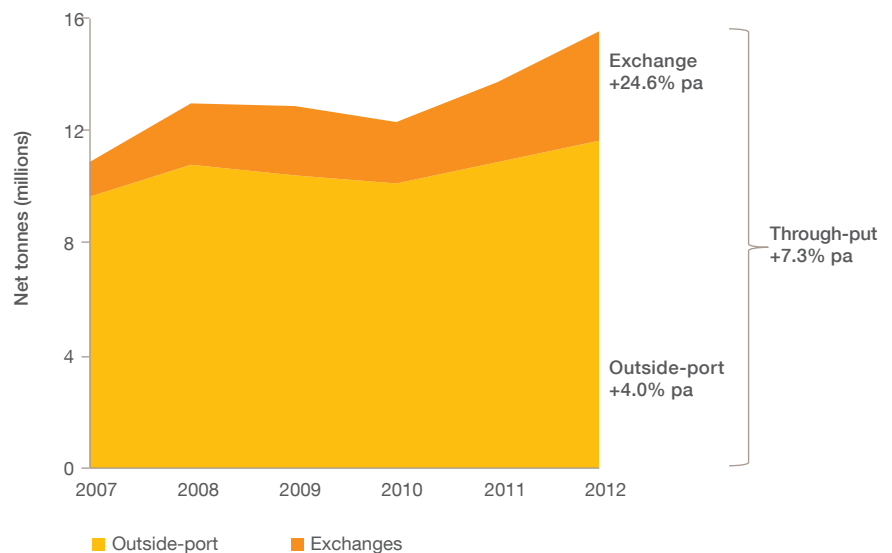
Executive summary continued

Growth in transshipping

Growth in total throughput at POA and POT has been significantly faster than growth in outside-port volumes, and this has been driven by dramatic increases in port exchange activity (international and domestic transshipping). This probably reflects the growing trend toward port hubbing, and the use of larger ships to extract economies of scale. While New Zealand still has a relatively large number of container ports for its size, regional ports such as Timaru and Wellington are losing traffic to their larger competitors. This trend is evident in both the data on average number of port calls and on import and export transshipment.

While transshipments are still small compared with overall international trade, New Zealand's ports appear to be moving towards a hub and spoke model. If this trend continues as expected, it is likely to reduce the role of regional ports (particularly for container trade) and concentrate overseas trade through a few major ports. The deployment of larger container ships on NZ shipping lines will accelerate this trend as only a few ports will have the trade volumes needed to justify the required investment required to host these ships.

2007-2012 Growth in UNI container volumes



Source: POAL, PoT data

Exogenous influences on infrastructure demand

Aside from growth in trade, demand for infrastructure at ports is being shaped by other influences.

The impact of larger ships

There is an international trend towards larger container ships due to the cost efficiencies they offer. Post-Panamax² container ships with a capacity of 8,000 TEUs or more are the fastest-growing category in shipping fleets. By comparison, the largest ships currently serving the New Zealand market can carry 4,100 TEU.

Increases to maximum ship size on major sea routes appear to be having a ‘cascade effect’ on other routes. Larger ships will be deployed on routes where there is sufficient container demand. However, smaller ships will continue to serve other routes at a higher cost.

There is a clear consensus that New Zealand will need infrastructure capacity to manage up to 6,000 TEU ships in the short to medium term, and perhaps up to 8,000 TEU ships in the medium to longer term. In the process, 3 or 4 hub ports will emerge, with regional ports acting as feeders. However, there is less of a consensus on the timing of these changes, which will be affected by growth in demand for overseas trade, developments in the shipping market, and infrastructure decisions made in New Zealand.

There is also a trend toward larger non-container ships. As with container ships, shipping lines will choose bulk cargo ships that best suit the products and ports that they serve. This trend is less likely to have a material impact on ports than the trend towards larger container ships. Unlike for containerised cargo, larger bulk ships will not lead to an increase in transshipment cargo due to the amount of time needed to load and unload bulk cargoes.

In terms of the UNI container ports, POT is actively preparing to host larger ships. They have recently been granted resource consent for further harbour dredging, which would ultimately provide capacity for ships up to about 8,000 TEU (though they are planning to develop this capacity in two stages).

POA’s strategy is to manage larger ships more progressively. They are planning some minor additional dredging, and planning to manage larger ships through tidal windows. POA also note that the draught of ships coming into Auckland tends to be less, due to the lighter imported products they carry.

It is unlikely that this trend will result in a large share of New Zealand’s international trade being ‘hubbed’ through Australian ports. Australian ports also lack the capacity to handle larger ships at present, although Brisbane and Sydney are addressing this shortfall. In addition, container volumes and cargo handling infrastructure at Australian ports are not significantly larger than those in the UNI region. Consequently, UNI trade could not be routed through Australian ports without considerable investment by those ports.

We discuss the impact of larger ships further into this report in the context of the ports’ existing and planned infrastructure.

2. Post-Panamax describes the range of ships larger than the capacity of the Panama canal.

Executive summary continued

Domestic freight costs

Land transport freight costs are a significant component of total freight costs in New Zealand. This has implications for the economics of port configuration options, which rely on considerable land transport legs.

The cost to ship a container to or from Singapore, via Auckland, for various New Zealand cities is estimated below.

For example, a company exporting a container from Napier to Singapore via Auckland would spend:

- \$1,520 on shipping line costs
- \$407 on fixed costs at POA (including container loading, customs duties, etc)
- \$1,529 on road freight from Napier to Auckland, \$1,090 on rail freight plus an estimated \$210 for container cartage to the rail depot, or \$1,054 on coastal freight.³

In other words, depending upon the domestic freight mode chosen, between 35% and 44% of the total cost of shipping from Napier would be spent on domestic transport alone. Estimates for other New Zealand cities suggest that domestic freight costs will increase considerably as the distance to the port of export/import grows.

Supply chain analysis - total cost of shipping one TEU on the Singapore-Auckland route

	Importing			Exporting		
International freight costs						
Shipping line costs						
		\$1,373				\$1,520
Port, customs, and biosecurity costs		\$456				\$407
Domestic freight costs						
	Road	Rail	Coastal	Road	Rail	Coastal
Whangarei	\$581	\$602	NA	\$581	\$602	NA
Auckland	\$210			\$210		
Hamilton	\$463	\$400	NA	\$463	\$400	NA
Mt Maunganui	\$746	\$602	\$699	\$746	\$602	\$669
New Plymouth	\$1,319	\$1,151	\$1,376	\$1,319	\$907	\$1,260
Palmerston North	\$1,889	\$1,272	NA	\$1,889	\$1,144	NA
Napier	\$1,529	\$1,334	\$1,139	\$1,529	\$1,090	\$1,054
Wellington	\$2,363	\$1,394	\$1,469	\$2,363	\$1,278	\$1,341
Blenheim	\$2,815	\$1,413	\$1,598	\$2,815	\$1,685	\$1,454
Christchurch	\$3,954	\$1,618	\$1,703	\$3,954	\$1,820	\$1,515
Dunedin	\$5,252	\$1,887	\$1,981	\$5,252	\$2,089	\$1,789
Container cartage		\$210			\$210	

Source: Productivity Commission, Ministry of Transport, PwC calculations

3. Domestic freight costs are estimates based on data compiled by the Ministry of Transport for road and coastal freight, and KiwiRail's stated prices for 'walk-up' customers. We would expect a shipper with significant volumes or a consolidated customer such as an inland port to be able to negotiate significantly lower costs, especially for rail.

Developing Northport as a container terminal is likely to be uneconomic due to the additional cost of shipping containers from Whangarei to other UNI locations. Auckland and Tauranga are located much closer to main population centres and export-producing regions, meaning that any additional costs for importers-exporters at the port (eg higher charges to compensate for higher land prices) is offset by lower domestic freight costs. Road and rail costs may fall significantly as a result of investment in infrastructure upgrades. However, their magnitude compared with port and sea freight costs means that significant efficiencies and cost reductions would be needed across the board before a container port at Whangarei would make economic sense.

Inland ports

Inland ports are intended to exploit the cost advantages of cargo handling at an inland location. They can potentially serve two purposes. First, they can reduce dwell times at the port by allowing customs clearance (etc) for containers to be completed at an inland location. This can reduce the total cost of port operations if the difference between land prices at the port and inland locations is large enough to offset any double handling.

Second, inland ports can lower costs for importers and exporters by exploiting the cost efficiencies available when moving large volumes of containers by rail. They allow importers and exporters to avoid the costs of road freight (and, in particular, congestion in Auckland's road network) by consolidating freight at a closer location and moving it by rail to a port.

From an infrastructure perspective, the key impact of inland ports is likely to be changes in the distribution pattern of the trade task, in terms of modal shifts (from road to rail) and/or changes to the port of destination or origin. Of these, only changes in the port of destination or origin will have an impact on the projected task for each port. We do not expect inland ports to alter the projected trade task for the UNI as a whole.

Inland ports are likely to reinforce competition between POT and POA. Metroport, an inland port established by POT in Auckland, has enabled POT to actively compete in the Auckland market due to its proximity to manufacturers and distribution centres in south Auckland. We expect that the proposal for an inland port at Ruakura near Hamilton would reinforce this trend.

Inland ports are primarily a commercial proposition and should be evaluated as such. However, they do have some public policy implications for land-use and infrastructure planning. If inland ports provide a commercially viable proposition to shippers – ie if they reduce supply chain costs by consolidating sufficient volumes of freight and moving it to and from a seaport by rail – they may have an impact on land uses in the surrounding area. For example, they may strengthen incentives for production or distribution facilities to locate close to the inland port.

The effects may not necessarily be immediate. The experiences of Metroport and Wiri Inland Port suggest that inland ports will be slow to reach capacity – Metroport reached 55% utilisation in 2011, more than a decade after opening, while Wiri continues to struggle to achieve significant volume. Growth at Wiri has been limited as the convenience, speed and cost of road transport has proven superior to potential cost efficiencies from rail. Consequently, it is likely that their effects on land use and distribution network capacity will occur only in the medium term or beyond. This should be taken into account when assessing future inland port developments.

Key success factors for inland ports

Inland ports succeed or fail as commercial propositions. A 2012 report to the Waikato Regional Council lays out some factors affecting inland ports' effectiveness:

1. size of catchment area
2. location within a freight precinct or industrial centre
3. reliable road and rail access links
4. ability to operate 24/7
5. efficient design to maximise reliability of vehicle and container movements
6. appropriate types of container handling equipment
7. on-site Customs and Biosecurity services
8. storage and repositioning of empty containers

Source: Draft Aurecon report (2012)

Executive summary continued

Projections of future freight through the Upper North Island ports

We have constructed long-term projections of future freight through the UNI ports. They include high and low scenarios that provide a range of potential outcomes. Our projections to 2041 indicate significant growth in both trade and throughput.

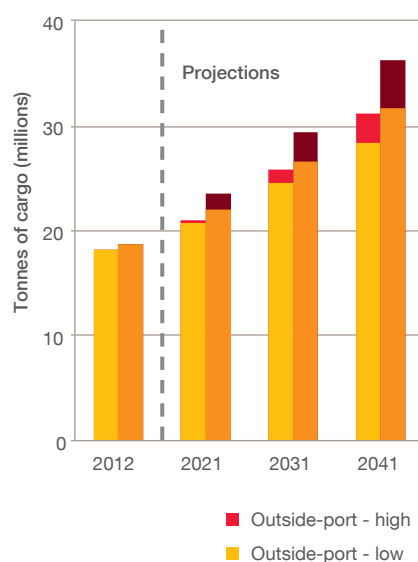
Throughput is expected to grow faster on the back of increased transshipment and domestic coastal freight. Key projections include:

- Throughput growth of 1.7%-2.3% pa, to 22m-32m tonnes, consisting of:
 - Outward growth of 1.8%-2.3%
 - Inward growth of 1.6%-2.3%
- Outside-port volume growth of 1.4%-1.8% pa, or an additional 17m-22m tonnes, consisting of:
 - Exports of 28m-31m tonnes in 2041, reflecting growth of 1.6%-1.9% per annum
 - Imports of 21m-24m tonnes in 2041, reflecting growth of 1.2%-1.7% per annum.

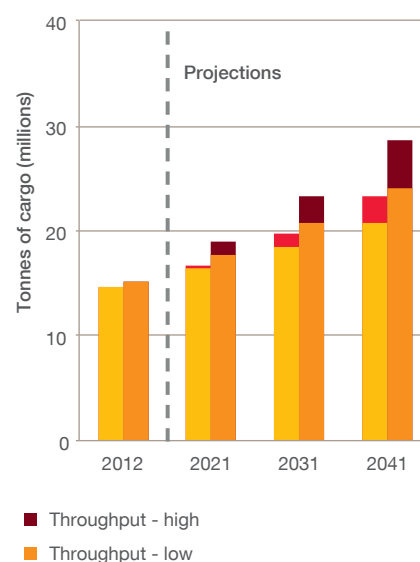
Overseas merchandise trade is the main component of the UNI port task, and hence the most significant driver of change. We expect growth in this area to be driven by, and in some cases constrained by, patterns of production, consumption, and overseas demand.

These include dairy and log production capacity in the UNI, regional population growth and future demand for petroleum products, and rapid growth in emerging Asian economies.

UNI outward cargo movements: outside-port and throughput



UNI inward cargo movements: outside-port and throughput



Source: Statistics NZ. PwC analysis

Overseas merchandise trade is the main component of the UNI port task, and hence the most significant driver of change.

Projections by port, and between container and bulk cargoes

Our main projections of the future port task have been made for the UNI region as a whole. However, we recognise breaking down these projections to individual ports is important in the context of understanding the constraints faced by these ports.

- At POA, container throughput is expected to grow by between 2.3% and 3.2% per annum over the period, while bulk throughput is projected to grow at between 1.9% and 2.2% per annum.
- At POT, container throughput is expected to grow by between 2.5% and 3.1% per annum over the period. Bulk throughput will also grow, but at a slower projected rate of between 1.7% and 2.3%.
- Growth at Northport and Marsden Point is expected to be slow relative to the other UNI ports. This is because the faster growing transshipping element is not expected to be a feature for the Whangarei ports due to the dominance of bulk cargo. Furthermore, growth in Northport's main cargo, unprocessed logs, is expected to be flat after 2020 due to the fact that log availability is projected to level off. Northport may be able to grow more rapidly if it is able to attract other types of cargo.

The table below summarises our projections to 2041, for each port by cargo and throughput type.

2012-2041 growth projections by port and type of cargo

Categories		Northport	Whangarei ports	POA	POT	Total UNI
Outside-port growth:						
Container	Per annum	-	-	2.0% to 2.5%	1.7% to 2.0%	1.8% to 2.2%
	Total	-	-	77% to 105%	62% to 76%	68% to 89%
Bulk	Per annum	1.0% to 1.0%	0.7% to 0.8%	1.7% to 1.9%	1.7% to 2.3%	1.7% to 2.2%
	Total	33% to 33%	22% to 26%	61% to 74%	62% to 91%	62% to 88%
Total	Per annum	1.0% to 1.0%	0.7% to 0.8%	1.9% to 2.4%	1.7% to 2.1%	1.4% to 1.8%
	Total	33% to 33%	22% to 26%	73% to 98%	62% to 84%	50% to 67%
Exchange growth						
Container (2021-2041)	Per annum	-	-	3.3% to 3.3%	5.0% to 5.1%	4.2% to 4.2%
	Total	-	-	90% to 91%	167% to 171%	126% to 128%
Bulk (2021-2041)	Per annum	-	-	6.2%	6.3%	6.3%
	Total	-	-	236%	240%	237%
Total (2021-2041)	Per annum	-	-	3.4% to 3.4%	5.1% to 5.1%	4.2% to 4.3%
	Total	-	-	94% to 95%	168% to 172%	128% to 131%
Total throughput growth						
Container	Per annum	-	-	2.3% to 3.2%	2.5% to 3.1%	2.4% to 3.2%
	Total	-	-	95% to 151%	104% to 146%	100% to 148%
Bulk	Per annum	1.0% to 1.0%	0.7% to 0.8%	1.9% to 2.2%	1.7% to 2.3%	1.7% to 2.3%
	Total	33% to 33%	29% to 33%	71% to 88%	62% to 92%	64% to 92%
Total	Per annum	1.0% to 1.0%	0.7% to 0.8%	2.2% to 3.0%	2.1% to 2.7%	1.7% to 2.3%
	Total	33% to 33%	29% to 33%	90% to 138%	82% to 117%	64% to 91%

Source: PwC analysis

Executive summary continued

In developing these estimates we have assumed that each port's share of overall UNI growth within each category of cargo movement will be similar to their historical shares, and that the share of cargo weight moving in containers will remain constant at 2012 levels.

With the obvious exception of heavy bulk cargoes such as logs and petroleum products, POA and POT compete for much of the freight task of the Upper North Island. This is especially true for (dry) containerised cargo. Although land transport costs will factor into importers' and exporters' decisions about which port to use, the two container ports are close substitutes for container cargo.

As a consequence, the shares of cargo carried through Auckland and Tauranga are likely to depend upon the ports' capacity to move additional containers, and the marginal cost of doing so. If, for example, POA reaches capacity while POT still has spare capacity, it is likely that POA will have to raise its prices. This will, in turn, encourage some shippers to divert cargo to POT. As long as spare capacity exists within the UNI ports, changing prices will encourage shippers to shift traffic away from congested ports.

Comments on these projections

We understand that these projections may be considered conservative. In particular, both POA and POT have experienced periods of growth in recent years (in container trade especially) that have been considerably higher than our projections. We make the following points in this regard:

- We are forecasting average growth to 2041 – we expect growth to be considerably higher (and lower) in certain years.
- As noted earlier, a considerable portion of recent growth has been driven by growth in port exchanges (over 30% per annum since 2007). While transshipping is expected to continue to grow, it is not realistic for it to grow at these sorts of rates beyond the short term.
- In weight terms, the UNIs key export products are forestry and dairy. While growth is expected to continue in these products, it is ultimately constrained by available forestry stocks, land for dairy farms and limited productivity opportunities.
- UNI population growth is projected to slow to an average of 1.3% per annum over the study period, and we expect imports to slow to reflect this. In addition, our major single import (oil) is expected to grow at an even slower rate as a consequence of supply constraints and more fuel efficient vehicles.

A considerable portion of recent growth has been driven by growth in transshipping.



Executive summary continued

Existing infrastructure at the Upper North Island ports

In considering existing port and port related infrastructure we have distinguished the following elements:

- **Port access** – the depth of each port’s channel and berths
- **Berthage** – the number, length and configuration of container and bulk berth space at each port
- **Storage** – the container and bulk storage capacity of each port
- **Distribution** – primarily the land transport infrastructure servicing the port.

Ports also own significant operational infrastructure, such as cranes, straddles (for stacking containers), reefer slots (power points for refrigerated containers), buildings and operational technology. These types of assets are discussed in the context of options for improving port efficiencies.



Port	Access	Berthage	Storage	Distribution
Northport	Channel depth: 14.8m chart datum Berth depth: 2 x 13m, 1 x 14.5m Turning room limits vessels to 275-300m	3 berths totalling 570m	48 hectares reclaimed, 34 hectares of formed storage	Primarily road from the north and west Some domestic coastal shipping
Refining NZ, Marsden Point	Deep water access for both channel and berths, though there is a 14.8m shoal patch on the approach	2 jetties totalling 134m, which can accommodate ships of up to 275m and 200m, respectively	Some bulk liquid storage at refinery	Wiri pipeline to Auckland Coastal shipping Road transport north
POA – container	Channel depth: 12.5m chart datum, 13.9m at high tide Berth depth: 12.5m, 13m and 13.5m	3 berths totalling 870m	46 hectares, with a further 15 hectares at Wiri inland port	Road primarily through Grafton Gully and heading south Rail on North Island Main Trunk (NIMT) south, North Auckland Line (NAL) to Northland
POA – bulk	Range of berth depths	1,637m in total	25.3 hectares	Road, primarily through Grafton Gully to south Rail on NIMT south, NAL to Northland
POT - container	Channel depth: 12.9m chart datum Berth depth: 14.5m	3 container berths totalling 600m, with berthage currently being extended to 770m in total	72 hectares of which 41 is currently used. An additional 3.5 hectares at Metroport.	Road from various locations Rail, on East Coast Main Trunk (ECMT), primarily from/to Metroport in Auckland
POT – bulk	Berth depth: various up to 12.9m	Bulk berths totalling 2,055m plus one cement dolphin berth	112 hectares	Road primarily from the south Rail from central North island forests, and from Auckland
TOTAL UNI - container	-	1,470m or 1,946m including berths being developed at POT and POA	118 hectares, with 18.5 hectares of inland port container storage	-
TOTAL UNI - bulk	-	4,626m	171 hectares	-

Executive summary continued

The ability of the Upper North Island ports to cater for our projected growth

Overview

The capacity of the infrastructure discussed previous in this report is generally not fixed, and it is therefore difficult to give a strict view on technical limits.

For example, storage requirements depend on many elements including the length of time the containers are stored at the port (the dwell time), the type of straddle technology, the layout of the storage area, the seasonality of the port's activity and the space available. Many of these components depend on different operational parameters.

Similarly, the capacity of berth infrastructure is affected by the length and configuration of the berthage, and by the speed that ships are serviced. This in turn depends on the numbers and quality of cranes servicing vessels, the size of the ships (bigger ships can be serviced relatively faster), the extent of transshipping, and the ability of the port to deploy the appropriate crews to process the ships.

Our approach has been to estimate capacity on the basis of international benchmarks. These give us an indication of the maximum throughput per hectare of storage space or metre of berth space, which the most intensely used ports of similar size to the UNI ports are achieving.

Projected infrastructure limits

Notwithstanding the comments above, the table opposite outlines the elements of the current port and port-related infrastructure where the current infrastructure appears unlikely to be sufficient to cater to our projected future growth. It also presents options for addressing these limits.

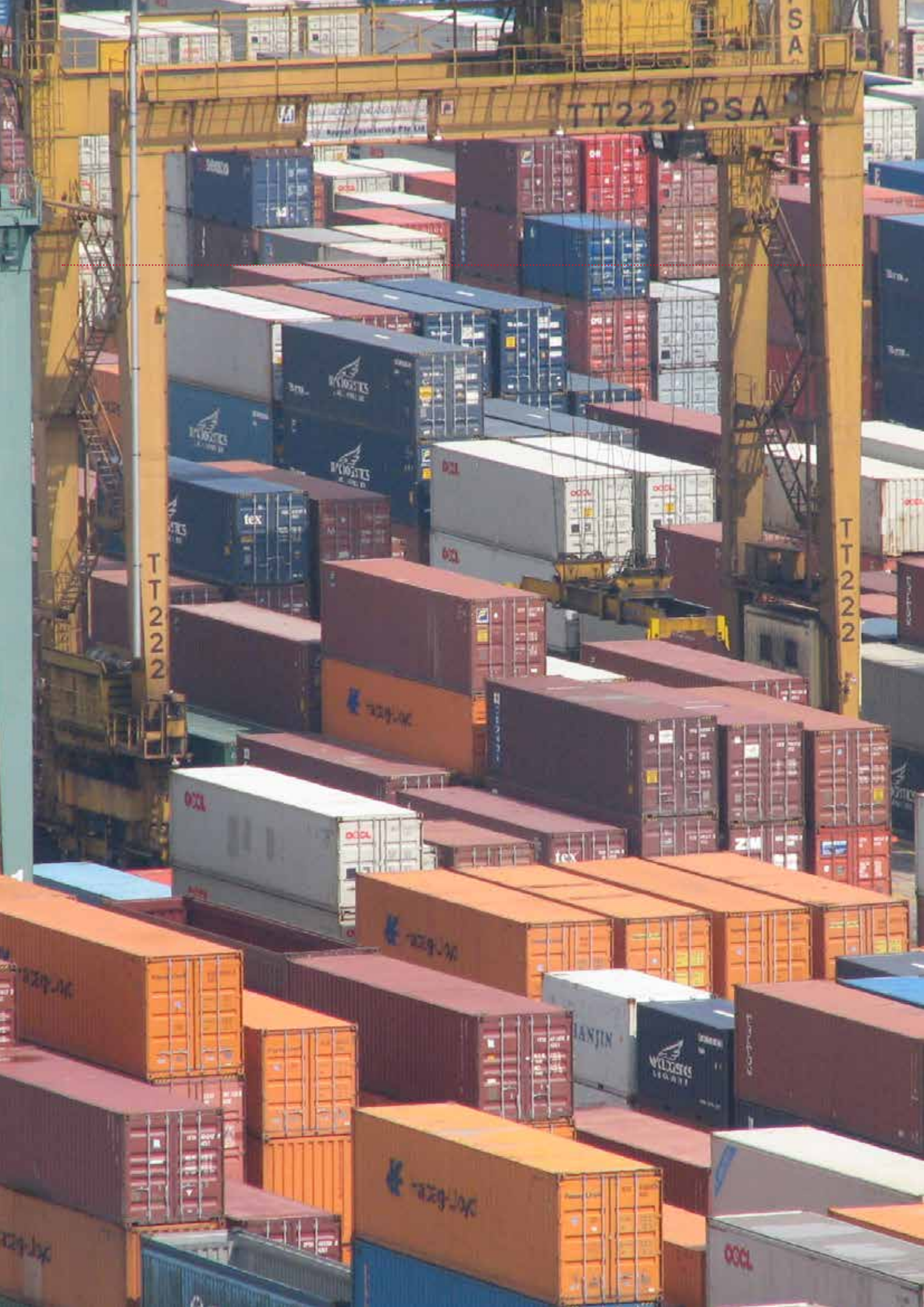
This is an organic or incremental view, in that we are addressing limits and constraints as they are expected to arise, given the current UNI port and distribution system. The next section considers transformational or system changes.

Storage requirements depend on many elements including the length of time the containers are stored at the port (the dwell time), the type of straddle technology, the layout of the storage area, the seasonality of the port's activity and the space available.

Infrastructure issue	Options	Viable?
Berth depth at POA	Increase the depth of the container berths by dredging	Yes, subject to consent and being warranted commercially
	Do nothing, and be unable to cater for ships above a certain size	Yes, though may limit POA's ability to operate as a hub port, and/or increase costs for importers and exporters (compared with the other option)
Berth depth at POT	Increase the depth of the container berths by dredging	Yes, POT has recently received resource consent for channel and berth dredging
	Do nothing, and be unable to cater for ships above a certain size	Yes. As POT has consents, this is likely to be based on commercial decision as to the return on investment in dredging
Container berthage at POA	Develop additional consented container berth. POA have consent to develop a 306m 4th container berth	Yes, but to fully cater for growth further berths or efficiencies will be required
	Develop further additional berthage elsewhere at the port	Probably scope for limited additions, subject to resource consent and potential community sensitivity
	Increase ship handling speeds, through using more or better cranes, increased labour flexibility, handling larger ships, better berthage and storage alignment	Yes, but to reach potential, likely to require some reconfigurations or additional berth length as well
	Re-purpose bulk berthage	Technically viable, but would impact bulk capacity which is also likely to be stretched
Container berthage at POT	Complete full container berth extension	Yes, POT has longer term plans for a 285 metre berth extension. This will likely require an upgrade of air traffic control systems at Tauranga airport, due to flight path conflicts
	Develop further additional berthage elsewhere at the port	Would probably require re-purposing existing bulk berthage, placing pressure on bulk operations. Likely to depend on the relative values to the port of the cargoes
	Increase ship handling speeds	Yes, though POT is already operating at relatively high levels of efficiency
Container storage at POA	Complete the development of the additional 3.6ha of consented reclamation at the north-eastern tip of Fergusson terminal	Yes, being progressively reclaimed currently
	Reclamations	Technical scope, but would require resource consent and this is likely to be affected by community sensitivity
	Improve stacking technology	Yes, POA are currently planning to move from 2+1 to 3+1 stacking technology
	Other efficiencies	Likely to be able to make incremental improvements to dwell times (though imports already have very low dwell times)
	Re-purpose bulk storage	Probably not due to space pressure on bulk cargo

Executive summary continued

Infrastructure issue	Options	Viable?
Bulk berthage at POA (particularly if Captain Cook and Marsden wharfs are lost)	Reconfiguration	Yes, but likely to require some reclamations which are likely to be constrained by community sensitivity There may be a need for additional car storage facilities – eg a low-level car park building
Bulk storage at POA (particularly if Captain Cook and Marsden wharfs are lost)	Car stacker Reconfigurations	Yes, based on cost relative to other storage options Yes, but likely to require some reclamations which would need resource consent, which are likely to be affected by community sensitivity
Storage at Northport	Currently unformed land could be developed. Shorter dwell times of bulk cargo Higher stack heights for bulk cargo	Yes. Could undertake further reclamations or use adjacent land owned by Northland Port Corporation. Yes, but likely to be difficult due to the way logs are shipped Yes, but physical constraints mean that benefits are limited
Grafton Gully (Although future congestion likely to be driven by non-port traffic growth, and/or land use pressure that impact existing routes (as opposed to port growth))	A range of possible corridor improvements, including major work options like grade separation at Grafton Gully Greater use of off-peak times Modal shift to rail	Yes, but investment not likely to be induced by port traffic. General traffic congestion, and land-use changes on Quay street are the primary drivers Yes, though would require changes in the operational hours of receiving distribution centres There is significant technical capacity on rail, but growth likely to be limited due to increasing commuter traffic. Also not cost effective for majority of Auckland based customers
Auckland sections of North Island main trunk	Construct a 3rd line for freight	Construction may be affected by KiwiRail's ability to finance it in their turnaround plan While funding has not been fully agreed, work is currently underway to advance the construction of sections of this line between Southdown and Wiri prior to the introduction of the planned intensive passenger train timetable in 2014 While present-day mode shares would make it difficult to justify, the Auckland Plan includes the construction of a full third track for freight between the port and Papakura between 2021 and 2030. This project may be constrained by community sensitivity
Tauranga rail (including east coast main trunk)	Increasing passing loops, signalling improvements, and ultimately double tracking	Yes, likely to be progressive, based on commercial arrangements between KiwiRail and POT



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Executive summary continued

The role of prices

In conjunction with decisions to invest in infrastructure, relative prices will play a key role in extracting and allocating capacity across the UNI port network, particularly where there are alternatives or substitutes. For example, costs and prices⁴ will help determine:

- Whether a port invests in additional physical infrastructure (eg reclamations) or operational efficiencies (eg more cranes, automated stacking technology)
- How freight is distributed (eg by road or rail)
- The types of products that ports cater for – eg if physical space becomes a premium we would expect them to focus on products for which they can charge the most per square metre of storage space. Or put differently, as they start charging more because space is tight, exporters and importers will start considering whether it would be more cost effective for them to use a different port
- Where exporters/importers send or source their products (which is already happening in the container trade competition between POT and POA).

The ability of port customers to choose between ports reinforces the role of price in allocating capacity. While there will continue to be limitations to the extent that ports can be substitutes (especially for bulk products) Metroport has demonstrated that under the right conditions, POT can compete in the Auckland market. We expect that, if successful, the proposed inland port at Ruakura would provide further opportunities to allocate latent capacity, both in the regional rail network and in its ports, though the rate of take-up may be slow given the experience of Metroport and Wiri.

In conjunction with decisions to invest in infrastructure, relative prices will play a key role in extracting and allocating capacity across the UNI port network, particularly where there are alternatives or substitutes.

4. These may be direct costs, or indirect costs such as the costs associated with congestion, or the uncertainty associated with obtaining resource consents.

So what does this all mean?

In summary:

- There is considerable capacity that can be accessed through improved operational efficiencies, most notably for containers and container storage in particular.
 - Completion of consented reclamations at Northport and POA and berth developments at all three ports will also provide significant additional capacity.
 - Projecting the impact of growth in bulk cargo is much more difficult, due to the lack of uniformity. With a few exceptions (storage for cars and logs) we have conservatively assumed that opportunities for operational efficiencies for these types of cargoes are more limited.
- If each port is to manage their share of trade as projected, we expect each port will need to develop further capacity over the study period (even with assumed operational efficiencies):
 - For Northport this would probably include development of the planned fourth berth and deployment of additional storage area.
 - o For POT this would include the additional 285 metres of container berthage at Sulphur Point. (There is also likely to be some additional bulk infrastructure – but this will likely be managed by reconfigurations rather than substantial development.)
 - For POA, further reclamation and berth developments will probably be necessary, especially if Marsden and Captain Cook wharfs cease to be used. However, with the required operational efficiencies, we expect these requirements to be less substantial than the preferred reclamation options in the 2008 Port Development Plan.
 - Relative prices and costs will largely determine which specific options are chosen, including what combination of new infrastructure and efficiencies is utilised.



Executive summary continued

Potential system changes to manage growth

There has been public commentary on systemic change in the ports systems as an alternative to incrementally adding capacity. We have summarised at a high level the pros, cons and implications of the three potential options. We note that these options would involve a relatively large-scale intervention in the market by government agencies – well over and above their current role.

While these options are not considered in detail in this report, they are provided as a summary to help inform further technical analysis. The options are focused on constraining growth at POA, as this is the port under the most significant pressure in terms of competing land uses, environmental concerns that limit growth capacity, and conflict with other transport uses.



Our options are focused on constraining growth at POA, as this is the port under the most significant pressure.

System change	Impacts/requirements	Comments
Option 1: Establishing a container terminal at Northport, to incrementally take over POA operations	Potential to re-purpose elements of Auckland's waterfront	Likely to be very expensive, relative to the incremental approach
	Investment at Northport – cranes, berthage, reclamation	Likely to have negative economic implications for both Northland and Auckland. The forestry industry would face competition for space, land transport between Auckland and Whangarei would be far more congested. These costs may be partially offset by reduced shipping costs for other Northland importers and exporters.
	Rail spur to Northport	
	Investment in Northern rail line	
	Avondale to Southdown line to avoid Newmarket	
	Managing Northland's existing bulk task	
	Additional traffic right through Auckland to the South Auckland distribution network	The UNI's trade supply chain would be more expensive, impacting competitiveness for importers and exporters
Ongoing increased costs across value chain (land transport costs exceed port costs)	May however provide reserve capacity and network resilience	
Option 2: Manage Auckland's growth elsewhere. In effect implying that POT takes container growth and POT and Northport take bulk growth.	As POA becomes more efficient, potential for footprint to be reduced	Given the ability of (container) exporters and importers to choose between the ports it is likely to be more efficient and effective for the market to allocate this growth. If it is relatively cheaper to deploy capacity at POT and Northport, then this should come through in prices
	Increased costs across the value chain for diverted products (and probably a bigger impact for bulk products)	
	Double tracking of Tauranga to Auckland line	
	Increased pressure on freight routes between Auckland and Tauranga and Whangarei	The UNI's trade supply chain would be more expensive, impacting competitiveness for importers and exporters
	Capacity issues may develop in Tauranga, especially in relation to berth length	
	Potential for reverse sensitivity issues in Tauranga, related to increased freight traffic, including trains	
	Northport likely to require 5th berth earlier, and prices for existing bulk trade likely to increase	
Option 3: A new UNI port	Potential to re-purpose elements of Auckland's waterfront	Given projections, it seems unlikely that this option would make economic sense over the term of this study
	Massive infrastructure investment, not only in port infrastructure but also in road and rail links	Benefits of repurposing current POA land seems, alone, insufficient to outweigh large costs for the foreseeable future
	Significant stranded assets	
	Considerable environmental impacts, depending on site selected	
	Transformational change across the supply chain	

Executive summary continued

Beyond 2041

While our projections provide an indication of the port task and infrastructure requirements out to 2041, there is likely to be further growth thereafter. It may therefore be the case that even if a given amount of infrastructure can cater for the projected trade task in 2041, it may not fully be able to at some point after that.

This suggests a couple of questions:

- *Is 30 years the right projection period, why not a 50 or 100 year timeframe?*
- *Surely at some point ports will reach capacity. Shouldn't we be making decisions and plans to provide for this?*

While there are a number of perspectives as to the appropriate period for the planning of long-term infrastructure, we believe a 30-year horizon is a sensible time frame in this context, as:

- It coincides with the longest planning periods used by many public sector entities including NZTA, Auckland Council and Auckland Transport.
- Projections over long time periods become increasingly undermined by transformative changes. If we reflect on changes over the last 30 years for example, we have observed geopolitical changes (the collapse of the Soviet Bloc, the emergence of the Asian economies), massive technological innovation, removal of trade barriers and the globalisation of world trade, and the emergence of environmental concerns into the mainstream. None of these changes would have been easily predicted in 1980, but they have all had significant impacts on international trade.
- As well as transformative change, there is also potential for major system shocks. This could include a major oil shock, natural disaster or some form of conflict that significantly undermines trade.

Given what we currently know or can reasonably assume, if we take our projections out far enough, we will reach serious constraints in our trade supply chain. However, practically reacting or providing for this is probably limited to ensuring planning is flexible, and provides or retains options for future policy makers to react to major changes and constraints as they become more certain.

In this respect, we note that the UNI is actually well served by three ports. This currently provides strong competition to the benefit of exporters and importers, and also operational flexibility and resilience in the UNI's trade and logistics supply chains.

There are benefits in retaining flexibility to adapt to future circumstances, even where there is a financial cost in doing so, and if the option is never exercised. For example, while we do not consider that Northport will be required to manage significant freight from outside of the Northland region, we do believe that retaining capacity for it to take a larger role provides valuable flexibility and resilience across the port network in the UNI.

Conclusions

The UNI ports are projected to experience strong growth over the next 30 years, underpinned by continued growth in the trade of primary products, and the ongoing development of transshipping at POA and POT.

We expect that cargo throughput will grow more rapidly than outside-port cargo, and that containerised cargo will grow more rapidly than bulk cargo – in line with recent trends. As a consequence, more pressure will be placed on port infrastructure, which must handle growing volumes of exchange cargo, than on distribution networks and land transport infrastructure to the port. Likewise, container handling facilities are expected to handle more growth than bulk cargo facilities.

Overall, our projections suggest the UNI port network has capacity to meet the freight task over the next 30 years. But this will require substantial operational efficiencies as well as incremental investment in infrastructure including the uptake of consented berth developments, reclamations, and channel and berth deepening.

If the task is to be managed with broadly the same share and configuration of ports, POA will most likely require further storage and berth capacity. When this is required will depend on the timing of any operating efficiencies, the timing of any release of Captain Cook and Marsden wharfs, and spikes in demand. If POA can make substantial operational efficiencies, we expect these requirements for additional infrastructure to be smaller in scale than the preferred reclamation options in the 2008 Port Development Plan. Whether further reclamation is achievable will depend on the ability to obtain

resource consents, which in turn will depend on consideration of the wider costs and benefits (social, economic, environmental and cultural) of the proposals.

If POA is unable to gain approval for an expanded footprint, then some of the projected growth will need to be accommodated at other UNI ports. In our view this is achievable given the capacity across the network. Relative prices will play an important role in reallocating freight - as constraints at one port increase, the cost of handling freight will increase, encouraging importers and exporters to move freight through the alternative port. This however, like any supply side constraint, will have economic consequences in terms of additional supply chain costs for exporters and importers.

The development of inland ports and improvements to transport and distribution networks may partially offset these cost increases, as evidenced by the ability of POT to compete with POA for many types of Auckland cargo, through its presence at Metroport.

We would expect that any transfer of growth to the other ports would occur slowly, but be punctuated by step changes as exporters and importers reconfigure their supply chains.

POT and Northport are also expected to need further infrastructure over the study period. While this would also require resource consent, there are less apparent impediments to these proceeding than at POA.

We do not forecast significant issues for land transport infrastructure to arise as a result of increasing port demand. In Auckland growth is likely to be dominated by non-port demand. Tauranga and Whangarei are generally not under the same land transport congestion pressures. However, improvements to the East Coast Main Trunk line between Auckland and Tauranga will most likely be required, including possible double tracking. We expect these changes to be progressive, based on commercial arrangements between KiwiRail and POT.

In summary, the most efficient and cost effective options are likely to be based around incremental growth at each port, complemented by changes in relative prices that help allocate latent capacity. The public sector will continue to play a key role in:

- balancing the wider costs and benefits of infrastructure investment through decisions around resource consents
- providing additional land transport infrastructure as appropriate
- monitoring the effectiveness of the UNI's logistics supply chain
- retaining flexibility and options across the network, both to provide network resilience and capacity to manage change.

It does not appear, based on current projections, that the benefits of substantial changes to the UNI port system, such as establishing a new container port, currently outweigh the costs involved.

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Thank you

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