



Long-term optimisation of the New Zealand port sector

October 2009

Disclaimer

Information in this report has been obtained from sources believed to be reliable. The report was prepared by Auckland Regional Holdings (ARH) for internal purposes and any external recipient of this report must make their own independent decisions regarding any information contained in this report and any statements made.

ARH does not warrant this report's completeness or accuracy and neither ARH, nor its staff, accept any liability for direct or contingent losses resulting from any information or statements made in this report. Opinions and conclusions represent ARH's collective judgment as of the date of this material and are subject to change without notice.

Introduction

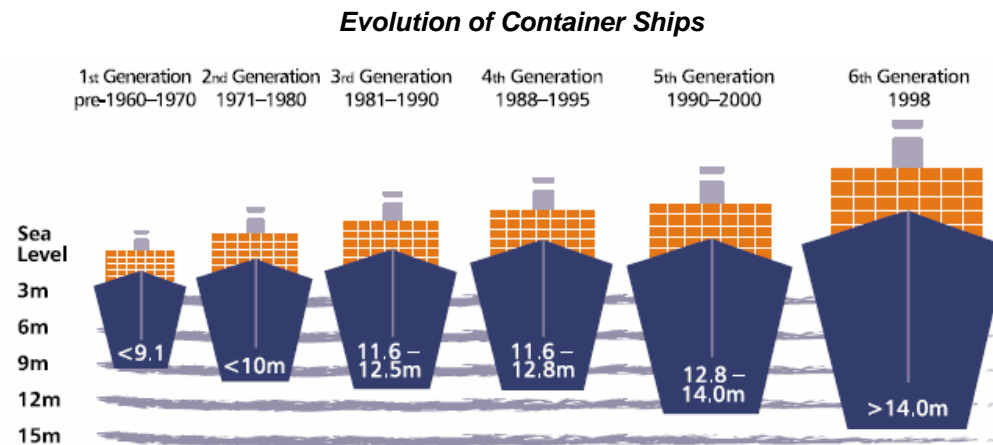
- As a remote trading nation NZ is dependent on an internationally competitive, efficient and sustainable port sector
- Currently, the structure of the NZ port sector is neither efficient nor sustainable - the nation's future international competitiveness is under threat
- Objectives for an optimised NZ port sector include:
 - Efficient capital investment
 - Sustainable long-term returns to enable future investment
 - Sufficient capacity to handle future freight growth
 - Preserve NZ's international competitiveness
 - More efficient supply chain
 - Minimise carbon emissions
- Focus is on container ports
- Industry consensus is needed on actions required to provide significant tangible benefits to the sector and NZ



Ports operating environment

International shipping industry


- Intensely competitive industry dominated by a few large international players
 - top five account for almost 80% of NZ market
- Global contraction in trade resulting in declining profitability, weak freight rates and overcapacity
 - Shipping companies that operate the main Asia, America and Europe services are expected to lose around US\$20 billion this year
- Seeking efficiency gains and improved returns through
 - Consolidation
 - Improved capacity utilisation – vessel sharing agreements, removing slot capacity
 - Larger ships hubbing at fewer ports
- Other trends
 - Strategic alliances
 - Vertical integration



Source: Port of Melbourne

Ports operating environment

Risks for New Zealand

Shipping industry trends	Risks for New Zealand
<p>Low profitability, overcapacity and low freight rates</p>	<ul style="list-style-type: none"> ▪ Reduction in available export capacity and / or direct services due to shipping line consolidation, removal of slot capacity and service withdrawals ▪ Pressure to reduce port charges
<p>Shipping line consolidation</p>	<ul style="list-style-type: none"> ▪ Increased bargaining power of shipping lines ▪ Trend towards larger ships accelerated
<p>Larger ships and hubbing</p> 	<ul style="list-style-type: none"> ▪ Requires significant investment in port and transport infrastructure ▪ Current NZ port returns are insufficient to justify future investment ▪ Potential for considerable unnecessary duplication of investment if hub port status continues to be contested and transport investment not co-ordinated ▪ Majority of benefits likely to flow to international shipping lines (and potentially also their major customers) ▪ Risk of, over time, NZ containers being increasingly hubbed through Australia if NZ cannot handle the larger ships

Ports operating environment

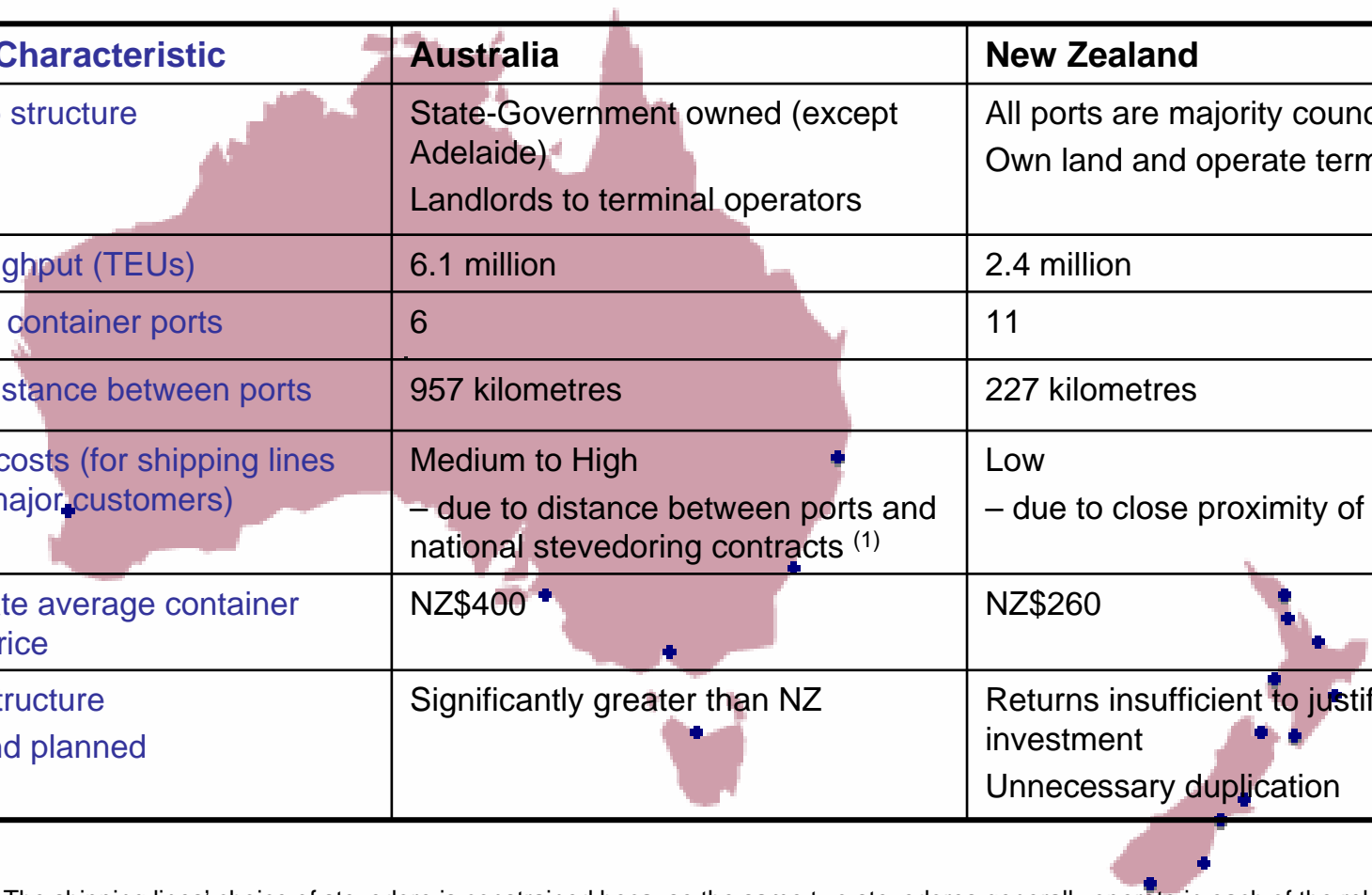
Ports response to shipping trends

- Globally, ports have responded to shipping trends through measures such as:
 - port consolidation
 - private investment
 - development of efficient inter-modal linkages
 - involvement of shipping companies in container port development
 - investment in technology & infrastructure
- NZ ports have not followed international ports in a number of areas including consolidation
- New Zealand's current port structure is relatively fragmented
 - ports are effectively the 'piggy in the middle' between the fairly well consolidated exporters and international shipping lines



New Zealand port sector

Benchmarking vs. Australia container ports

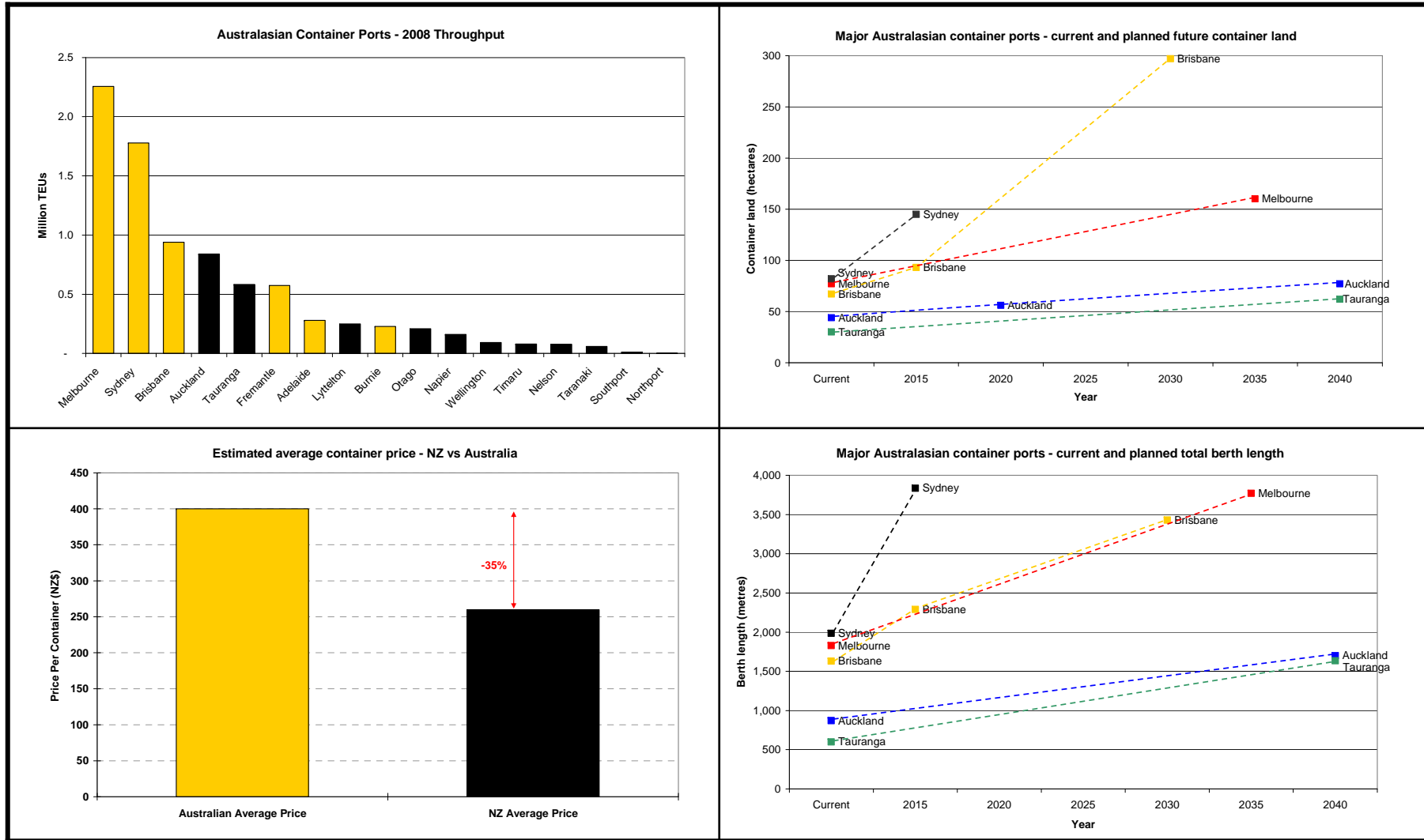


Industry Characteristic	Australia	New Zealand
Ownership structure	State-Government owned (except Adelaide) Landlords to terminal operators	All ports are majority council owned Own land and operate terminals
2008 throughput (TEUs)	6.1 million	2.4 million
Number of container ports	6	11
Average distance between ports	957 kilometres	227 kilometres
Switching costs (for shipping lines and their major customers)	Medium to High – due to distance between ports and national stevedoring contracts ⁽¹⁾	Low – due to close proximity of ports
Approximate average container handling price	NZ\$400	NZ\$260
Port infrastructure -current and planned	Significantly greater than NZ	Returns insufficient to justify future investment Unnecessary duplication

- Note (1): The shipping lines' choice of stevedore is constrained because the same two stevedores generally operate in each of the relevant ports. The power of shipping lines to switch may also be constrained in the short term as the stevedores have limited capacity to service significantly higher levels of business. Where a shipping line seeks a national contract, capacity constraints at only one terminal may effectively prevent that line being accommodated.

New Zealand port sector

Benchmarking vs. Australia container ports



New Zealand port sector

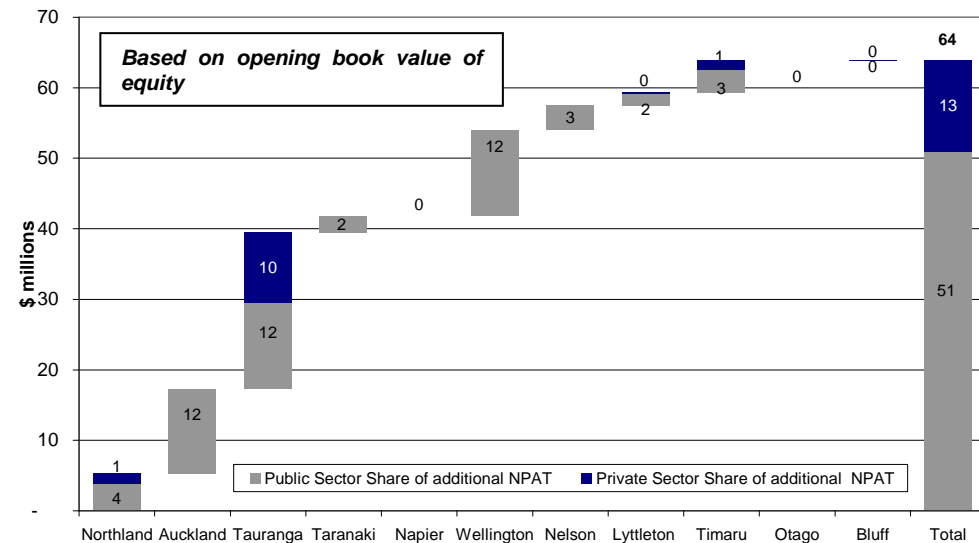
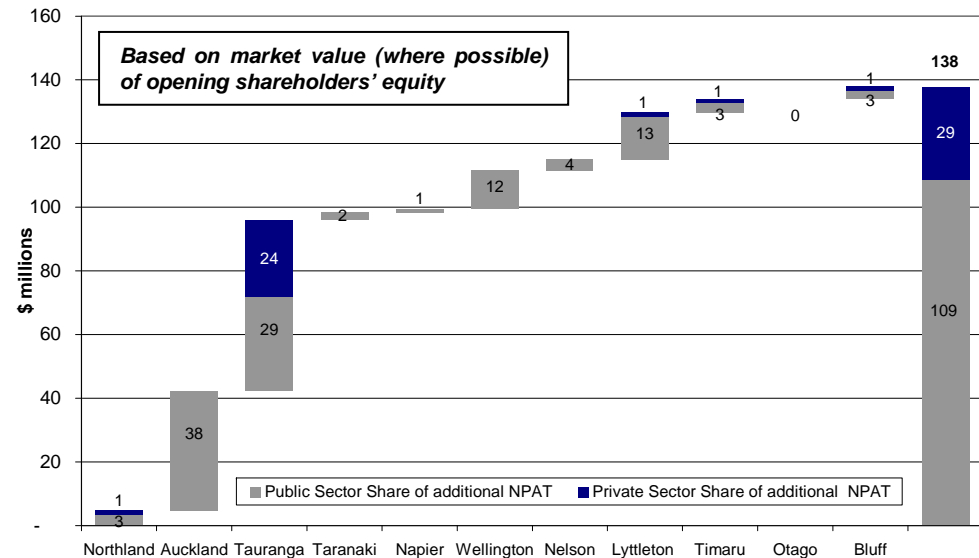
Inadequate returns

- Inadequate returns is an industry-wide issue, with port companies' local authority shareholders foregoing up to an estimated \$109 million of annual earnings in 2008 (equivalent to over 20% of their combined rates income)
- In 2008, an average return on equity of approximately 10% (vs. the 2008 average of 5.1%⁽¹⁾) would have been achieved had NZ's average container handling prices been more in line with those achieved in Australia

Note (1): Calculated as the value weighted average NPAT / opening equity of NZ's 11 container ports. Market value of shareholders' equity has been used where possible. The average return based on opening book value of equity was 7.0%

Note (2): This analysis was conducted from a shareholder's perspective for the purpose of estimating foregone industry earnings and was not undertaken for the purpose of conducting detailed inter-port comparisons

Additional 2008 NPAT if NZ container ports were achieving a 10% return on equity

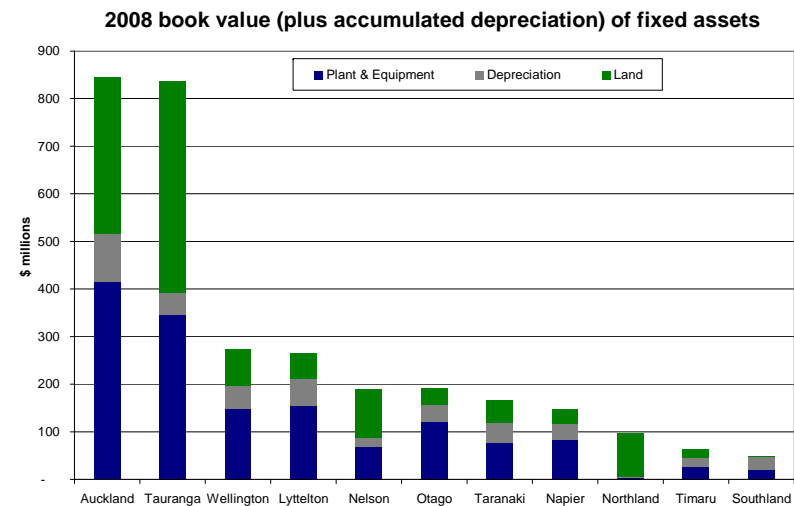


Source: Port and shareholder annual reports

New Zealand port sector

Unnecessary duplication of investment in infrastructure

- Next generation of ships to call in NZ 5,000-7,000 TEUs
 - vs. up to 4,100 TEUs currently
- Timing uncertain but investment necessary to respond to shipping industry requirements and reduce the likelihood that, over time, NZ containers are increasingly hubbed through Australia
- This will put significant pressure on NZ's infrastructure
 - need to establish a small number of “hub” ports
 - regional feeder ports linked by efficient transport connections
 - substantial investment in cranes, dredging, storage areas etc, as well as supporting transport infrastructure and a more efficient supply chain
- Uncertainty around the future shape of the NZ port sector means “hub” port status is being contested
- This is resulting in unnecessary duplication and inefficient investment



Source: NZ port companies 2008 Annual Reports

New Zealand port sector

Risk of NZ containers being hubbed through Australia

- Small, fragmented container volumes in NZ are costly to service by shipping lines
- Risk that, over time, NZ containers are increasingly hubbed through Australia due to larger ships and hubbing
 - Accelerated by global contraction in trade driving need for shipping consolidation and service rationalisation
 - Anecdotal evidence that this is already beginning to occur
- Would result in a longer, more costly supply chain and reduced international competitiveness
 - NZ's international competitiveness depends on its ability to connect directly with its large export markets
 - Loss from export delays of perishable agricultural products is around 3% of trade for each extra day
- Mitigating factors include:
 - NZ's reefer exports are very valuable to shipping lines
 - Potential for vacuum to be filled by direct services as may be difficult to provide high frequency trans-shipment service
 - NZ is closer than Australia to North America and same distance from North Asia

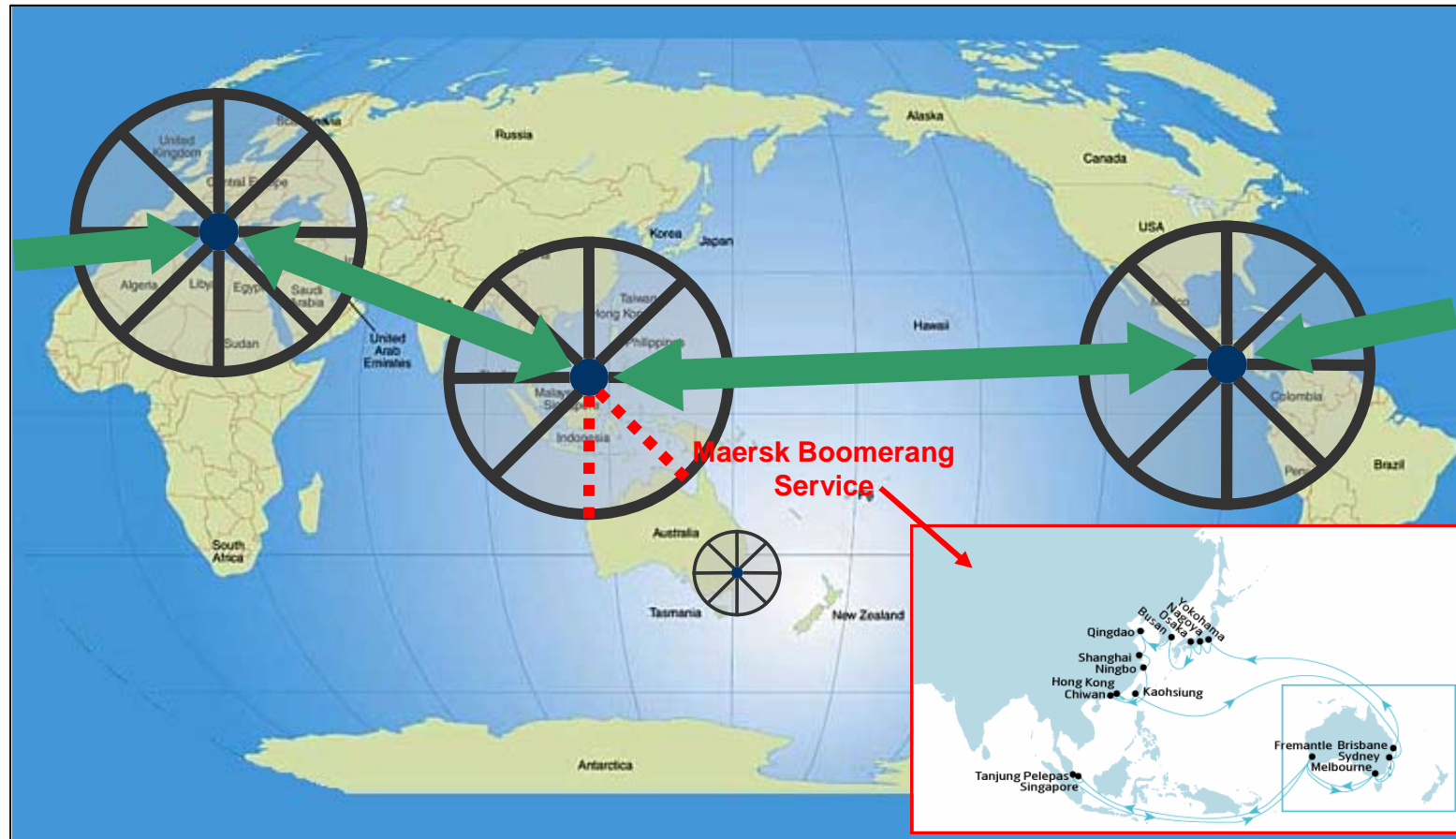
However:

- Australia's proximity to Europe (via Middle East)
 - Melbourne is actively seeking services from larger ships
 - High fixed cost industry means Australian ports would benefit from additional NZ volumes
 - Establishment of "Boomerang" type services through Australia and hubbing of Europe trade through Asia
- Significant portion of NZ trade is at risk
 - Consolidation of containers at a small number of hub ports in NZ would reduce this risk of this happening

New Zealand port sector

Risk of NZ containers being hubbed through Australia

- The fact that this very real risk exists and has major ramifications for New Zealand's international competitiveness means it is vitally important for NZ to respond by establishing hub capacity and the ability to handle larger ships



New Zealand port sector

Need for rationalisation

- Low bargaining power with shipping lines and intense inter-regional competition driven by
 - shipping line consolidation
 - close proximity of ports
 - fixed cost nature of the industry which drives the need for volume
 - low switching costs between ports

- Potentially resulting in net wealth transfer from NZ owners of ports to international shipping lines

- Returns unsustainable and insufficient to justify future investment

- Potential for significant unnecessary duplication of investment in infrastructure as hub port status contested

- Risk that, over time, NZ containers will be increasingly hubbed through Australia

- Resulting in outcomes that are not efficient or in the best interests of NZ and are detrimental to NZ's long-term productivity and competitiveness

- Rationalisation of the port sector is needed to address these issues
 - **does not mean a reduction in the number of ports, but is about how each port is best used to create value and an efficient supply chain that benefits NZ**

New Zealand port sector

Drivers and potential benefits of port sector rationalisation

Rationalisation Driver

Low profitability of shipping industry

- Consolidation / vessel sharing
- Pressure to cut costs

NZ port sector characteristics

- Large no. & close proximity
- High fixed costs
- Low switching costs

Lack of co-ordination within NZ port and transport sectors

Larger ships and hubbing

Globalisation

Population Growth

Environmental Concerns

Impacts on New Zealand

- Intense inter-regional port competition
- Low bargaining power with shipping lines
- Port sector returns insufficient to justify future investment

- NZ hub ports required but status contested resulting in unnecessary duplication of infrastructure
- Risk of NZ cargo being hubbed through Australia

- Freight growth (concentrated in the Upper North Island)
- Pressure on port and transport infrastructure

- Need to reduce carbon emissions

Benefits of Rationalisation

- Increased bargaining power with the international shipping lines
- Ability for NZ ports to achieve the sustainable returns required for future investment in critical port infrastructure

- A clearly defined hub and spoke port network within NZ would:
 - minimise unnecessary future duplication of investment
 - optimise the timing of capital spend
 - meet the requirements of international shipping lines thereby increasing the likelihood of continued regular and affordable direct services to NZ

- Potential supply chain efficiencies and cost savings to help manage increased freight movements and preserve and enhance NZ's international competitiveness e.g. through more efficient cargo flows
- Consolidation of cargo at a small number of NZ hub ports will result in greater inland freight movements, however could result in reduced carbon emissions due to the reduction in number of ships calling in NZ and increased use of coastal shipping and rail

Transport infrastructure

Challenges

- Port and transport infrastructure planning and development need to be highly interdependent
 - ‘whole of supply chain’ approach
 - ensure matching of port and transport capacity to prevent bottlenecks or stranded assets
- NZ land transport system faces a number of challenges
 - Geography
 - Historical underinvestment in road and rail infrastructure (quality ranked significantly lower than Australia)
 - High freight costs relative to other countries
 - Significant forecast growth in land transport activity
 - Environmental concerns and increasing fuel prices
- Inadequate supply of infrastructure ranked as most problematic factor for doing business in NZ
- Government and industry initiatives
 - Amended Government Policy Statement
 - National Infrastructure Plan
 - National focus of transport networks
 - Industry studies – NZ Shippers Council, NZ Business Council for Sustainable Development



Identification of potential hub ports

Shipping lines' choice of port

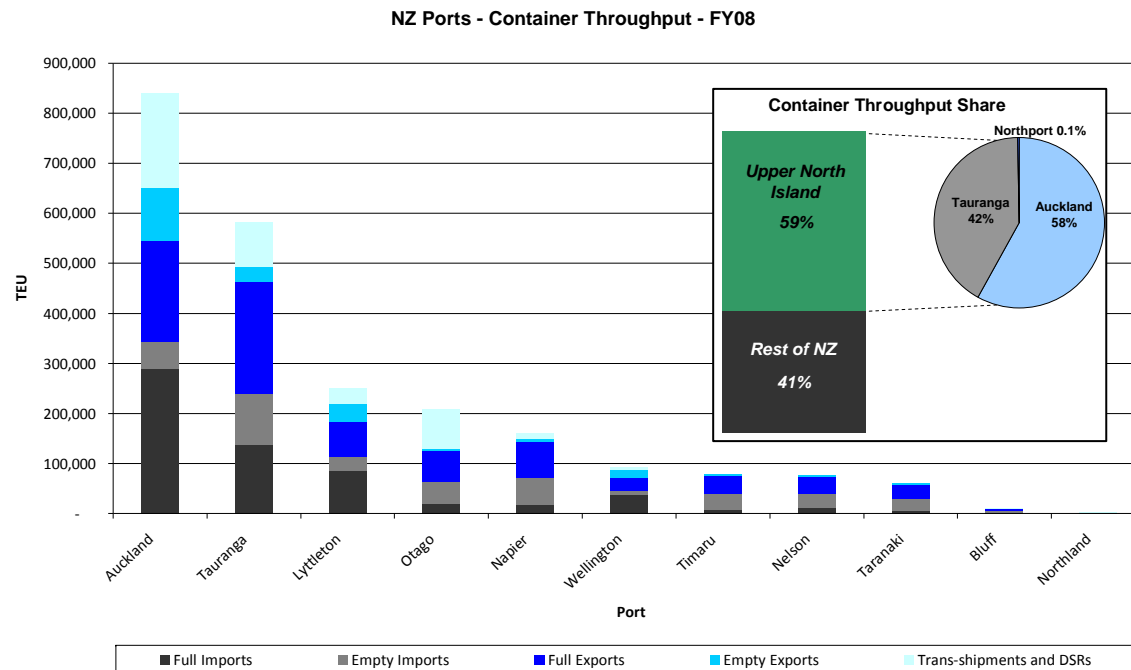
- Given the large number and close proximity of ports, shipping lines play one port off against the other, often on the basis of price e.g. Auckland vs. Tauranga, Lyttelton vs. Otago etc.
- However, larger ships and hubbing will require them to choose their major hub port over the long-term. Evidence of this has already been seen in NZ
- Shipping lines' choice of port is determined by a wide range of factors which vary between the various shipping lines and cargo types. Strategic considerations are important
 - e.g. route optimisation that drives vessel utilisation, competitive dynamics around capacity availability etc.
- Other key considerations include:
 - Container volumes
 - Cargo profitability i.e. imports, reefer, other
 - Cargo balancing
 - Location i.e. proximity to major customers
 - Productivity
 - Infrastructure i.e. ability to handle larger ships
 - Landside services and connectivity
 - Reliability
 - Port charges
 - Service differentiation



Identification of potential hub ports

Container volumes and import / export flows

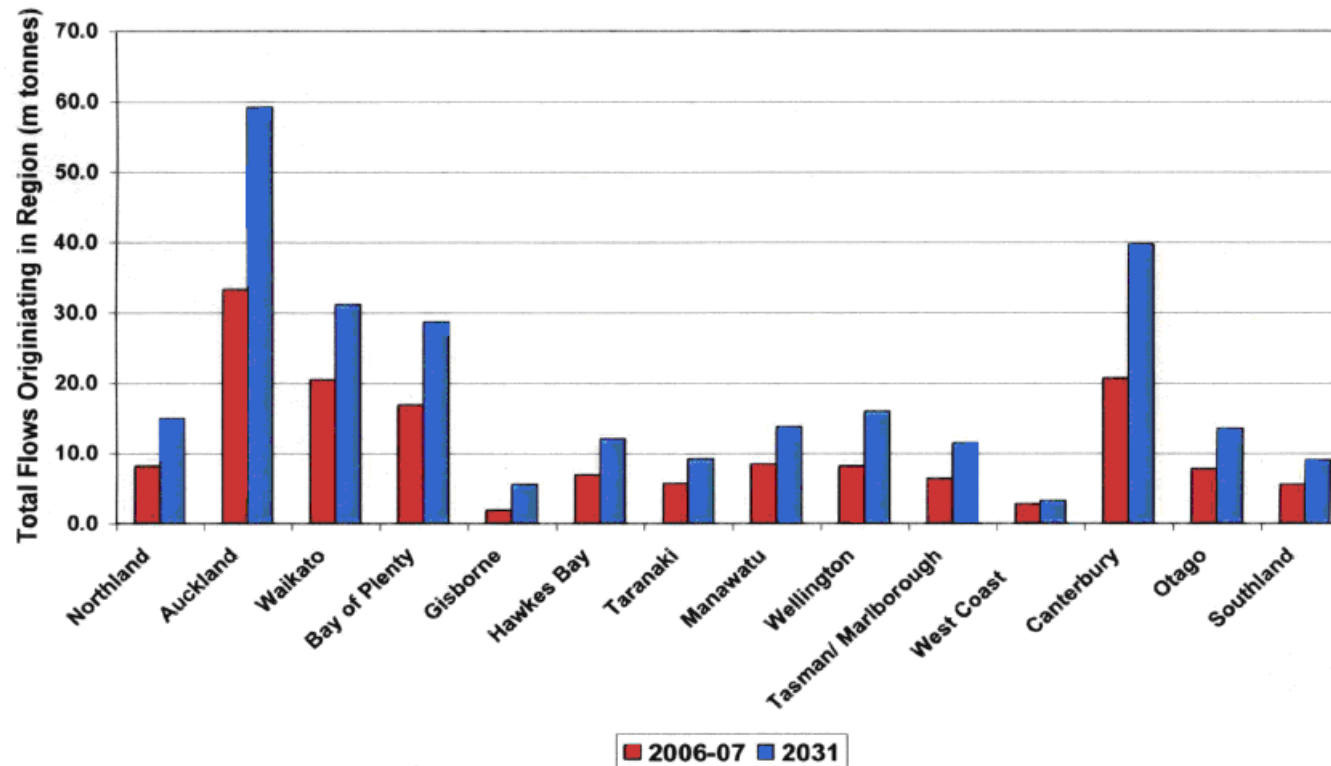
- Container trade is concentrated in the upper North Island (almost 60% of NZ's total container throughput)
- Export and import proportions largely mirror a concentration of industry and population
- Key container export ports are Tauranga and Auckland, with significant volumes also exported out of Napier, Lyttelton and Otago
- Key import markets for containers are Auckland, Christchurch, Wellington and Bay of Plenty
- Exports generally tend to flow out of the nearest port. Exceptions include:
 - Fonterra – consolidating port use
 - Coal – railed from west coast to Lyttelton
 - Steel – some exported from Tauranga
 - Meat – proportion of Taranaki production shipped from Auckland and Tauranga



Identification of potential major / hub ports

Forecast freight growth by region

- New Zealand's total freight task is expected to increase by 75% by 2031
- The major growth is expected to occur around Auckland, Waikato, Bay of Plenty and Canterbury
 - this will create significant challenges as demand for services and transport infrastructure increases



Source: National Freight Demands Study, Ministry of Transport (2008)

Identification of potential major / hub ports

Container imbalances

- The worldwide repositioning of empty containers is a substantial problem for international container transport operators, and a major cost driver
- Around 30% of the containers leaving or coming into New Zealand ports are empty. At both a national and individual port level, NZ's total import and export flows by port are imbalanced due to differing population and industry concentrations
- These imbalances are further exacerbated when considered by container type and size

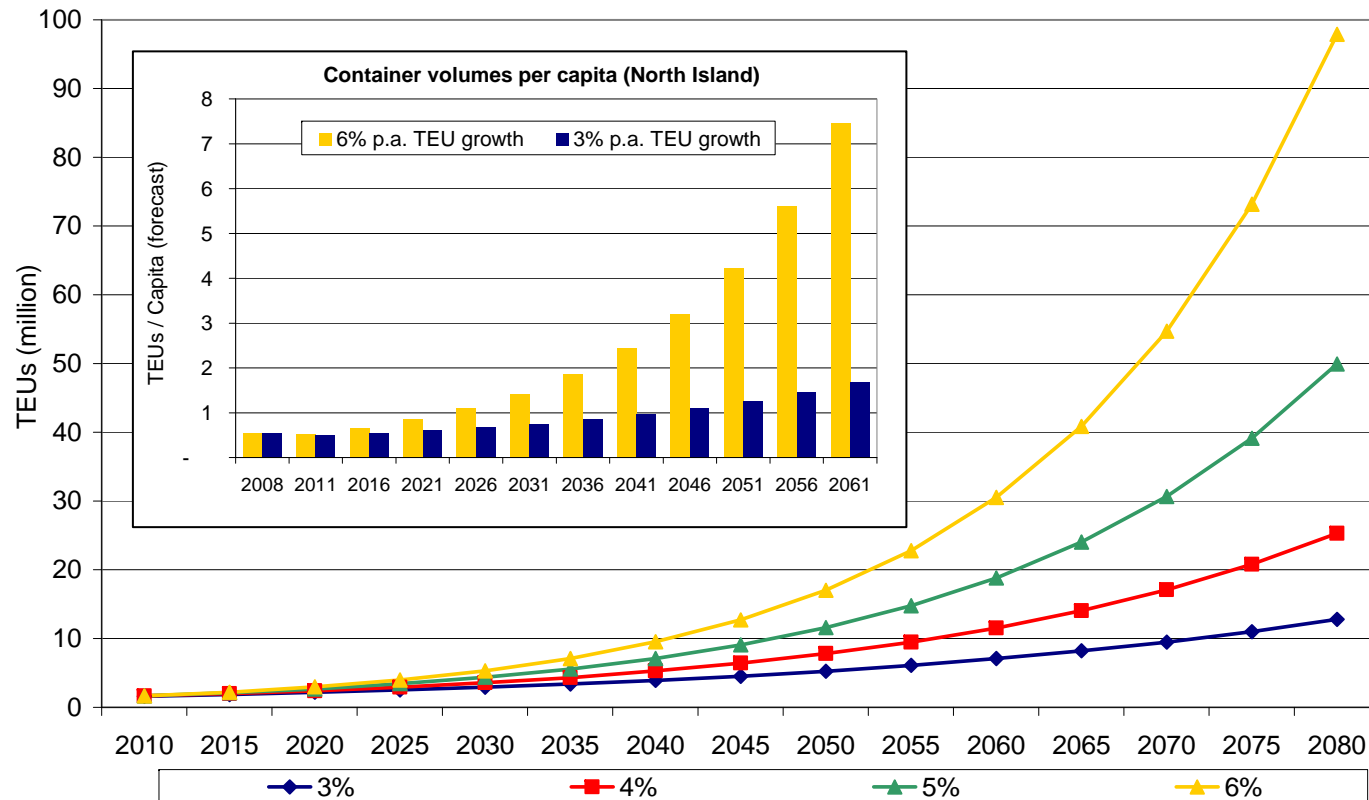
Port	Proportion of Full Containers that are:		Imbalance (i.e. variation from 50:50 "balanced" split) ⁽¹⁾	TEU Imbalance (000s) ⁽¹⁾
	Imports	Exports		
Auckland	59%	41%	9%	87,318
Tauranga	38%	62%	12%	86,529
Lyttelton	55%	45%	5%	14,641
Otago	23%	77%	27%	43,563
Napier	20%	80%	30%	52,296
Wellington	57%	43%	7%	9,288
Timaru	18%	82%	32%	29,251
Nelson	26%	74%	24%	21,764
New Plymouth	15%	85%	35%	22,057
Bluff	21%	79%	29%	4,120
Northland	1%	99%	49%	939
Total	45%	55%	5%	149,272

Note (1): *Blue = excess imports; Red = excess exports*

Identification of potential hub ports

North Island container growth scenarios

North Island container volume growth scenarios

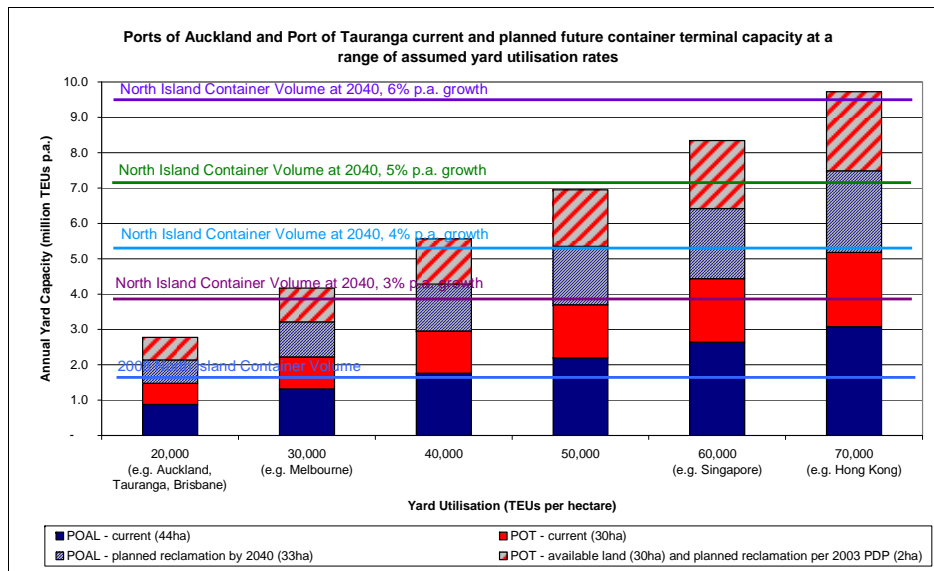


- A long-term planning horizon is needed. Long-term forecasts are very sensitive to the assumed growth rate:
 - 5% is often used within the industry as a medium to long-term container growth assumption
 - International shipping industry annual container growth factor rule of thumb is GDP x 2.0-2.5
 - 6% appears optimistic over the very long-term especially relative to projected population growth

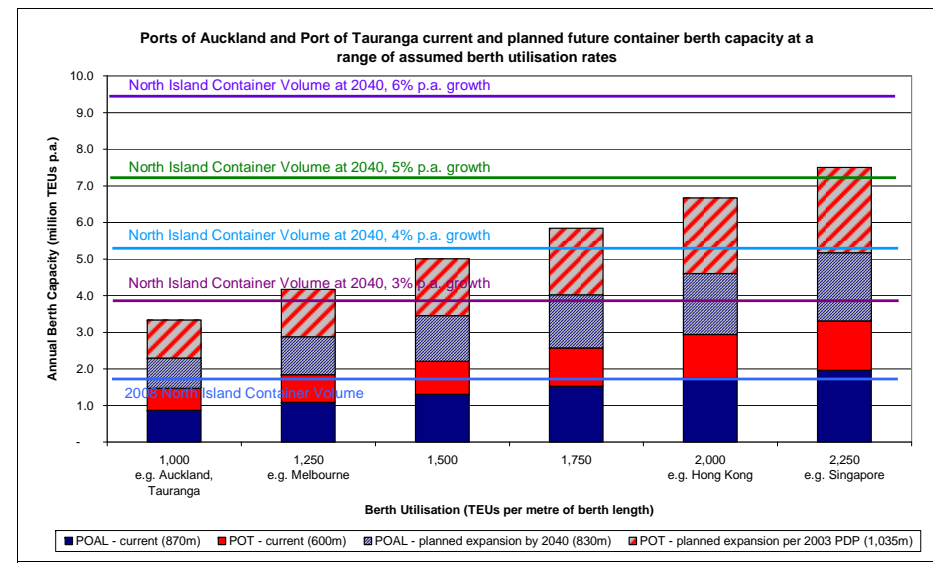
Identification of potential hub ports

North Island indicative capacity analysis

Auckland and Tauranga container terminal capacity



Auckland and Tauranga container berth capacity



Source: Estimates based on Ports of Auckland and Ports of Tauranga websites and public domain port development plans

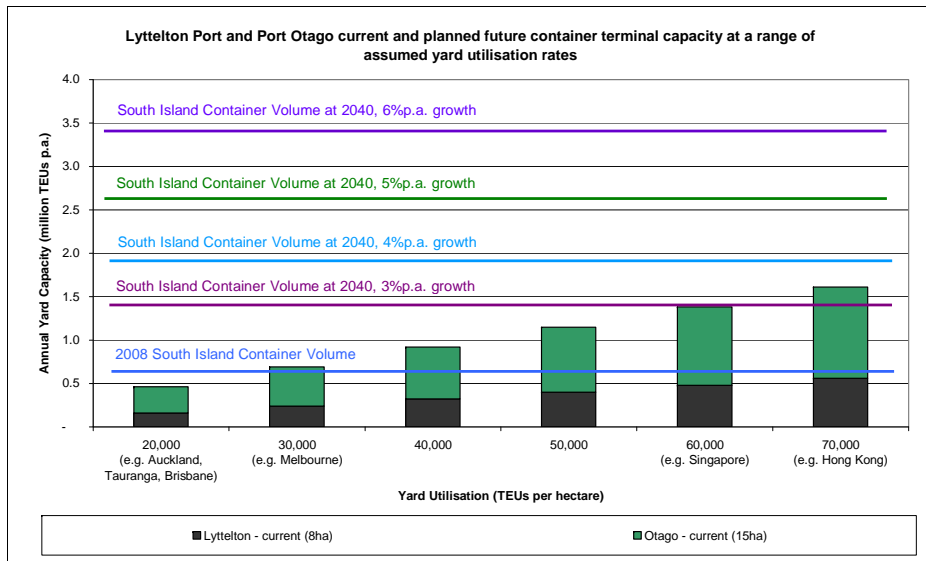
- Key physical capacity constraints for ports are container terminal area and berth length
- Only under world class productivity levels could Auckland and Tauranga's planned combined future port capacity be sufficient to meet projected North Island container demand in 2040, assuming 5%-6% p.a. compounding growth
- Berth length appears likely to be the greater constraining factor

Note: this analysis does not take into account transport infrastructure capacity and requirements

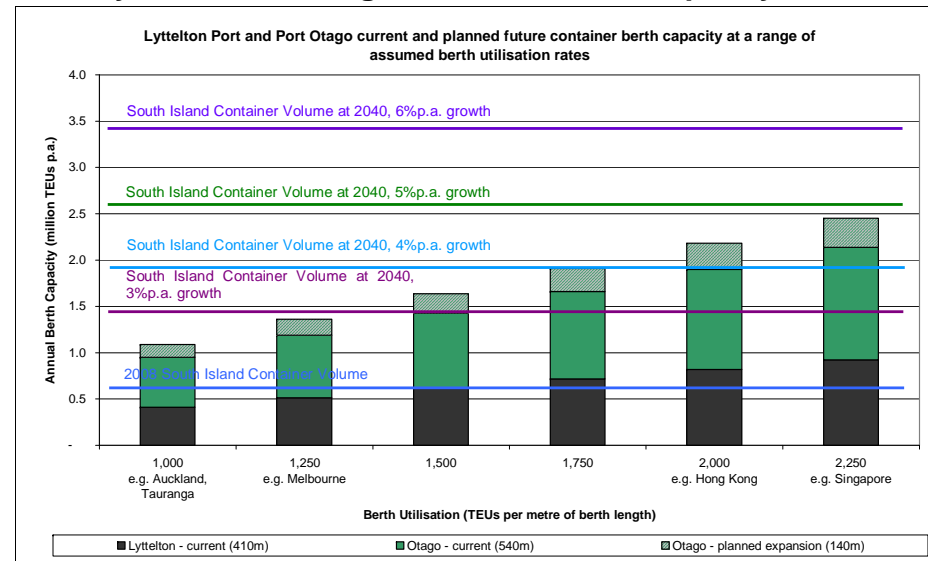
Identification of potential hub ports

South Island indicative capacity analysis

Lyttelton and Otago container terminal capacity



Lyttelton and Otago container berth capacity



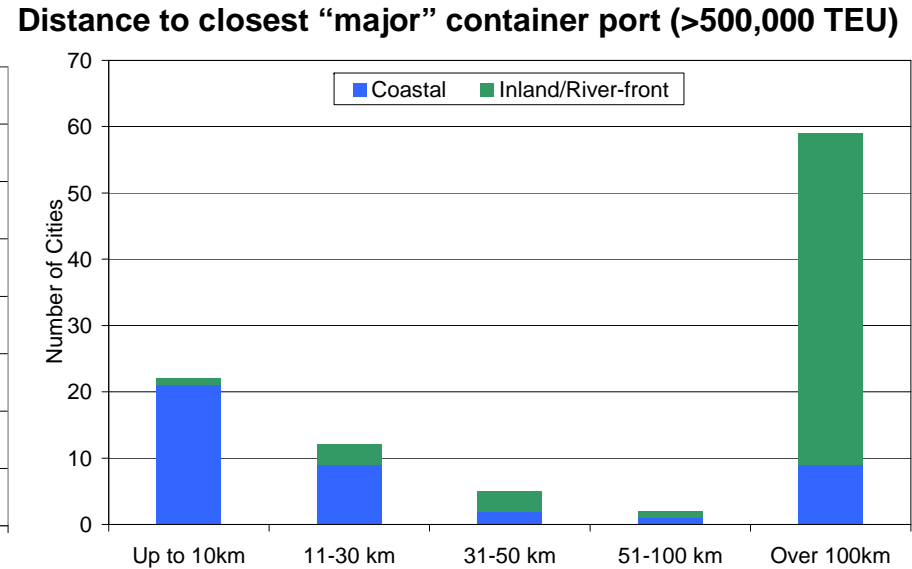
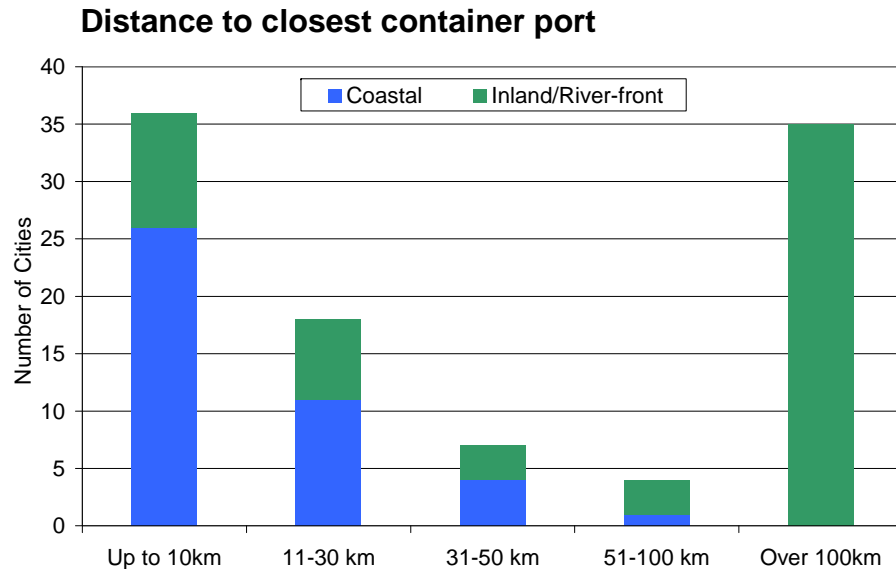
Source: Lyttelton Port and Port Otago websites, Port Otago application for resource consent (September 2008)

- South Island container volumes are expected to grow at a slower rate than North Island volumes
- In contrast to the North Island, container terminal area (rather than berth length) appears likely to be the future capacity constraining factor. However, inland ports can be used to reduce dwell time at terminals
- Significant additional container terminal land would require expensive reclamation
- It appears that in the absence of significant reclamation, even assuming current world class utilisation rates are achieved by 2040, both Lyttelton and Otago ports will be needed in order to cater for the South Island's future capacity requirements, even assuming only 3%p.a. growth

Identification of potential hub ports

Port location – international benchmarking

- All of the world's major coastal cities are located within 100 kilometres of a container port.



Source: Publicly available information and ARH analysis

- Main reason for observed instances of port relocation is requirement for deeper water and land for expansion
- Examples of port establishment closer to city centre, e.g. Stockholm and Taipei, demonstrate value of being close to economic and population hub
- Large Gateway Port is being established 50km from London’s city centre
- Auckland, NZ’s largest urban region, has no feasible alternative locations for a deep water port (Tauranga and Northport are 150-250km away)

Identification of potential hub ports

Conclusions

- Australia's 3 major ports are planning investment to handle 4-7 million TEUs each by around 2030-2035, utilising terminal land area between 150-300 hectares. This indicates the significant scale NZ's container hub ports will need to reach in the long-term to remain internationally competitive
- All NZ's container ports face challenges/constraints and require significant investment in both port and transport infrastructure to achieve this scale and to maintain internationally competitive productivity levels
- In the absence of a very large greenfield NZ super-port in the upper North Island, NZ is likely to require:
 - capacity increasing technology, e.g. stacking equipment, inland ports, transport infrastructure
 - at least 3 major international container ports operating at world class productivity levels
- Competitive advantages of NZ's container ports are largely associated with their proximity to industry and/or population, as well as their natural physical characteristics e.g. deep water harbour, ability to expand, etc.
- Increasing environmental awareness favours ports located close to major consumption and production bases



Identification of potential hub ports

Conclusions

- NZ's largest hub port(s) will need to be in the upper North Island, with the Ports of Auckland and Tauranga the key candidates due to their proximity to the large import and export bases, existing investment in infrastructure, forecast future freight growth, and ability to handle larger ships
- Potential volume increases (which over the longer term are expected to be significant), combined with future capacity constraints means that both (rather than one) are likely to be required into the foreseeable future. Further growth and investment at both of these ports, as well as in supporting infrastructure, will be required
- North Island capacity, investment, and cargo flows could be optimised through some form of container business combination between these two ports
- Northport, also has the future potential to develop a significant container port terminal, subject to major investment in the rail network



Identification of potential hub ports

Conclusions

- Given its remote West Coast location and small population, Taranaki appears more suited to providing an important New Zealand coastal feeder hub for non-containerised cargo and potentially a trans-Tasman container feeder service
- NZ requires at least one major South Island port to consolidate significant South Island export volumes before being shipped (either coastal or international) due to the Cook Strait
- The leading major South Island port candidates are Lyttelton and Otago due to their existing investment and proximity to major population and production bases
- An alliance between these two ports could enable optimisation of South Island container capacity and cargo flows
- NZ's other container ports are likely to become regional feeder ports



What can assist port sector rationalisation

Co-ordination amongst all stakeholders required

- The Government has indicated that it sees infrastructure development as vital to NZ's future economic growth and productivity
 - Achieving an optimal port and overall supply chain configuration for NZ will make a significant contribution to the Government's key objective of improving NZ's economic growth, productivity and international competitiveness

- **Step One: Determine optimal configuration of NZ port sector and overall supply chain**
 - requires identification of future hub ports in context of overall supply chain
 - requires input from all industry stakeholders i.e. Government, ports, cargo owners, shipping lines etc
 - Government support required for industry led initiatives
 - Government could co-ordinate recommendations of all industry stakeholders by developing a National Ports and Freight Strategy (this is happening in Australia)
 - this would provide the guidance and confidence for future investment in port and transport infrastructure

What can assist port sector rationalisation

Co-ordination amongst all stakeholders required

- **Step Two: Action Plan**

- A thorough review of the current structure of the NZ port sector and regulatory and policy environment will be an important first step
- Improved co-ordination within the sector is needed to minimise bottlenecks and unnecessary duplication of investment, as well as increased bargaining power with international shipping lines to enable ports to earn sustainable financial returns necessary to invest in NZ's significant long-term infrastructure requirements
- Scarce public sector funds for port and supporting transport infrastructure need to be invested efficiently for the port sector to remain internationally competitive, particularly with Australia
- The Government's decisions regarding transport policy and investment will play an important role by ensuring timely investment in supporting transport infrastructure capacity i.e. state highway and rail networks that link to the ports

Summary

- The current structure of the NZ port sector is neither efficient nor sustainable and poses a significant threat to NZ's future international competitiveness
- Certainty is needed to ensure efficient investment in port and transport infrastructure
- Optimisation of the NZ port sector, within the context of the overall supply chain, is required
 - it is not about the number of ports but how each is used to create an optimal supply chain
- A co-ordinated approach to planning is required
 - involvement from all industry stakeholders
 - integration across the whole supply chain



If you have any queries or would like further details please contact:

Peter Casey at peter.casey@arh.co.nz

Tel: 09 303 9460

Aimee Comer at aimee.comer@arh.co.nz

Tel: 09 303 9467

Sheree Voyce at sheree.voyce@arh.co.nz

Tel: 09 300 5059