International Studies & Regulatory Framework

11 INTERNATIONAL STUDIES OF COASTAL SHIPPING

11.1 INTRODUCTION

In considering the factors that might shift more domestic freight in New Zealand from road and rail onto coastal ships it is appropriate to consider relevant experience globally. Coastal and Short Sea Shipping services enjoy an increasing focus worldwide as governments seek to reduce the impact of continued growth in the freight task on established infrastructure. As advocated by proponents in the European Union, the aim of promoting Short Sea Shipping is to avoid the "negative consequences in terms of additional road infrastructure costs, accidents, congestion, local and global pollution, the reliability of the supply chain and of logistics processes and environmental damage."

11.2 EUROPEAN UNION

The European Union ("EU") is considered to be at the forefront of Short Sea Shipping research and development. Short Sea Shipping is defined as a logistics concept covering the sea leg of door-to-door freight transport of containers, trailers, general cargo and bulk within Europe and with countries geographically close to Europe. Whereas intra-regional shipping operates in Europe across seas, in New Zealand shipping facilitates trade on the coast. Between 1995 and 2007, the total tonne-kilometre volume of Short Sea Shipping in the 25 member EU grew by 37%, while road freight grew by 50%. Short Sea Shipping performs 37% of all tonne-kilometres in the EU-25 while the share of road is 46%. The fastest growing segment of the Short Sea Shipping market is containerised cargo with average yearly growth rates of 8.8% since 2000.

Pertinent segments from EU legislation:
"The Commission White Paper on the Common Transport Policy" of September 2001 stresses the development of intermodality as a practical and effective means to achieve a balanced transport system, and proposes not only the development of Motorways of the Sea, high quality integrated intermodal maritime options, but also the more intensive use of rail and inland waterway transport as key elements in this strategy."

The EU has set ambitious targets for its Short Sea Shipping promotion programme. "If no decisive action is taken, total road freight transport in Europe is set to grow more than 60% by 2013. The effect would be an estimated growth in international road freight for the period 2007 to 2013 of 20.5 billion tonne-kms per year for the 25 Member States of the EU, with negative consequences," as noted above.

"It should help to shift at least the expected aggregate increase in international road freight traffic, but preferably more, to Short Sea Shipping, rail and inland waterway transport or to a combination of modes of transport in which road journeys are as short as possible."

European studies and experience offer several insights into the problems and long term feasibility of Short Sea Shipping initiatives. Points of note include:

- For distances of less than 150 km, road transportation is more competitive than all other modes including combined transport solutions;
- The breakeven point between road and rail is estimated to be 170-250 km from a port;
- Short Sea Shipping requires high volumes to achieve acceptable breakeven points in service frequency and cost;
- European maritime professionals estimate stevedoring and port charges account for over 50% of the cost of Short Sea Shipping in Europe;
- 24 hour port access, the organisation of warehousing and distribution areas and land access facilities are important for viable Short Sea Shipping operations;

- Short Sea Shipping requires full integration in the intermodal supply chain;
- A negative image of Short Sea Shipping in the market place prevails due to complicated customs and administrative procedures, high port duties, longer transit times and holdups at interchanges;
- Deep sea container lines have the greatest influence on the structure of inland networks and transfer terminals in Europe. Shipping industry rationalisation and the formation of strategic alliances are increasing their influence;
- A survey of 700 sample shippers identified 'Reliability', 'Cost', 'Punctuality' and 'Time' as the top criteria by which they judge competing transport modes; and
- Short Sea Shipping was graded 'poor' for non-scheduled transport and for the application of information technology in freight services.

EU initiatives to encourage a modal shift by shippers vary in their magnitude. The 2001 White Paper "European transport policy for 2010: time to decide" outlined the key policy initiatives of the transport industry in the EU this decade, with a continued focus on Short Sea Shipping. The PACT programme initiated in 1992 successfully launched 167 modal shift projects on a budget of €53 million. The 'Marco Polo' programme replaced PACT in 2001 and Marco Polo II has a total budget of €400 million for the six years 2007 – 2013 and an even bigger mandate to encourage Short Sea Shipping projects.

In addition to industry subsidies, directives have been introduced with the aim of addressing the perceived structural shortcomings of Short Sea Shipping. Standardising reporting formalities for ships entering and leaving EU ports is one key focal point. The European Commission has advocated the creation of 'one-stop administrative stops' in the ports of Member countries to streamline compliance procedures and reduce the number of administrative steps. A guide to customs procedures for Short Sea Shipping has also been produced after identifying simplification opportunities. The Commission is aiming to ensure the use of common electronic forms by 2013 at the latest.

The identification and rectification of intermodal issues are key to improving the flow of freight to Short Sea Shipping. The multitude of different loading unit configurations in Europe in the past has created friction, costs and delays in handling between modes. Standardising pallet sizes, corner fittings and steering tunnels has been important to enhancing the competitive position of shipping over a pure overland route.

The image of shipping as an 'old fashioned' industry received much attention in Europe. In an attempt to change attitudes, the European Commission sought to communicate that Short Sea Shipping can offer a quality service with speed, reliability, flexibility, regularity, frequency and cargo safety. The appointment of national maritime representatives, workshops, conferences, seminars and the distribution of promotional material have all been utilised to this end. There are Short Sea Promotional Centres operating in 19 countries in Europe. These countries are Belgium, Bulgaria, Cyprus, Croatia, Denmark, Finland, France, Germany, Greece, Holland, Ireland, Italy, Malta, Norway, Poland, Portugal, Spain, Sweden, and the United Kingdom.

These Centres undertake a range of promotional activity targeting potential users, the media, politicians and bureaucrats. They offer neutral advice on the use of Short Sea Shipping to meet the needs of transport users. Most have websites that provide details of all scheduled shipping services to and from any port in the country and destinations, transit times and links through to the appropriate service provider for quotations. The web interface for the European Shortsea Network is presented below.

The EU has formally designated "Motorways of the Sea" a concept which aims at introducing new intermodal maritime-based logistics chains on four key transport routes in Europe by 2010. They are considered as part of the Trans-European Network and are intended to provide attractive alternatives to road motorways for transport users. The EU acknowledges that significant changes in mode selection can only be achieved through the concentration of freight flows onto these sea routes. This requires active partnerships between ports, shipping lines, land-based transport providers, freight consolidators and the public sector, to ensure that the required inter-modal infrastructure is in place. Such flows will be concentrated onto a relatively small number of ports to ensure this freight concentration occurs and the necessary frequency of services is available.

The four routes developed are:

- Motorway of the Baltic Sea, linking the Baltic Sea and the North Sea-Baltic Sea canal;
- Motorway of the Sea of western Europe, from Portugal and Spain via the Atlantic Arc to the North Sea and the Irish Sea;
- Motorway of the Sea of south-east Europe, from the Adriatic Sea to the Ionian Sea and the Eastern Mediterranean, including Cyprus; and
- Motorway of the Sea of south-west Europe; western Mediterranean, connecting Spain, France, Italy and including Malta and linking with the Motorway of the Sea of south-east Europe and including links to the Black Sea.

The EU continues to support ongoing research in a range of areas including lowering ship emissions, new ship types, engines and port equipment. The EU is working towards a single reliable statistical source covering all components of the Short Sea Shipping industry in Europe.

In total the EU identified 161 bottlenecks that hindered the development of Short Sea Shipping in the region in 2000. In a 2006 review, it noted that a number of obstacles still prevented Short Sea Shipping from developing rapidly. These fall into three broad categories:

- **Integration**: Still not reached full integration into multi-modal door-to-door supply chains;
- **Administration**: It involves complex administrative procedures; and
- **Efficiency**: It requires higher port efficiency and good hinterland accessibility.

The same review looked at the progress made on initiatives to overcome these failings. Examples included the new computerised transit system in operation since 2003, which has enabled electronic messaging to replace the previous paper based system. In 2005 the Commission introduced a system update to further simplify and streamline Customs procedures and create a paperless environment for Customs and trade that enhanced security aspects. It also noted that the creation of a single reliable statistical source of tonne-kilometre data on Short Sea Shipping was close to completion.

11.2.1 Maritime Regulation in the EU

The European regulatory framework is complicated by the mix of regulations and legislation at the EU, national and sub regional levels.

Four regulations, numbered 4055/86, 4056/86, 4057/86 and 4058/86, establish the principles of freedom to provide services, competition, and free access to the market in sea transport. A further regulation, No 3577/92, deals specifically with freedom to provide services in sea transport within Member States ("Maritime Cabotage").

Regulation 4055/86 provides Member State nationals (and non-Community shipping companies using ships registered in a Member State and controlled by Member State nationals) the right to carry passengers or goods by sea between any port of a Member State and any port or off-shore installation of another Member State or of a non-Community country.

Maritime cabotage in the EU was liberalised on 1 January 1993. In the case of France, Italy, Greece, Portugal and Spain, mainland cabotage was gradually liberalised according to specific timetables for each type of transport service. Mainland and inter-island cabotage for these countries was liberalised in 1999. The exemption was prolonged to 2004 for Greece for scheduled passenger and lighter services and services involving ships of less than 650 gross tonnages.

Enacted regulation grants freedom to provide maritime transport services within and between Member States (Maritime Cabotage) for Community ship owners operating flagged and registered Member State ships, subject to these ships complying with the cobatage conditions for that Member State.

11.3 AUSTRALIA

Australia, our closest neighbour and a country which shares a common legal and cultural heritage, has taken steps recently to assess perceived constraints facing their coastal shipping industry. In October 2008 a House of Representatives Standing Committee on Infrastructure, Transport, Regional Development and Local Government produced a paper titled "Rebuilding Australia's Coastal Shipping Industry". The scope of the inquiry was to consult widely with industry stakeholders and to develop a practical policy framework to encourage coastal shipping with regulatory options for the Government to enact. In the consultation process 81 submissions were received from 66 parties from industry, Government, labour unions and individuals. During the inquiry the Committee defined coastal shipping in the widest possible sense, as 'ships engaged in Australian coastal trade under licence or registered under the Shipping Registration Act'. This encompassed both Australian and foreign flagged ships.

Shipping in Australia last year accounted for 26% of the total domestic freight task, and like New Zealand, had experienced a steady decline of market share over the last decade with the move of freight to road and rail. The vast majority of freight handled by coastal shipping is bulk products such as petroleum products, cement, minerals and steel. In 1996 Australian registered trading ships numbered 75, but by 2005/06 this had fallen to 46. Today foreign registered ships utilising permits under the Australian Navigation Act 1912 offer the majority of domestic shipping capacity and consequently there exists a skills crisis in the local maritime industry.

In an attempt to improve shipping's competitive position against overland modes of transport, the Standing Committee provided a very specific set of measures for the Government to implement, focusing on maritime and tax legislation. Of particular interest to a New Zealand context is the recommended introduction of a tonnage tax regime in Australia. A tonnage tax system provides domestically registered ships the option of paying income tax based on the tonnage of their ships rather than their business earnings. The system can offer shipping companies greater certainty and simplicity in their tax provision and is of considerable benefit to service providers in years of bumper profits. The scheme however, can have the opposite effect when shipping companies make losses. Tonnage tax systems enjoy widespread support globally, with the UK, US, Belgium, Germany, Greece, Norway and Denmark all employing similar schemes. In the UK, where tonnage tax is cited to have had particular success, the scheme locks in a tax payer's preference for ten years. A survey by the Committee in Australia found widespread support amongst local stakeholders for a scheme as it would encourage ships to register in Australia and, as the Committee recommends in Australia's case, would be linked to local seafarer training requirements. The Committee recommended that urgent consideration be given to the introduction of a tonnage tax in Australia as part of suite of other reforms in order to stimulate the growth of the domestic industry. Also recommended was that it be linked to an obligation to provide training to seafarers.

Another key tax reform included in the Committee's recommendations is the re-introduction of accelerated depreciation on ships. In 1989 a Shipping Reform Task Force in Australia initiated a package of reforms which included accelerated depreciation tax provisions. This was noted to have had a positive effect on the Australian shipping industry at the time with 36 new ships introduced to the country between 1988 – 1994. In aggregate this constituted A$1.6 billion of investment. In 1996 the provisions were reversed to achieve neutrality in the tax system, and a subsequent fall in the number of registered ships was experienced. The Committee now recommends a re-introduction of the tax legislation with an accelerated depreciation rate of 20% and a useful life of five years for ships. As a comparison, the Committee noted Australian trucks are capped at a useful life of 7.5 years.

In addition to tax reform, the Committee recommended a number of other changes to the regulatory framework within which coastal shipping operates in Australia.

Port interchanges are vital to the success of the coastal shipping industry in Australia and as such the Committee recommends the creation of a national port development plan to address current and potential capacity constraints. Particular emphasis is placed on the need to provide berth space for coastal shipping operators upon the increase in trade. It is noted that without greater funding to expand general cargo berths, coastal shipping operations will continue to cede scheduled berth slots to the needs of international container lines.

In relation to the shortage of skilled seafarers in Australia, the Committee recommends the creation of a national maritime training authority and the introduction of a national training ship to Australia. Attracting suitably interested students to the industry is not seen as the source of the skill shortage, rather the selection, training and retention of new seafarers is the issue. The Committee also recommends an investigation into the transferability of skills between the Navy and civilian maritime industry.

In addition to the Standing Committee enquiry, Meyrick and Associates, in conjunction with GHD and Booz Allen Hamilton produced an "International and Domestic Shipping and Ports Study" for the Government of South Australia in May 2007 and on behalf of the Australian Maritime Group ("AMG").

The International and Domestic Shipping and Ports Study covered three main areas:

- Implications of developments in the legislative and regulatory environment for shipping, ports and logistics, with an assessment of likely impacts for Australia;
- Implications of changes in the Australian international sea freight task over the period 2005-2020 encapsulating the container, bulk and breakbulk trades with an assessment of existing plans to increase port capacity and the size / nature of any resulting capacity shortfalls; and
- Increasing shipping's share of the Australian domestic freight task with a focus on the current market, required success factors, potentially contestable market volumes based on 'optimal conditions', and the opportunities Government and industry may have to support the future viability of coastal shipping.

The study noted shipping's share of the inter-state non-bulk freight task is currently just 3% in mass terms. Indeed, domestic container traffic on the coast between Perth and the Eastern States, and between Brisbane and the south-eastern seaboard ports totalled only around 65,000 TEU (or around 1 million tonnes of freight) in 2005. Virtually all containers in this market were carried by international ships, constituting approximately 40,000 TEU shipped between the Eastern States and Freemantle and 25,000 TEU between Brisbane and Sydney / Melbourne / Adelaide. The vast majority of cargo was shipped on international ships travelling on single voyage permits. Australia no longer has a domestic based coastal shipping industry outside of the Tasmania – Mainland route and the provision of product specific ships that distribute bulk products such as petroleum and cement. Road is estimated to carry 73.6% of domestic inter-regional freight and rail 23.5%.

The study concluded that the opportunities to increase coastal shipping's market share are significant, both through organic market growth and targeted market share capture initiatives. The majority of additional coastal volume is likely to be captured from rail. It identified three types of product that coastal shipping should target:

- Low value commodities where the cost of transport is a significant part of the product-to-market cost such as building products, timber, paper, base chemicals and certain agriculture products;
- Heavy weight and hazardous cargo such as metals, chemicals and gases; and
- Commodities which are not time sensitive and move between distribution points close to ports, such as raw material inputs for manufacturing industries or stock transfers for regional storage facilities.

11.3.1 Maritime Regulation in Australia

The maritime industry in Australia is governed by a comprehensive and somewhat complex set of regulations. The principal piece of legislation is the Navigation Act 1912. Cargo can be shipped around the Australian coast in ships either licensed under Part VI of the Navigation Act 1912, which are subject to all Australian labour laws, or by international ships under single voyage or continuous voyage permits also issued under Part VI of the Navigation Act 1912. International ships are not subject to many of the Australian labour laws and not obliged to pay Australian rates of pay under a single voyage permit. As detailed in the Standing Committee Report:

"Part VI of the Act applies to ships entering Australia (operating under permit in the coastal trade) and ships introduced by an Australian entity to operate permanently on coastal voyages (under licence and engaged in the coasting trade). There is a clear distinction made by the Department for Infrastructure, Transport, Regional Development and Local Government, between operating (under permit) and engaged (under licence). This distinction is important because if a ship is deemed to be engaged then it must be licensed and therefore required to comply with several Australian Acts."

11.3.2 Coasting Trade Licences

Section 288 of the Act requires a ship to be licensed to enable it to engage in the coasting (interstate coastal) trade. The legislation sets no restriction as to nationality of the ship or the crew, it is only necessary that the ship complies with a number of conditions, namely that:

- Crew aboard a licensed ship must be paid Australian wages when engaged in the coasting trade under a continuing voyage permit (s.288);
- Crew must have access to the ship's library for passengers if there is no library for the crew on the ship (s.288); and
- The ship must not be receiving any subsidy from a foreign Government (s.287).

Licences may be issued for a period of up to three years but in practice are issued for up to one year.

11.3.3 Coasting Trade Permits

The Act allows non-licensed ships to carry interstate coastal cargo in certain circumstances where they have been issued a permit. The relevant provision is Section 286 of the Act, which provides that a permit may be issued to a non licensed ship to carry coastal cargo in instances where:

- No licensed ship is available to meet the needs of shippers of domestic cargo [the availability test, ss.286(l)(a)]; or
- Where the service provided by licensed ships is not adequate to meet the reasonable needs of shippers [the adequacy test, ss.286(l)(b)]; and
- It is in the public interest.

Unlike licences, permits are issued at the discretion of the Minister (or his / her delegate). A permit can be either a Single Voyage Permit ("SVP") for carriage of a specified cargo between designated ports at a particular time or a Continuing Voyage Permit ("CVP") for a number of successive voyages between designated ports. The recent practice is to issue a CVP with a validity of up to three months, allowing a ship to trade between specified ports within this period. A ship using a permit is not deemed to be engaging directly in the coasting trade, and is thus not subject to the licensing requirements for ships operating in the coasting trade.

In 2005, 670 Single Ship Permits were issued for ships carrying an estimated 11.9 million tonnes of cargo. The majority of SVPs are used to carry dry bulk and petroleum products. In 2005 there were 154 CVPs used and these ships carried a total of 3.4 million tonnes of cargo.

11.4 UNITED STATES

Despite concerted efforts by industry and governing bodies, Short Sea Shipping in the United States ("US") has not enjoyed the same level of support or success as that achieved in Europe. Short Sea Shipping constitutes only 6% of the US's total freight tonnage, but, as in other increasingly congested developed countries, a continued emphasis is being placed on the development of the sector. One key initiative has been the establishment of the Committee on the Marine Transportation System tasked with developing a National Strategy for the Marine Transportation System. The strategy encompasses all aspects of marine transport including international, coastal, inland and intermodal components with an aim to ensure there is a comprehensive blueprint for the development of the marine sector in the US and appropriate coordination between all private, central and state government entities.

Other developments in the US include significant commitments to research on Short Sea Shipping. "US Short Sea Shipping: Prospects and Opportunities" is one such key study by the Centre for Maritime Studies US Merchant Marine Academy for the US Short Sea Shipping Cooperative. The study conducted a survey to assess the level of understanding amongst industry stakeholders. There were 43 responses received from a total of 128 surveys. Respondents included port authorities, terminal operators, logistics providers, shipbuilders, ship operators, domestic shippers and organised labour officials. The survey asked participants to rank factors in five categories (market, competition, finance, technical and socio-political) on a scale of 1 to 5 as critical or not to the future of Short Sea Shipping. Market size, market growth and technological integration in the intermodal supply chain were deemed to be more critical than other aspects, with all other factors rated neutral. The study applied a broad definition of Short Sea Shipping as "an alternative mode of transportation that will reduce highway congestion in the US".

To provide a viable alternative to overland transport, Short Sea Shipping must prove to be either more cost effective or offer a faster service. Interestingly, research in the US observes that for distances under 200 nautical miles Short Sea Shipping cannot compete commercially with overland transport modes, but as the freight journey lengthens the cost advantages of Short Sea Shipping increase significantly. At 800 nautical miles Short Sea Shipping is approximately half the cost of overland transport in the US. When the cost of highway construction is also accounted for, which is US$32 million per lane mile and US$100 million per interchange, unsurprisingly the cost / benefits of Short Sea Shipping are substantial and in the US this mode is attracting an increasing amount of attention. US road transport providers pay a range of taxes at both the State and Federal level to contribute to the cost of maintenance and construction of the highway network. Whilst the original interstate highway network was wholly funded on a user pays basis, this is no longer the case, with contributions made by both state and the federal governments.

Policy recommendations from the US maritime study include legal, tax and market awareness initiatives, but the study stresses the importance of conducting thorough cost / benefit analyses to ensure each proposal does not benefit special interest groups over society at large.

With regard to tax credits, the Center for Maritime Studies recommends a full review of harbour maintenance tax policy, with the introduction of income tax credits to encourage seafarer training and the provision of potential tax holidays to encourage entrepreneurs to start up Short Sea Shipping firms. The offer of property tax relief for ports developing or renovating facilities for Short Sea Shipping operations is also recommended.

Like the EU, the US maritime study recognises the importance of changing traditional market perceptions of Short Sea Shipping and recommends approaches to trucking company executives to encourage integration with shipping as a potential part of their broader service offering.

Currently there is discussion about the opportunity of wider collaboration between the US, Canada and Mexico which might involve some relaxation of the restrictions in the Jones Act to encourage the development of intra-regional shipping, akin to the regional Short Sea Shipping focus in Europe. From an administrative perspective, a major impediment exists in the lack of NAFTA wide documentation conformity and standardisation. Uniform documentation would be highly beneficial to the group and the expanded use of electronic processing would further enhance efficiency of transport between these three neighbouring countries.

11.4.1 Maritime Regulation in the US

The US has a comprehensive cabotage regime which is embodied in the Merchant Shipping Act of 1920, commonly referred to as the Jones Act. This restricts the right to carry US origin / destination coastal domestic traffic solely to US flagged ships. Under the Jones Act, ships engaged in these activities are required to be US-documented, US-owned and controlled, and US-crewed. It also provides the option to add a single international leg to a US domestic voyage. The Jones Act also discriminates on the basis of ship construction, with only US built ships able to ply this trade. The cost structures of US built, crewed and managed ships are considerably higher than their foreign equivalents and this is seen as an impediment to the introduction and development of a competitive domestic shipping industry.

The US also drives the global requirement for far greater commitment to security provisions. Through the Container Security Initiative high risk containers are identified and must be inspected in overseas ports before they reach the US. This also includes the "24 hour rule" which requires information on 14 aspects of the freight to be reported 24 hours before the container is loaded onto a ship.

11.5 KEY OBSERVATIONS / CONCLUSIONS

The following highlights selected general conclusions and trends observed from the above commentary:

- **Market Share**: Coastal shipping internationally has struggled to maintain significant market share and has often lost freight to the competing modes of road and rail. The vast majority of freight handled by coastal shipping is bulk products. However the fastest growing segment of the Short Sea Shipping market in the EU is containerised cargo.
- **Negative Perceptions**: In the US and Europe, the negative image of Short Sea Shipping is linked to complicated customs and administrative procedures, high port duties, longer transit times and holdups at interchanges. Reliability, cost, punctuality and time were rated as the top criteria by which shippers judge competing transport modes.
- **Increased Government Focus**: Coastal and Short Sea Shipping services currently enjoy an increasing focus worldwide as governments seek to reduce the impact of continued growth in the freight task and reduce the significant cost of transforming ageing, capacity constrained land based infrastructure to meet demand. Shipping furthermore generates positive externalities by way of reduced congestion, accidents and carbon emissions which governments are keen to capture.
- **Volume Consolidation Key**: Short Sea Shipping requires the aggregation of volumes to achieve acceptable break-even points in service frequency and cost. The EU has formally designated four "Motorways of the Sea" and acknowledges that significant changes in modal market share can only be achieved through the concentration of freight flows onto these sea routes. Such a shift requires active partnerships between ports, shipping lines, land-based transport providers, freight consolidators and the public sector to ensure the provision of inter-modal infrastructure. Sea freight corridors are concentrated onto a relatively small number of ports to ensure the benefits of scale and frequency occur.
- **Port Charges Material**: European maritime professionals estimate stevedoring and port charges account for over 50% of the costs of Short Sea Shipping in Europe.

- **Logistics Requirements**: 24 hour port access, sufficient warehousing, distribution and land access facilities are important for viable Short Sea Shipping operations.
- **Infrastructure Requirements**: As coastal trade increases the provision of berth space for coastal shipping operators is key. It is noted that without greater funding to expand general cargo berths in countries like Australia, coastal shipping companies will necessarily cede berth windows to the needs of international container lines.
- **Intermodal Integration**: Short Sea Shipping requires full integration in the intermodal supply chain to minimise costs and delays in cargo transfers. US studies recommend approaches to trucking company executives to encourage an integration of shipping as a potential part of their broader service offering.
- **Streamlined Documentation**: Simplification and standardisation of documentation procedures and requirements are often cited as a perceived source of service enhancement.
- **International Shipping Line Influence**: International lines dominate the interstate coastal shipping market in Australia. Australia no longer has a domestic based coastal shipping industry outside of the Tasmania – Mainland route and product specific ships that distribute bulk products.
- **Service Promotion**: The perception of coastal shipping as a staid, old fashioned industry prevails throughout many segments of the freight market. A greater marketing effort is needed to demonstrate coastal shipping can provide a quality service in offering speed, reliability, flexibility, regularity, frequency and cargo safety.
- **Regulatory Support**: Regulatory support for coastal shipping is actively being promoted globally. In Australia, two such measures are under examination; the introduction of a tonnage tax scheme and the reintroduction of accelerated depreciation on ships. Tonnage tax systems enjoy widespread support globally, with the UK, US, Belgium, Germany, Greece, Norway and Denmark all employing similar schemes. Accelerated depreciation had notable success in attracting Australian domestic ship registration in the 1990s. However the advent of cabotage systems in a number of jurisdictions worldwide, has failed to secure market share for domestic coastal shipping operators relative to cost effective overland competition.
- **Skills Shortages**: Maritime skill shortages are a key issue which was raised across the industry. It is noted that the proposed regulatory amendments in Australia also focus on addressing the domestic skills shortage.
- **Target Trades**: From international research and market surveys coastal shipping is perceived as possessing key strengths in the transport of:
  - low value commodities where the cost of transport is a significant part of the product-to-market cost;
  - heavy weight and hazardous cargo; and
  - commodities which are not time sensitive and move between distribution points close to ports, such as raw material inputs for manufacturing industries or stock transfers for regional storage facilities.

12 New Zealand Maritime Regulatory Framework

12.1 Introduction

The purpose of this section is to provide a brief summary of the relevant legislation governing the maritime industry in New Zealand. Its particular focus is on identifying the differences in legal application between domestic and international shipping service providers.

Readers should note that whilst the authors of this report believe the following commentary to be accurate as at the date reported, they do not represent themselves as legal or taxation experts. As such, this report may not present a complete or accurate account of relevant legislation governing the maritime industry in New Zealand.

12.2 Summary of Relevant Legislation

The principal legislation governing the shipping industry in New Zealand is the Maritime Transport Act 1994. Section 198 of this Act establishes the three categories of ships that may carry coastal cargo in New Zealand.

These are:

- A New Zealand ship;
- A foreign ship on demise charter; or
- A foreign ship that has or will have embarked or disembarked goods and has not or will not visit a foreign port since that embarkation or disembarkation.

The general provisions of the Maritime Transport Act apply to all ships engaged in coastal shipping in New Zealand waters, however there are specific sections which apply only to New Zealand ships. In general, the sections of the Act relating to maritime documentation (for example certificates of insurance) and liability apply to all ships operating in New Zealand coastal waters, while provisions relating to employment and safety standards apply only to New Zealand registered ships.

Under the Immigration Act 1987 S11 workers aboard ships engaged in coastal shipping are temporarily exempt from requiring visas or work permits. No visa requirement is necessary for crew members from the time the ship first clears New Zealand Customs to either the time it leaves its last Customs destination in New Zealand on the same voyage, or 28 days after the ship first clears Customs.

The effect of this visa waiver is that foreign nationals employed on ships carrying coastal cargo in New Zealand waters for less than 28 days are not necessarily subject to the Employment Relations Act, the Minimum Wage Act 1983, the KiwiSaver Act 2006 or the Injury Prevention, Rehabilitation and Compensation Act 2001, and are not considered employees under the Employment Relations Act 2000.

The general effect of the legislation on the coastal shipping market is that foreign registered ships are permitted to carry coastal cargo in New Zealand with no cabotage restrictions or the application of New Zealand employment law to ship crew. Industry participants estimate that this provides international shipping lines with a 15% – 20% cost advantage in reduced compliance compared with New Zealand based coastal shipping providers.

More detailed commentary on the regulatory framework for the shipping industry in New Zealand is presented in Appendix 1.

12.3 SUMMARY OF TAXATION

The following discussion summarises differences in the tax treatment of domestic and international shipping operators carrying on domestic coastal shipping in New Zealand. A more detailed consideration of tax differences is presented in Appendix 2.

Domestic resident shipping operators are subject to New Zealand income tax on profits from worldwide operations. In contrast, non New Zealand resident shipping operators in most cases receive relief from New Zealand tax on inbound and outbound shipping operations under New Zealand's double taxation agreements. The net effect is non New Zealand resident shipping operators are able to cross-subsidise their New Zealand domestic operations. Moreover, in respect of certain jurisdictions, offshore shipping operations receive favourable tax treatment as compared with New Zealand and in the case of tax havens incur little or no tax obligations.

In New Zealand a general requirement exists for employers to deduct PAYE income tax from salary and wages paid to employees. In many cases non New Zealand resident employees as well as non New Zealand resident shipping operators will not be subject to tax in their country of residence due to residency in a tax haven jurisdiction. In the domestic shipping context where New Zealand income tax obligations do apply, it is more expensive for resident shipping operators to employ staff. New Zealand wages are above international market rates and operators must also compensate to a degree the tax burden endured by employees.

ACC levies constitute another obligation for domestic shipping operators. In general, these levies fall into two categories; those imposed on employers, and those imposed on employees. The levies imposed on employers are generally calculated by reference to the PAYE income payments made by an employer at a rate determined by the employer's business industry description (designed essentially to take account of the different risks of injury to employees inherent in different industries). Similarly, levies imposed on employees are based on, in general terms, the PAYE income payments received by an employee. The outcome is that only employers who withhold PAYE and employees who receive PAYE deducted salary and wages suffer the burden of ACC levies. As we anticipate that non New Zealand resident shipping operators are likely to employ less expensive non-residents (or that any New Zealand resident employees are likely to arrange their affairs to become non-resident), typically non New Zealand resident shipping operators are not subject to employee or employer ACC levies.

Differences also occur in the extent and timing of GST obligations on cargo fees, insurance premiums and consumables for non-resident operators.

The following figure summarises key differences identified between New Zealand tax obligations and those which international shipping providers may be subject to.

12.3.1 Taxation Matrix – Current New Zealand Tax Law and Practice

Taxation Matrix – Current NZ Tax Law and Practice			
	NZ owner/operator and NZ employees	**NZ owner using foreign sub and non-NZ employees**	**Non-NZ owner/operator and non-NZ employees**
NZ Income Tax on Profits - International	Full tax: 30%; in BBC case = also NZ tax on charter payments (subject to DTA)	Generally full tax: 30%; no NZ tax in BBC case where non-NZ sub pays charter payments	No tax: YD 6 + DTA exemption + practicality
NZ Income Tax on Profits – NZ	Full tax: 30%	Full tax: 30%	Full tax: 30%; DTA elimination + practicality
NZ Tax on Salaries – International	Full tax: (PAYE + income tax at 19.5%, 33% and 39%)	If non-NZ resident employee = as for third column; if NZ resident employee, PAYE may need to be withheld = depends on Clark case; full NZ income tax	No tax
NZ Tax on Salaries - NZ	Full tax: (PAYE + income tax at 19.5%, 33% and 39%)	If non-NZ resident employee = as for third column; if NZ resident employee = PAYE may need to be withheld (Clark); full NZ income tax	No tax: 92 day rule; 183 day rule + practicality
NZ Tax on Insurance Premiums (assumes non NZ insurer)	NZ tax: at 3% of gross premium	No NZ tax	No NZ tax

BBC = Bare Boat Charter

DTA = Double Tax Agreement

Clark = House of Lords in Clark v Oceanic Contractors [1983] 1 All ER 133

As indicated in the figure, international shipping operators carrying coastal freight in New Zealand potentially enjoy a significant cost advantage over domestic operators.

12.4 Maritime New Zealand

One of the fundamental differences between shipping and other modes of transport is the complexity of the industry and regulatory regime in which it operates. Maritime New Zealand ("MNZ") is the government agency responsible for safety, security, regulatory and marine environmental protection oversight of the marine sector in New Zealand for both domestic and foreign-flagged vessels. It's objective as detailed in its enabling legislation and its 2009-2012 Statement of Intent is:
"To undertake its safety, security, marine protection, and other functions in a way that contributes to the aim of achieving an integrated, safe, responsive, and sustainable transport system".

Amongst the list of functions for MNZ in its Statement of Intent 2009-2012 the following are most relevant to the coastal shipping industry and its future development:

- To promote maritime safety and security and protection of the marine environment in New Zealand and beyond New Zealand, in accordance with New Zealand's international obligations;

- To license ships, their operation and their crews;
- To ensure effective implementation of the International Code for the Security of Ships and of Port Facilities, in accordance with the Maritime Security Act;
- To administer the international obligations of the Crown under the treaties, memoranda, and other international maritime and marine environment protection agreements agreed with the Minister of Transport; and
- To develop and maintain maritime safety and marine protection rules.

MNZ recognises the need for a long term vision for the development of the coastal shipping industry in New Zealand. This would enable the integration of coastal shipping into overall transport policy, the streamlining of current regulations and laws to reflect the realities of the modern shipping industry, and identification of integration and investment requirements across all modes of transport in New Zealand. As part of the regulatory framework that MNZ is required to supervise and enforce, New Zealand is a signatory to more than 40 international maritime conventions. Many of these impose significant obligations and costs onto ships operating around New Zealand. This highlights the additional regulatory burden on shipping compared to both road and rail which are solely subject to domestic regulatory regimes.

MNZ recognises that many of its current rules are outdated, complex and do not meet the needs of the modern maritime industry. There are two elements of the current regulatory regime that impact coastal shipping:

- Design, construction and equipment standards that vessels must meet; and
- Crewing requirements for these vessels.

The industry has suggested recognising a new category of vessel in New Zealand which would be an intermediate category between international and the domestic Safe Ship Management system ("SSM"). This would allow vessels longer than the current SSM limit of 45m or 500 Gross Tonnes, to be recognised as operating solely in a New Zealand coastal capacity, and accordingly be allowed to operate with appropriate crew qualifications and staffing levels.

The possible introduction of such an intermediate class of vessel would be undertaken in conjunction with a comprehensive review of qualifications and operating limits. Any resultant certificates would be based upon the international Standards of Training, Certification and Watchkeeping for Seafarers ("STCW") convention, and reflects a global desire to move away from solely time-based qualifications, and operating limits to a mixture of time and competency-based qualifications. It is hoped that such changes will also assist dealing with the global issues facing the shipping industry, being an aging workforce and the increasing difficulty in attracting new people into the industry.

If the changes proposed for inclusion in MNZ's review come into effect, this could result in significant reductions in the cost of operating vessels around New Zealand, with no sacrifice of safety standards, and could serve to reduce the gap in operating costs between New Zealand flagged ships and international ships carrying cargo between New Zealand ports.

12.4.1 Design construction and equipment standards

Vessels that are less than 45m in length operate within the domestic SSM System. Vessels greater than 45m in length must meet international (classification Society-Class) standards, whether or not they trade internationally. Some countries, and some classification societies, have introduced 'intermediate' classes that recognise design, construction and equipment standards in between domestic standards and international standards. It is a requirement of current maritime rules that a ship greater than 45m must meet design and construction standards of Class.

12.4.2 Crewing

Maritime Rules currently require vessels greater than 45m operating beyond restricted limits (12 miles) to meet crewing standards similar to those of vessels of any size trading internationally. The standards apply to certificates and total number of crew. The current command qualification for smaller coastal cargo ships (New Zealand Offshore Master with STCW endorsement) is limited to ships smaller than 500 Gross Tonnes. The next higher command qualification is Class One Deck Officer or Master Foreign Going (Unlimited). Current required engineering qualifications do not provide an impediment to entry as they are based upon kilowatts of main engine power.

12.5 KEY OBSERVATIONS / CONCLUSIONS

Key aspects of the above commentary include:

- **Principal Legislation**: The principal legislation governing the shipping industry in New Zealand is the Maritime Transport Act 1994. The general provisions of the Act apply to all ships engaged in coastal shipping in New Zealand waters, however there are specific sections which apply only to New Zealand ships.
- **Visa Requirements**: Under the Immigration Act 1987 S11, workers aboard specified ships engaged in coastal shipping are temporarily exempt from requiring New Zealand visas or work permits. The effect of this visa waiver is that they are not considered employees under the Employment Relations Act 2000 and are hence exempt from a range of associated domestic legislation.
- **Financial Implications (excluding Taxation)**: Industry participants estimate that the difference in applicable legislation provides international shipping lines with a 15% – 20% cost advantage as compared with New Zealand based coastal shipping providers.
- **Taxation**: New Zealand resident shipping operators are subject to income tax on profits from worldwide operations. Non New Zealand resident shipping operators in most cases receive relief from New Zealand tax on inbound and outbound shipping operations under New Zealand's double tax agreements. In respect of certain jurisdictions, offshore shipping operations receive favourable tax treatment and in the case of tax havens incur little or no tax liabilities.
- **PAYE & ACC**: Non New Zealand resident employees and non New Zealand resident shipping operators in general are not subject to income tax or ACC obligations in New Zealand. To the extent domestic shipping operators are, the implication is that they suffer a higher cost base than international operators.
- **Maritime New Zealand**: MNZ is the government agency responsible for oversight of the marine sector in New Zealand. New Zealand is a signatory to more than 40 international maritime conventions. Many of these conventions impose significant obligations and costs onto domestic ships operating around the country. MNZ recognises that current regulations are outdated or no longer appropriate to New Zealand conditions. Addressing a range of known issues has the potential to reduce operating costs for domestic coastal shipping providers.


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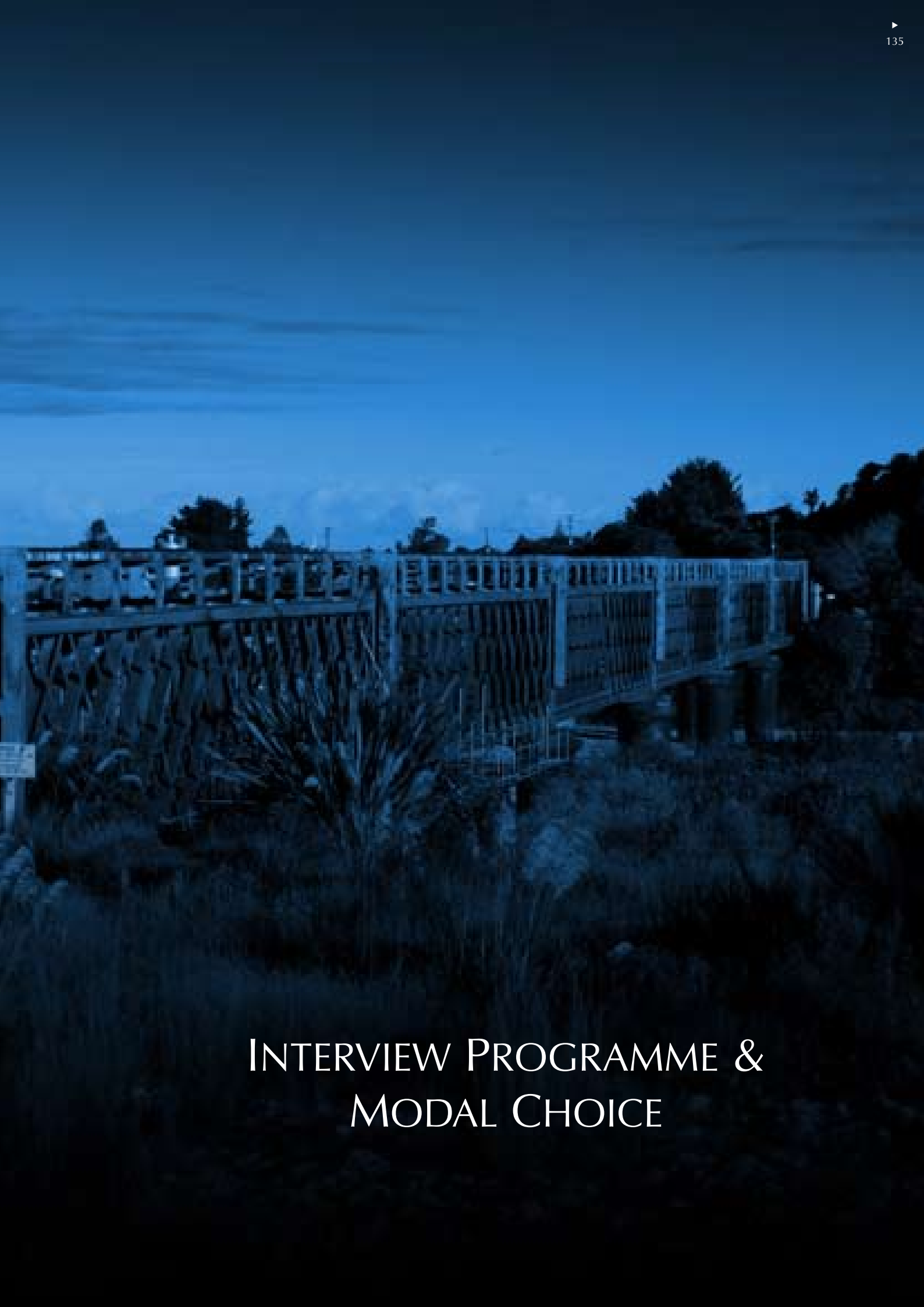


Interview Programme & Modal Choice

13 RESULTS OF INTERVIEW PROGRAMME

13.1 INTRODUCTION

In this section we outline the interviews undertaken as part of this study and provide a summary of the feedback received. While associated insights are incorporated into our modal analysis, the following links direct commentary received with market participant groupings.

13.2 INTERVIEW STRUCTURE

To ensure that the analysis and recommendations presented in this study were well grounded in commercial reality, the project team undertook a wide range of interviews with industry stakeholders.

A generic questionnaire was developed as the basis for discussion and in each participant group we sought to identify particular transport issues, as well as the needs and the criteria by which interviewees selected their preferred mode of transport. The openness of participants to change was also raised, particularly in relation to coastal shipping.

The questions asked and resultant discussion fell into the following six broad areas:

- **Your Organisation**: Areas of activity and scale of operation;
- **Market Conditions**: Past freight performance, trends and forecast growth;
- **Modal Choice**: Factors influencing freight modes used and their relative importance;
- **Future**: Implications for freight growth and modal options;
- **Infrastructure Development**: State of and options for key transport infrastructure; and
- **Government**: Perceived role of Government in infrastructure investment, setting transport policies, and influencing modal choice.

The form of questionnaire used for shippers is attached as Appendix 3.

In total 121 parties were interviewed. The sample comprised of the following groups:

Interviewee Statistics

Interviewee	#	Comment
Shippers	45	
Ports	13	100% of container ports in NZ
Shipping lines – International	14	Approx 90% of international shipping lines servicing NZ
Shipping Lines – Domestic	4	100% of scheduled service providers
Transport operators	13	
Freight forwarders	2	
Industry groups	15	
Regional Councils	10	
Government agencies	5	
TOTAL	**121**	

13.3 INTERVIEW SUMMARIES

13.3.1 Ports

Interviewed representatives included all ports with container terminal operations in New Zealand plus several smaller ports that specialised in bulk cargo. Discussions with port companies centred on updates to the type, volume and destination of freight handled. Ports were asked to identify perceived competitive advantages, potential growth opportunities and constraints / challenges to achieving that growth. Ports were questioned about their engagement with

shipping lines and port users and the extent to which the port could influence shippers' freight modal decisions. Several questions were presented specific to coastal shipping, including its importance, the facilities required and provided, and what could be done to stimulate greater coastal shipping volumes.

Finally we addressed what the appropriate role of Government was in their business and in the transport sector as a whole, particularly what Government might do to best encourage a greater use of coastal shipping in New Zealand.

13.3.2 Summary Feedback

The ports all noted a downturn in import volumes as a result of the current economic climate. Imports were noted to have fallen between 10%-20% and for those ports that handled vehicle imports, this segment was down by up to 55%. Export volumes had sustained earlier volumes through the export season peak but uncertainty was expressed regarding volume expectations for the balance of 2009 and into 2010. All ports had a strong focus on reducing cost structures to limit exposure.

Ports were expending time and effort to retain the number of scheduled calls offered by international shipping lines, which they saw as their principal customers. They acknowledged that in many instances they had little effective influence on shipping line scheduling as New Zealand services typically constituted a small part of a much larger and complex mosaic of global services, decided upon outside of the country. However, all ports worked to identify and amalgamate export and import volume from shippers in their regions of catchment to bolster respective business cases to the shipping lines.

All ports were very conscious of the potential impact of the introduction of larger ships to New Zealand and the prospect for rationalisation of port calls. Most ports interviewed had comprehensive development plans established, with several preparing to apply for, or possessing, resource consents for channel and berth dredging to enable the servicing of larger ships. The implications for port side cargo handling facilities and intermodal connections that cater for forecast freight flows for the next 10 – 20 years had also been considered. Most ports possess existing capacity to handle significant increases in volumes or could obtain such with relatively low levels of capital expenditure. Some of the smaller ports acknowledged that they were increasingly likely to become feeder ports to larger international ports due to constraints such as channel depth.

The strategic focus varied across the ports interviewed. Some placed a greater emphasis on engaging with shippers in their region and in a few instances actively provided advice and assistance to them on freight matters. One port executive noted that when they engage directly with shippers, they are typically able to identify significant cost savings as many shippers lack the information or internal capability to actively manage their logistics requirements, and are often easily guided by transport operators to accept suboptimal options. Ports perceive their role in optimising freight options as a contribution to the overall survival and growth of clients in the trade catchment, which should result in increased volumes through the port in the future.

Other ports aggressively seek to attract freight from a greater geographic span and are prepared to invest in the provision of dedicated facilities to attract, and lock in, significant shippers. Examples of facilities provided in dedicated freight arrangements include the provision of land or warehousing space. Ports also entered into partnering arrangements with freight service providers outside of the shipping industry. This effort to aggregate volumes was perceived to bolster the port's business case for the retention of existing scheduled shipping services and to entice a commitment from new ones. Such activities build upon regional economic development that many ports see as part of their contribution to their region.

13.4 REGIONAL COUNCILS

Regional Councils with substantial ownership stakes in regional ports were also interviewed. In particular this group was questioned on how they perceived their port investment fitted into regional transport and economic development strategies. Respondents covered the shareholders of all but two of the major ports. Firstly the interview sought to identify the principal freight requirements of the region, how the port fitted into this task and the inter-modal requirements in the region.

Secondly, questions were asked about the importance of the port as an investment and if they viewed the port as a financial investment providing an adequate return on investment, or if they were prepared to forego this return in recognition of the broader economic contribution the port made to their regional economy.

Similarly the standard set of questions about the role of Government were asked, as addressed to port companies.

13.4.1 Regional Council Feedback

As illustrated by the quotes below, Regional Councils viewed the port in their region as a vital piece of regional infrastructure.

"A key part of the strategies relating to regional growth, transport linkages and future planning."

"The port is an important component of the regional transport strategy. They [management] need to ensure that it is a competitive international port."

"The port is a major strategic asset for the region. It is also an important source of dividends, the absence of which will require an increase in rates."

"The port is absolutely fundamental to the overall freight task. Much of the region's road and rail network is centred upon port access."

Little evidence was detected of a preparedness to subjugate regional interests to a perceived national benefit by accepting a lesser role for the regional port. Such a suggestion was thought to adversely impact on the access of regional exporters to cost competitive transport to international markets and result in a loss of influence over the transport services to businesses.

It was noted that Councils' Regional Land Transport Strategy documents identified a range of local infrastructure development requirements.

13.5 SHIPPING LINES - INTERNATIONAL

The vast majority of shipping lines that operate scheduled services to New Zealand for both container and break bulk products were interviewed as part of the study. In aggregate these shipping lines handle approximately 90% of New Zealand's import and export container volume. In discussions with international shipping lines we sought to identify aggregate volumes handled in and out of the country, how New Zealand services fit into their global operations and the impact of the current global economic downturn.

Each shipping line was asked what level of involvement, if any, they had in moving domestic coastal volumes in New Zealand and whether this was a targeted market segment. In cases where international shipping companies did not offer domestic shipping services we questioned why they were not provided and what factors or impediments discouraged them from handling coastal shipping volumes in New Zealand.

13.5.1 International Shipping Line Feedback

International shipping lines are currently struggling to respond to extremely difficult market conditions with most, if not all, of the major lines currently incurring substantial losses. A result of the significant decline in global trade and consequent excess supply of shipping services, freight rates in the words of one shipping company executive are at "frightening and unsustainable levels".

Added complexities exist for the shipping lines servicing New Zealand, as a distant freight destination with an inherent imbalance of imports and exports, exacerbated by the recent downturn in imports. A particular imbalance exists in the market for 40' dry and reefer containers, where demand from exporters exceeds by a significant proportion demand from importers. These trade characteristics create a significant issue of seasonal container supply which manifests shipping lines carrying significant numbers of empty containers to New Zealand. Recently international shipping lines have placed a strong focus on the container supply coming out of Australia and undertaken a significant number of transhipments, either directly or via other transport providers. A much stronger focus on container repair and maintenance in New Zealand is also witnessed to minimise the time containers are out of service. A couple of shipping lines noted "some exporters may soon have to pay for importing empty 40' units if they wish to continue using them outbound."

These trends experienced by international shipping lines impact on the level and type of services offered in New Zealand. Several service providers commented that New Zealand shippers had become accustomed a multitude of options and a very high level of service without necessarily paying the full cost of it.

In the market, principal relationships for import freight custom were typically held with major freight forwarding companies. Shipping lines still held strong direct relationships with major exporters in New Zealand.

Since the recent downturn several shipping lines have introduced larger ships to New Zealand as these became available from other regions. Shipping lines are aggressively looking to maximise revenue and minimise costs through imposing strict speed limitations on these services. A high level of participation in Vessel Sharing Agreement's ("VSA's") is observed as a mechanism for maintaining a competitive level of service in the New Zealand market. This constrains the level of coastal shipping services provided as the need to move their own empty containers around the country is further restricted by slot allocations on VSA partner ships. Several of the lines stated that they expected further reductions in the capacity committed to New Zealand under current scheduled services.

A wide variation of interest in providing coastal shipping services between New Zealand ports was observed. Five of the international shipping lines interviewed actively carry domestic origin coastal cargo as a part of their operations in New Zealand. While these companies assert this is a useful part of their business, a number felt that the additional revenue did not justify the added complexities of securing cargo and altering logistics and planning arrangements. Additional cargo also imposed further pressure on port slots. All maintained a greater interest in providing blue water services as the key source of revenue generation. As one executive stated "International trade flows are our priorities – coastal would be dropped first if ships were running behind schedule". Shipper experience supported this with examples where coastal freight had been left behind or off loaded because of excess export cargo pressure or for the ship to remain on schedule. Another shipping line executive stated "Moving third party trade introduces complexity and the risk of slowing up services."

13.6 SHIPPING LINES - DOMESTIC

All domestic shipping lines providing scheduled container and bulk services around the New Zealand coast or between the North and South Islands were interviewed. Domestic shipping providers were asked a similar set of questions as those put to the international shipping lines. Accordingly, we sought to determine their business activities in New Zealand, the volumes of freight handled, major clients and information on their cost structure.

Furthermore we questioned the growth prospects for coastal shipping in general, what this growth depended on as well as the constraints to achieving the growth targeted. We also asked about the intermodal capabilities required to support dedicated coastal shipping to gain an understanding of how coastal shipping services fitted into the overall mosaic of transport services in New Zealand, with a particular focus on interactions with international shipping lines.

Finally the role of Government in their business and in the transport sector was addressed, and in particular, what might be done to encourage the greater use of coastal shipping and what role Government should play in this.

13.6.1 Domestic Shipping Feedback

The cement and petroleum domestic coastal shipping operations are dedicated service providers with standalone supply chain and infrastructure. In these goods coastal shipping has proven to be the preferred freight mode across a number of countries.

Only two domestic coastal shipping providers commit regular scheduled services to the movement of general freight in New Zealand. Both possess strong relationships with customers although in recent times significant changes have occurred to their scheduled services in an attempt to capture more enduring business opportunities.

Key areas of focus and concern for domestic operators include:

- Port Charges: Which can represent approximately 50% of operating costs;
- Differential Pricing: Coastal shipping does not require infrastructure provision to the level demanded by international operators;
- Coastal Specific Infrastructure: Incorporating enhanced intermodal integration; and
- KiwiRail: Confirmation of competitive positioning and levels of Government support.

Furthermore, domestic and international shipping lines are subject to different taxation and regulatory regimes. Additional obligations exist for domestic operators in the form of taxation, crewing, safety, ACC and staff overheads. This results in substantially greater operating costs for domestic shipping lines as compared to the international shipping lines providing incidental coastal shipping services.

The domestic shipping operators similarly expressed disappointment at the apparent neglect on the part of Government in the development of the domestic shipping industry in New Zealand. Operators felt that shipping offered tangible advantages over other modes and should form part of an integrated transport system in New Zealand. The development of domestic shipping in New Zealand would help alleviate some of the congestion problems experienced on the road network and thereby avoid some of the investment otherwise required as contributing to the achievement of New Zealand emission goals.

Domestic shipping lines raised concerns at the continued level of government support, via both operating subsidies and capital expenditure contributions, to KiwiRail. They felt that these provided an inequitable advantage to rail which had enabled instances of predatory pricing and market distortion in the past.

Comments were also made regarding the substantial charges coastal shipping paid to the ports to load and discharge cargo. A comparison was drawn with cargo travelling by either road or rail from a similar origination port to a similar destination port. It was noted such cargo would not incur a corresponding level of infrastructure costs.

13.7 TRANSPORT OPERATORS

Representatives of a cross-section of the trucking and freight forwarding companies in New Zealand were interviewed as part of the study. This included several of the major nation-wide trucking and logistics companies, specialised bulk carriers and regional operators located in both rural and urban centres. We also interviewed major container storage operators and representatives of KiwiRail and OnTrack. The particular focus of the questions put to road transport companies and freight forwarders was on the role they served in guiding the freight decisions for their clients. Specifically we addressed to what extent that includes consideration of other transport modes and what the criteria were that they and their clients used in making these selections including the relative weightings of these criteria. Also questions were asked about the growth opportunities for their business, what barriers exist to achieving this growth, and how they could achieve greater efficiencies for their clients.

The extent to which road transport companies and freight forwarders used coastal shipping was addressed, including their experiences and how it might best fit into integrated intermodal transport solutions for their clients.

Much like other participants we asked about the role of Government in the transport sector, the extent to which the current roles of Government were seen as appropriate and what could be done by Government to improve the attractiveness of coastal shipping in New Zealand.

13.7.1 Transport Operator Feedback

The identification of a typical trucking company is problematic. There exists a wide variety of service offerings among the parties we interviewed. The largest transport companies offered complete national logistics management services, whilst smaller rural or urban companies operated smaller fleets locally. Although trucking is an intensely competitive industry, the majority of operators surveyed had built up strong client relationships. In some instances these are more accurately described as business partnerships, as dealings had extended over many years and each business was in part structured to fit with the needs of the other. Such experience was observed notwithstanding growing industry trends for formal service agreements, a reduction in agreement tenure, and formal reviews of performance against agreed service standards. It was noted by a number of companies that whilst formal agreements existed for transport services, they often provide little if any security relative to the term of arrangements, with a range of "out clauses" being introduced by shippers.

A number of road transport companies were active in providing advice to their clients on the best mode, or combination of modes, to meet their service requirements. One operator stated "they place their own staff into major clients sites (a 3PL type operation) until the client understands the nuances of the transport business." A more typical scenario however was summed up by another operator; "In general, clients provide details of consignments which largely define mode. We would advise clients on alternatives, but service mix is chosen by clients".

Customer requests for significant flexibility in service provision was a key observation. As one operator noted "Generally we only know the schedule one day out and an indication three days out, but the general mix of volumes / cargos is reasonably predictable." Road transport operators also asserted they were able to handle seasonal variations in freight flows as the typical fleet had a variety of truck and trailer units capable of handling a wide range of cargo

types. All of the linehaul operators interviewed had extensive shorthaul capacity as well. A typical trip would utilise smaller vehicles to undertake LCL pickups, which were then amalgamated into a longhaul loads and transported to a city depot for drop-off, where once again deliveries were made by smaller vehicles. One of the key points of competitive advantage claimed by operators was that road transport was suited to handle LCL cargo whilst coastal required full containers and rail preferred wagon loads. This general level of capability and flexibility was facilitated by good IT systems that would track each consignment by truck in real time.

Profitability for longhaul operations is strongly influenced by the ability of road transport operators to obtain backhaul loads. This is a key factor prompting larger companies to consider all modal options. Some road operators provide integrated logistics solutions that include the use of rail or coastal shipping as appropriate to the needs of their clients. Others will use rail or coastal shipping when time permits, or for capacity overflow, oversized or overweight goods, or alternatively when they cannot get targeted returns at agreed rates (e.g. lack of backhaul for inter-island cargo). As one operator commented "Rates for transport are negotiated and then we effectively have to beat that to make our return." One of the qualifications expressed was a reluctance to use coastal shipping as it involved a loss of cargo control by the road transport operator. In addition, the preparedness to use international ships varies because of concerns about the reliability of carriage.

The industry makes extensive use of owner-drivers or contract drivers. This is one of the factors which enhances flexibility. When the industry enjoyed high growth rates, driver shortages were seen as a significant concern. The economic downturn has since reduced this concern but the industry still faces a major challenge in attracting new staff to deal with the aging demographic of its workforce. Given these shortages, the use of alternative modes such as rail or coastal shipping for longer distance movements was perceived in some instances as a way of improving employment conditions for drivers, and allowing road transport companies to concentrate on shorter haul movements for which they possessed a clear advantage.

Almost universal agreement was observed on the need to move away from the current methodology and technology of charging road access costs. Hub meters were seen as archaic and unreliable and there was a strong desire to move to a GPS based system. The current RUC regime was seen as administratively cumbersome with a high degree of compliance costs as compared to a fuel tax regime.

A strong desire was expressed for the Government to approve the proposed increase of gross laden weight restrictions for trucks from the current limit of 44 tonnes to 53 tonnes for approved routes by permit. However, some operators were largely indifferent to the proposed increase as they viewed freight as primarily volume restricted rather than weight restricted.

13.8 Industry Groups

A wide range of Industry Groups were interviewed. These included industries which were major users of transport services such as food, horticulture, cold storage and forestry, plus business promotion organisations and representatives of different areas of the overall transport sector. We endeavoured to obtain an understanding of the overall volumes produced by the industry, a view on future growth expectations and an understanding of the importance of various modes of transport to the industry. Of particular interest was what would drive the future growth of the industry such as increased volumes, new varieties of produce, or developments including new technology. These were perceived to have different impacts on future transport requirements. We also sought to determine the major challenges confronting the industry and what research these groups undertook on behalf of their industry. An overall industry perspective was sought which would provide a conceptual framework in which to view the responses from individual companies that we interviewed within that industry.

The standard set of questions about engagement with Government, the appropriateness of Government's role in the transport sector and what could be done to improve the attractiveness of coastal shipping in New Zealand, in particular by Government was asked.

13.8.1 Industry Group Feedback

There was a range of levels of involvement by the Industry Groups that we interviewed in the freight task and challenges that their members faced. Some left it entirely up to individual members to address, while others had undertaken or commissioned studies on the impact or requirements imposed on members by changes in the transport sector. All felt that transport was a fundamental issue for New Zealand and several had formal sub-committees on supply chain issues. As lobby groups, unsurprisingly all industry groups interviewed had strong engagement with Government and with the Ministries relevant to their industry such as Agriculture, Labour, Foreign Affairs, Food Safety and Customs. Customs and bio security are growing issues with increasing demands from the US for x-raying.

Strong support was observed for the introduction for increased weight limits on trucks from those industries whose members were significant users of road transport. There was also concern expressed about the level and capability of New Zealand's infrastructure where they felt there had been inadequate investment over a long period of time.

While a number of the industry groups expressed views on the ports and international shipping sector (particularly about the levels of scheduled services and the reduction in direct services) none had strong opinions about the coastal shipping industry in New Zealand.

13.9 SHIPPERS

The primary focus group for interviews was with cargo owners ("shippers"). The goal was to gain an understanding of their freight transport choices and logistics requirements. We asked about volumes handled, current business and logistics models, and the weightings formally or informally applied to the attributes of alternative freight mode offerings.

Shippers were asked about expected growth projections and how this might impact their freight handling requirements. Also raised was their preparedness to consider alternative transport modes, particularly how coastal shipping or rail feature and what these modes would need to offer to become attractive.

Finally we enquired about the role of Government in their business and their views regarding Government's roles in the transport sector. We also enquired as to what the Government might do to encourage them to use either coastal shipping or rail, if they were not already materially using those modes.

The shippers interviewed were representatives of the major industries in New Zealand. Where possible we interviewed the largest industry participant and at least one mid-size and one smaller company to attain an understanding of the freight requirements and issues across the full spectrum of each industry.

We discuss the summary feedback from these interviews below.

13.9.1 Modal Choice Criteria

Shippers, as cargo owners, were the principal decision makers in relation to transport modes, although a number of them, particularly smaller companies, sought advice from freight forwarders and transport companies. In several instances smaller companies delegated freight decisions completely and relied upon specialists on a best efforts basis, or against agreed service standards, to select the transport mode used.

Modal choice involves either a specific mode or combination of intermodal transportation options. The freight task may constitute a number of different legs for which there may be different optimal transport modes. The focus for our study was to gain an understanding of the freight requirements each company had, to understand how these supply chain requirements fitted into the business model for each company, and the criteria used to make the mode or intermodal selection.

Companies in New Zealand have an increasingly professional focus on the management of the logistics component of their business. For some companies however, the freight task is not seen as core business activity and accordingly it is contracted out to specialist providers. Major companies tended to have a manager for their freight requirements, who was increasingly a qualified logistics specialist, whilst smaller companies tended to outsource the entire requirement to freight forwarders as specialists. Larger companies entered into comprehensive service contracts that set KPIs for both inward and outward freight services and covered price, delivery times, damage levels and a range of other service standards. These contracts are reviewed at regular intervals and involve, in theory at least, periodic tenders held to test the incumbent against the wider market. Notwithstanding this intention to undertake periodic reviews, we found many companies had built long term relationships with their freight providers that had enabled the development of integrated supply chains that functioned as effective business partnerships. In some instances the trucks of the transport service provider were painted in the colours of the client and the drivers were included in client training programmes for things such as specialised product handling and safety.

We asked all of the interviewees to rate the criteria by which they select their dominant freight mode. The respondents profile for shippers was as per the following figure.

Respondents for Shippers

Industry	Approached	Participated
Cement & Construction	5	4
Dairy	4	4
Fertiliser	2	2
Food Processors	13	10
Forestry	3	3
Manufacturers	7	6
Meat	3	3
Minerals	3	2
Oil & Chemicals	3	1
Other	3	3
Retailers	7	5
Tyre Manufacturers & Distributors	2	2
TOTAL	**55**	**45**

While the sample is relatively small, we consider that it is of sufficient size to provide useful insights and confirm whether New Zealand market participants have a similar ranking of criteria as observed in a number of international studies.

Based on our review of international studies which considered similar shipper preferences, the criteria we offered as choices were:

- **Product Care**: Reflecting product characteristics such as the perishable nature of fresh produce or transport of hazardous materials;
- **Cost**;
- **Timeliness**;
- **Reliability**;
- **Safety**; and
- **Other**.

Participants that provided responses in the "Other" category criteria noted environmental impact considerations, key customer service expectations, convenience and communication, wider relationships, large product dimensions, fragile freight and security concerns during transit.

Each interviewee was asked to rate these criteria on a scale of 1 – 5, with 1 being relatively unimportant and 5 being of the highest importance. Whilst four interviewees did not provide ranking for any of the criteria, the majority nominated a ranking for at least one criteria and the average number of criteria that the interviewees provided a ranking for was 3.15.

13.9.2 Criteria Ranking

The weightings of the top five criteria were:

Ranking of Criteria	
Reliability	4.75
Product Care	4.64
Safety	4.58
Timeliness	4.31
Cost	4.23

Reliability was cited as the most important criteria as the potential impact of a failure to receive or deliver product on time, and as specified, resulted in either the downturn or cessation of a manufacturing process or the potential loss of a sale. Supply chains are built around the seamless inter-connection of a range of components. Repeated failure due to an inability to rely on a service provider would jeopardise the total supply chain.

Product care was the second ranked criteria for similar reasons. If the product did not arrive in good condition the same potential risk of a loss of sale eventuated. This was particularly important for perishable or fragile products.

Safety was cited as being important for products where mishandling posed a danger to staff, the transport operator or the wider public. Particular examples included hazardous goods because of the risk involved with the product.

Timeliness is in some ways a further but specific dimension of reliability. It was important that not only were the linkages between components of a supply chain reliable but that they connected in a timely manner. Many manufacturers and wholesalers had incorporated timeliness, as an integral part of their value proposition, offering delivery anywhere in New Zealand within 24 hours.

Cost ranked fifth, however it was evident that companies were becoming much more focused on minimising cost as the current economic downturn continued. The increasing importance given to reducing freight costs became apparent over the 2-3 month period in which we conducted the interviews. Direct feedback was provided by freight forwarders and transport companies that increasingly they were being asked by clients to identify the lowest possible freight cost provider, and on occasion, this was selected at the expense of longer delivery times. Many companies were also actively examining different transport mode combinations that might result in a lower cost with potentially an acceptable increase in overall transit time. For some exporters slower services on the international shipping leg were seen as a form of free storage. Obviously such considerations were balanced against the cashflow consequences of deferred sales.

13.9.3 International Results

Interview results were broadly in line with international studies identified during our research. In a study undertaken for the European Union and presented to the European Conference of Ministers of Transport in May 2000, the criteria in order of priority to shippers were:

- Reliability;
- Cost;
- Punctuality;
- Time;
- Safety of Goods.

The criteria following this top five, in order of importance were: Flexibility, Information Flow, Frequency of departure, Relationship of personal trust and 24/48 hours service.

In an Australian study by Meyrick and Associates, GHD and Booz Allen Hamilton the authors found:

"The existence of a large number of road operators within the shorter distance corridors (i.e. Sydney-Melbourne, Adelaide-Melbourne, Sydney-Brisbane) have compounded competitive pressures to force the critical elasticity factors of transit time, reliability, availability and price to levels which make it difficult for rail and sea to compete under the current operating environment. Rail and sea freight modes are not likely to gain significant mode share in these shorter corridors. These critical factors are significant in customer decision making within longer corridors as seen by customers' choice to pay a premium for road over rail. This market trend is indicative of the high importance placed by customers on transit time, availability and reliability over price."

13.9.4 Factors Influencing the Criteria Weightings

The weighting of the criteria used by shippers in selecting their preferred mode of transport, in part reflects the particular characteristics of the industry in which they operate and the business model they have adopted for New Zealand. The choice of freight mode tends to reflect a combination of different aspects in a company's business including the nature of the product produced, customer demands and expectations, and the delivery commitment incorporated in the company's competitive positioning.

13.9.5 Product Nature

For many companies the nature of their product determines the appropriate freight mode options. Product characteristics are a particular issue if the good is heavy, like steel, or if the units are large and do not fit into conventional containers, or if it requires specialised handling facilities entailing substantial investment, such as coal, or if the product has chemicals that require hazardous goods handling facilities.

Coal is illustrative of a heavy and bulky product that requires specific handling and storage facilities. As a result of volumes handled there is a substantial investment required in the development of dedicated facilities. Accordingly, long term service contracts between the coal producer, transport company and the port are observed. Such commitments are required so that each entity has the necessary confidence to justify the investment in facilities. The parties in this supply chain are typically incentivised to work as a genuine partnership to optimise the efficiency at all stages of the supply chain. Rail is the transport mode of choice for coal domestically. Rail offers dedicated wagons, loading, unloading, handling and storage facilities and provides greater carrying capacity than trucks. In the New Zealand context rail is also a better option than coastal shipping, due to the difficulties of entry and exit from the West Coast river ports. The rail / port intermodal combination is typical for the coal industry worldwide.

In the analysis undertaken we identified two other industry groups requiring specialised facilities; the cement and oil companies servicing New Zealand. Both possess very clear, industry specific, transport arrangements. The two cement companies in New Zealand each manufacture at coastal locations and utilise purpose built ships to deliver product to storage facilities around the country, for on-shipment by road to major areas of consumption. The specific characteristics of cement as a bulky, heavy product prone to contamination by water, necessitates specialised storage and transport facilities and coastal shipping is by far the most efficient method of transport. The dedicated storage facilities at ports also enable cement companies to more readily match supply with demand. It should be noted that some aggregation of raw material is undertaken by road and almost all of the ex-port distribution is undertaken by road.

Oil companies transport the majority of their refined product from a single refinery at Marsden Point. Approximately half of refinery output is supplied by pipeline from the Marsden Point Refinery to Wiri for distribution in Auckland and to the Waikato by road. The balance of refined products is delivered to dedicated coastal storage facilities by two Silver Fern Shipping operated tankers. As petrol has a long shelf life, the frequency of delivery is dictated by consumption and the costs of storage. Ships typically operate to a three month forward schedule that matches anticipated consumption.

As the transport and storage of both cement and petroleum products requires specialised equipment, there is little if any possibility of either industry changing its current freight mode choice. Globally cement and petroleum products are typically transported by ship and constitute a significant proportion of coastal freight volume.

Outside of those products requiring specialised cargo handling facilities we identified perishable products, such as fresh vegetables, that require minimal transit times, specific handling or storage facilities. For these products, speed of transport is the highest criteria, along with quality information technology that identifies the location of loads in real time. These requirements have typically meant road transport is the optimal transport mode for perishable products, although the transport of liquid milk by rail shows that in specific instances there can be opportunities for other modes. Trucking offers the fastest journey time, allied with reliability and high quality information technology systems to ensure constant communication between the transport companies and shippers.

For many companies the cost of freight is a relatively small portion of the total value of the goods. Accordingly, a potential loss of sale due to a delay or failed delivery far outweighs the additional cost of selecting road transport. However, for others where the cost of transport is a major proportion of the value of the product, cost is of prime or equal importance. In such instances shippers look to minimise both the direct cost of transport as well as any double handling that incurs. For example, log exporters interviewed stated they were unlikely to use coastal shipping as a means of transport as the costs of double handling were significant in comparison to the value of the logs freighted.

13.9.6 Supply Chain Characteristics

Companies also need to consider what supply chain characteristics best suit their business. Typically a national supplier has a major Distribution Centre ("DC") in Auckland supported by a secondary DC in Christchurch and in some instances further DC's in the lower North Island in Wellington or Palmerston North. For major retail companies, attempts are being made to increase the proportion of goods handled through the DC's and rationalise onward deliveries to stores and other outlets. Stores increasingly possess less storage space and so are dependent on frequent deliveries to keep shelves fully stocked.

In a typical supply chain model an Auckland facility services North Island trade directly and regularly restocks a Christchurch DC via long haul transport. There are attempts afoot to

increase the volume of direct imports into the secondary DC's like Christchurch to reduce onward transport costs.

Where movements between Auckland and Christchurch DC's involve relatively small consignment sizes road is often utilised. However, for regular movements between Auckland and Christchurch DC's where consignment sizes are often larger, this provides an opportunity to use alternative modes such as rail and coastal shipping. While rail and coastal shipping do not provide the same quality of service as road because of longer transit times and less flexibility, these modes can often be accommodated in planned stock replenishment moves where shippers can reap the advantage of lower transport costs. When these alternative modes are employed, road transport is still used to provide more urgent deliveries and in some instances direct delivery to inland South Island customers.

Where companies also have DC's in Palmerston North or Wellington to serve the lower North Island, coastal shipping is typically excluded from such Auckland based movements. Rail is able to compete, although at shorter distances road is much more competitive.

One of the responses to the economic downturn we encountered was an importer / retailer that was prepared to offer a complete logistics solution to third parties in order to fill under-utilised capacity. The company proposed to effectively incorporate imports for other parties into their supply chain system. This included customs clearance and wharf pick-up arrangements, transport to storage, devanning containers, product storage and delivery to stores around the country. As this proposal was in addition to current arrangements and service contracts, they were able to offer a very cost competitive service for small companies seeking to manage a similar supply chain on a much smaller scale.

In cases where the companies do not also own retail outlets, store customers are likely to demand regular deliveries as they manage their limited storage space and seek to minimise working capital requirements. A significant number of interviewed manufacturers and wholesalers accepted daily orders and committed to making deliveries into stores anywhere in New Zealand within 24 hours. These shippers used road to achieve this desired delivery frequency.

Transport arrangements and commitments varied significantly across our shipper sample. A number, particularly smaller companies, regarded transportation as a non-core activity and accordingly all outsourced their requirements. This entailed either the use of freight forwarders or larger transport companies to manage all inward and outward freight. Typically these services were assessed against defined KPIs and the company paid one aggregate bill. Other companies regarded transportation as an integral component of their business and employed logistics specialists to manage the entire supply chain. These employed separate contracts for import freight, customs clearance, wharf pick-up and delivery, contract devanning and storage. Some companies used their own truck fleet for delivery within the Auckland metropolitan region, but linehaul contracts were employed for the rest of the North Island and rail or coastal shipping to the South Island, as well as separate regional delivery contracts with road transport firms in different regions. All of the companies focused on managing the efficiency and cost of their freight arrangements.

13.9.7 Shipper Feedback on Preparedness to Use Coastal Shipping

More than 50% of the interview respondents in the shipper category did not have an opinion when asked about their preparedness to use coastal shipping. Of those that did there was a wide range of commentary. Shippers that already used coastal shipping were generally happy with the level of service received, indicating it fitted their business model and offered a lower cost than alternative modes. A number of companies used coastal shipping as part of a broader transport mix. Typically this was for portions of inter-island movements that were

not time sensitive. In some instances parties used both domestic and international shipping lines to service this freight. Shippers that did not use coastal shipping noted the transit time and lack of frequency as their principal concerns, although for some coastal shipping was not deemed appropriate for their product. Other shippers were content with their current freight arrangements and saw no reason to consider any changes.

When asked what would encourage the use of coastal shipping, once again the majority of interviewees did have a definitive view. The following statements are typical:

"Timing is an issue, coastal shipping is a day or two longer than the service required by customers. Improvements in frequency might improve service uptake. LCL freight three times a week could be useful. Shipping requires more warehousing. Coastal is good for DC to DC not to customer."

"Coastal Shipping is not competitive on time, and has limited flexibility."

"Coastal shipping needs a higher profile. Often it is not considered as an option because of ignorance."

However, others were more positive, with existing users commenting:

"For freight moved on international ships, coastal shipping costs one third of road transport;" and

"We use coastal shipping as it fits our model. It offers free storage while goods are in transit."

Other shippers were prepared to consider coastal shipping for only that portion of their freight task that was not highly time sensitive; "Our cargo is not time sensitive so coastal shipping is an option". Also noted was a much stronger interest in freight modes that can potentially deliver cost reductions. The ability of coastal shipping to reduce the carbon footprint of companies was also increasingly recognised and companies were at least prepared to investigate the use of coastal shipping to help support environmental objectives.

13.10 FEEDBACK ON THE ROLE OF GOVERNMENT

There was general consensus that the Government had a legitimate and necessary role in the following areas:

Role for Government	
Transport research and analysis	98%
Transport safety and policies	93%
Investment in infrastructre	93%
Setting taxes, user charges and levies	93%

The degree of consensus declined with the level of support for a Government role in:

- Guiding or influencing the selection of transport modes (79%); and
- Employment and industry regulation (59%).

Strong opposition was observed to Government attempting to dictate transport modes to users, 94% of respondents were against this suggestion. The compelling consensus was that these decisions were best left to the market.

A number of interviewees suggested that Government was the entity best placed to develop and articulate a vision for the transport sector in New Zealand. This was particularly articulated for the port sector which was commonly perceived as requiring rationalisation. The point of focus for this varied amongst respondents but typical statements included:

"A need for a national port strategy but not a return to the days of the New Zealand Ports Authority, which was too stringent. This should result in designation of international gateways."

"Government needs to show a vision and be prepared to invest in regional infrastructure."

"New Zealand needs a National Freight Strategy rather than the current 'build from the bottom' piecemeal efforts."

"We need some sensible rationalisation of the ports, with planned investment and co-operation. The rationalisation of shipping and rail activities always failed to eventuate."

A level of concern was expressed at the different transport modes not operating on a level playing field. Rail was perceived to receive a significant level of financial support from Government enabling it to undercut other modes on price. Arguments were made that rail had adopted predatory pricing in the past to see off competitive initiatives, particularly from coastal shipping. As one respondent noted, to improve the attractiveness of coastal shipping the Government should "make the others look less attractive by cleaning out all the current supportive 'subsidies' and let the real operator costs emerge."

Whilst there was a desire amongst a number of the interviewees for the Government to be more active in the development a broader vision for the sector, a number felt that the Government agencies involved did not possess the level of industry and commercial knowledge necessary for active engagement required. This was noted particularly with regard to the shipping industry.

13.11 Feedback On How To Encourage Coastal Shipping

Mixed views were expressed by interviewed parties in relation to how best to encourage use of coastal shipping. A number of parties expressed the view that the Government should not be involved. The assertion was that the development of the industry was best left to the market and in order to achieve substantial growth it had to satisfy core customer needs.

In many instances the responses mirrored the reasons for current use or non-use of coastal shipping. As previously noted, the most common grounds cited by shippers for not using coastal shipping was that sailings are too infrequent and the overall time taken for deliveries was too long. These concerns could be partially alleviated with additional sailings and a demonstration by coastal shipping operators of the same long term service commitments as larger road operators.

A desire was expressed for greater certainty of rail's competitive positioning, as the most direct competitor to coastal shipping. It was noted that the Government had previously been prepared to provide substantial subsidies to rail and accept little, if any, commercial return.

A few parties suggested that coastal shipping should receive subsidies so that it was competing on the same commercial basis as road and rail. They felt road and rail transport providers were not required to pay the full costs of infrastructure, or the costs of emissions. It was suggested that the Government help stimulate greater service frequency and actively promote coastal shipping as a transport mode, by supplying information on economics, networks and delivery times.

A number of parties recommended changes to the New Zealand port sector to stimulate the development of coastal shipping. This included industry rationalisation to reduce current port over-capacity and pre-empt the anticipated reduction of port calls by the international shipping lines. Some parties felt there needed to be greater coordination and co-operation between ports and that Regional Councils were poor shareholders as they focused solely on parochial issues. It was suggested that intermodal connections at ports needed to be improved to significantly enhance the efficiency of all port traffic including coastal volumes.

In summary, no clear consensus existed amongst the interviewed parties on how to best stimulate the development of coastal shipping, or even if attempting to do so was appropriate. There was a desire for clarity about the role of rail and for the achievement of a level playing field across all transport modes. The general view was that the market remained the best means by which participants make a clear and informed business decision on which transport mode best suited their business needs.

13.12 KEY OBSERVATIONS / CONCLUSIONS

Modal choice by shippers is influenced by a range of factors. The following presents selected key observations and conclusions from our interview process.

- Ports Activities: Port involvement with shippers varied. Selected ports are actively assisting shippers in optimising their freight options. However, by far the majority have little influence / involvement in freight mode selection by shippers.
- Regional Councils: Regional Councils view their investments in port infrastructure as a key source of regional growth and transport linkage. Little interest was expressed in the subjugation of regional interests to a perceived national benefit by accepting a lesser role for the regional port.
- International Shipping:
  - Financial Performance: Struggling to respond to extremely difficult market conditions with most, if not all, of the major lines currently incurring substantial losses.
  - VSA: There is a high level of participation in VSAs as a mechanism for maintaining a competitive level of service in the New Zealand market. This can constrain the provision of coastal shipping services as the international shipping lines need to move empty containers around New Zealand and can be restricted by slot allocations on VSA partner ships. Several lines stated that they expected further reductions in the capacity committed to New Zealand under current scheduled services.
  - Operating Focus: Variation of interest was observed in the provision of coastal shipping services for domestic cargo between New Zealand ports, with only a select group currently offering domestic cargo space. Most operators felt the additional revenue achieved from coastal cargo was outweighed by the added complexity of securing domestic cargo and the associated demands on logistics and planning, as well as the risk posed to established ship timetables. All interviewed shipping lines focused on the provision of blue water services as their key revenue driver. For many operators, coastal volumes would be dropped first if ships were behind schedule.
  - Pricing: International operators offer extremely competitive freight rates for domestic cargo. These rates are unable to be matched by other modes (including domestic coastal) and as such, a significant portion of coastal containerised traffic is handled by international ships as part of the completion of an international shipping leg. Domestic relocation rates of less than $400 are understood to be available to the majority of ports.
- Domestic Shipping Operators: Domestic operators identified a range of key areas affecting their business including, high levels of ports charges, the potential for differential pricing of coastal versus international services, coastal infrastructure requirements versus international

lines, and the positioning of KiwiRail as a key competitor.

- Road Operators:
  - Advantages: The competitive advantage of road operators lie in a high degree of flexibility and responsiveness to shippers and an ability to handle LCL cargo, relative to rail or coastal shipping.
  - Intermodal: Road operators will use other modes as part of an integrated logistics solution or when time permits, capacity overflows, goods are oversized or overweight, or when road operators cannot generate targeted return at agreed rates (e.g. a lack of backhaul for inter-island cargo).
- Shipper Selection Criteria:
  - Shippers interviewed ranked "reliability" as the key modal selection criteria. It is noted however that depending upon the product, other highly rated criteria emphasised "product care" and "safety". Whilst "cost" ranked fifth, it was evident that companies were becoming more focused on minimising cost as the current economic downturn continued.
  - Shipper selection criteria was influenced by a range of industry specific factors including product nature and supply chain characteristics.
  - Issues noted regarding use of coastal shipping as a transport mode included timeliness, lack of flexibility, need for warehousing, the cost of double handling and a general lack of awareness of service offering. Positive comments noted included cost competitiveness, a good fit for non-time sensitive cargo and environmental benefits.
  - A level of concern was expressed that the different transport modes were not competing on a level playing field. Rail was perceived to receive a significant level of financial support from the Government that enabled it to undercut other modes on price.
- Role of Government:
  - A general consensus was noted by shippers on the role for Government in undertaking transport research and analysis, transport safety and policy, investment in infrastructure, and setting taxes, user charges and levies. Strong opposition was observed to the proposition of Government dictating transport modes to users, 94% of respondents were against this suggestion. The compelling consensus was that these decisions were best left to the market.
  - Whilst there was a desire amongst a number of the interviewees for the Government to be more active in the development a broader vision for the transport sector, a number felt that the government agencies involved did not have the level of industry and commercial expertise required, particularly in the shipping industry.
- Encouragement of use of Coastal Shipping: In summary, no clear consensus existed amongst the interviewed parties on how to best stimulate the development of coastal shipping, or even if attempting to do so was appropriate. Indicative feedback included:
  - The development of the industry was best left to the market and in order to achieve substantial growth coastal shipping had to increasingly satisfy customer needs.
  - There was a desire for greater certainty of rail's competitive positioning, as the most direct competitor to coastal shipping and a freight mode owned by a shareholder that had previously provided substantial subsidies and accepted little, if any, commercial return.
  - A few parties suggested that coastal shipping receive subsidies to compete on a similar basis with road and rail. They felt transport providers were not required to pay the full costs of infrastructure, nor the costs of emissions.
  - A number of parties recommended changes to the New Zealand port sector to stimulate the development of coastal shipping. This included industry rationalisation to reduce current port over-capacity and pre-empt the anticipated reduction of port calls by international shipping lines.
  - It was also suggested that intermodal connections at ports needed to be improved and this would significantly enhance the efficiency of all port traffic including coastal volumes.

14 CASE STUDIES

The following presents a selection of illustrative case studies based on our interview programme.

14.1 MANUFACTURER / DISTRIBUTER

This company manufactures FMCG in the South Island from local and imported raw materials and wholesales these and imported products throughout New Zealand. Following a major review, it has materially reconfigured its transport logistics chain. Raw materials are principally sourced locally, while some are imported directly via the closest port. Under a reconfigured plan, production destined for the New Zealand market will now all be shipped to a new Auckland DC, which will also receive all imported finished products. The bulk of production will continue to be exported through the closest port.

Geography of sales closely reflects New Zealand's population distribution, with 60% of national sales north of Hamilton. Accordingly, under the new plan, the current multiple DC's are now being consolidated into a single DC in Auckland. Sales are dominated by a few national wholesalers, with the company coordinating deliveries from the DC to those customers' DC's and stores.

Freight Insights

The reconfiguration of logistics will not affect the import of finished product (Auckland) or raw materials (South Island), nor the export of South Island products. However, all national freight requirements will be consolidated into a single nationwide logistics company which will coordinate transport of all production to the Auckland DC, and from there to customer sites nationwide. The company has previously trialled rail for linehaul freight but was not satisfied with service capability and reliability. It is currently trialling coastal shipping for its South Island-Auckland requirements. However, it anticipates that the bulk of its linehaul and distribution task will be provided by road. Under this new structure, which maximises backhaul opportunities, vehicle utilisation is expected to rise from 35% to over 80%.

14.2 NEW ZEALAND STEEL

We interviewed New Zealand Steel, a major resource processing firm located in the upper North Island. They import a range of inputs through Port of Tauranga which are delivered to plant by rail. They also bring in very large volumes of coal from Huntly and on occasion coal is also imported from Indonesia. Lime is sourced from the Waikato. All of these bulky inputs are delivered to site by train with aggregate inwards freight being approximately 1 million tonnes per annum. Iron ore is delivered to site by pipeline as a slurry from ironsand deposits north of the Waikato River on the west coast of the North Island.

Deliveries of steel products within Auckland are made by truck with owner drivers all on individual contracts. Deliveries to other North Island destinations are also made by truck under a term contract with a linehaul trucking operation. Rail is not seen as a viable delivery option because of the typical short leadtime requirements and also because it cannot deliver product directly to the end customer.

Deliveries to the South Island are typically made by rail with some limited linehaul by truck for time sensitive deliveries. Delivery to customer sites is then made by local trucking firms.
Given the heavy weight of all of its products, New Zealand Steel is very focused on ensuring its safety standards are maintained. It requires all contracted drivers to undertake comprehensive safety training and also insists on very high standards of handling equipment.

New Zealand Steel exports a substantial portion of its production to a range of customers in the Asia-Pacific region. These are typically transported by rail to port and depending on the product type sent either on bulk carriers or in heavy duty 20' containers.

Use of rail for both inward and outwards freight provides significant cost savings as it ensures a back haul capability. These arrangements have been in place for a number of years and over this time the arrangements between New Zealand Steel and KiwiRail have been optimised with both parties seeing it as a well functioning partnership.

Freight Insights

The heavy and bulky nature of inputs and the heavy weight of its outputs has prompted New Zealand Steel to maximise the use of rail. Back haul capability enables a cost competitive service which both parties have worked hard to optimise and they now see as a strong partnership.

14.3 NATIONAL RETAILER

We interviewed one of the larger national retailers which imports between 30%-35% of the items it sells, principally from China, with the balance of its product range purchased from New Zealand manufacturers or import agents and representatives. Sales are broadly in proportion to the geographic spread of population across New Zealand. It is typical of several national retailers that we interviewed, in that it has its major DC in Auckland to cover supply to all North Island outlets with a secondary DC in Christchurch for supply to South Island outlets. The Manager of the main DC is a logistics specialist responsible for oversight of the complete supply chain.

The majority of direct imports are through Ports of Auckland, with a small proportion through Port of Tauranga, reflecting the scheduled services to New Zealand from port of origin. Approximately 8%-10% of imports are direct to Christchurch. Import shipping and customs clearance are handled under contract by a major freight forwarding company with containers collected ex-wharf and delivered to the DC overnight. Contract labour is used for the devanning of the containers with some product repacked onto pallets for immediate reshipment and the balance put into storage. The company employs its own staff for storage and repacking and has its own trucks for delivery to its Auckland outlets. It has a long term contract with a major logistics company for delivery to the rest of the North Island outlets and to the South Island DC. The logistics company is responsible for selecting the mode of transport so long as they meet the agreed service standards of transit time. It primarily uses its own linehaul services but does use some rail to the South Island. It does not use coastal shipping because of the relatively tight delivery standards. The contract for this service is subject to annual review and contains service standards for delivery times to a variety of locations, pricing and damage.

In the current economic environment there is a strong focus on cost control and asset utilisation. The Logistics Manager is currently looking to trial the provision of 3rd party distribution services. This would include taking responsibility for import containers at wharf for other smaller importers / distributors. They would then be included in all of the current supply chain steps of customs clearance, delivery into store, devanning, storage and delivery to customers or retail outlets throughout New Zealand.

Freight Insights

This is a typical example of how a logistics supply chain is composed of a range of different links; international shipping, wharf to DC handling, devanning, storage, regional distribution, intra-island linehaul and the different options for inter island movements. For each of these links there is a range of optimal modes. It also illustrates how active companies are in managing the logistics requirements for their business.

14.4 VEHICLE COMPONENTRY MANUFACTURER

The company interviewed manufactures, imports and exports components for vehicles ranging from motorbikes through to tractors. Approximately half of the manufactured goods are exported.

The company supports wholesale and retail outlets throughout New Zealand and has a firm philosophy of timely replacement of goods sold – often on a next day basis, resulting in a very tight order chain.

The company's logistics manager operates a highly measurable supply chain system that permits swift and short-order replacements whilst also controlling medium term local manufacturing.

Freight Insights

While maintaining a DC near to manufacturing plant, the company also uses its manufacturing facility as the initial DC for one third of the overall imports.

The main freight mode linking the manufacturing plant DC is rail with regular daily movements. The company utilises 20' containers on rail, helping to keep inventory stocks low at the receiving DC but, importantly, pricing from rail tips the balance in favour of 20' units.

The company has used coastal shipping in the past but it was not seen as reliable, had longer transit times (against other modes) and did not fit in with their rapid-response philosophy. As this was some time ago, the company was interested to learn from the interviewers that more regular shipping services were now available.

We note that a number of interviewees had negative perceptions of coastal shipping based on poor information, dated knowledge and sometimes conjecture.

14.5 FMCG RETAILER

The interviewed organisation is a major supermarket retailer – part of a triumvirate that collectively covers the whole of New Zealand. In this case we were meeting with the South Island entity.

In logistics terms the company operates three South Island DC's, the main one is a central feeder and receives all imported product, while the other two each supply one half of the South Island. The company is virtually stand-alone and only joins with the other two North Island 'partners' for systems, branding and advertising.

The company sources 'shelf-ready' items from 500 suppliers but now has a vendor management inventory system with 10% of these involved with a live inventory control package.

The cost of freight is well under 5% of the average value of the product and while the company has a common retail pricing philosophy, 40% of their market is within 40 km of each DC. Thus while there is a degree of internal freight subsidy for the longer journeys, they can alleviate this to some extent by their engagement with several carriers who partner with them in maximising loaded return journeys.

Innovative in their logistics thinking, this operator reaches back up the supply chain to effectively take control of the products at the factory door of the suppliers - in effect now creating a wholly controlled logistics chain. This negates the previous approach of suppliers selling 'Free into Store'. By working under a logistics chain principle, the company has far greater opportunities to maximise linking mixed, part loads and minimising freight costs.

Freight Insights

Though the company is South Island centric, a large amount of their supplies emanate from Auckland. They work closely with a small contracted number of road carriers to maximize their ability to tightly control overall freight costs. When coupled with on-line system commonality with their major suppliers, the whole chain becomes more user-friendly, interactive and measurable.

With over 20,000 Stock Keeping Units in their system, whole-of-chain control is vital. In fact the company has now created their own in-house logistics company to gain further control and achieve instant transparency.

The company also imports directly from overseas and attempts to maximise upon dedicated container imports through Lyttelton Port of Christchurch. On-going goods for their various retail chains are sent out by road against daily (by store) orders. Again, innovation is being utilised in conjunction with road carriers to maximise two temperature ranges within the same trucks – where chilled and frozen products can comfortably travel together.

While the current accent is mainly on road transport, the company does use coastal shipping for some Auckland – Lyttelton moves. They are also re-considering utilising rail again (after a poor performance enforced withdrawal) as KiwiRail's Auckland – Christchurch lead times are now falling within the company's targeted transit parameters.

14.6 Coal Exporter

Solid Energy is New Zealand's state-owned coal company, and is the largest as measured by extraction, domestic supply and export volumes. Solid Energy is also developing renewable energy and investigation into coal-to-diesel technologies. The focus of this study is coal exports via the Midland Line from Westport to Lyttelton Port, and Waitako mines for New Zealand Steel at Glenbrook.

Solid Energy has been instrumental in developing New Zealand's export coal market based upon mines at Stockton, Reefton, Strongman and Spring Creek on the South Island's West Coast, providing high-grade coking coal principally for steelmaking. Export volumes have built from <0.2 million tonnes per annum (mtpa) pre 1982 to 0.4-0.6 mtpa from 1982-1990, and since to 2.6 mtpa. Rising process and global economic factors resulted in slumping export demand in later 2008, although volumes are now recovering.

Coal is a high bulk, low value commodity making selection of transport mode a critical factor. Solid Energy has explored a range of freight modes, including various barging options (from Westport and Greymouth to Lyttelton, New Plymouth, Marlborough and Australia) and a proposed purpose-built jetty near Westport. The freight task is however well suited to rail, being high volume and repetitive, where long term arrangements permit optimisation. Price is a key logistics chain driver.

Freight Insights

Solid Energy faced a very long process to optimise its rail service. It was not until both parties, after 20 troublesome years, approached the task as a strategic partnership, requiring mutual commitments to infrastructure and volumes that rail achieved reliability and scale. This partnership has featured substantial investment by both parties, with a progressive scaling up of capability. Extended passing bays, longer trains (originally 16, now trialling 45 wagon trains), and specialised wagons and operations, have raised line capacity to 5 mtpa.

14.7 Case Study: Milk Processor

This company processes milk collected from the South Canterbury region primarily for export. It has progressively expanded its processing facilities as it secures greater milk supply, and sees organic growth in supply for the foreseeable future.

The company's freight task comprises collection of raw milk, the supply of other raw materials (packaging, coal, chemicals) to the processing plant, and the dispatch of processed product, for export primarily and national supply. While most raw milk supply is from within 50km of its processing plant, with growth it is attracting suppliers from farther afield (>100 km). Trucks currently collect all raw milk, and will do so for the foreseeable future. In time, consideration will be given to reducing bulk using reverse osmosis to remove water on-farm. At this stage all domestic transport needs are met by trucking contractors.

Freight Insights

As a relatively young company, it has had the opportunity to optimise its freight task and was keen to explore all freight modal options. While its current road transport operators are providing excellent service, the company remains keen to implement a rail strategy to offset traffic, congestion, emissions and safety issues. While its plant was deliberately built adjacent to a rail line, and designed to incorporate a rail siding, TranzRail (and its successors) have proved reluctant to facilitate installation of a siding. The company has also faced unacceptable delays in having safety systems installed on a busy rail crossing. While the logistics of servicing rail sidings on (otherwise) long-haul routes is complex, given the scale of operations (targeting 4,000 export TEU annually), and opportunities for backhaul of raw materials, the company has been disappointed it has not warranted greater focus.

14.8 Vertically Integrated Drinks Manufacturer

The interviewed organisation was a vertically integrated beverage producer. The company produces bulk wines at a number of locations in both the North and South Islands which are transported to Auckland for bottling and subsequent distribution. The company also imports and exports a range of wines and spirits, which pass through its Auckland DC. The company has a secondary DC in Christchurch to serve the South Island. This is supplied from the Auckland DC.

The company utilises all three transport modes for the movements of their products. Bulk wine is transported to Auckland using a combination of rail and coastal shipping via Nelson for product from the South Island, by rail for product from Hawkes Bay and by road for product from Gisborne. Bulk wine is transported on rail or coastal shipping using ISO containers which facilitates intermodal use.

Distribution from the Auckland DC utilises a combination of coastal shipping, arranged through a freight forwarder, and road. Coastal shipping is used for regular transfers to the Christchurch DC where the demands can be predicted reasonably accurately since movements typically take approximately five working days door to door. Road is used for other movements to third party DC's and direct to customers, which are often more time sensitive and where as a result, there may be greater need for the flexibility, reliability and clear lines of responsibility that road offers. Rail is not used for the distribution of finished products. In part this reflects a relatively high level of damage to the product.

Freight Insights

For freight movements which are not time sensitive and for which coastal shipping provides a realistic alternative, extensive use is made of this mode, with the price advantages outweighing the slower and less flexible service offered. Road is used exclusively where its advantages in terms of service quality and reliability outweigh its higher costs.

15 CONTESTABLE VOLUMES

15.1 INTRODUCTION

Coastal shipping serves a number of components of the freight market in New Zealand, encompassing both bulk commodities and more general cargo. For some bulk cargo, particularly cement and petroleum, coastal shipping is well suited to the movement of freight. Such a fit also exists where the main sources of supply are located on the coast (with the exception of the movement of petroleum between the Marsden Point refinery and Auckland which is transported by pipeline). Onward distribution within the regions is undertaken by road, although there is also potential for the involvement of rail in this movement. Coastal shipping moves a number of other commodities, particularly where these utilise some form of intermodal facility, via containers or RORO vehicles. However, in the transport of commodities, coastal shipping is typically in competition with road and rail, and the potential market share available varies from route to route and with the type of commodity. Only a portion of the overall freight market is contestable by coastal shipping and even in this potentially contestable market the strength of coastal shipping offerings varies significantly.

15.2 THE OVERALL FREIGHT TASK

The total freight task in 2006-07 as derived from the NFDS is displayed in the figure below.

NFDS Freight Movements all modes - million tonnes p.a.

From\To		Nth	Akl	Wai	BOP	Gis	Hby	Tar	Man	Wgn	T-M	WC	Can	Otg	Sth	NZ	ex-intra
Northland	Nth	10.8	4.1	0.1	1.1		0.4	0.2		0.4	0.3		0.3	0.4	0.2	18.4	7.6
Auckland	Akl	0.7	33.7	2.6	1.3	0.1	0.2	0.2	0.7	0.9	0.2		0.9	0.3	0.1	42.1	8.4
Waikato	Wai	0.1	9.0	23.8	4.5		0.3	0.5	0.1				0.1			38.5	14.7
Bay of Plenty	BOP		1.5	2.7	17.4	0.4	0.4	0.1	1.2	0.3			0.1			24.1	6.7
Gisborne	Gis		0.1		0.1	2.0	0.7			0.1						3.1	1.1
Hawkes Bay	Hby	0.1	0.2	0.2	0.1	0.2	7.4	0.1	0.8	0.4						9.4	2.0
Taranaki	Tar	0.3	0.1	0.5	0.2			5.9	0.2							7.2	1.3
Manawatu	Man			0.1	0.1		0.5	1.3	7.7	1.6			0.2			11.6	3.9
Wellington	Wgn		0.1	0.1	0.1		0.1		1.3	7.7						9.5	1.8
Tasman/ Marlb	T-M								0.1	0.1	7.9	0.2	1.0	0.1		9.4	1.5
West Coast	WC		0.2	0.1				0.1		0.2	0.3	3.6	4.5	0.2		9.1	5.5
Canterbury	Can		0.2	0.1	0.1			0.1	0.3	0.3	0.6	0.2	22.3	1.3	0.4	26.0	3.7
Otago	Otg												0.8	8.4	1.1	10.3	1.9
Southland	Sth												0.4	1.0	6.7	8.2	1.5
Total	NZ	12.0	49.4	30.3	25.0	2.7	10.2	8.4	12.5	12.0	9.4	4.1	30.7	11.6	8.5	226.8	
excluding intras	NZ x	1.2	15.7	6.5	7.6	0.7	2.8	2.5	4.8	4.3	1.5	0.5	8.4	3.2	1.8		61.5

Source : National Freight Demands Study (NFDS)

15.3 THE POTENTIAL MARKET FOR COASTAL SHIPPING

Coastal shipping is only able to serve part of the freight market in New Zealand due to either the nature of the product being shifted or the geographical characteristics of the movements undertaken. The contestable part of the market for coastal shipping has been estimated by taking into account the total freight volumes set out above, and excluding these product and geographic conditions.

As part of the process, the study also excluded movements of cement and petroleum, deemed to be almost entirely distributed by sea, and therefore treated separately.
The total list of commodities / services excluded were:

- Liquid milk;
- Export logs;
- Livestock;
- Petroleum;
- Cement;
- Aggregates; and
- Couriers.

A list of the geographical movements excluded were:

- All internal movements within a region;
- All movements between regions without major ports and other origins or destinations within the North Island, including the Waikato and Manawatu-Wanganui. It is considered that the complexity of the journey by coastal shipping, involving a long haul by another mode to or from a port, prohibits coastal shipping from competing for this traffic; and
- Coal traffic from the West Coast to Canterbury.

The resultant freight flows which can be considered potentially contestable are displayed in the figure below. The areas highlighted are those which have been excluded, as described above.

Total Contestable Flows - million tonnes p.a.

From\To		Nth	Akl	Wai	BOP	Gis	Hby	Tar	Man	Wgn	T-M	WC	Can	Otg	Sth	NZ
Northland	Nth		1.0	0.1	0.4											1.4
Auckland	Akl	0.5			1.3	0.1	0.2	0.2		0.8	0.1	0.0	0.9	0.3	0.1	4.5
Waikato	Wai	0.1									0.0		0.1	0.0		0.2
Bay of Plenty	BOP	0.0	1.5			0.2	0.3	0.1		0.3			0.1	0.0	0.0	2.6
Gisborne	Gis	0.0	0.1		0.1		0.4			0.1	0.0					0.6
Hawkes Bay	Hby	0.1	0.2		0.1	0.1		0.1		0.4						0.9
Taranaki	Tar	0.0	0.1		0.2		0.0			0.0	0.0		0.0		0.0	0.4
Manawatu	Man												0.1			0.1
Wellington	Wgn		0.1		0.1		0.1	0.0			0.0					0.3
Tasman/ Marlb	T-M		0.0	0.0			0.0		0.1	0.1		0.0	0.9	0.1	0.0	1.2
West Coast	WC		0.1	0.1						0.0	0.1		0.4	0.2	0.0	0.8
Canterbury	Can	0.0	0.2	0.1	0.1		0.0	0.1	0.2	0.3	0.5	0.2		0.8	0.3	2.9
Otago	Otg		0.0		0.0								0.1		0.2	0.3
Southland	Sth		0.0	0.0	0.0				0.0	0.0	0.0		0.4	0.6		1.2
Total	NZ	0.7	3.2	0.3	2.2	0.4	1.0	0.4	0.3	2.0	0.8	0.3	3.0	2.0	0.7	17.3

Source : National Freight Demands Study (NFDS), updated

The figure presents a potentially contestable market for coastal shipping of approximately 17 million tonnes of freight in 2006-07, representing about 8% of the overall freight task in tonnage terms.

The most significant movements observed from this data collation are:

Key Contestable Volumes 2006-07 - million tonnes	
Over 0.75 million tonnes in 2006-07	
Northland-Auckland	0.97
Auckland-Bay of Plenty	1.27
Auckland-Wellington	0.80
Auckland-Canterbury	0.86
Bay of Plenty-Auckland	1.51
Tasman-Canterbury	0.86
Canterbury-Otago	0.83
0.4-0.75 million tonnes in 2006-07	
Northland-Bay of Plenty	0.40
Auckland-Northland	0.50
Canterbury-Tasman	0.47
Southland-Otago	0.64
Total for selected movements	**9.11**

These 11 selected movements have a total flow of about 9.1 million tonnes, or 53% of the potential contestable volume. The six movements in excess of 0.75 million tonnes have a total flow of 7.1 million tonnes, or 41% of the total. We therefore conclude there is a considerable concentration in the movements of freight by route, and to a large extent the largest movements are located within the North or South Islands. Of the key contestable movements set out above, only one is an inter-island transfer between Auckland and Canterbury.

15.4 CURRENT SHARES OF COASTAL SHIPPING

15.4.1 Overall Position

Coastal shipping already carries freight on a number of the routes within the observed contestable freight market. The estimated flows and respective share of coastal shipping, of the total contestable flows, are set out in the following figures.

Revised Estimates of Coastal Cargo - 000 tonnes p.a.

From\To		Nth	Akl	Wai	BOP	Gis	Hby	Tar	Man	Wgn	T-M	WC	Can	Otg	Sth	NZ
Northland	Nth															
Auckland	Akl				1		0			1	45		329	26		401
Waikato	Wai															
Bay of Plenty	BOP		4							0			69	5		77
Gisborne	Gis															
Hawkes Bay	Hby		2		0					0			1	1		5
Taranaki	Tar		0		0								3	0	0	3
Manawatu	Man															
Wellington	Wgn		0		0		0	0			108		51	0		159
Tasman-Marlb	T-M		47		0			0		17				0		64
West Coast	WC															
Canterbury	Can		57		9		2	7		31	13		0	1		119
Otago	Otg		6		3		3			12			7			31
Southland	Sth				0		0			3				0		4
NZ Total	NZ		116		14		5	7		64	166		460	33	0	865

Source : National Freight Demands Study (NFDS), updated

Coastal Shipping Share of Contestable Flows															
From\To		Nth	Akl	Wai	BOP	Gis	Hby	Tar	Man	Wgn	T-M	WC	Can	Otg	Sth	NZ
Northland	Nth		0.0%	0.0%	0.0%											0.0%
Auckland	Akl	0.0%			0.0%	0.0%	0.2%	0.0%		0.1%	31.5%	0.0%	38.0%	9.5%	0.0%	8.9%
Waikato	Wai	0.0%											0.0%	0.0%		0.0%
Bay of Plenty	BOP		0.3%			0.0%	0.0%	0.0%		0.0%			56.9%			3.0%
Gisborne	Gis		0.0%		0.0%		0.0%	NA		0.0%			NA			0.0%
Hawkes Bay	Hby	0.0%	0.9%		0.7%	0.0%		0.0%		0.1%			NA			0.6%
Taranaki	Tar		0.2%		0.0%		0.0%			NA			6.6%			0.9%
Manawatu	Man												0.0%			0.0%
Wellington	Wgn		0.6%		0.6%	NA	0.2%	0.1%			100%					62.4%
Tas/ Marlb	T-M								0.0%	18.7%			0.0%	0.0%	0.0%	5.4%
West Coast	WC		0.0%	0.0%							0.0%		0.0%	0.0%	0.0%	0.0%
Canterbury	Can		27.3%	0.0%	7.1%	NA	5.8%	8.3%	0.0%	11.1%	2.8%	0.0%		0.1%	0.0%	4.1%
Otago	Otg												5.5%		0.0%	9.4%
Southland	Sth				0.9%					13.3%	0.0%		0.0%	0.0%		0.3%
Total	NZ	0.0%	3.6%	0.0%	0.6%	0.0%	0.5%	1.5%	0.0%	3.2%	20.1%	0.0%	15.2%	1.7%	0.0%	5.0%

Source : National Freight Demands Study (NFDS), updated

For the major movements identified and set out in the figure above, the market share of coastal shipping is relatively high for freight movements between Auckland and Canterbury, with an observed 38% of the total contestable market. Other smaller movements where coastal shipping has a share of more than 10% of the potentially contestable market are:

- Canterbury to Auckland;
- Auckland to Tasman / Marlborough;
- Bay of Plenty to Canterbury (although the overall volumes are fairly low);
- Wellington to Tasman / Marlborough (although there are some difficulties with the interpretation of the figures);
- Tasman / Marlborough to Wellington;
- Canterbury to Wellington; and
- Southland to Wellington (although again total volumes are low).

For all other key flows identified, the market share of coastal shipping is low.

15.4.2 Key Flows in Detail

In further examination of the key routes, the breakdown of contestable commodities are presented as follows:

Contestable Commodities - >0.75 million tonnes							
to/from/to	Northland Auckland	Auckland BOP	Auckland Wellington	Auckland Canterbury	BOP Auckland	Tasman Canterbury	Canterbury Otago
Dairy Products	0.15	0	0	0	0	0.01	0.01
Total Timber Products (exc export logs)	0.4	0.02	0.02	0	0.04	0.39	0.08
Meat	0.05	0	0	0	0.01	0.01	0.09
Horticulture	0	0.02	0.02	0.08	0.1	0.15	0.13
Coal	0	0	0	0	0	0	0
Chemicals including limestone and fertiliser	0	0	0	0	0	0	0.01
Aluminium and Steel	0	0.32	0.04	0.04	0.05	0	0
Other Minerals	0.02	0.02	0	0	0.06	0.02	0
Retail	0.04	0.48	0.46	0.46	0.77	0.01	0.24
Total Identified	0.65	0.85	0.54	0.58	1.02	0.58	0.56
Other (1)	0.32	0.41	0.26	0.28	0.49	0.28	0.27
Total inc Other	0.97	1.27	0.8	0.86	1.51	0.86	0.83

(1) Flows not specifically identified by commodity but assumed to be 48.5% of identified totals in line with NFDS analysis.

Contestable Commodities - 0.4 to 0.75 million tonnes				
to/from/to	Northland	Auckland	Canterbury	Southland
	Bay of Plenty	Northland	Tasman	Otago
Dairy products	0	0	0	0.29
Total Timber Products (exc export logs)	0.2	0.01	0.02	0.03
Meat	0.05	0	0	0.07
Horticulture	0	0.01	0.08	0.01
Coal	0	0	0	0
Chemicals including limestone and fertiliser	0.02	0	0.03	0.02
Steel and Aluminium	0	0.04	0	0.01
Other Minerals	0	0	0	0
Retail	0	0.28	0.19	0
Total Identified	0.27	0.34	0.32	0.43
Other (1)	0.13	0.16	0.15	0.21
Total inc Other	0.4	0.5	0.47	0.64

(1)Flows not specifically identified by commodity but assumed to be 48.5% of identified totals in line with NFDS analysis.

For the key movements identified, commodities can be divided into two main categories:

- The movements of retail type products away from main distribution centres in Auckland and Christchurch; and
- The movement of basic commodities, particularly dairy products, forest products and meat to either processing plants or ports in other regions.

15.5 SHARES OF COASTAL SHIPPING AND RAIL

The shares of coastal shipping and rail in the key movements identified in the analysis are summarised in the following figure. These build upon the data from the breakdown of contestable commodity flows over 0.75 million tonnes.

Coastal Shipping and Rail Movements in 2006-07 (million tonnes)							
	Total	Other	Total incl Other	Coastal Shipping	% Total	Rail	% Total
Northland - Auckland	0.65	0.32	0.97	0		0.12	12.7%
Auckland - Bay of Plenty	0.85	0.41	1.27	0		0.67	52.5%
Auckland - Wellington	0.54	0.26	0.8	0		0.09	11.8%
Auckland - Canterbury	0.58	0.28	0.86	0.33	38.0%	0.37	42.7%
Bay of Plenty - Auckland	1.02	0.49	1.51	0		0.82	54.2%
Tasman - Canterbury	0.58	0.28	0.86	0		0.05	5.6%
Canterbury - Otago	0.56	0.27	0.83	0		0.24	28.7%
Northland - Bay of Plenty	0.27	0.13	0.4	0		0.023	5.9%
Auckland - Northland	0.34	0.16	0.5	0		0.016	3.2%
Auckland - Otago	0.19	0.09	0.28	0.03	9.5%	0.036	13.0%
Bay of Plenty - Wellington	0.22	0.11	0.33	0		0.008	2.5%
Canterbury - Tasman	0.32	0.15	0.47	0.01	2.8%	0.02	4.7%
Southland - Otago	0.43	0.21	0.64	0		0.41	64.8%

From data presented it is observed that the share of coastal shipping is low for movements within each island. Only for the longer movements between islands, where the alternatives of rail or road also involve the use of the Cook Strait ferries, does coastal shipping's market share become significant. The key movement is between Auckland and Christchurch, where coastal shipping is used extensively as part of the distribution process between manufacturing plants and distribution centres as well as movements between distribution centres in the two islands.

These flows largely consist of scheduled movements, in which journey time, and to a lesser extent reliability, are less critical. For these regular shipments, the cost advantages of coastal shipping become more relevant.

The lesser emphasis on journey time and reliability also enables rail to obtain a relatively high share in this movement. Rail shares many of the characteristics of coastal shipping in this regard. The high share of coastal shipping also reflects the relatively high frequency of service offered between the two regions by both domestic and international shipping lines.

A significant coastal shipping market share is also observed in the movement of freight between Auckland and Otago, although to a much lesser extent than that for Auckland and Canterbury. In many respects this reflects the different nature of commodity flows on the routes, with a higher proportion of retail flows being direct deliveries to local wholesale and retail stores from Auckland on a more ad hoc basis, and more regular movements between distribution centres arriving in Canterbury. The lower share for rail observed also supports this argument. For longer movements, both rail and coastal shipping suffer less of a disadvantage in terms of typical journey times compared to road. However service frequency can affect movement timings.

For rail, higher market shares are experienced for export / import movements including ports. Key volumes include exports / imports between Auckland and the Bay of Plenty, and exports to Otago via Southland.

The key characteristics of potentially contestable commodity movements by coastal shipping are detailed briefly below.

Characteristics of Key Flows

Movement	Comments
Northland-Auckland	Dominated by movements of timber products, mainly to processors or for sale into the Auckland market. Some dairy products from the rail connected dairy plants to the port.
Auckland-Bay of Plenty	Mainly steel and aluminium and export manufactures. High rail modal share.
Auckland-Wellington	Mainly retail products, some into distribution centres and some for direct delivery.
Auckland-Canterbury	Mainly retail products, typically between distribution centres. High rail and coastal shipping modal shares.
Bay of Plenty-Auckland	Mainly imported manufactured goods for processing or into distribution centres.
Tasman-Canterbury	Mainly timber products, largely for processing in Canterbury.
Canterbury-Otago	Mainly retail products, typically from distribution centres in Christchurch.
Northland-Bay of Plenty	Mainly timber products, associated with pulp production.
Auckland-Northland	Mainly retail products.
Auckland-Otago	Mainly retail products, often supporting more regular movements from distribution centres in Christchurch.
Canterbury-Tasman	Mainly retail products plus some fertiliser.
Southland-Otago	Mainly dairy products and meat for export.

15.6 MARKET POTENTIAL FOR COASTAL SHIPPING

In New Zealand, analysis of total freight movements that are potentially contestable by coastal shipping can usefully be divided into four main categories:

- **Inter-Regional Flows**: Short distance, intra-regional flows of both basic commodities and manufactured / retail goods, for which the shortness of the journey effectively precludes the use of coastal shipping except for some specialised commodities. This comprises about 75% of the national freight task as measured in tonnes;
- **Basic Products**: The movement of basic products of a relatively low value, where the minimisation of transport costs is an important consideration. Where these are produced in locations with direct connections to rail or coastal shipping, or in the service of customers at ports, use is made of these modes. The transportation of coal, cement and petroleum already uses rail and coastal shipping. However many of the other commodities within this group are initially produced at dispersed and remote locations where transport by road is the only realistic option. In addition, where commodities are produced for export markets, the product tends to be transported to the nearest port for export, and so the scope for a coastal shipping leg is again limited;
- **Manufactured Products**: The movement of manufactured products as part of other manufacturing processes, encompassing items such as steel, paper, board, bulk wine and beverages, some foodstuffs and chemicals. These tend to be dispatched to schedules which are not particularly time sensitive, (although reliability of arrival time may be important) but also because of the relatively low value of the product, there are significant benefits in reducing transport costs. Again where these are transported between destinations some distance apart, coastal shipping has a role in their movement, as evidenced by current flow;
- **Retail Products**: The movement of products for retail markets, including the supporting wholesaling and distribution. These tend to be of three different types:
  - Regular movements between manufacturers and distribution centres, and between distribution centres, typically located in Auckland and Christchurch, although with some movements to secondary distribution centres in Palmerston North and Wellington in the North Island and Dunedin in the South Island. These secondary centres tend to be supplied from major centres on the same island;
  - More ad hoc movements between distribution centres in response to unanticipated shortages; and
  - Direct deliveries to wholesale and retail stores, and stockists.

Coastal shipping can realistically only serve the first of these retail flows and is therefore primarily confined to the movements between distribution centres in Auckland and Christchurch. Within this market, coastal shipping already has a large market share of volume and any increase in coastal shipping volumes may only be achieved by switching volume from rail. The relatively small share by road in this identified contestable freight market for coastal shipping is largely made up of urgent goods for which neither rail nor coastal shipping would form an acceptable substitute.

Overall the markets for coastal shipping are limited primarily to the movement of semi-manufactured products (such as steel, chemicals and timber products) between appropriate locations, and the movement of retail products between the major distribution centres in Auckland and Christchurch. For both of these volume groupings considerable competition is presented by rail and road. The position of coastal shipping however would change if the current patterns of international shipping services changed and there was a need to provide transhipment cargo services between regional and hub ports.

15.7 KEY OBSERVATIONS / CONCLUSIONS

The following presents selected key observations and conclusions from the above commentary.

- **Service Capability**: Coastal shipping is only able to serve part of the freight market in New Zealand due to either the nature of the product shifted or the geographical characteristics of the movements undertaken.
- **Competitive Environment**: For some bulk cargo, particularly cement and petroleum, coastal shipping is well suited to the movement of freight. In the transport of commodities, coastal shipping is typically in competition with road and rail, and the potential market share available varies from route to route and with the type of commodity.
- **Intra-Island Movements**: There is considerable concentration in the movements of freight by route, and to a large extent the largest movements are located within the North or South Islands. The share of coastal shipping is low for contestable movements intra-island.
- **Inter-Island Movements**: The market share of coastal shipping is relatively high for freight movements between Auckland and Canterbury, with an observed 38% of the total contestable market.
- **Market Assessment**: Growth in core bulk commodities currently handled by coastal shipping (such as cement and petroleum) is considered limited. Potentially contestable commodity volumes for coastal shipping are also limited primarily to the movement of semi-manufactured products (such as steel, chemicals and timber products) between appropriate locations, and the movement of retail products between the major distribution centres in Auckland and Christchurch. However for these commodity volume groupings considerable competition is presented by rail and road.

Modal Economics

16 MODAL ECONOMICS - SHIPPING

16.1 INTRODUCTION

In furthering our assessment of the opportunities for domestic shipping, a financial model of a new coastal operation servicing the container trade in New Zealand was developed. The model is based on a single ship service, performing a weekly scheduled rotation to four ports. We have adopted as our Base Case a weekly schedule serving Auckland, Tauranga, Lyttelton and Otago. Several alternative route configurations were also tested to examine the operational and economic constraints on the scheduled service, and to assess the most viable port combinations.

Coastal shipping scenarios presented include:

- A four port east coast service, with utilisation of either container terminals or the general wharves;
- A four port service mixing larger container ports with smaller provincial ports;
- A five port scenario; and
- A multiple ship scenario.

These schedules serve to demonstrate the dynamics of a weekly coastal shipping service, reflecting identified market opportunities, practical operational constraints (such as ship transit times and port crane rates), and commercial viability.

The purpose of our analysis is not to provide a complete business case assessment for potential investment, but rather to examine operational constraints and indicative cost / revenue drivers, so to garner an improved understanding of the economics of running a coastal shipping operation in New Zealand. Our analysis draws particular attention to required breakeven volumes for the introduction of a new service and the level of fixed versus variable costs.

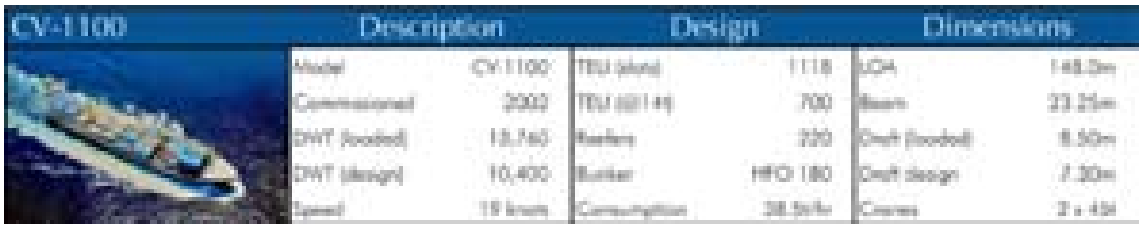
16.2 GENERAL ASSUMPTIONS

16.2.1 Freight Task

The current coastal task is estimated to be approximately 195,000 TEU annually (as per the figure in 16.3.1), or 3,750 TEU per week, comprising 50% full containers and 50% empty international containers being repositioned. This assessment excludes transhipment volumes which are introduced in section 16.5 “International Hub and Feeder Scenarios”.

16.2.2 Ship Characteristics

Our coastal model employs an 1100 TEU geared containership. This is a somewhat larger ship than the 700 TEU Spirit of Endurance that Pacifica currently operates on its East Coast service. The standard ship of this class is the ConTex CV-1100, offering 1,118 TEU slots. Detailed ship specifications are presented below.



16.2.3 Charter Basis

The ship charter is assumed to be on a "bare boat" basis, where the "charter party" or ship operator is responsible for crewing, maintenance and insurance. We note that in 2007 when charter demand was high, ship owners preferred to lease their ships on "time charters" whereby they provided crew, maintenance and insurance. Such an arrangement is unattractive for New Zealand operators.

Ship charter rates have fallen sharply since late 2008 (figure in 7.2.4). The time charter rate for a 1000 TEU ship has fallen from US$9,000/day in mid-2008 to US$3,000/day currently. As a result, establishing a normalised charter rate benchmark is challenging. We have based our assumed charter rate on the 10-year average of US$6,500/day (time charter), and adjusting these rates for a bare boat charter (which excludes crew and maintenance costs) we have adopted US$4,000/day. This rate is consistent with ship sales and ship broker lists where a similar ship (1000 TEU, <10 years old) can be currently purchased for less than US$15 million. Using a 10% cost of funding, this equates to US$4,000/day.

16.2.4 Trade Flows

Trade flows for coastal shipping are represented by existing coastal trade and a potentially contestable market of freight volumes. Existing container volumes have been grouped in a coastal freight matrix showing regional connections. This matrix (presented in section 16.3.1) shows that the high volume (and high profitability) legs are inter-island connections. We observe that Auckland domestic outbound containers alone represent half of New Zealand's coastal shipping volume (being the movement of manufactured and imported goods, and the repositioning of empty containers). Of the Auckland flows, the majority of full containers are destined for Lyttelton (see Section 3.7.1 and figure in 8.5.3), while flows to Timaru and Otago are largely empty containers. In aggregate, all direct inter-island links account for 74% of the coastal volumes. Coastal shipping is expected to attract the greatest market share on longer, inter-island routes, where it has the greatest pricing advantage.

16.3 Base Case Scenario

16.3.1 Route Selection

Route selection and the order of port calls are influenced by transit distance, ship speed, time and identified trade volume. Our Base Case scenario assumes a single ship operating a weekly service incorporating Auckland. Deducting in-port time (indicatively 35%), and assuming a 17 knot sustainable cruise speed, a ship could cover 1,800 nautical miles, or 900 nautical miles from Auckland return, suggesting a connection to Otago is at the outer boundary. Each port added introduces incremental route deviation and berthing time. Ultimately, route design is a balance between expected loadings, transit distance and the flexibility an operator requires to accommodate unforeseen delays.

To meet practical scheduling constraints, and to incorporate key inter-island links, the weekly service is limited to four ports. Alternative port combinations were also modelled, including a five port scenario. Each combination provided different features, balancing potential loadings (from the freight matrix), with transit distances and schedule flexibility. While the five port scenario maximised revenue and profitability, the schedule was ultimately deemed impractical given a lack of operating flexibility.

The selection of our Base Case four port service (being Auckland to Tauranga, Lyttelton then Otago, and returning to Auckland in that order) is guided by available volumes as presented in the following freight matrix.

New Zealand Coastal Volumes (TEU)											
TEU	AKL	TRG	NPE	WLG	NPL	NSN	LYT	TIU	POE	BLU	NZ
AKL	0	8300	7300	400	11500	5700	24200	22200	20600	0	100200
TRG	700	0	1100	0	1500	0	9700	100	900	0	14000
NPE	900	1200	0	100	0	1700	700	0	1300	0	5900
WLG	200	2400	1200	0	2500	3300	10800	5100	900	100	26500
NPL	300	0	0	0	0	100	0	600	400	0	1400
NSN	500	0	0	0	0	0	0	0	0	0	500
LYT	7900	4000	4200	3000	3800	4200	0	0	1800	100	29000
TIU	3000	400	400	2800	0	200	1400	0	800	500	9500
POE	700	1300	2200	1400	0	500	400	1200	0	0	7700
BLU	0	400	0	300	0	0	0	0	100	0	800
NZ	14200	18000	16400	8000	19300	15700	47200	29200	26800	700	195500

Source: Cubic-Njord, Rockpoint estimate Port links **direct** **+1** **+2**

Our Base Case weekly service incorporates port-to-port links that encompass 40% of total New Zealand coastal container flows, with the south bound inter-island links alone carrying 28%. The Base Case route covers a total transit distance of 1,760 nautical miles (or 3,250 km). The north bound link (from Otago to Auckland) carries less than 1% of the total coastal shipping volume.

16.3.2 Ship Speed, Port Time

For our Base Case, the model assumes an average ship speed of 17 knots. This is close to the CV-1100's practical maximum speed, and compares with a maximum (but unsustainable) speed of 19.2 knots. The model assumes an extra hour per port for the approach into port and berthing, giving a transit time of 107 hours. The remaining 61 hours in the week is in-port time available for container loading and unloading.

Base Model - 4 ports Container Terminal					
Schedule Times					Arrival
Depart		Distance (nm)	Transit (Hours)	In-Port (Hours)	Days
Port Chalmers	POE				0.00
Auckland	AKL	831	50	22	3.01
Tauranga	TRG	144	9	7	3.69
Lyttelton	LYT	590	36	22	6.08
Port Chalmers	POE	192	12	10	7.00
		1757	107	61	7.00

16.3.3 Loading Volumes

Considering container weight and ship stability restrictions, the CV-1100's practical service capacity for full (14 tonne) containers is limited to 700 TEU (being 63% of nominal capacity). While the current coastal market comprises 70% empty containers, suggesting the ship could safely manage loadings of up to 1,000 TEU, for the purposes of our modelling we have conservatively constrained loadings to 700 TEU.

Available ship slots for all port pairs can, in theory, be occupied, but there are some practical constraints. Exchanges are expected to be highest on:

- Legs where the demand (from the freight matrix) is highest;
- Longer legs (particularly inter-island legs) where ships have a cost advantage over road and rail;

- Direct port-to-port links ensuring quick delivery; and
- Where the ship maintains its direction (that is, north-south or south-north).

The following figures summarise our assumed exchange schedule. Direct port links account for 25% of the weekly exchanges, while direct+1 (one intervening port) adds a further 50% (as almost all Auckland to Lyttelton via Tauranga), while direct+2 adds 25% (entirely the Auckland to Otago link via both Tauranga and Lyttelton). All exchanges are constrained within the coastal freight matrix total (which excludes transhipment volumes).

Volume Matrix (TEU)				
		direct	+1	+2
700	AKL	TRG	LYT	POE
AKL		0	266	175
TRG	0		140	14
LYT	70	0		28
POE	7	0	0	

Share of Coastal Volume Matrix (TEU)				
	AKL	TRG	LYT	POE
AKL		0%	60%	44%
TRG	0%		75%	81%
LYT	67%	0%		81%
POE	52%	0%	0%	

From the assumed exchanges we have constructed a ship loading schedule, with exchanges at each port accounting for all containers loaded (for all subsequent ports) and unloaded (from all preceding ports). The schedule starts in Otago with the exchange of containers destined for other ports (in this case just 77 TEU). Unloads and loads are then recalculated at all subsequent ports. The largest loading port is Auckland (441 TEU loaded), the largest unloading is at Lyttelton (406 TEU), with the ship reaching maximum loading of 54% on departure from Tauranga. For this weekly schedule, 700 TEU are carried, resulting in 1,400 port moves (a load then a subsequent unload).

TEU On Ship	Unloaded	Loaded	On Departure	% Capacity	*Crane rate*
POE			77	7%	
AKL	77	441	441	40%	*23*
TRG	0	154	595	54%	*23*
LYT	406	98	287	26%	*23*
POE	217	7	77	7%	*23*
	700	700	295	27%	*23*

16.3.4 Crane Rates

Crane rates measure the number of container moves per hour, per crane at each port. With an assumed 1,400 moves to be performed within an available 61 in-port hours, the Base Case model requires an average crane rate of at least 23 moves per hour across the four ports.

The Rockpoint Port Benchmarking Survey currently monitors Gross Crane Rates for the Port of Tauranga and Lyttelton Port of Christchurch. This records Tauranga's net crane rate at 35 moves per hour, and Lyttelton at 27. Auckland has informally indicated it is achieving 30 moves per hour. The crane rate applied in the model presumes that the ship will be serviced only by a single port crane for the entire time in port. As a smaller coastal ship, the ability to achieve these indicated crane rates may not be practicable. Designing a schedule assuming a lower crane rate serves to accommodate unscheduled delays in port and at sea.

16.3.5 Berthing Windows

While a formal service window may be agreed with each port, the ship may incur delays should the berth be occupied by a delayed (off-slot) or higher priority ship. Stevedores and crane operators may also not be immediately available. For this model, we have assumed the ship is worked for all hours it is in port.

16.3.6 Revenue

To attract volume a coastal service must be cost competitive against other freight modes (road and rail). The price charged to customers should reflect the competitive positioning of coastal shipping for factors such as service frequency (weekly for this ship schedule vs. multiple services daily for road and rail), speed of delivery (52 hours from Auckland to Christchurch in our Base Case vs. 24 hours by road and 36 hours by rail) and reliability. Without offering a lower cost or better service option to shippers, coastal shipping will almost certainly fail to attract required customers.

We investigated current market pricing of representative city-to-city legs for each freight mode as the basis of our terminal-to-terminal revenues ($/TEU). Our modelled revenues are the sum of TEU carried on each port pair. No differentiation was made for 20' or 40' (i.e. 40' equates to two 20' containers), full or empty, dry or reefer containers. No allowance was made for pickup and delivery charges from the port (container terminal). These are deemed additional costs to be incurred by the customer.

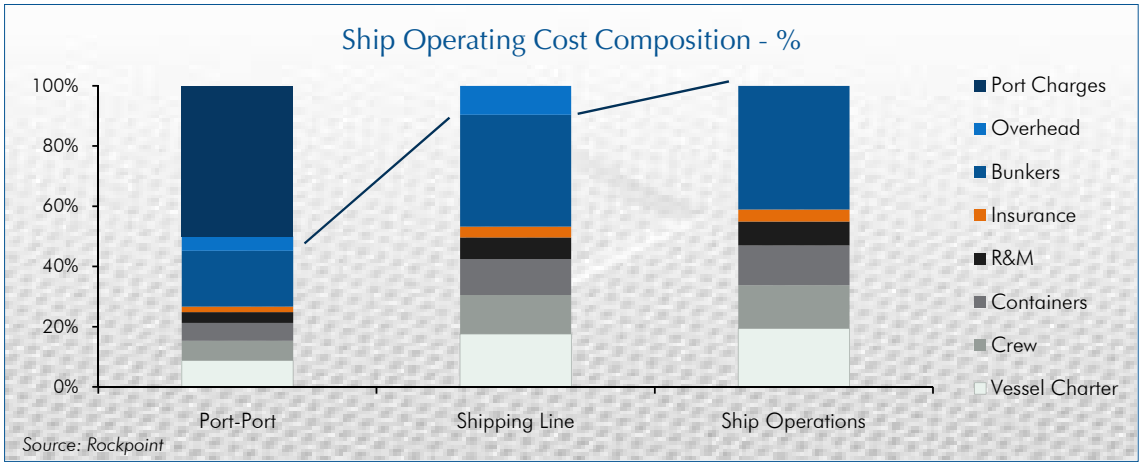
16.3.7 Operating Expenditure

Key operating cost assumptions are based on international studies and feedback from shipping operators and experts.

The categories considered include:

- **Administration**: Comprising management, administration and marketing staff, as well as office costs. The model assumes a standalone administration function for a single ship, and as such is considered a conservative scenario;
- **Ship Costs**: Constituting the bare boat charter rate, plus crew, maintenance, container and insurance costs. The model assumes a rate of US$4,000 per day (or NZ$6,670 per day at NZ:US $0.60, close to the 10 year average bare boat charter rate). Crew, maintenance, container and insurance costs are separately factored in addition to this rate;
- **Bunkers**: Ship fuel. The principal driver of bunker costs are the bunker price (US$/tonne), ship size and ship speed. Each aspect is factored into our model at assumed market rates; and
- **Port Charges**: These include services such as wet charges (e.g. pilotage, towage) and dry charges (wharfage, stevedoring, storage and other land-based services). Port charging schedules are complex, using a variety of rates on different bases (time, time-of day, ship size, one-off) with material differences between ports. For the purposes of our modelling, we have assumed a fixed rate of $10,000 per ship visit (wet charges) and $140 per TEU unloaded or loaded (dry charges).

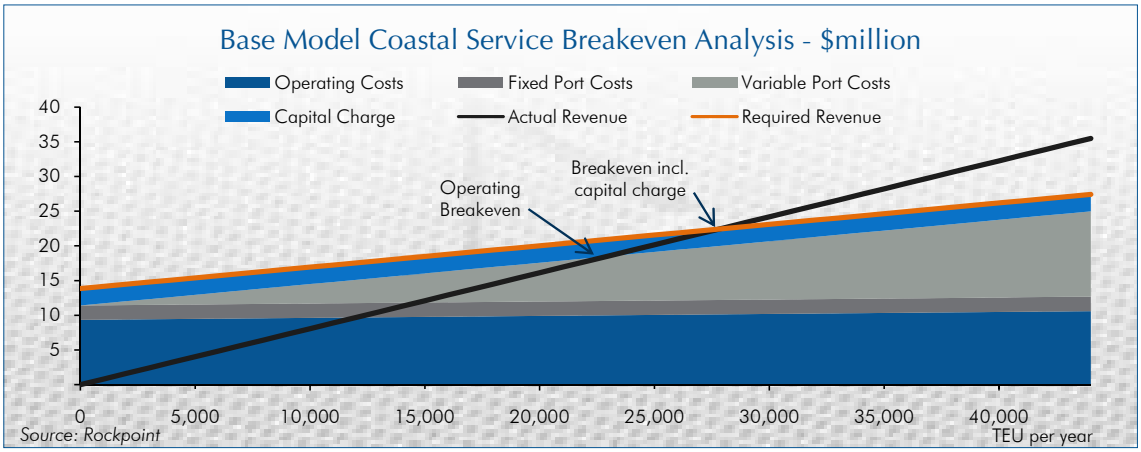
The relative contributions of these operating cost categories are presented in the following figure, being port gate to ship to port gate (port-port or container yard-container yard), shipping line (which excludes port charges) and ship operations only:



Source: Rockpoint

16.3.8 Key Observations and Conclusions

Breakeven Analysis: Key in determining the feasibility of a new coastal shipping service is an assessment of required breakeven volume. Based on our assumptions for a single ship, four port service, trade volume of approximately 23,000 TEU per annum is necessary for the enterprise to breakeven on an operating cash flows basis. To also cover capital costs (that is, provide a full return on investment), the required breakeven volume increases to 28,000 TEU per annum. These results are presented in the following figure.



Fixed and Variable Cost Drivers: From the prior figure we observe the behaviour of different cost components relative to volume. Fixed cost components include a required return on capital and the fixed port charges of pilotage, berthage and towage. These costs are incurred by the service regardless of cargo volume. Ship operating costs similarly behave like a fixed cost for a defined service route as the cost of operating a ship on a given route is incurred regardless of the load carried. Bunker costs are the only operating cost component to increase marginally with the greater weight of cargo on the ship.

In the modelled shipping service, variable port costs constitute the greatest variable cost component, representing the incremental stevedoring charges of loading and unloading additional cargo. In the modelled service with an assumed volume of 700 TEU per week, fixed and variable port costs constitute approximately 50% of the cost of running the service (this cost assessment is in line with international port charges).

Returns: A summary of the revenue and cost elements of the Base Case scenario using an assumed annual volume of 36,400 TEU (700 TEU weekly) is presented below. The figure below displays an indicative income statement on a basis of cents per tonne-km. This is a key measure for comparison across the three competing transport modes (ship, rail and road). The Base Case delivers $4.3 million in annual profit, from revenue (price to the customer) of 4.2 cents per tonne-km, and costs of 3.6 cents per tonne-km. Using these financial projections we can determine the modeled coastal shipping service is price competitive against road and rail. We however acknowledge that other factors such as speed of delivery, frequency of service, incremental door-to-door delivery costs, contribute to a shipper's modal choice.

Financials	$m p.a.	c/t-km
Revenue	29.4	4.2
Ship Op Costs	6.6	0.9
Bunkers	4.8	0.7
Administration	1.3	0.2
Port Charges	12.3	1.8
Pre-Tax Profit	**4.3**	**0.6**

The following figure presents the sensitivity of pre-tax profit against changes in revenue as a percentage change in the base price for each leg, and volume (TEU carried per weekly circuit). The Base Case model identifies a pre-tax profit of $4.3 million (assuming 700 TEU and 100% revenue).

Sensitivity						
		Revenue Factor				
Margin	**4.3**	80%	90%	100%	110%	120%
	400	-6.9	-5.2	-3.5	-1.8	-0.1
TEU	500	-5.1	-3.0	-0.9	1.2	3.3
per	600	-3.4	-0.8	1.7	4.2	6.7
Trip	700	-1.6	1.3	4.3	7.2	10.1
	800	0.1	3.5	6.9	10.2	13.6

Similarly, the pre-tax profit is presented against changes in port charges and bunker costs in the following figure. The base case model assumes US$400 per tonne of bunker fuel.

Sensitivity						
		Port Pricing Factor				
Margin	**4.3**	80%	90%	100%	110%	120%
	350	7.3	6.1	4.9	3.6	2.4
Bunker	375	7.0	5.8	4.6	3.3	2.1
US$/tonne	400	6.7	5.5	4.3	3.0	1.8
	425	6.4	5.2	4.0	2.7	1.5
	450	6.1	4.9	3.7	2.4	1.2

16.4 Alternative Scenarios

Building upon the base case presented, we amend our assumptions to investigate four alternative scenarios. Scenario 1 alters the assumption that coastal cargo flows through port container terminals, to instead use general wharves. Scenario 2 alters the route to call at provincial ports utilising container terminals. Scenario 3 considers a five port schedule calling at container terminals. Finally, with the benefit of these operational and economic insights, we consider the implications of a multi-ship service.

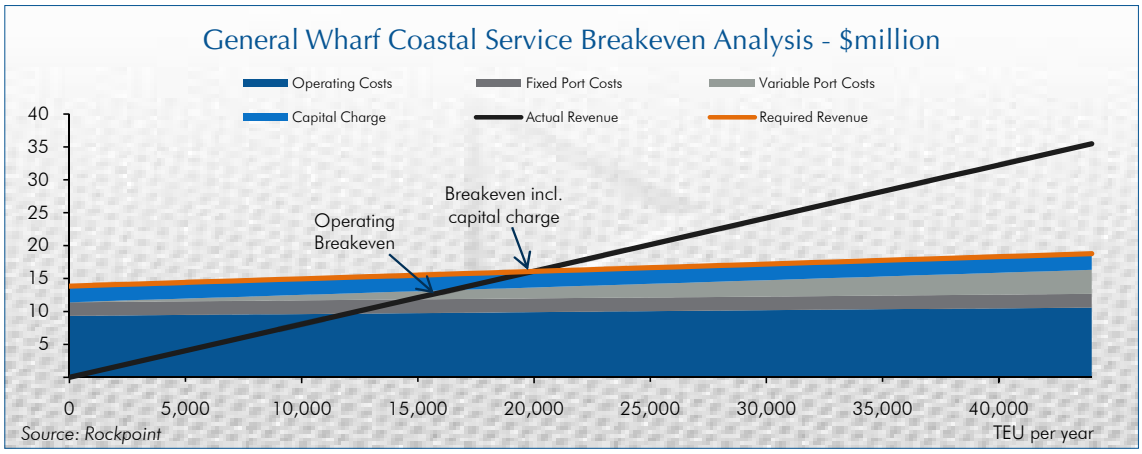
16.4.1 Scenario 1: Four Port, General Wharf

In light of the magnitude of port costs identified in the breakeven analysis, we have analysed a scenario where a coastal service utilises general wharves instead of dedicated container terminals, and transfers cargo with ship's gear (two onboard cranes). While the ship incurs similar fixed port charges (pilotage, towage, berthage), the port stevedoring costs are substantively avoided. The assumed route configuration matches the base case single ship, four port service incorporating Auckland, Tauranga, Lyttelton and Otago. All transhipment containers in the service are assumed to incur an additional cost for a movement from the general wharf to the container terminal or vice versa. Whilst acknowledging that 70% of coastal volumes are empty containers, we have conservatively assumed that 50% of the volumes carried are transhipment containers and so incur the additional handing charge.

Our analysis concludes that using general wharves improves profitability despite assuming that the service carries fewer containers (reflecting reduced transfer rates), 500 TEU per week against 700 TEU per week. Pre-tax profit is observed at 0.8 cents per tonne-km as opposed to 0.6 cents per tonne-km in the base case container terminal scenario.

Financials	$m p.a.	c/t-km
Revenue	21.0	4.2
Ship Op Costs	6.3	1.3
Bunkers	4.8	1.0
Administration	1.3	0.3
Port Charges	4.2	0.8
Pre-Tax Profit	**4.2**	**0.8**

Consistent with these forward projections, breakeven volumes are lower under the general wharf scenario. Operating breakeven volume is approximately 16,500 TEU and the breakeven volume inclusive of capital charges is approximately 20,000 TEU. Significant reductions in variable port costs are also observed in the following figure.



In considering the indicative projections, we note that given additional complexity, both shipping lines and ports may discourage the use of the general wharves for transhipment containers.

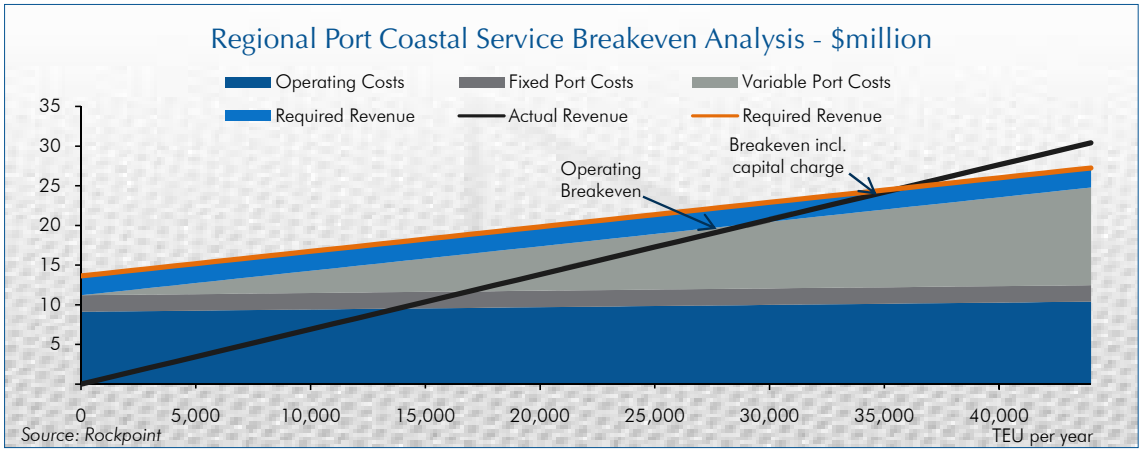
16.4.2 Scenario 2: Regional Ports

Scenario 2 considers a service linking regional ports on feeder services to hub ports. Our assumed route is Auckland, Lyttelton, Nelson, Napier, returning to Auckland. The service captures the high volume Auckland-Lyttelton link, whilst providing feeder capacity from Nelson and Napier, which have both recently lost direct export services. The scenario assumes ports provide cranes and stevedoring services via the container terminals.

With a shorter transit distance, available port time increases to 67 hours (vs. 61 hours in the Base Case) enabling better accommodation of lower crane rates from mobile cranes utilised at Nelson and Napier. Volumes carried are assumed to be 700 TEU per week, for an average crane rate of 21 moves per hour as calculated across the four ports. We assume 25 moves per hour at Auckland and Lyttelton, therefore the required crane rate at Nelson and Napier is reduced to 15 moves per hour.

While operating costs are lower than the base case (shorter transit distance), port-to-port legs are shorter, and so generate lower revenue per TEU, at 3.6 cents per tonne-km (vs. 4.2 cents per tonne-km in the base case). As such, profitability falls close to breakeven.

Financials	$m p.a.	c/t-km
Revenue	25.2	3.6
Ship Op Costs	6.6	0.9
Bunkers	4.6	0.7
Administration	1.3	0.2
Port Charges	12.3	1.8
Pre-Tax Profit	**0.3**	**0.04**



16.4.3 Scenario 3: Five Port

The five port scenario adds a Napier port of call to our base case, with the service schedule becoming Otago, Napier, Auckland, Tauranga, Lyttelton then returning to Otago. To include an additional port call it is necessary to alter the assumed ship speed from 17 knots to 17.5 knots. The adjusted service schedule is detailed below:

5 ports Container Terminal					
Schedule Times (hours)					Arrival
Depart		Distance (nm)	Transit	In-Port	Days
Port Chalmers	POE				0.00
Napier	NPE	491	29	2	1.30
Auckland	AKL	372	22	24	3.21
Tauranga	TRG	144	9	5	3.81
Lyttelton	LYT	590	35	18	6.02
Port Chalmers	POE	192	12	12	7.00
		1789	107	61	7.00

The five port scenario lifts Base Case revenues by $0.3 million to $29.7 million, although this may increase if the scenario assumed more than 700 TEU per week (given the average loading in transit fell from 27% to 21%). Higher bunker costs from a longer route and higher transit speed push pre-tax profit to $3.6 million. Notwithstanding a lower average loading, adding a fifth port leg raises revenue to 5.4 cents per tonne-km compared to the base case 4.20 cents per tonne-km.

Financials	$m p.a.	c/t-km
Revenue	29.7	5.4
Bunkers	5.2	0.9
Port Charges	12.8	2.3
Administration	1.8	0.3
Pre-Tax Profit	**3.6**	**0.7**

As previously indicated, we consider the five port service configuration unrealistic given it faces greater time constraints. Key factors leading to this conclusion:

- **Speed**: It is unrealistic to base a schedule on the maximum serviceable speed of the ship, given it is then more vulnerable to weather or mechanical delays; and
- **Crane Rate**: The calculated 23 moves per hour assumes the ship is serviced for all hours in port (and assumed not delayed). A 5% drop in transit speed, or a six hour (10%) delay in port would demand a crane rate of 26 moves per hour to maintain schedule.

The following table presents the sensitivity of the implied crane rate per hour to transit speed and the number of containers carried per week. This illustrates the difficulties arising from delays in transit and carrying higher volumes.

Sensitivity						
Crane Rate		Transit Speed				
TEU/hour	**23.0**	14.0	15.0	16.0	17.0	17.5
	600	34	27	23	21	20
Volume rate	700	40	32	27.4	24	23.0
TEU/week	800	45	37	31	28	26
	900	51	41	35	31	30

Although the nominal five port service has the potential to capture greater coastal shipping volumes, we conclude the schedule, as configured, is too tight to provide a realistic and reliable service. Normal delays from weather, mechanical issues, restrictive port scheduling and crane rates in the five port schedule could not be adequately accommodated and the service would soon prove unmanageable.

16.4.4 Scenario 4: Multiple Ships

Modelling a single ship provides insights into operational constraints and financial performance. It does not, however, reflect the opportunities available to coastal shipping as a freight mode.

In New Zealand, three domestic general-cargo ships currently service the coast on very different weekly services:

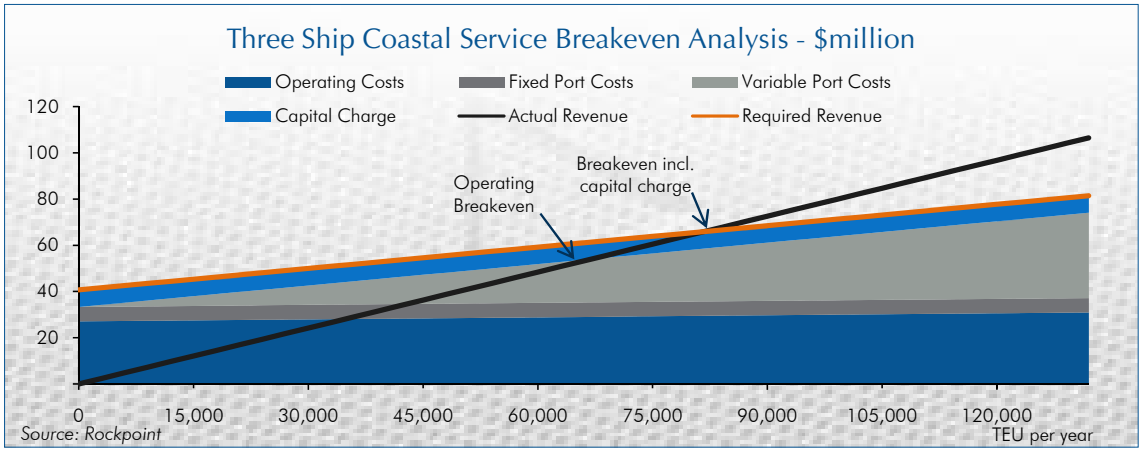
- Pacifica East Coast service, most similar to our scenarios, traverses Auckland, Lyttelton, Otago, Tauranga and returning to Auckland on a weekly service;
- Pacifica West Coast service visits Onehunga, Lyttelton, Nelson, Napier and returning to Onehunga weekly; and
- Strait Shipping's Wellington-Nelson return and Wellington-Lyttelton return trip twice per week.

Our analysis does not consider how competing operators interact, or which competitive dynamics may impact on the emergence of a more comprehensive coastal service.
Employing additional ships, however, offers upside opportunities for coastal shipping including:

- **Frequency:** For a given route, each additional ship will increase the frequency of service. Three ships on a weekly route provide (effectively) a two day service;
- **Ports:** The freight matrix suggests existing coastal volumes (full containers and empty containers) only justify the introduction of multiple weekly services on a few port-to-port links (mostly from Auckland to the South Island ports). Additional ships could provide frequency on these heavy links and incorporate a network of other port links;
- **Transhipments:** International shipping lines have already positioned for hub-and-feeder structures. Currently, the resultant transhipments are largely carried on international ships, although existing domestic operators are increasingly taking some of the load.

Volume is the key determinant of profitability of coastal shipping. Our coastal freight matrix indicates annual volumes of 195,000 TEU (excluding the Wellington-Picton inter-island link and transhipments). We estimate domestic ships currently carry an estimated 70,000 TEU annually. Increasing domestic shipping's share of existing coastal volumes offers clear opportunity to improve profitability and increase service frequency.

If two additional ships were included in our base case scenario, breakeven volume would necessarily increase from 28,000 TEU to approximately 80,000 TEU.



The key determinant of coastal shipping's competiveness against other modes is service (frequency and scope). Coastal shipping is already the most price competitive, especially for long-haul inter-island services. Should domestic operators capture a greater share of coastal volume, introduction of additional ships would provide an integrated network employing multiple coastal ships offering wider scope and improved frequency of the service (figure in 8.6.2). This would position coastal shipping to compete more effectively for contestable freight volumes, particularly time sensitive cargo.

16.4.5 Key Observations / Conclusions

The following observations and conclusions can be drawn from our analysis of the operation and required revenue of a new hypothetical coastal shipping operation.

- **Breakeven Volumes**: Our Base Case single ship, four port coastal shipping service, requires breakeven volume of 28,000 TEU. The addition of two extra ships to this service would increase the necessary breakeven volume to approximately 80,000 TEU. At current coastal volumes of 195,000 TEU (85,000 TEU full and 110,000 TEU empty containers) a new three ship service would constitute 48% of the total market and a single ship service would constitute 14% of the total market. A three ship service would equate to approximately 115% of volumes currently handled by domestic operators. While it is possible, given the increased frequency of service under the three ship service scenario, that incremental volume may be captured from either rail or road, the introduction of such a service in the absence of assured access to increased transhipment volumes appears challenging. Structural change in terms of port call rationalisation by international shipping lines represents a necessary prerequisite.
- **Profitability**: At an assumed weekly volume of 700 TEU (36,400 TEU per annum) the Base Case coastal shipping service generates pre-tax profit of $4.3 million per annum. The four port general wharf scenario generates pre-tax profit of $4.2 million per annum, with lower port costs offset by a lower volume assumption of 26,000 TEU per annum.
- **Port Variable Costs**: Container terminal stevedoring charges constitute a significant portion of total cost at higher volumes (~50%). The use of general wharves and ship gear reduces the cost of loading and unloading cargo at the expense of time alongside.
- **Time Constraints**: In establishing a coastal shipping schedule, time is a critical constraint. Crane rates, ship speed and operational delays all restrict the number of port calls possible in a weekly service. The Base Case single ship, four port container service is considered realistic given the schedule allows for the reasonable occurrence of delays. In contrast a five port service inclusive of Napier is considered too constrained.
- **Analysis Constraints**: The analysis undertaken has been simplified to highlight key commercial features associated with domestic coastal shipping operations. It is important to note that the ability of a new coastal service to secure the Base Case breakeven volume will be dependent on a range of variables including, competitive responses from incumbent operators and competing modes, inherent service delivery constraints of a weekly service offering to shippers, freight task growth and the potential for structural industry change.

16.5 INTERNATIONAL HUB AND FEEDER SCENARIOS

While a coastal shipping business case can be built around carriage of domestic cargo (full containers) alone, this represents only 20% of the assessed coastal container market. The balance is carried by international ships on their scheduled services, of which 30% are empty containers.

NZ Coastal Container Movements - TEU	
Full domestic containers - container terminals (Cubic-Njord)	44000
Full domestic containers - general wharves (Rockpoint)	41000
Empty containers - container terminals (Cubic-Njord)	110000
Domestic Container Movements	195000
Transhipment containers - container terminals (Cubic-Njord)	255000
Total Coastal Container Movements	**450000**

Coastal volumes face direct competition from road and rail, especially for shorter hauls. Our analysis based on NFDS study data estimates that contestable volumes are approximately 17.3 million tonnes, 7.5% of the total national freight task of 227 million tonnes, or 10.5% of the 65.1 million tonnes excluding intra-regional volumes. Of the contestable volumes, we assess that coastal ships currently carry 865,000 tonnes, or 5% (including bulk, breakbulk and container cargo).

While domestic ship operators could grow volume by increasing their market share of existing coastal volumes, a significant growth opportunity exists in the provision of feeder services to international shipping lines for the transhipment of international containers. If international shipping lines were to restrict ship calls to selected hub ports, but still seek to provide an "all port" service to shippers, domestic feeder services would be necessary.

Both Pacifica and Strait Shipping are already providing such feeder services, albeit for a small portion of the market. However, we do observe that the Pacifica East Coast service currently calls at the four largest ports which are all candidates for becoming hubs, and so does not currently provide a feeder service from "second tier" ports. The Pacifica West Coast service, and the Strait Shipping Kent service both provide more typical feeder capacity.

As Cubic-Njord observes, over 70% of coastal container volumes are empty containers. Given this mix, the average weight of coastal containers (domestic and transhipped) is estimated to be less than seven tonnes / TEU, which provides an opportunity for a coastal ship to undertake the repositioning task while also utilising most available ship slots.

The purpose of this analysis is to assess the potential for slot cost efficiencies to be generated via adopting hub and feeder configurations, and thereby present a stronger argument for enhanced domestic coastal shipping services. For illustrative purposes we have developed a simplified model of a single international service. We have then tested this with a variety of international ship size and coastal feeder scenarios.

16.5.1 Analysis Parameters

We note that the analysis undertaken is intended to be illustrative only. Key analysis parameters adopted include:

- A Base Case five ship international weekly service and a single feeder ship configuration;
- International services are restricted to a two port call – in Auckland and Lyttelton;
- No account is taken of potential service efficiencies resulting from an optimised international schedule and feeder services;
- No account is taken of resultant port infrastructure development requirements; and
- Stevedoring rates are assumed static for all sizes of international ship.

16.5.2 International Base Case Scenario

The International Base Case scenario we have created is derived from a "typical" international service, utilising 2500 TEU ships, which call at several New Zealand ports. For simplicity, we have modelled a single offshore port, choosing Hong Kong as a proxy for any of several global hubs (such as Singapore or Tanjung Pelepas), or for more generic regional destinations (such as North Asia, South East Asia, or indeed Europe or North America).

Our assumed schedule traverses Hong Kong, Auckland, Lyttelton, Nelson, Napier, Tauranga, back to Auckland then returning to Hong Kong. At typical transit speeds, this represents a five week schedule with a weekly service requiring five ships.

Bunker Costs

As with our coastal shipping model, we have calculated bunker costs for various ship sizes, and varying with transit speed.

Bunker Consumption Rates

Tonnes/Day vs Speed knots

Role	TEU	13	14	15	16	17	18	19	20	21	22
Line Haul	7000	41	49	60	72	84	97	113	132	150	220
Line Haul	5500	30	36	46	55	65	76	91	109	130	150
Line Haul	4000	25	29	37	44	53	62	74	87	102	120
Line Haul	2500	21	25	31	36	43	50	60	72	86	103
Coastal	**1100**	**16**	**18**	**22**	**25**	**29**	**33**	**38**	**46**	**60**	**75**

Crane Rates

We have also assumed the crane rates in the following figure, noting that in all ports except Nelson the ship can be served by either one or two port cranes (or even three for Hong Kong or Auckland international – AKLi). Port costs are also shown as a mix of fixed $10,000 per ship visit and a variable $140/TEU for stevedoring. A discounted rate is applied to transhipped containers.

Port Crane Rates and Charges

		AKLi	LYT	NSN	NPE	TRG	AKLd	HKHKG
Container Rate TEU/hr		84	54	15	36	64	56	90
Port Costs ($/TEU lifted)	**140**	140	140	140	140	140	140	120
Port Costs (transhipments $/TEU)	**80%**	*112*	*112*	*112*	*112*	*112*	*112*	*96*
Port Costs $ per ship visit	**10000**	10000	10000	10000	10000	10000	10000	15000

Container Volume Matrix

The following presents our assumed container volume matrix, as the import (bottom row and right column) and coastal trade (shaded).

Ship Cargo Matrix (international and domestic)

from\to	AKL	LYT	NSN	NPE	TRG	AKL	HKHKG
AKL		500	100	50			
LYT				100	100	50	200
NSN				50	50	100	100
NPE					50	50	250
TRG							450
AKL							800
HKHKG	1150	600	20	100	300		

Loading Schedule

The container flows have then been transcribed into a loading schedule, which show the ship arrives from offshore at 87% slot capacity and departs at 72%. These rates are at the upper end of effective capacity, assuming light import containers and up to 20% empty containers, and so presenting a "maximum revenue" scenario. The port transfer rate based on multiple operating cranes, with the days in each port indicated, is presented below.

Ship Loading Schedule (TEU)

Destination	Domestic		International					
2500	Unload	Load	Unload	Load	On Discharge	Capacity	Rate TEU/hr	Days
HKHKG					2170	87%		
AKL		650	1150	0	1670	67%	84	0.89
LYT	500	250	600	200	1020	41%	54	0.66
NSN	100	200	20	100	1200	48%	15	0.33
NPE	200	100	100	250	1250	50%	36	0.41
TRG	200	0	300	450	1200	48%	64	0.49
AKL	200	0	0	800	1800	72%	56	0.60
HKHKG			1800	2170	2170	87%	90	

Operating Costs

We have calculated expected ship operating costs for this weekly service based on our coastal model and benchmarks from our research. The total annual cost for running five ships on this weekly service is estimated to be $228 million.

16.5.3 Scenario 1: Coastal Feeder

Scenario 1 assumes the international ship restricts its calls to a single North Island and South Island port (Auckland and Lyttelton), with a domestic feeder service employed to reposition the balance of the containers.

The scheduling becomes more complex, and the coastal service cannot perfectly replicate the International Base Case. The international ship is assumed to carry the same import and export volumes to and from New Zealand, although capacity constraints restrict its ability to carry domestic cargo from Auckland to Lyttelton. With the new transhipment volume, the domestic ship is expected to carry a total of 1,670 TEU per week, more than in the International Base Case.

Scenario 1 - 2500 plus 1100

from\to	AKL	LYT	NSN	NPE	TRG	AKL	HKHKG
AKL		0	120	150	300	0	1600
LYT			international carries domestic				200
NSN				50	50	200	
NPE					50	300	
TRG			domestic tranships			450	
AKL			international				
HKHKG	1570	600					

Under this scenario, the international ship can save a full week with an adjusted speed of 19 knots and only needs four ships to provide that weekly service.

The coastal ship similarly operates a weekly service. The total cost of the combined services is $239 million ($205 million for the international ship and $34 million for the domestic ship), an overall increase of $11 million or 4.5%. However, the total containers moved also increased by 9%

16.5.4 Scenario 2: 4000 TEU Ship

Scenario 2 replaces the 2500 TEU ship on the international legs with a 4000 TEU ship. In the International Base Case, ship size was defined either by available volume or the capacity of the smallest port, presumed on this route to be Port Nelson. This additional capacity allows the ship to carry more international cargo – 2,720 TEU imported (vs. 2,170 TEU) and 2,150 TEU exported (vs. 1,800 TEU). It also presents an opportunity to carry 200 TEU of domestic cargo from Auckland to Lyttelton. Increased port transfers require the ship to travel at 20 knots to maintain a four week service. The loadings of the domestic ship are unchanged.

The total cost of the combined services is $272 million ($238 million for the international ship and $34 million for the domestic ship), a 19% increase on the international base case. TEU carried rose by 30%.

16.5.5 Scenario 3: 5500 TEU Ship

Scenario 3 assumes a 5500 TEU ship providing further scale economies on the international legs. For the purposes of this model, we assume that ports provide the capacity to handle these larger ships at the same rates. The international ship now imports 3,770 TEU, exports 2,700 TEU, and carries 500 TEU of domestic cargo. It travels at 22 knots to maintain a four week schedule. With increased import and export volume, an additional domestic ship is introduced, each with loadings equivalent to the single previous ship.

The total cost of combined services is $382 million ($314 million for the international ship and $68 million for the two domestic ships), an increase of 67% against the international base case. TEU carried rose by 99%.

16.5.6 Scenario 4: 7000 TEU Ship

Scenario 4 assumes a 7000 TEU ship, at the upper limit of the range suggested by hubbing advocates like Fonterra, and requiring substantial port investment. The international ship now imports 4,770 TEU, exports 3,800 TEU, and carries 1,000 TEU of domestic cargo. It travels at 24 knots to maintain a four week schedule. The further increased import and export volume requires yet another domestic ship, now three, with each carrying loadings equivalent to the single ship in the international Base Case.

The total cost of the combined services is $513 million ($411 million for the international ship and $102 million for the domestic ship), an increase of 124% on the international base case. TEU carried rose by 182%.

16.5.7 Scenario 5: Brisbane Hub

Key Australian east coast ports of Brisbane, Sydney and Melbourne are all undergoing major redevelopment. Brisbane's new Fisherman's Island port is being expanded, a third stevedore introduced, and the channel deepened and straightened to handle next-generation ships. A 60ha reclamation at Sydney's Botany Bay terminal will add 1850m of container wharf with 16.5m draught. At Melbourne, dredging of 23 million m^3 from the channel through Port Phillip Bay is almost complete, with 14m all-tide draught able to accommodate next-generation ships. This incremental capacity makes all these ports candidates to act as a hub for New Zealand import and export trade. Our research already indicates that New Zealand transhipment volume through Australian ports has increased markedly over the last year.

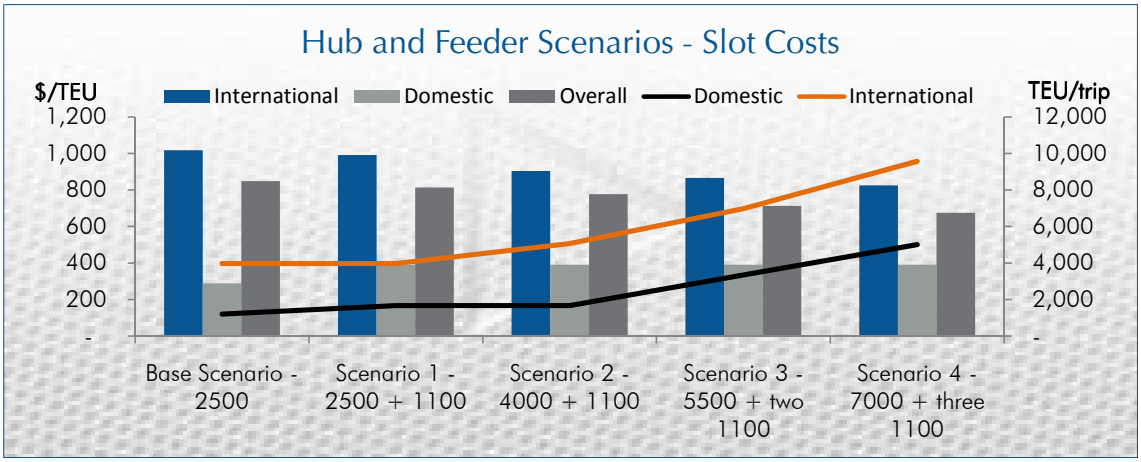
Scenario 5 changes the destination of the International Base Case from Hong Kong to Brisbane, with Brisbane then acting as a hub for a 7000 TEU ship linking to Hong Kong. There is no change to volumes carried, although the New Zealand service is assumed to occupy only 35% of the capacity of the 7000 TEU ship.

The total cost of the combined services is $239 million ($111 million for the 35% share of the 7000 TEU ship and $128 million for the 2500 TEU feeder ship), a 5% increase on the International Base Case. With no change in TEU carried, slot costs rose by 5%.

16.5.8 Summary of Results

The trend towards larger ships, and the economies they bring, has long been evident, internationally and in New Zealand. These savings are evident in our modelling, with slot costs falling as the ship size and volumes carried increase. Furthermore, application of network theory across a shipping line's existing schedules may yield greater benefits.

Hub And Feeder	TEU per Trip		Costs $m p.a.		Slot Costs $/TEU p.a.		
Scenraio	International	Domestic	International	Domestic	International	Domestic	Overall
Base Scenario - 2500	3,970	1,200	210	18	1,018	288	849
Scenario 1 - 2500 + 1100	3,970	1,670	205	34	991	391	813
Scenario 2 - 4000 + 1100	5,070	1,670	238	34	904	391	777
Scenario 3 - 5500 + two 1100	6,970	3,340	314	68	867	391	712
Scenario 4 - 7000 + three 1100	9,570	5,010	411	102	825	391	676
Scenario 5 - Brisbane hub	3,970	1,200	111	128	538	2,044	888



16.6 Implications for New Zealand

Fonterra, as New Zealand's largest exporter, has spoken of the benefits of introducing larger ships, citing some $2-$3 billion in annual savings to the wider economy. The potential for significant costs efficiencies is supported by our modelling which identifies a reduction of slot costs from larger ships. For all their apparent benefits, both hubbing and larger ships have significant implications for New Zealand.

16.6.1 Hub and Feeder

In a hub and feeder structure, international shipping lines focus their import and export schedules onto chosen hub ports, and arrange for the repositioning of cargo from feeder ports by other company services, or through domestic shipping, rail or road. Benefits arise from larger exchanges onto core international services. While seven ports can currently accommodate 4100 TEU ships, the likely candidates to become hub ports are the four largest. Auckland and Tauranga collectively handle 82% of the North Islands container trade, Lyttelton and Otago handle 74% of the South Island container trade.

It is likely that international shipping lines will select no more than two hub ports, with one in each island. Assuming each hub port retains all its current non-transhipped cargo, the following figure shows that 638,000 TEU will require transhipping, a percentage increase of 150%, while total TEU handled across all ports will increase by 32% (with an average gain of 40% for the hub ports, and nil for the feeders).

NZ Ports - Hubbing Scenario						
000 TEU	AKL	TRG	LYT	POE	All Other	NZ Total
Current (Unique Containers)						
International Containers	475	421	159	107	382	1542
Domestic Containers (adj)	*47*	*16*	*28*	*17*	*46*	155
Transhipments (adj)	*136*	*65*	*18*	*34*	*4*	256
Total Unique Containers	658	501	205	158	432	1954
Containers Handled (Ports)	**841**	**582**	**251**	**209**	**483**	**2366**
Potential Hubbing Scenario						
International Containers	631	559	211	142		1542
Domestic Containers (adj)	*47*	*16*	*28*	*17*	*46*	155
Transhipments (adj)	*214*	*134*	*44*	*51*	*195*	638
Total Unique Containers	892	709	283	210	241	2336
Containers Handled (Ports)	**1153**	**859**	**355**	**279**	**483**	**3129**

More realistically, all hub ports will lose some existing trade, and gain other trade via transhipments. Assuming each hub port retains 70% of its current non-transhipped cargo, this suggests over 1.1 million (or 50%) of all unique containers will need to be transhipped. Alternatively, should only the largest port in each island become the hub and retain all current cargo, over 60% of all non-transhipment containers would need transhipping.

Under any of these scenarios, hub port throughput will increase markedly. The implications are considerable:

- Port Utilisation: Increased throughputs would increase hub port berth utilisation (as calculated in Section 8.6.1) from an average of 42% to 60%. Similarly crane and terminal utilisation would increase, and may give rise to congestion issues.
- Regional Infrastructure: While transhipment volumes do not leave the port, space constraints place greater pressure on handling non-transhipment cargo, with implications for regional transport and service infrastructure.

16.6.2 Larger Ships

Globally, the emergence of hubbing structures has occurred in parallel with increased ship size (Section 7.4.3). Under existing configurations, ship size is restricted to the capacity (typically draught) of the smallest scheduled port. Limiting blue water ship visits to larger hub ports provides an opportunity to optimise ship size and lower slot costs. In addition, even smaller ships could be deployed on feeder legs, with the resultant increase in service frequency providing scope to compete for contestable volumes from other modes.

Fonterra, as New Zealand's largest exporter, has spearheaded this discussion, and is seeking support from major exporter groups and other stakeholders. While the benefits of larger containerships may be apparent, the challenge will be in addressing wider logistics issues including:

- Ship Capacity: A ship loaded with full containers cannot achieve its design capacity. New Zealand's heavy export containers (milk powder, meat) mean Maersk's 4100 TEU ships, the largest calling New Zealand shore, are limited to 2850 TEU, or a 61% loading.
- Port Capacity: The dimensions of larger ships require ports to invest in providing greater all-tides draught, longer berths and cranes with greater reach. Moreover, higher peak exchange rates place greater demand on terminal storage, with all ports subject to land area constraints. Stack heights using existing straddles are limited to 3-container high, while rubber-tyred gantries offer scope to stack 5 (or more) containers high.
- Port Capability: The increased exchanges implicit with larger ships create wider logistical challenges. This was apparent when P&O (Maersk) first introduced its 4100 TEU service, where exchanges of 3,000 TEU in Auckland overloaded the port's straddle, storage and

dispatch capacity. Anticipated exchanges in Auckland for a 6000 TEU ship could exceed 5,500 TEU, and take 3 quay cranes nearly 3 days of continuous operation.

- **Regional Logistics**: An exchange of 5,500 TEU, ignoring any other ships which may be in port, will require freight to pass through the port gate at a rate of up to 75 TEU per hour for three days. This will compound existing peak-time congestion on roads and rail connections.
- **National Implications**: Congestion constraints impact the transport system well beyond the port gates. In addition to larger exchanges, hubbing will result in freight movements increasingly reliant on freight corridors to ports. This quickly becomes a national logistics and investment issue. The benefits of hubbing will need to be appropriately shared, including through providing trade certainty to the ports to underwrite investment in port infrastructure.

16.6.3 Port Consolidation

Historically ports have proven willing to invest in capacity to handle increasing ship sizes. This has involved wharf strengthening (for axle loadings of larger straddle carriers), dredging and berth extensions (to handle large ships), and larger gantry crane. However, the cost of service provision has risen exponentially with ship size. Since 1995, the 11 largest ports invested over $1,500 million, with almost half of this incurred during the last four years. The four largest ports have all commenced planning to accommodate the next generation containership (5500 TEU), with significant capital expenditure implications.

Given all ports operate under legislation requiring them to operate as a successful business, such a significant investment decision must be prudently secured by new revenues. A hub-and-feeder structure combined with larger ships can only be achieved through a coordinated, stepwise industry restructuring initiative involving all stakeholders:

- **Shipping Lines**: The slot-cost benefits of larger ships are readily apparent and perhaps more so now in an environment of low profitability. These benefits will need to be appropriately shared, including via trade certainty to the ports to underwrite investment in port infrastructure;
- **Shippers**: New Zealand's advantages in pastoral farming are offset by our distance to market. Achieving lowest delivery costs in a competitive global market is increasingly important but so to is the time to market for perishable products;
- **Transport Operators**: Road, rail and coastal shipping operators will all play a role in providing capacity to reposition cargo;
- **Ports**: Faced with substantial investment, ports will require certainty of trade from shippers and shipping lines. Perhaps more challenging, the benefits accruing to the hub port will need to be appropriately shared with the other ports to avoid irrational competitive responses;
- **Regions**: Ports need support from strong regional infrastructure, comprising roads and railways with available capacity, services and a skilled workforce. This is substantively driven by regional councils, who are in all cases the major shareholder of the ports; and
- **Government**: The national implications of hubbing larger ships requires government involvement, vision and leadership. It is necessary to consider the wider national good, and to ensure that benefits are appropriately apportioned and that they sufficiently outweigh considerations such as potential loss of competition. Such initiatives will benefit from active facilitation, to address potential regulatory risks to proponents.

16.7 KEY OBSERVATIONS / CONCLUSIONS

Most international shipping lines have adopted hubbing as a scenario to enhance services, increase capacity utilisation and improve profitability. The benefits have been confirmed for the scenarios presented, although a series of practical issues arise in assessing observed results:

- **Transhipment Capacity**: An 1100 TEU domestic ship is well matched to a 2500 TEU international ship, however it lacks capacity to reposition the import / export volumes of larger ships. The addition of more domestic ships provides extra capacity, while also improving service frequency and so competitiveness against rail and road.
- **Transit Speed**: As import and export volumes rose with ship size, the increased transfers nominally required ships to travel faster to make up for longer port time. However, our international service is simply a proxy, and in reality a schedule would be designed to best suit the volumes and transit distances required for ships to both remain on a weekly cycle and for the ships to travel at their optimal speed.
- **International Schedule**: International shipping lines each offer multiple services, and accordingly the opportunity is presented to redesign these services to link a more comprehensive coastal feeder operation and so provide a more optimised service matrix.
- **Capital Investment**: Currently seven ports offer the draught needed to handle 4100 TEU ships (Auckland, Tauranga, Napier, New Plymouth, Wellington, Lyttelton and Otago) although only the largest four are the candidates to become container hub ports. Any ports seeking to attract even larger ships would need to invest significantly in draught, cranes and storage, with associated implications for regional infrastructure. For New Zealand it makes little economic sense for more than two ports to commit the funds necessary to become a hub port.
- **Forecast Freight Growth**: The NFDS forecast freight growth of 70-75% in the period to 2031, which in itself will demand substantial investment in transport infrastructure. When combined with hubbing and increased ship size, the peak demand on hub ports could potentially increase 4-fold by 2031.
- **Government Support**: Government will be required to provide leadership, facilitate execution and arbitrate to ensure net benefits are appropriately apportioned. Should New Zealand be unable to provide a satisfactory solution, major development projects currently underway at Brisbane, Sydney and Melbourne suggest that these ports could potentially act as a hub for New Zealand. Our research indicates that New Zealand transhipment volume through Australian ports has increased markedly over the last year. Should these trends develop more formally, New Zealand risks becoming a satellite freight destination with the loss of associated benefits in infrastructure development and time to market delays for exports.

17 MODAL ECONOMICS - INFRASTRUCTURE SYSTEMS

17.1 INTRODUCTION

For illustrative purposes, we present a high level revenue analysis of the provision of Infrastructure Systems, identified in this report as the rail network, state highway road network and ports.

The objective of this analysis is to compute an implied commercial revenue requirement for each infrastructure system, assuming the application of an illustrative target rate of return. We then contrast this indicative revenue requirement with reported / assumed revenue levels.

In undertaking this analysis, the required revenue calculation is split into two key components; a rate of return on the current value of assets and a recovery of associated operating expenditure.

Key points to note:

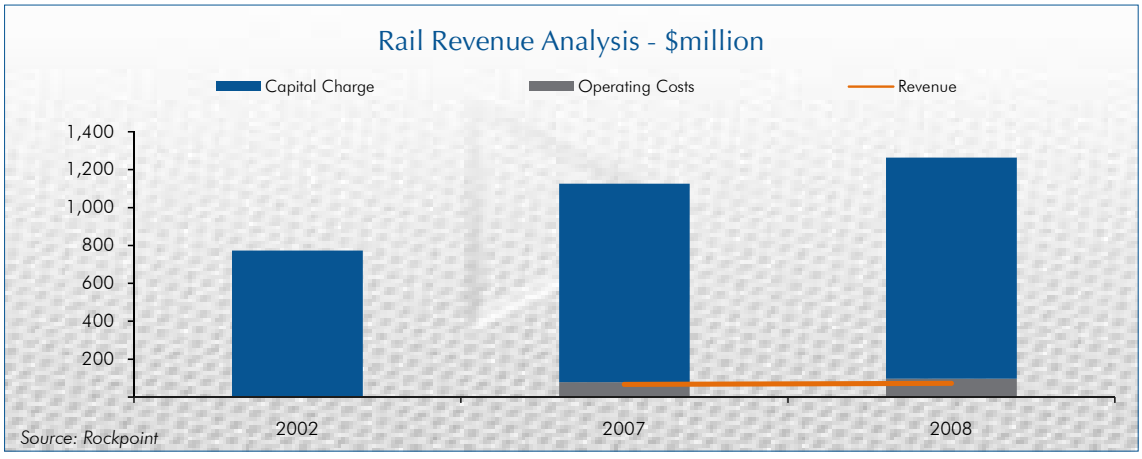
- A 10% pre tax target rate of return has been applied in each assessment. The outcomes of the analysis are materially impacted by the target rate of return assumed, however, we note that broad outcomes do remain consistent over a large band of targeted returns;
- Indicative revenue requirements are presented for the 2002*, 2007 and 2008 financial years; and
- This high level analysis focuses on indicative commercial returns only assuming consistent target returns. As such, no government policy, social objectives or any associated externalities (positive and negative) have been taken into account.

  * Derived from the MOT's Surface Transport Costs and Charges report.

17.2 RAIL SERVICES

The following chart presents indicative revenue requirements for the rail network for the 2002, 2007 and 2008 financial years, contrasted with actual revenue receipts.

In 2002, rail network assets were valued at $7,730 million Depreciated Replacement Cost ("DRC"). Since 2002 asset values have increased to $11,670 million DRC in 2008.



17.2.1 Key Observations

The following high level observations can be made from this analysis:

- 2008 rail network charges represent approximately 6% of the calculated revenue requirement under the assumed business case analysis framework.
- 2008 network charges do not cover reported operating costs.

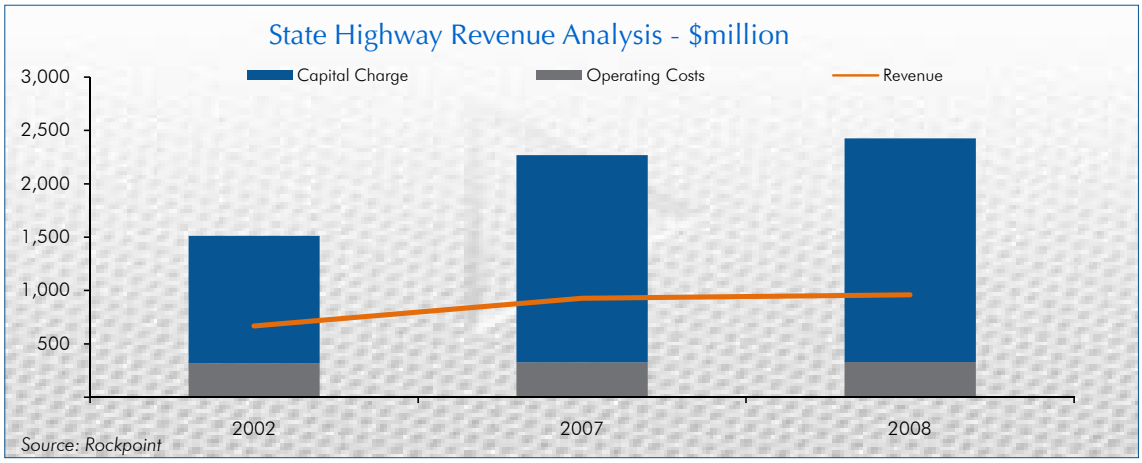
- Impacts of recent track asset revaluations are clearly observed by the growth in the capital charge component relative to operating cost recovery requirements.
- We note that consolidated rail operating revenues (inclusive of passenger and freight revenues and infrastructure), represent less than half the calculated revenue requirement under the assumed business case analysis framework, whether or not we include government subsidies. Assuming a limited ability for passenger related revenues to make a material impact on revenue receipts, freight rates and / or volumes would have to materially increase to approach indicated commercial return levels. Whilst current passenger and freight revenues (excluding government subsidies), cover operating costs, they make minimal contribution to required returns on capital employed.

17.3 State Highway Network

Similar to the analysis undertaken for rail, revenue requirement for the Stage Highway network is a function of assessed infrastructure asset values, required rate of return and operating costs. State Highway network DRC values have been sourced from TRANSIT New Zealand's annual reports.

It is assumed that 50% of road user fees serve as State Highway network revenue on the basis that highways handle approximately half the nation's traffic on a vehicle kilometre basis. Administration of the State Highway network is undertaken by a variety of parties. For the purposes of this analysis 100% of TRANSIT's operating costs are assumed to be State Highway related and 50% of Ministry of Transport's and NZTA's operating costs are assumed recoverable by State Highway revenues. We have assumed 50% of MoT's operating costs on the basis that the vast majority of Government transport funding is committed to road transport.

Assuming a consistent commercial analysis framework, the following chart presents the required revenue assessment for the provision of the State Highway network, against road user fees collected for use of these assets. The key sources of user contributions include Road User Charges ('RUC'), Fuel Excise Duties ('FED') and Motor Vehicle Registration and Licensing Fees ('MVR').



17.3.1 Key observations

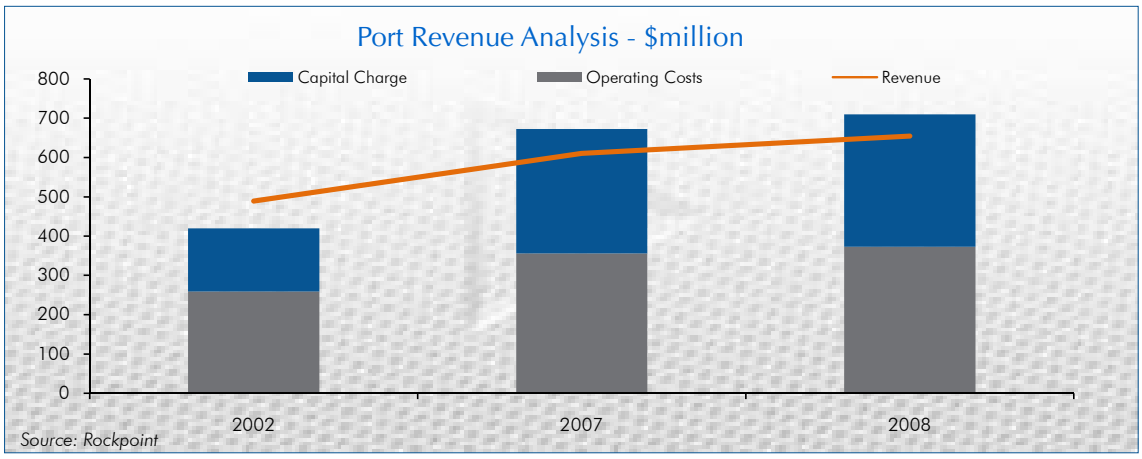
The following high level observations can be made from this analysis:

- Assumed revenue receipts recover less than half of the implied target revenue requirement. Consistent with this observed outcome, we note that the current PAYGO policy does not specifically seek to recover any return on the value of the underlying asset and assumes that New Zealand as a whole receives an appropriate benefit from the State Highway network by way of increased economic activity.
- The capital intensive nature of road network provision is clearly evidenced by the scale of the assumed capital charge relative to operating costs recovery requirements.

- On a purely commercial basis, the assumed revenue receipts from all sources would need to more than double to achieve indicated commercial returns inclusive of a return on capital.

17.4 PORTS

The following chart presents indicative revenue requirements for New Zealand's port sector for the 2002, 2007 and 2008 financial years. This is contrasted with actual port related revenue receipts.



17.4.1 Key Observations

The following high level observations can be made from this analysis:

- The impacts of port asset revaluations and capital development activities are evidenced by the increased proportion of required revenue attributable to capital charges.
- Current port charges are within 8% of the assessed required revenue under the assumed analysis framework.
- 2002 revenue level exceeded the assessed revenue requirements. This likely reflects a mix of revalued and historical cost assets in the accounts.

18 MODAL PRICING

18.1 PRICING DETERMINANTS

Pricing for freight services is set in a competitive market. While over time pricing will be guided by actual costs and target returns, large discrepancies occur, both between and within modes.

Key cost determinants include:

- Nature of Cargo: Bulk goods (such as raw milk, petroleum, cement, grain, coal) are typically carried en masse by specialist equipment (ships, rail cars, trucks) dedicated to that task. The wide range of general cargo characteristics materially influences the nature of packaging (containerised, palletised, refrigerated) and the mode of transport. Unit value, susceptibility to damage and timeliness of delivery are also factors;
- Distance: Distance is the major driver of freight variable costs, being dictated by fuel price, vehicle depreciation (capital charges), and the unit fuel consumption rate (highest for road, lowest for ship);
- Time: Time covers the collection and delivery, intermodal exchange, and time in transit influences driver / crew costs;
- Third Party Services: Third party services covers requirements for intermodal services, storage, local collection and delivery and inter-island ferry services (for road and rail); and
- Capacity Utilisation: Capacity utilisation is a major driver of freight economics, with returns maximised on continuous operations, full loads and backhaul opportunities. The unit of carriage for road transport is smaller (a truck), and readily matched to general cargo consignments, while ships offer substantial capacity with the lowest flexibility, creating greater challenges in matching desired freight flows.

The nature of cargo is the primary determinant in the form of transport (containerised, breakbulk or pure bulk) that may then influence selection of freight mode. Port data suggested general cargo is predominantly containerised with average weights (including empty containers) exceeding 12 tonnes/TEU. In contrast, studies of road transport have shown that general cargo is more typically configured as breakbulk (usually palletised), and carried in curtain-siders and boxvans. While the volume capacity of such line-haul road trucks are similar to containers (35m^3/TEU), load weights for road cargo are typically materially lower. For rail, over half KiwiRail's wagon fleet is configured for containers, with an additional 20% as specialist bulk wagons, the balance are general wagons for breakbulk cargo.

Even when all these factors are considered, each operator within the modes bids a different price, reflecting cost base differences, service offering, and return expectations. Accordingly, there is no universal freight price schedule.

18.2 ROAD TRANSPORT

The Road Transport Forum ("RTF") commissioned Waikato University to undertake a study of the road transport industry for the year ended 31 March 2006. Of the 160 responses, 28 were from inter-city operators for which 10 operated fleets of 6 or more trucks. For the intercity operators, the study indicated on average revenue of $1.98 per km. A higher rate of $2.60 per km was observed for operators with fleets of more than 6 trucks, probably reflecting larger vehicles better suited for line-haul operations.

Road Transport Forum Study		Intercity	Intercity (>6)	Total
Sample Number		28	10	155
Gross Income	$000	810	4070	730
Vehicle Costs	%	54.2%	45.6%	45.9%
Operating Income	%	5.1%	8.0%	3.4%
Income	$000 per truck	280	265	170
	$ per 1000kms	1975	2600	2650
Operating Profit	$000 per truck	16	22	5
	$ per 1000kms	71	156	71
Kilometers	000 per truck	130	100	60
ROA (pre-interest)	%	15.7%	22.0%	10.0%
ROA (post-interest)	%	8.1%	15.3%	3.3%
Unit Revenue*	cents/tonne-km	**9.9**	**13.0**	

Source: Waikato University 2007 for Road Trasport Forum

* assumes 20 tonnes per 2 TEU load (from Rockpoint study)

In contestable cargo markets, we expect linehaul trucks to be larger than average, and capable of carrying the equivalent of either two 20' containers or one 40' container (that is, 2 TEU). We note that new regulations will permit truck lengths sufficient to carry three empty containers.

Considering the cargo contestable by road, rail and coastal shipping, we assume an average of 10 tonnes per full TEU, this is likely to be heavier than the average carried by road transport, but lighter than the average container weight observed by ports. On the basis of a 20 tonne payload (2 TEU per linehaul truck), we derive unit revenues of 9.9 – 13.0 cents per tonne-km.

18.3 Comparative Delivery Costs

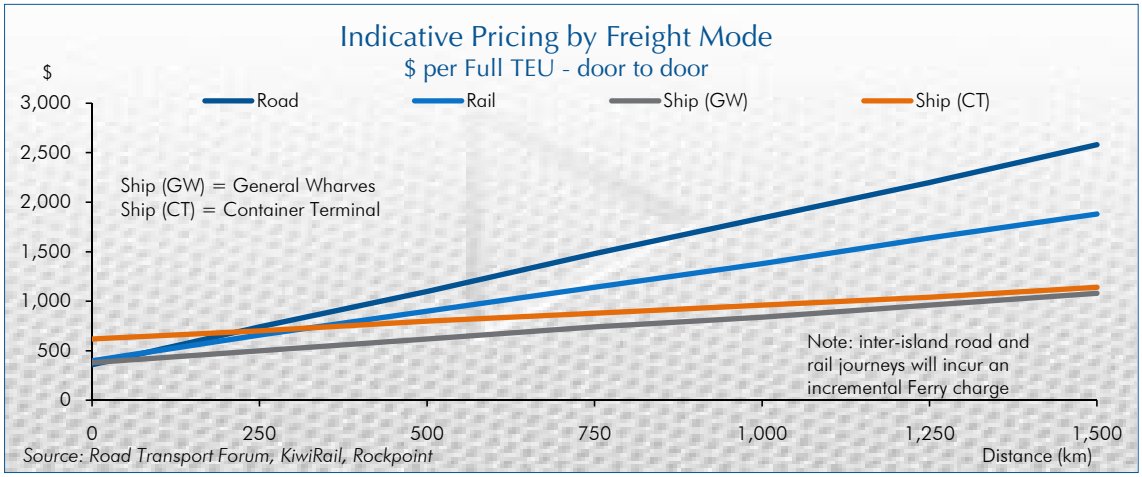
In developing indicative pricing for the three modes based on their assessed fixed costs and variable costs for the transportation of a 20' container, we assume that pricing for all modes is based on a door-to-door service. The linehaul rates (terminal to terminal) for coastal shipping are derived from our coastal shipping model, those for road are taken from the RTF study (summarised above and confirmed by other studies such as STCC), while rail is calculated from public data and confirmed from direct discussion with KiwiRail. An additional pickup and delivery cost is incurred for a door-to-door service, including for road, although for some consignments direct pickup and delivery on the same truck may be an option.

Earlier studies have suggested coastal shipping is price competitive for distances exceeding 200 km. This is confirmed in our analysis, although we note that modal choices reflect various other factors such as timeliness and frequency of service. Coastal shipping has greatest market share, at 38%, for the general trade between Auckland and Lyttelton, a distance of 1,055 km by road or rail.

Indicative door-to-door freight rates derived from our modelling are presented in the following figure. In practice, the freight rates vary materially, reflecting the particular nature and requirements of the cargo, configuration (container, pallet, bulk), and what specialist equipment may be required. Very competitive rates are currently available given the economic climate. Some road operators are reportedly offering Auckland to Christchurch rates below $1,500. While attractive to shippers, it is unlikely such rates will be sustainable in the long term.

Indicative Delivery Costs per TEU by Mode								
	Pricing		Distance (km)					
	Fixed	Variable	250	500	750	1000	1250	1500
Road	360	1.50	740	1100	1480	1840	2200	2580
Rail	410	1.00	660	900	1140	1380	1640	1880
Ship (CT)	620	0.35	700	800	880	960	1040	1140
Ship (GW)	380	0.45	500	620	740	840	960	1080
Implied c/tonne-km*			* assumes 10 tonne/TEU					
Road			29.6	22.0	19.7	18.4	17.6	17.2
Rail			26.4	18.0	15.2	13.8	13.1	12.5
Ship (CT)			28.0	16.0	11.7	9.6	8.3	7.6
Ship (GW)			20.0	12.4	9.9	8.4	7.7	7.2

Ship (CT) assumes using Container Terminal, while Ship (GW) assumes using General Wharves

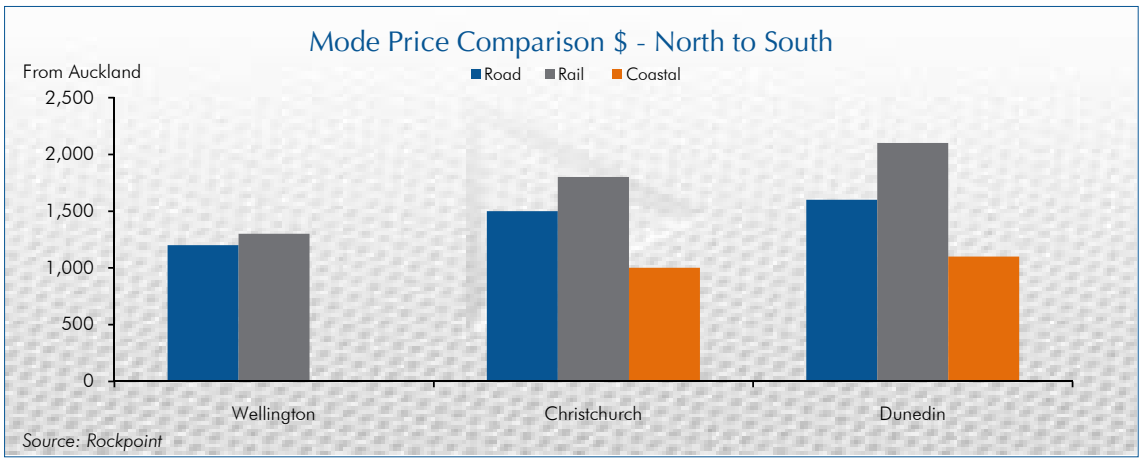


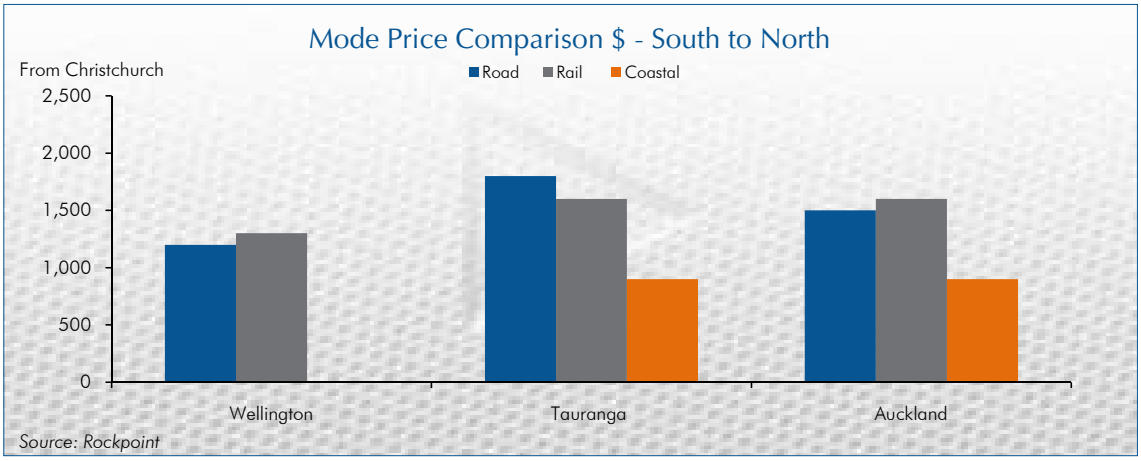
The Understanding Transport Costs and Charges report (Hyder 2008 for the Ministry of Transport) presented door-to-door prices (ex GST) from Auckland to Christchurch (1,054 km) as being $1,200 for sea freight, $1,800 for rail and $2,800 for Road. Adjusting to a terminal-to-terminal basis, the report indicates $910, $1,310 and $2,540 respectively.

18.3.1 Market Snapshot

In the current challenging economic climate, operators may be even more motivated to attract business simply to cover cash costs.

The following figures present a snapshot of least cost pricing estimates obtained as part of our research for this study. Pricing is presented for both north to south (ex Auckland) and south to north (ex Christchurch) cargo flows.





The data presented highlights:

- The aggressive pricing currently being offered by road relative to other modes; and
- Intra mode pricing differentials that exist between north to south travel versus south to north.

The behaviour of shippers in freight mode choice is broadly consistent with these strong pricing signals. As an example, in Section 15.5 we calculate that, on the Auckland to Canterbury route, coastal shipping holds a 38% market share, rail had 43% and road the balance at 19%. However, apparent inconsistencies exist. On the longer Auckland to Dunedin route coastal shipping attracts only a 10% share, rail 13% while road carries 77%. In part, this may be explained by Otago only being served by a single weekly coastal service, whereas Canterbury has two. The nature of cargo may also be a factor. The more pertinent observation is that in interviews with shippers (Section 13.9.1) price ranked fifth behind reliability and timeliness in modal choice criteria.

18.4 Key Observations / Conclusions

The following presents selected key observations and conclusions from the above commentary:

- **Modal Pricing Determinants**: These vary widely, and reflect the nature of cargo, distance, timeliness, ancillary services, and capacity utilisation.
- **Intra Modal Pricing**: Within modes, pricing variation also reflects differences in operator costs, scale efficiencies, growth strategies and targeted returns.
- **Road Transport**: The Road Transport Forum analysis suggests road transport revenues are approximately 9.9 cent per tonne-km (intercity) for operators with less than six trucks and approximately 13 cents per tonne-km for those with greater than six trucks.
- **Shipping**: Analysis clearly demonstrates the cost advantages of shipping over longer distances relative to road and rail.
- **Market Snapshot**: Least cost pricing obtained during the course of this study shows the aggressive short run pricing offered by road operators when compared to more established guidelines. This outcome possibly reflects current challenging market conditions faced by road operators.

19 EXTERNALITIES AND RELATED ISSUES

19.1 INTRODUCTION

The movement of freight by all modes generates a range of impacts on other stakeholders and the environment. These externalities vary significantly across modes, with the core effects of:

- Emission of greenhouse gases;
- Pollution;
- Accident costs;
- Noise and vibration; and
- Congestion.

For some externalities like greenhouse gas emissions, pollution and noise, there are also significant differences within modes. Newer transport units tend to be much less environmentally intrusive, particularly in terms of air pollution and to a lesser extent in terms of greenhouse gas emissions and noise. The timing and routing of journeys also affect the externalities associated with modes. Routes avoiding urban areas have lower externality costs than those which impact on specific portions of the population, and journeys timed outside of peak periods create much lower congestion costs than those occurring at peak times.

This section considers the possible cost of the externalities associated with the movement of freight for each of the main modes. For road this considers the externality costs of heavy vehicles only as it is these movements which are in principle contestable by other modes. Costs are estimated both in aggregate and also for a typical freight movement using each of the three modes. A movement between Auckland and Christchurch was selected for this purpose.

19.2 TYPES OF EXTERNALITIES AND THE ASSOCIATED COSTS

19.2.1 Introduction

In order to assess the importance of environmental externality costs in total and the relative differences between modes, a range of information sources were utilised. The major source of information was the Surface Transport Costs and Charges Study ("STCC"), published in 2005. While this is a very comprehensive source of information and it includes a compilation of material from a number of sources, the study is based on information received in 2002 and is therefore somewhat dated. The reader should be conscious of this when considering any results based on this study.

Other major sources of information used are the Economic Evaluation Manuals ("EEM") developed by NZTA. These are more current and deal with the way in which environmental externality costs can be incorporated in the assessment of road schemes. Material for other modes has been derived from different sources and there may therefore be issues with the consistency of these.

19.2.2 Emission of greenhouse gases

The analysis of greenhouse gas emissions relate to observed fuel efficiencies across different modes and typically the inherent characteristics of these modes rather than specific movements.

There are very significant differences in the production of greenhouse gas emissions by different modes, even in the transportation of the same freight as observed in the following figure.

Relative Emissions of CO^2 - grams per tonne-km	
Road	123
Heavy road	92
Rail	23
Coastal shipping	14
International shipping 2500 TEU ship	8
International shipping 5000 TEU ship	5-6

Source: Sea Change Report, Consultants analysis for international ships based on Bunker Consumption Rates

Procedures have been developed to attach a cost to the emissions of CO_2. In the current version of the EEM the environmental cost of CO_2 emissions is estimated at $40 per tonne emitted in 2004 prices or about $45 per tonne in current prices. Although this is an externality and is imposed on other parts of the community, the estimated costs of changes in CO_2 emissions are included in the standard evaluation of transport schemes and projects.

An allowance for this element is included in the overall assessment of the costs and revenues of road users as set out in the STCC. The figures in this report offer estimated "Climate Change" costs for heavy vehicles in 2002 of about $28 million, out of a total of $95 million. This observation is consistent with the emission rates set out above.

The costs of the reduction in CO_2 emissions by switching from road to other modes of transport is one of the factors considered in Alternative to Roading ("ATR") submissions to NZTA. In a recent example, involving the modal shift of export forestry products from road to rail, the value of savings represented about 4-9% of the total benefits from switching. The proposals involved direct delivery of products to a port and so movement by road was required to aggregate materials. A further onward leg by road at the destination end was not required for export cargo. Where the option of coastal shipping domestic freight is feasible, somewhat higher benefits may be achievable, although this would depend on the extent intermodal connections were needed.

19.2.3 Air Pollution

Air pollution is another external impact of the movement of freight. For heavy vehicles this is mainly in the form of particulates and emissions that are considered to generate health issues for those living or working in proximity to concentrated activity. The impacts are calculated to reflect the length of travel through urban areas where the population is most likely to be affected.

Due to the use of residual fuel (bunker fuels) by ships which produce high sulphur concentrations health effects near ports can be severe. New international efforts to reduce air emissions from ships should address this in the long term.

Typically no specific allowance is made for pollution for rail travel but this could be an issue if diesel powered locomotives passed close to residential or other sensitive areas. For shipping the effects are minimal given the distances between residential or other sensitive areas and ports where ships emit most pollutants.

The cost of air pollution as applied within the EEM is estimated at $0.20 per heavy diesel vehicle km in urban areas (EEM Vol 1 A9.4). Changes in this cost are included in scheme appraisals. From the STCC the total annual cost of air pollutants for heavy commercial vehicles in 2002 was estimated at approximately $100 million.

In the case of the ATR submissions discussed above, the reduction in pollution was estimated to represent about 4% of the total benefits of switching movements from road to rail.

The emission of particulates can be reduced by the introduction of more efficient and cleaner engines. Emission rates are therefore likely to decline over time. Figures from the UK show that despite the growth of road transport, total emissions of particulates from road transport sources halved over the period from 1988 to 2006.

19.2.4 Accidents

The movement of freight by road gives rise to accidents measured in costs per tonne-km. Accidents on roads are higher than via other modes. While much of these costs are borne directly by the heavy vehicle operators in terms of damage to their vehicles and injuries to staff and through insurance payments, other costs fall on the community in general.

Heavy vehicles typically do not have higher accident rates than other types of road vehicles, but their greater mass means that accidents tend to be more severe. As an example for injury accidents on 100 km/h 'near rural' roads, the cost per accident in the EEM is taken to be $700,000 for a heavy vehicle compared to average values of $555,000 for a 'mid block' urban accident and $455,000-$585,000 for accidents at intersections (EEM Table A6.22).

In the STCC, the total costs of accidents in 2002 attributed to heavy vehicles was estimated at about $44.3 million out of a total of $677 millions for all road users, approximately 6.5%. This is the equivalent to a cost of about 0.2-0.3 cents per tonne-km. Evidence from Europe suggests that accident costs for rail are about 10% of this amount. No data is available on accident rates for shipping but these can be considered to be negligible.

Accident rates are typically higher in urban areas and data from the UK suggests that urban accident rates are typically 2.5 to 6 times higher than those in rural areas. Travel on motorways is typically much safer than that on urban streets and in the UK, the accident rates for motorways are about 10% of those for urban areas and about half of those for rural areas. While differences in the forms of the road networks probably preclude an exact comparison with New Zealand, the general trends are typically supported by New Zealand observations.

Accident rates in New Zealand are generally declining, albeit rather slowly. Standard accident prediction models incorporate this trend in their analysis.

19.2.5 Noise and Vibration

Heavy vehicles contribute to noise and vibration effects. In the STCC the total cost attributable to heavy goods vehicles was estimated at about $20 million out of a total cost of $290 million for all vehicles. Noise and vibration impacts are primarily incurred within the main urban areas but can be mitigated by a variety of measures. Rail traffic also generates similar effects especially when rail lines pass through urban areas. Policy issues may arise if urban development occurs close to rail lines, especially in proximity to stations.

19.2.6 Overall Environmental and Accident Impacts

The total cost in environmental impact of heavy road vehicles and rail are set out in the following figure. It should be noted that these relate to 2002 volumes and costs derived from the STCC report. While some elements will have increased with rising road freight traffic since 2002, other elements particularly air pollution and accidents will have been reduced by improvements in engine design and in road safety standards.

Externality Costs for Freight ($millions in 2002)		
Type of impact	Road Freight Heavy Vehicles	Rail Freight
Greenhouse Gas Emissions	28	
Air Pollution	101	
Noise and Vibration	20	
Accidents	44	
Total	193	9

Source : STCC with Consultant Analysis

The cost of the environmental damage and accident impacts in road freight transport are roughly 21 times higher than those for rail freight. In part this reflects:

- The greater scale of the road freight task carried by heavy vehicles, which in 2002 was estimated to be about 3-4 times higher than that for rail freight; and
- The higher environmental unit impacts of the movement of freight by road rather than by rail, which on a per tonne-km basis averages to be approximately six times higher.

19.2.7 Marginal Costs: Environmental Externalities

The STCC evaluates marginal costs for a range of vehicle types, operating conditions and delineates between urban and rural areas. Some key results formulated in relation to a freight movement between Auckland and Wellington are summarised in the following figure.

Marginal Externality Costs			
Impact	Urban	Rural	Combined (2)
Road (cents per veh-km)			
Local Air Quality	37.4	0	
Noise	3.2	0	
GHG	3.7	3.7	
Total marginal cost per veh/km	44.3	3.7	
Marginal cost cents per net tonne-km	3.4	0.3	0.6
Rail (cents per gross tonne-km)			
Local Air Quality			0.08
Noise			N/A
GHG	0.06	0.06	0.06
Total marginal costs (cents per gross tonne-km)			0.14
Total marginal costs (cents per net tonne-km) (2)			0.18

Notes (1) Evaluated for LOS C/D for urban travel and free flow for rural routes and for HCVII
(2) On basis of movement from Auckland to Wellington
(3) Assumes gross to net tonne conversion factor of 0.8

Source : STCC Table B12.4 and subsequent discussion in Annex E

Marginal accident costs are estimated at about 14.5 cents per truck-km or about 1.1 cents per net tonne-km.

Using these costs, the total environmental externality costs for a typical freight movement with a weight of 13.05 tonnes (in line with STCC assumptions) from Neilson Street in Auckland to Hornby in Christchurch are assessed across the three modes. These take into account the need for road to pick up and deliver at both ends of the journey for rail and coastal shipping. These would include road movements within the Auckland urban area for delivery to the rail depot at Southdown or to Ports of Auckland on the Waitemata Harbour and within the Christchurch urban area for delivery from the Middleton rail yard or the Port of Lyttelton. The movements by road and rail take into account distances travelled within Auckland, Wellington and Christchurch and it is assumed that all movements north of Papakura or south of Belfast

are in the urban area. The analysis ignores the movement on the inter-island ferry for which the environmental effects are likely to be small and the externalities for coastal shipping are based on greenhouse gas emissions only. The details of the analysis and the key results are set out in the following figure.

Comparative Externality Costs - Auckland to Christchurch

	Main Mode		
	Road	Rail	Coastal Shipping
Total tonne-kms			
Urban	888	848	
Rural	12,032	12,632	15,660
Urban Road Delivery	Included above	131	470
Environmental Costs (cents per tonne-km)			
Urban	3.4	0.18	0.045
Rural	0.3	0.18	0.045
Urban Road Delivery	3.4	3.4	3.4
Total environmental costs ($ per movement)			
Urban	30	2	
Rural	36	23	7
Urban Road Delivery	Included above	4	16
Total	$66	$29	$23

Notes (1) See text for description of movement and key assumptions

The analysis indicates the higher environmental externality costs for road transport, at about 130% higher than those for rail and 185% higher than those for coastal shipping. For coastal shipping and to a lesser extent rail, the results are affected by the need for road collection and delivery within each urban area and the assumptions of these movements. In the example quoted in the figure, the collection and delivery costs for coastal shipping represent almost 70% of the total environmental externality costs. The assumptions possibly overestimate the costs for road and rail transport within the urban areas since much of the travel through these would take place on motorways or rail tracks separated from sensitive population areas. The costs of air pollution and noise may therefore be overstated. Despite these qualifications the analysis does highlight the issue of the urban pick-up and delivery components of movements undertaken by rail or coastal shipping, to the extent which these partially offset the inherent environmental benefits of these modes.

19.2.8 Marginal Costs: Accident Externalities

A similar externality analysis has been undertaken for accident costs. However without a detailed investigation it is not possible to get an accurate breakdown of the costs by region and road type. The STCC quotes a marginal accident cost of 14.5 cents per truck-km although it should be noted that this is much higher than the average rate derived of about 5 cents per truck-km as described above. Thus the results should be treated with particular caution.

The analysis assumes:

- Motorway accident rates are about half those for rural roads, which in turn are about a third of those in urban areas;
- Rail accident costs are about 10% of the average of road costs; and
- The same trip assumptions used for the assessment of environmental externality costs apply.

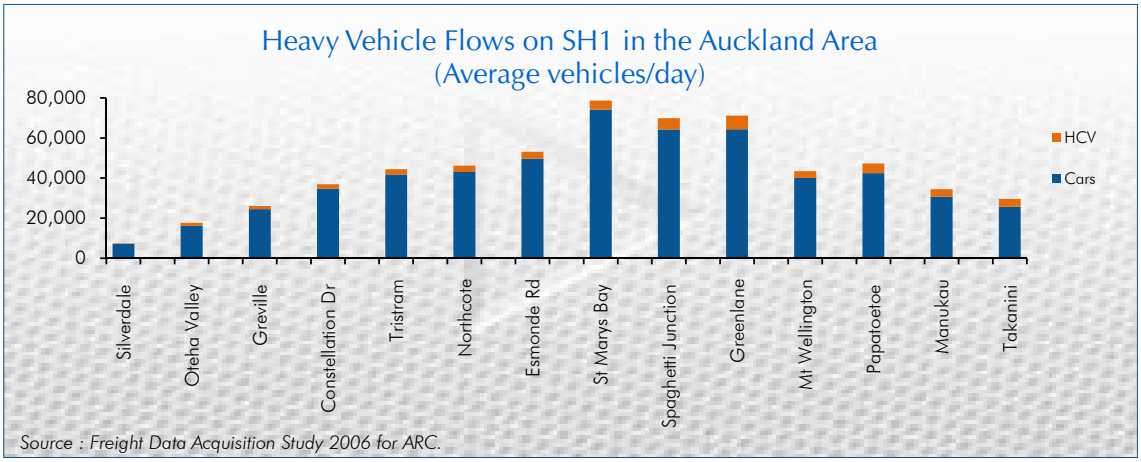
The relative accident costs by mode are presented in the following figure.

Accident Externality Costs - Auckland to Christchurch			
Journey Component	Costs by Road	Costs by Rail	Costs by Coastal Shipping
Modal Component	$144	$15	Nil
Pick-up and delivery by road	Included above	$3	$12
Total	$144	$18	$12

From the assumptions made, the accident externality costs are very much higher for the movement of freight by road, at about 8 times as large as those for rail and 12 times as large for movements by coastal shipping. Although the absolute level of costs is somewhat uncertain due to a divergence between average and marginal costs, the relativities of the three modes are clear. Road is the most expensive and rail and coastal shipping have much smaller costs, with only a limited difference between the two.

19.2.9 Congestion

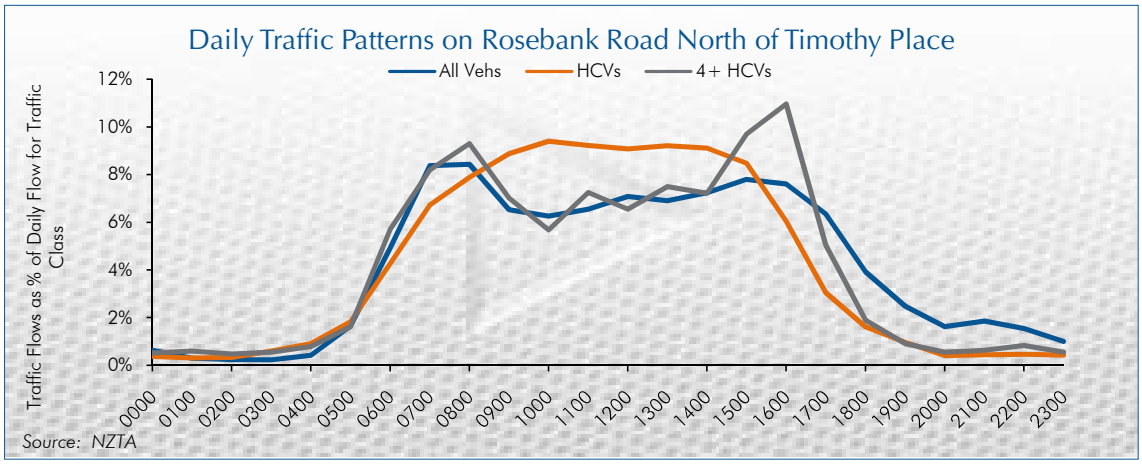
The movement of freight in busy urban areas contributes to congestion, although typically the proportions of heavy vehicles on urban roads are relatively low. An example of the heavy vehicle flows on State Highway 1 through Auckland is set out in the Figure below. These show that heavy traffic flows only make up a small proportion of total flows.



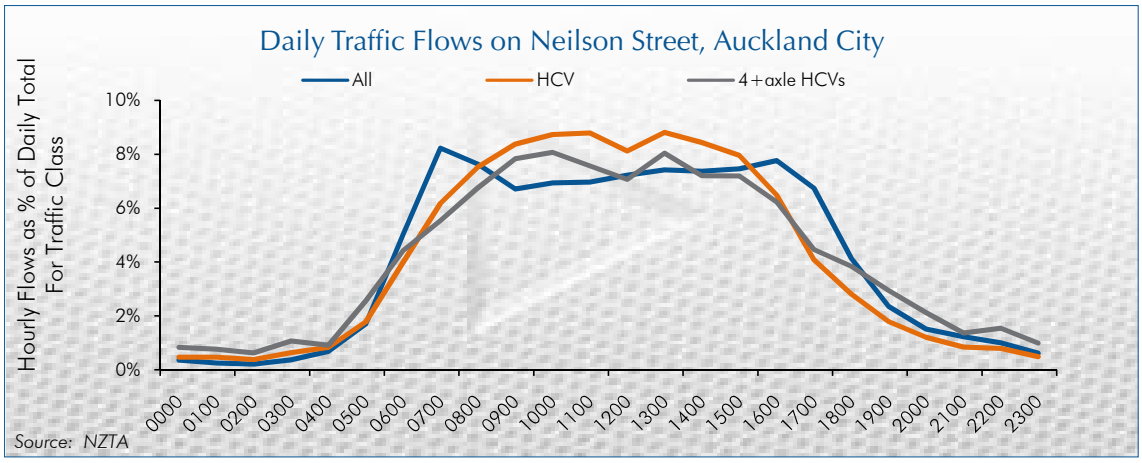
Outside of the motorway, on routes serving industrial and commercial areas, the share of heavy vehicles is higher but still only represents a limited proportion of the total traffic flow. For Neilson Street in Auckland City, as one of the key freight routes serving a number of very large distribution centres within the city, the proportion of heavy commercial vehicles is approximately 15% of the total flow for the average weekday. In Rosebank Road, which serves one of the main manufacturing areas, the share of heavy vehicles is lower at about 7% of the total daily flow.

As a result of congestion within the busy urban areas, road transport operators attempt to minimise their exposure to difficult operating conditions. However, much as operators wish to avoid these busy periods, they are obliged to meet the needs of their customers and it is not possible for them to avoid peak time operations entirely. This is particularly a feature of roads directly serving manufacturing areas which typically require goods to be delivered at the beginning of the day, dispatches then sent out over the working day and another concentration of activity at the end of the day when finished products are despatched for longer distance distributions. For key distribution centres and in particular those serving road based activities, a somewhat different pattern prevails with a concentration of the movements of the heaviest vehicles outside the main peaks.

This can be illustrated with a comparison of the daily traffic patterns for the two areas previously assessed in Auckland City; Rosebank Road and Neilsen Street.



In Rosebank Road there are high concentrations of the largest commercial vehicles at the times when the overall traffic flows are also peaking, with the flows between peaks relatively small. The movements of smaller commercial vehicles that primarily deal with shorter distance deliveries and collections are more concentrated between the peaks with relatively high flows throughout the period.



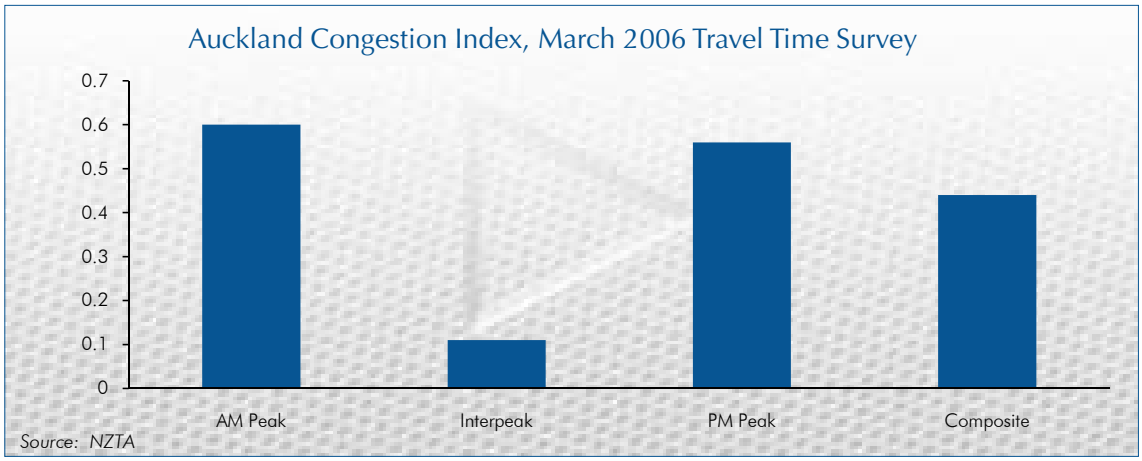
The position in Neilson Street, a major logistics area within Auckland, displays somewhat different patterns. Much lower shares of the heavy traffic move at the main peak times and much higher shares occur outside these periods, particularly in the early evening. For many of the movements represented by these flows there is more discretion over the time of travel and, as a result, more traffic can be scheduled away from the busiest periods, especially in very quiet hours.

While congestion on the highway network is a serious issue both for the movement of freight and general traffic movements, freight typically represents only a small part of the overall traffic flows and even a significant reduction in freight traffic would only have a limited impact on congestion conditions. In addition the patterns of freight movements are driven by the needs of customers and this limits the scope for changing the form or timing of these. Attempts have been made by the road transport operators to schedule customer deliveries in night-time hours to achieve better utilisation of equipment but in most cases these have been rejected, because of the additional burden of security and staff availability.

As a result of identified needs during specific delivery and collection windows, changes in modes for long haul movements may only have limited impacts on overall traffic conditions in

the urban areas. Given that most intermodal movements, whether by rail or coastal shipping, require pick up or delivery by road, the scope for reducing congestion may be limited. Indeed it is possible that unless intermodal terminals are particularly well served by road transport links, increases in rail or coastal shipping may increase congestion levels on the approaches to aggregation points. This may be a particular issue for coastal shipping where the intermodal transfer points at ports are in effect fixed. For rail more opportunities exist for the development of accessible intermodal terminals as, in principle, a wider range of locations are available.

The STCC report quotes a range of marginal congestion values from $0.61 per vehicle-km in Auckland to $0.01 per vehicle-km in rural areas. The figures for the urban areas however are very sensitive to the timings of the journeys, with trips in the peak periods imposing much higher costs than those at other times. Measures of relative congestion in Auckland for different time periods based on the results of a travel time survey in March 2006 are illustrated in the figure below. The Congestion Index ('CGI'), measures the extent to which traffic is delayed below the nominal free-flow speed of the network, with a higher index indicating reduced travel speeds and a higher level of delay.



The figure demonstrates considerable differences in the levels of congestion at different time periods, and the benefits which can be achieved by avoiding the busiest periods. Although not measured in the survey, the CGI for the evening and early morning periods is very low, approaching zero.

The use of road transport provides much greater flexibility in the selection of departure and arrival times for longer distance movements. However, the connections to rail and coastal shipping services typically have more constrained times to meet both customer requirements and the intermodal connections. Accordingly freight travelling by these may be forced to travel at the busiest periods.

The levels of congestion in different cities can be inferred from Table 1 in SP9 of the EEM Volume 2 (Page SP9-10). Although this figure is intended to assess the effects of the reduction in vehicle traffic on major urban centres following the introduction of a new public transport services, it does provide an indication of the relative typical travel conditions in each of these.

Reflecting the information from the Travel Time Survey as set out in the figure below and the EEM, the following estimates are made for relative road congestion costs:

Congestion Costs (2002 prices)	
Movement Type	Cost per veh-km ($)
Road movements in Auckland associated with rail and coastal shipping	0.60
Road movements in Auckland where timing is more flexible	0.10
Peak period road movements in Wellington	0.40
Road movements in Wellington away from the peak	0.10
Road movements in Christchurch associated with rail and coastal shipping	0.13
Road movements in Christchurch where timing is more flexible	0.10
Movements in rural areas	0.01

Sources : STCC, Travel Time Surveys and EEM Vol 2 and Consultants analysis

The ability to avoid peak periods for longer distance freight movements, as illustrated in the Auckland Congestion Index figure, means that the congestion costs of road transport can be significantly reduced by the choice of journey start and finish times. The options for freight transported by other modes may be more restricted.

Utilising the above figure the possible congestion costs for a movement from Auckland to Christchurch have been estimated and set out in the following figure.

Congestion Costs - Auckland to Christchurch (2002 prices)				
Movement Type	Road vehicle congestion costs per veh-km ($)	Road distances (km) associated with movements by:-		
		Road	Rail	Coastal Shipping
Road movements in Auckland associated with rail and coastal shipping	0.60		4.0	15.0
Road movements in Auckland where timing is more flexible	0.10	27.0		
Road movements in Wellington	0.40			
Road movements in Wellington away from peak	0.10	25.0		
Road movements in Christchurch associated with rail and coastal shipping	0.13		6.0	21.0
Road movements in Christchurch where timing is more flexible	0.10	16.0		
Movements in rural areas	0.01	947.0		
Total costs associated with complete journey ($)		16.3	3.2	11.7
Total costs associated with complete journeys if all urban travel is in peak periods ($)		37.9	3.2	11.7

For the particular journey identified, road transport generates congestion costs roughly five times as high as rail, in cases where it is possible for road vehicles to avoid peak periods. The difference with coastal shipping congestion costs is much smaller, with road costs being about 50% higher in reflection of the greater distances coastal shipping cargo moves within the urban areas of Auckland and Christchurch.

If all travel was at peak times, the congestion costs for road transport would more than double to a figure ten times higher than that associated with the trunk haul by rail and three times higher than that for coastal shipping.

19.3 OVERALL ASSESSMENT OF EXTERNALITY COSTS

The movement of freight by all modes imposes costs on external parties although the extent of this cost varies from mode to mode. For all the categories of externalities considered, the costs associated with the movement of freight by road transport are substantially higher than those associated with movements by rail or coastal shipping. However the differences between rail and coastal shipping are much smaller. To illustrate the scale of the differences an analysis has been done, both of total costs imposed by each mode and of the costs for a typical journey from Neilson Street in Auckland to Hornby in Christchurch.

The total costs estimates for the main categories, excluding congestion, are summarised in the figure below. For road freight this is based on movements by heavy vehicles only since it is only these movements which are assumed to be potentially contestable by other modes.

Externality Costs by Mode (2002 prices)

Type of Externality	Total Cost in 2002 ($million)	Average cost (cents per tonne-km)
Movement by Heavy Road Vehicles		
Greenhouse Gas Emissions	28	
Air Pollution	101	
Noise and Vibration	20	
Accidents	44	
Total	193	1.4
Movement by Rail	9	0.2
Movement by Coastal Shipping (1)	2-3	0.1

Notes (1) Relates to greenhouse gas emissions only and is estimated based on the difference between the emission rates for rail and shipping

For road costs, externalities represent about 36% of the total allocated costs for heavy vehicles in 2002. Of the total, air pollution represents the highest expense and experience from overseas indicates that these costs are likely to fall significantly with the introduction of more environmentally friendly heavy vehicles. A number of the transport firms interviewed as part of this study indicated that they had deliberate policies to upgrade their fleets to reduce their carbon footprint and improve their environmental performance. An example is the introduction of new vehicles of Euro-V standards.

According to the allocation of costs and revenues set out in the STCC, the total costs associated with heavy freight vehicles, including these environmental externality costs and a return on renewable assets, were matched by the revenues generated from heavy vehicles though road user charges, other taxes and fees. Given that air pollution costs represent a large proportion of the total and these may have reduced since 2002, the position may currently be more favourable.

On a tonne-kilometre basis, externality costs associated with road are much higher than those associated with rail and coastal shipping movements. The average costs associated with road transport are six times as high as those for rail and 12 times as high as those for coastal shipping. However these differences in the levels of externality costs are tempered by the need for road transport in rail and coastal shipping solutions for the collection and delivery of freight within the urban areas. This may be a particular issue for coastal shipping since ports are by definition almost always at the fringe of an urban area and thus involve relatively long road movements. Rail intermodal terminals may be more centrally located, reducing the length of road collection and delivery services.

The estimated total marginal costs associated with the movement of a consignment from Neilson Street in Auckland to Hornby in Christchurch are summarised in the figure below. These include the intermodal costs of the movements by road associated with rail and coastal shipping.

Total Externality Costs - Auckland to Christchurch (2002 prices)			
	Road	Rail	Coastal Shipping
Greenhouse Gas and Air Pollution	66	29	23
Accidents	144	18	12
Congestion	16.3	3.2	11.7
Total	226	50	47

In current price levels such numbers are probably about 20% higher, although, as discussed, reductions in air pollution and accident costs may have reduced increases for road transport. Overall the externality costs associated with this isolated freight movement are probably about 4-5 times higher by road than those associated with the line haul by rail or coastal shipping.

For many of the environmental impacts identified, costs generated are high only in the urban areas where the movement of freight impacts on the large population. Outside of the urban areas these tend to be relatively low with the exception of greenhouse gas emissions costs. Movements contestable by rail or coastal shipping are typically long, large distances in rural areas where costs are low and involve only relatively short distances in urban areas where externality costs are higher. Significant externality costs are also generated in urban areas for the collection and delivery of freight by road for connection to rail or coastal shipping. These effects tend to reduce the differences in externalities between the modes.

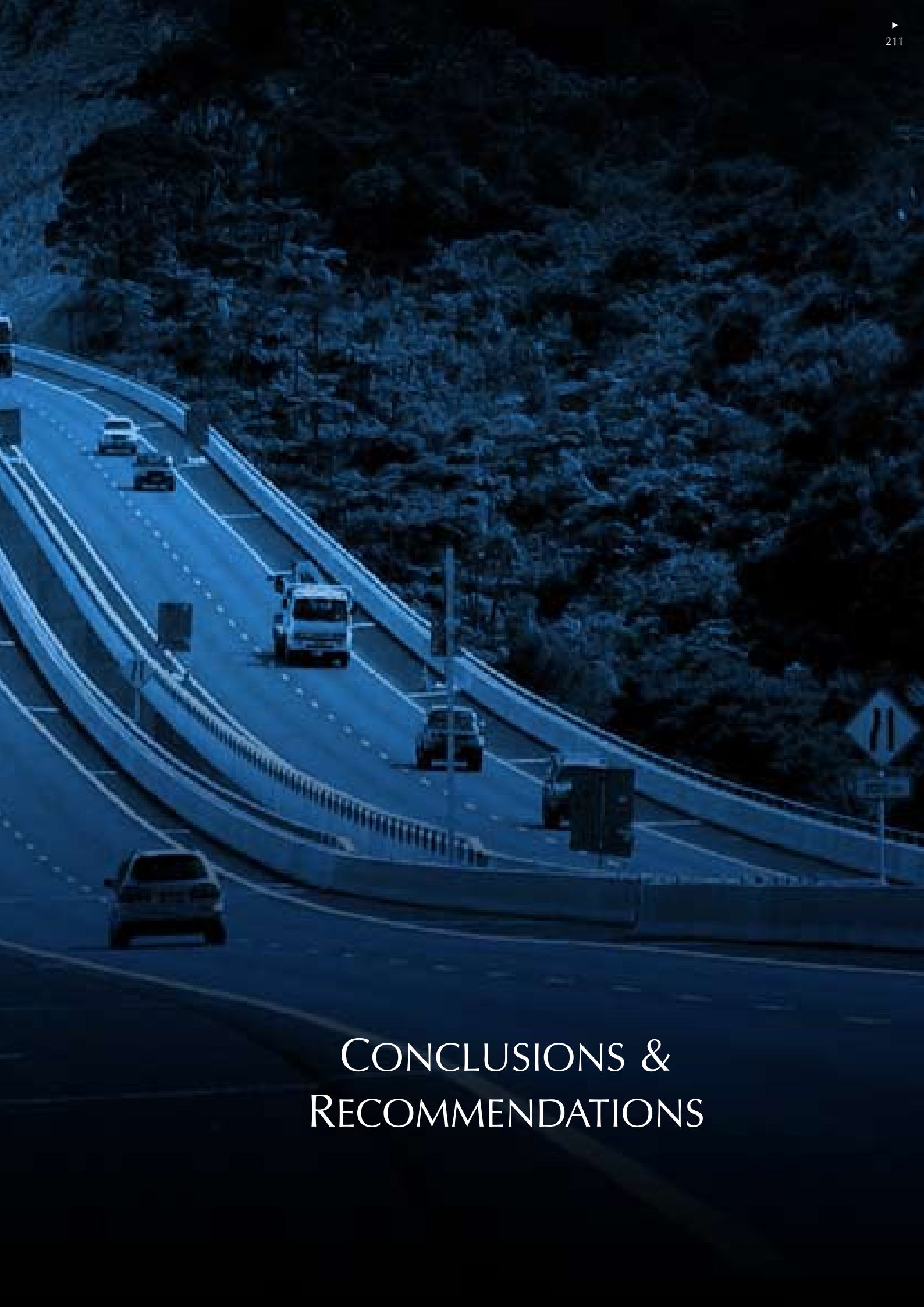
Moreover, while road freight vehicles contribute to congestion, they typically only form a limited part of the demand for travel on strategic road links at key times. Often at these times there are little alternatives to the mode used as freight has to fit in with wider manufacturing and distribution patterns. Reducing the number of freight vehicles on roads, even if possible, would only have a limited impact on overall congestion levels. Measures to reduce the numbers of private cars, including encouraging public transport, or increasing car sharing may be a more feasible way of reducing traffic levels.

19.4 KEY OBSERVATIONS / CONCLUSIONS

The following presents selected key observations and conclusions from our analysis.

- **Form of Externality Impact**: All modes generate some level of externality costs through the emission of greenhouses gases, pollution, noise and vibration, accident costs and congestion.
- **Concentration**: The level of these externality costs is highly dependent on travel distances and time in urban areas due to the far greater population densities.
- **Allocation**: Externality costs are currently not specifically incorporated in the pricing of any mode.
- **Intermodal Components**: The level of externality costs for rail and coastal shipping are impacted by the need to have a road movement for pick-up and delivery at origin and destination.
- **Impact Hierarchy**: Road has a significantly higher level of externality costs than either coastal shipping or rail. Coastal shipping imposes the lowest level of externality costs.

▸
Puhoi Tunnel



Conclusions & Recommendations

20 CONCLUSIONS

The following summary conclusions have been garnered from the study.

20.1 MARKET POSITION

Despite a rich history, coastal shipping in New Zealand declined with the expansion of the overland transport modes of rail and road throughout the 19th and 20th Centuries. Coastal shipping (excluding the Wellington – Picton ferries) currently carries 4.2 million tonnes annually. This represents only 1.9% of the national freight task or 15% measured in tonne-km, and is principally in the form of inter-island traffic and specialist bulk commodities. Coastal shipping is ideally suited to the transport of bulky, heavy products, although this market segment offers few growth opportunities, especially for key cargo of petroleum and cement. Containerised general freight represents the largest growth opportunity for coastal shipping.

20.2 FREIGHT TASK ASSUMPTIONS

The current economic environment is creating volatility in freight movements within New Zealand and abroad. Nevertheless, the position outlined in the NFDS still provides a reasonable basis for the estimation of the long term freight task, a breakdown of cargo across different transport modes and a foundation for transport planning. The assumed 2.0% per annum growth in freight over the next 22 years to 2031 applied in the NFDS is also still valid and accepted in this study. Revised estimates for coastal shipping volumes were however adopted reflecting updated information availability and further analysis.

20.3 STRUCTURE OF THE NEW ZEALAND COASTAL SHIPPING INDUSTRY

The coastal shipping market is readily split into two components; the movement of domestic cargo for domestic cargo owners and repositioning of full or empty containers for international shipping lines.

In the movement of domestic cargo, coastal shipping predominately serves trade transiting between the North and South Islands, as opposed to intra-island freight. A core segment of this trade is the Auckland to Christchurch container market, where coastal shipping currently holds 38% market share. Coastal shipping's market presence in other port combinations is significantly weaker.

Both international and domestic shipping lines service the coastal shipping trade in New Zealand. However, the outlook and fundamentals of the two types of operations contrast significantly. International ships that carry domestic cargo between New Zealand ports do so as an adjunct to a core international shipping service. Domestic trade represents a limited focus and the needs of domestic shippers are secondary to their blue water cargo movements. International shipping lines typically have a greater portion of intra-island movements than domestic providers as they often call at multiple ports within each island and marginally price such movements.

Domestic shipping lines, in contrast, must generate sufficient return from their domestic cargo activities to cover the full cost of operations. Domestic providers also suffer a higher cost burden than international shipping lines as they are subject to greater obligations necessitated by New Zealand employment and tax law. New Zealand maritime regulations similarly stipulate design, equipment and crewing requirements that approximate the needs for long, blue water voyages rather than coastal operations. An amendment of operational and crew qualification obligations could result from Maritime New Zealand's current review of legislation, but this is expected to take at least two years to complete.

With a sole focus on domestic cargo, domestic shipping lines provide a greater level of certainty for local shippers than international shipping lines. Ad hoc freight may prefer the attractive rates offered by international lines but regular shippers favour a consistent, dedicated service over a longer period of time. It is noted that service providers such as Cubic Transport and Searoad Logistics actively market slot space on a mix of international ships for coastal transport where capacity is available.

20.4 Competitive Positioning of Coastal Shipping

In the market for regular, less time sensitive freight, the cost advantage of coastal shipping ensures its market share is reasonably high. In the context of the total national freight task however, there are limited volumes of cargo that are potentially contestable by coastal shipping.

The criteria hierarchy for freight mode choice discerned by New Zealand cargo owners was reliability, journey time, frequency / flexibility and cost, being a similar ranking to the international studies reviewed.

In market assessments of coastal shipping service offerings, positive rankings occurred for the provision of a low cost service, but frequency, flexibility and journey time were perceived as limitations. Service reliability also rated as an issue as international lines place less of a priority on the carriage of domestic freight than international freight. Instances were cited of domestic cargo abandoned at port as a result of the need to accept export cargo, or to maintain an international schedule. In addition, potential exposure to both domestic and international schedule changes was seen as a reliability issue.

In the market for long distance domestic freight a modal hierarchy of costs and benefits exists with road offering greater advantages in terms of transit time, flexibility and reliability but at a higher cost. Rail presents a cheaper but slower option than road with less flexibility and coastal shipping is the least expensive but slowest and least flexible option.

20.5 Business Case Comparison

An assessment of the comparative cost advantages of road, rail and coastal shipping, necessitates an exploration of a freight movement across similar service offerings. A cargo owner using coastal shipping will incur the costs of collection and distribution from the port, inclusive of handling charges at origin and destination. Similar pick-up and distribution costs are incurred by rail, whereas road transport is typically door to door pick-up and delivery.

For freight and passenger road users, the Government and Territorial Authorities do not attempt to capture an economic return on the value of the road network used. Instead under the PAYGO basis of charges, governing authorities attempt to match current user charges against current costs of operation, maintenance and development. There is an issue of whether transport operators pay for the full costs that they impose on the road network because of the general assumptions of pattern of usage and allocation of costs.

Rail receives substantial support from central Government, as its shareholder, for network infrastructure maintenance, upgrade costs and above track operating costs. While rail generates sufficient revenue to cover direct operating costs, it does not provide a market return on the capital cost of the network assets.

Unlike the other two principal transport modes, coastal shipping must target an economic return on total operations, including on port infrastructure through the payment of commercial port charges. This places it at a relative disadvantage to road and rail. Port handling charges incurred by coastal shipping constitute a significant portion of total operating costs. In the case

of a geared coastal ship using general wharves, port handling charges constitute approximately 16% of total operating costs. For a ship using container terminals, port charges amount to 50% of total operating costs.

Coastal shipping provides strong benefits in terms of fuel efficiency and environmental sustainability, particularly in terms of emissions and congestion. These overall benefits are somewhat reduced by the need for a road transport component for a door-to-door service. In the absence of mechanisms for incorporating the cost of these externalities, coastal shipping does not currently accrue any advantage.

20.6 Infrastructure Charges

As we observed in Section 16, Modal Economics Shipping, port charges constitute up to 50% of operating costs for domestic shipping operators utilising container terminals. Where domestic shipping operators are able to utilise general wharves, and provide their own stevedoring, these costs fall below 20%. Even so, these infrastructure costs represent a higher share of total operating costs than they do for freight operators using either the road network (estimated at 12% of operating costs, comprising Road User Charges, Fuel Excise Duties and Motor Vehicles Registration and Licensing Fees) or the rail network (estimated at 16% of rail freight revenues). These differences arise principally given port owners are targeting a full commercial return on the capital value of their assets. The Meyrick report on Australian coastal shipping observes that the requirement to use container terminals may disadvantage domestic operators should international services using the same facilities be granted higher priority for berthing and stevedoring, and so adversely impact on the reliability of domestic services.

20.7 Modal Economics - Shipping

We have developed the business case for a hypothetical coastal shipping entity and analysed its profitability in a range of port call scenarios and number of ships that it deploys. Our Base Case is for a geared 1100 TEU ship that operates a weekly service from Otago to Auckland calling at Tauranga and Lyttelton on the return voyage. Our single ship scenario needs to attract 28,000 TEU to breakeven, rising to 80,000 for a 3 ship service. In the current market of approximately 195,000 TEU this is a 14% and 48% market share for the single and 3 ship scenarios. The ability of a new coastal service to secure the Base Case breakeven volume will be dependent on a range of variables including competitive responses from incumbent operators and competing modes, inherent service delivery constraints of a weekly service offering to shippers, freight task growth, and the potential for structural industry change.

While domestic ship operators could grow volume by increasing their market share of existing coastal volumes, the most significant growth opportunity is the provision of feeder services for transhipment containers to service international shipping lines. If international shipping lines were to restrict ship calls to selected hub ports, but still seek to provide an “all port” service to shippers, domestic feeder services would be necessary. The significant change in the market structure would be required for the multiple ship scenarios to become commercially viable, given they are in addition to the current domestic shipping providers.

20.8 Regulatory Framework

As summarised in Section 12, domestic shipping companies are at a significant cost disadvantage compared to international shipping lines offering coastal shipping services in New Zealand. This arises from the higher employment obligations that they have under New Zealand law than international shipping lines. Also New Zealand is a signatory to several international conventions which impose on domestic coastal operators crewing, qualification and safety standards as if they were routinely engaged in blue water services, adding to their

comparative cost disadvantage. Maritime New Zealand is committed to a substantial review of operation and qualification requirements which may provide domestic operators some relief.

20.9 BUSINESS ENVIRONMENT

Our evaluation of the prospects for the domestic shipping industry has highlighted the pivotal role of international shipping services to New Zealand's prosperity. It is a hugely challenging environment for the shipping industry with significant losses being incurred by all major international lines, substantial numbers of ships being laid up, a wide range of operational changes being implemented in an attempt to slash operating costs and boost revenue. A substantial overhang of new ships will also need to be absorbed over the next 3-4 years. This industry crisis poses significant issues for New Zealand. The most obvious to date has been the rationalisation of services and we have seen 250,000 – 300,000 TEU slots withdrawn from service in the last year.

It is evident that international shipping lines are becoming more focused on international transhipment ports which are likely to further reduce the number of direct services originating from New Zealand, and so add time into many of the longer routes with obvious impact on time-sensitive products such as chilled meat exports. During our interviews we heard of industry concerns that some shipping lines may withdraw completely from New Zealand and that they may seek to charge exporters for bringing empty containers to New Zealand. While it is extremely difficult to predict the extent and timing of such impacts on New Zealand, transport policy makers do need to anticipate these changing industry conditions.

20.10 EXTERNALITIES

All modes generate some level of externality costs through the emission of greenhouses gases, pollution, noise and vibration, accident costs and congestion. However, externality costs are not currently specifically incorporated in the pricing of any mode. Road imposes significantly higher level externality costs than rail, while coastal shipping imposes the lowest level of externality costs.

20.11 MODAL PRICING

Modal pricing determinants reflect a range of factors including nature of cargo, distance, timeliness, ancillary services and capacity utilisation. Within modes, pricing variation is also evident, reflecting factors such as differences in operator costs, scale, growth strategies and targeted returns. Our analysis clearly demonstrates that over longer distances coastal shipping provided the lowest cost service, followed by rail and then road. Price, however, must be weighed against the relative service capability of road, which rated best in terms of transit time, frequency and reliability. Rail offering a slower and less flexible service, while coastal shipping the slowest and least flexible service.

Least-cost pricing obtained during the course of this study demonstrates current aggressive short-term pricing offered by road when compared to established price guidelines. This may reflect the current challenging market conditions faced by road operators, and may not be sustainable.

20.12 MARKET PROSPECTS

Coastal shipping could potentially capture greater market share if able to offer more frequent services. However, the comparative disadvantages of longer transit time and less flexibility than other modes will still prevail. Coastal Shipping also needs to address negative perceptions of service quality.

Rail presents the most direct competition to coastal shipping. Should rail be required to increase prices in order to generate an economic return on both operating and infrastructure businesses coastal shipping's competitive positioning would improve significantly.

The structural change most likely to benefit coastal shipping would be the rationalisation of New Zealand port calls by international shipping lines, by either introducing significantly larger ships into their New Zealand services or concentrating their export and import volumes onto "hub ports". Resultant changes to scheduled port calls would require the movement of substantially greater volumes from the sources of production to designated hub ports. Under a hubbing scenario, international shipping lines would likely call on at least a North and a South island port, and so the majority of cargo consolidation (transhipments) will occur intra-island. Road and rail will accordingly be positioned to compete with coastal shipping.

Consolidation of port calls will also increase the need to reposition empty containers from importers in the north to exporters the south. Coastal shipping is well placed to meet this market need. However, the manner in which the market will develop is hard to anticipate, and is complicated by the depressed current global shipping market and by the particular dynamics and imbalances of container supply in New Zealand.

Any rationalisation of scheduled port calls by international shipping lines, would also require significant investment in intermodal facilities and potentially coastal shipping facilities. This is deemed necessary to assemble and distribute the additional volumes within timeframes required by the shipping lines. Moreover, a movement to larger international ships will require investment in port channel and berth dredging as well as port container handling and storage facilities.

20.13 Role of Government

Most interviewees suggested that the Government should be the party responsible for developing an integrated transport strategy for New Zealand and help drive implementation of this through its investment and funding decisions. In developing an integrated transport strategy, the Government is the only party capable of ensuring the development of the industry has the national benefit at its core.

One of the fundamental issues that will confront Government if a proposed merger between two potential hub ports within the North Island or South Island emerges will be balancing the national benefit against the emergence of strong regional monopolies. The Government's stance is a significant risk factor that faces port company directors when considering merger/consolidation opportunities.

Whilst many interviewees sought the Government to be more active in developing a broader vision for the sector, 94% of respondents opposed the Government dictating transport modes to users. In addition, a number of parties felt that the Government agencies involved lacked the level of industry and commercial knowledge to actively engage with industry, particularly in relation to the shipping.

20.14 Other Possible Initiatives

Support for coastal shipping internationally varies. As discussed in Section 11, the EU is the leading proponent of the development of coastal shipping, although we need to acknowledge that their support is for Short Sea Shipping which has a wider focus than the coastal shipping within a single country and involves a more complex administrative framework. The EU provides significant financial support and makes Short Sea Shipping and inland waterways a strong feature in its intermodal investment and policy development. The EU is finalising a

complete set of statistical data to ensure the market and policy makers are fully informed. It is committed to simplification of the administration, documentation and customs procedures. Member states have also committed to active promotion of Short Sea Shipping and have established policy representatives to be the focal point for further development of the industry. In Australia, recommendations have been made to develop specific port infrastructure suited to the needs of coastal shipping. A number of EU members have adopted favourable taxation measures such as a tonnage tax to further support coastal shipping. These measures are also being given serious consideration by Federal representatives in Australia at present. Given the consistent New Zealand policy of not using the taxation system as a sector or issue specific promotional tool we do not make any such recommendation in our report.

21 RECOMMENDATIONS

The following presents a range of recommendations resulting from analysis and stakeholder feedback received during the undertaking of this study.

21.1 ENHANCED DATA CAPTURE

This study, the NFDS and other studies on New Zealand freight markets have been hampered by the extent, availability and quality of data. While a wide range of data sources are available, the data is not comprehensive, and it is apparent that there are no agreed conventions on data capture, format, nor dissemination. These are all necessary to permit meaningful analysis on the freight task in New Zealand and to meaningfully inform Government when formulating policy. The extent of this challenge is outlined in Section 3 National Freight Task.

To appropriately inform industry and Government on freight issues we recommend:

A working group be established to address mandatory comprehensive capture of key freight data (container, breakbulk and bulk flows) through New Zealand ports, on road and by rail. Consistent with the work being undertaken for the UTCC Stage 2 Study, conventions on data capture should be agreed, the data will ideally be derived from existing data collection undertaken by stakeholders and be useful to the wider market. All industry participants and government agencies should be required to share this information. This database would be made publicly available, with appropriate analysis, to permit clear recognition and mapping of imports, exports, transhipments and domestic movements and the performance of road, rail and port operations. The format and procedures for this should be agreed by government agencies (Customs, Transport, Agriculture) in open consultation with industry participants (port companies, international and domestic shipping companies, transport companies, key shippers and industry groups).

21.2 GOVERNMENT INTERACTION AND POLICY DEVELOPMENT

The Government fulfils a variety of roles in the transport industry. It formulates policy, plans, regulates and taxes, owns and invests in public good infrastructure (roads and rail), and provides transport services (rail operations) in competition with private companies. From these roles it must cater for forecast transport growth and account for externalities, while seeking to maximise / optimise national good outcomes. As outlined in Section 13 'Results of Interview Programme', participants in the freight industry overwhelmingly seek more comprehensive engagement from Government and a clear and enduring statement of vision. There is wide expectation of significant change in the international shipping industry, with implications for ports of call and required facilities in New Zealand. Such changes will have material impacts on the wider transport infrastructure and operators, and will directly impact Government as funder for the road networks, as shareholder of KiwiRail, and potentially as funder or supporter of other modes and intermodal facilities.

As such we recommend that:

The Ministry of Transport forms a dedicated unit, with comprehensive and specialised knowledge, to provide leadership and to engage with the wider transport and Maritime Sector, including international and domestic shipping lines, ports and relevant service providers.

21.3 AN INTEGRATED TRANSPORT STRATEGY

Section 17 'Modal Economics – Infrastructure Systems' provided an illustrative comparison of KiwiRail's financial performance, and the challenges facing rail. While KiwiRail generates a return on operating costs, it does not provide an adequate return on total capital employed

(in combined operations and network). Further, KiwiRail is the recipient of substantial grants to restore and enhance network capability and to subsidise operations. Until the Government, as 100% shareholder, clearly articulates the business case and long term strategy for KiwiRail and its role in national transport infrastructure, industry players will defer commitment of investment, especially into coastal shipping. To the extent that Government investment in KiwiRail is not supported by clear commercial drivers, this could distort the freight markets, and adversely impact private operators and the national good.

Accordingly, we recommend:

The Government as shareholder and provider of operating and capital grants clearly articulates its investment strategy for KiwiRail, including breakdown of the commercial and national good drivers. This should also include whether as a State Owned Enterprise KiwiRail is expected to provide a return on all capital employed and if so what that target is.

21.4 Maritime New Zealand

Coastal shipping operators in New Zealand are subject to more complex, and often more archaic, regulations than road and rail operators. Under the current regulatory framework, all commercial ships over 45m must fully comply with all international protocols for crewing, qualifications, ship maintenance and equipment standards, even though they are solely engaged in coastal operations. The shipping industry worldwide has growing difficulty in attracting, training and retaining skilled officers and crew, a problem mirrored in New Zealand.

Accordingly we recommend that:

Maritime New Zealand be supported in its efforts to develop appropriate and pragmatic regulations which govern New Zealand's maritime qualifications and operational requirements, and consider appropriate standards for mid size ships that solely operate around the New Zealand coast. This will enable a more competitive coastal shipping industry to develop under a regulatory system considered appropriate for domestic conditions.

21.5 Regional Transport Strategy

The Regional Land Transport Strategies are key to guiding investment in New Zealand's road network, at both the State Highway and Local Road levels. NZTA prompts the territorial authorities to actively engage in pan-regional issues and development needs for the State Highways. Whilst NZTA currently recommends it, as part of this process, the regions could be required to more formally assess and forecast the freight task using a standard methodology. Such studies could identify and monitor activities in major transport hubs in their region, such as ports, rail hubs and multi-user distribution centres. This will guide wider investment in intermodal facilities and support road and rail infrastructure to better achieve the objectives as outlined by Government in the recent GPS. As noted in NZTA's July 2009 newsletter "for the 2009/12 National Land Transport Programme the NZTA has determined, in order to give effect to the GPS, that it will prioritise those activities making the greatest contribution to economic growth and productivity in the first instance."

Accordingly, we recommend that:

NZTA's requirements for Regional Land Transport Strategies be extended to require a formal analysis of the freight task that exists in and across each region and the likely growth of this over the next ten years. That the Regional Land Transport Strategies identify the major transport hubs in each region and in conjunction with surrounding regions formally consider the intermodal requirements for each such facility as part of their Regional Land Transport Plan for transport investment.

21.6 New Zealand Port Sector

As noted in Section 4 the New Zealand Government has no ownership interests in the New Zealand maritime sector (excepting KiwiRail's inter-island services). Every port in New Zealand remains majority owned by local councils. This disparate ownership was widely identified by parties interviewed for this study as an impediment to the sensible development of appropriate port capability. So long as each port remains focused on its immediate regional interests, the market mechanisms to drive consolidation or consider a "national benefit" perspective are lacking (or at least attenuated). The risk is that New Zealand will be subject to decisions made elsewhere which may provide little or no benefit to New Zealand, to domestic industry participants, or to New Zealand cargo owners. Such decisions may include hubbing New Zealand trade through recently expanded facilities at Melbourne, Sydney or Brisbane. In addition, it was also noted that regulatory issues such as competition law represented a perceived significant hurdle, and as such a risk element, to the progression of such initiatives.

We recommend that:

Government, in a facilitation role, clearly articulates its policy views in relation to potential consolidation or coordination of port service capability from a national benefit standpoint, including how it could facilitate the evaluation of any such initiatives from a regulatory or infrastructure perspective.

21.7 Coastal Shipping Promotion

A lack of knowledge of the capability, pricing or availability of coastal shipping services in New Zealand was a common comment from interviewees. Misunderstanding or past experience often prejudiced shippers against coastal shipping. This mirrors the findings regarding the public image of coastal shipping in the EU. The response in the EU was the establishment of promotional entities for coastal shipping in 19 of the EU member countries, charged with improving (often unwarranted) public perceptions. The level of pro-activity ranges from merely providing information on scheduled services, facilitating links to service providers, to wider media promotion, through to active engagement with potential clients for coastal shipping services. This was undertaken in conjunction with relevant transport ministries as part of their development of wider support for coastal shipping actions which include simplifying documentation (including customs clearance) and port processes, and better alignment of intermodal investment.

We recommend that:

The Maritime Unit in the Ministry of Transport be charged with the establishment of a web based promotion service providing details of coastal services provided by domestic and international shipping lines in New Zealand, advice and links to service providers, supported by initiatives to simplify documentation. This would be coordinated with integrated data collection and sector engagement as recommended in Government Interaction and Policy Development above.

▸
Cook Strait Ferry

Appendices

22 APPENDIX 1: COASTAL SHIPPING - REGULATORY FRAMEWORK

The following is a brief summary of the relevant legislation governing the maritime industry in New Zealand. Its particular focus is on identifying the differences in legal application between domestic and international shipping service providers.

Readers should note that whilst the authors of this report believe the following commentary to be accurate as at the date reported, they do not represent themselves as legal experts. As such, this report may not present a complete or accurate account of relevant legislation governing the maritime industry in New Zealand and is intended to provide general guidance only.

22.1 MARITIME TRANSPORT ACT 1994

Section 198 sets out what ships may carry coastal cargo in New Zealand. These ships fall into three categories:

a) A New Zealand ship; or
b) A foreign ship on a demise charter (a charter where the New Zealand charterer has full control over the ship) to a New Zealand-based operator who employs a crew to work on the ship under employment or service agreements governed by New Zealand law; or
c) A foreign ship that has or will have embarked or disembarked goods or New Zealand passengers and has not or will not visit a foreign port since that embarkation or disembarkation.

If there are no ships available that fall into one of the categories above, the Minister responsible for the administration of the Maritime Transport Act 1994 may authorise another ship to carry coastal cargo, subject to any conditions the Minister considers appropriate, including conditions relating to health and safety. Under this provision the Minister could authorise a foreign ship under foreign control to come into New Zealand waters and carry out coastal shipping without the requirement that they embark or disembark cargo.

The provisions of the Maritime Transport Act apply to all ships unless they are warships of New Zealand or any other state, or any ship owned and operated by another state for wholly governmental (not commercial) purposes. Therefore the general provisions of the Act apply to all ships engaged in coastal shipping in New Zealand waters, however there are specific sections which apply only to New Zealand ships. In general, the sections of the Act relating to maritime documentation (for example certificates of insurance) and liability apply to all ships operating in New Zealand coastal waters, while provisions relating to employment and safety standards apply only to New Zealand registered ships.

22.2 CARRIAGE OF GOODS ACT 1979

This Act applies to domestic carriage of goods by any ship, whether or not it is simultaneously engaged in international carriage. The Act includes provisions relating to liability for carriers, liability of carriers employees, warrantees by contracting parties, rights of action against carriers and the rights of carriers, for example to sue for freight or recover freight.

22.3 IMMIGRATION ACT 1987

A foreign national is undertaking employment if he or she is working aboard any craft registered in New Zealand under any Act and which engages in activity anywhere within New Zealand's territorial sea. A worker in this situation will require a work visa or permit and is subject to New Zealand employment laws. A ship registered in New Zealand can include New Zealand owned ships or ships on demise charter to New Zealand.

Under section 11 of the Immigration Act workers aboard certain ships engaged in coastal shipping are temporarily exempt from requiring visas or work permits. This is the case when:

a) The person is a crew member aboard a ship carrying passengers or cargo between New Zealand and other countries in the ordinary course of that ship's business. There is no visa requirement for that crew member from the time when the ship first clears customs to either the time it leaves its last customs place in New Zealand on the same voyage or 28 days after the ship first clears New Zealand customs; or
b) The person is a crew member aboard a ship which has been permitted to carry goods or passengers within New Zealand because of an order by the Minister under section 198 of the Maritime Transport Act 1994 (see above). There is no visa requirement for that crew member for the 28 days after the ship first clears New Zealand customs.

22.3.1 Implications of workers not required to obtain visas

The visa waivers under the Immigration Act 1987 have implications for those workers in respect of New Zealand's employment legislation.

22.4 Employment Relations Act 2000

This Act does not specifically exclude foreign workers employed by foreign employers from its provisions. However, the definition of employee is someone who is employed under a contract of service. New Zealand's Contractual Remedies Act 1979 and Contractual Mistakes Act 1977 do not apply to contracts governed by foreign law. It is therefore unlikely that foreign workers without visas engaged in coastal shipping or their employers would be subject to the Employment Relations Act, the Minimum Wage Act 1983, the KiwiSaver Act 2006 or the Injury Prevention, Rehabilitation and Compensation Act 2001.

22.5 Health Safety in Employment Act 1992

This Act applies to:

a) A person who is employed or engaged under an employment agreement or a contract for services governed by New Zealand law to work aboard a New Zealand ship or a foreign based ship carrying coastal cargo that is on a demise charter to a New Zealand based operator; and
b) To the person who employs or engages that worker; and
c) To the ship as a place of work.

This Act does not apply to foreign workers on overseas operated ships.

The Act covers general duties of hazard management and training and codes of practice and makes workplaces subject to inspection and employers liable to infringement fees if standards are not met.

22.6 Smokefree Environment Act 1990

This Act applies to any New Zealand ship, ship on a demise charter to a New Zealand based operator, or ship carrying coastal cargo within New Zealand. This Act therefore applies to all operators engaged in coastal shipping within New Zealand.

This Act prevents smoking in workplaces, including ships, and provides for inspection and enforcement powers for enforcement officers.

22.7 ADMIRALTY ACT 1973

This Act grants admiralty jurisdiction to the High Court of New Zealand (and in certain limited circumstances, to the District Court). The Act applies to all ships within New Zealand's territorial waters, no matter what their nation of registration, provided that claims made under this Act do not extend the circumstances where money or property is recoverable under the Maritime Transport Act 1994. This means that the provisions of the Maritime Transport Act relating to areas such as liability for collisions will apply to internationally registered ships, but claims relating to areas such as wages and health and safety may not.

In general, the Act grants the Court jurisdiction in areas such as:

a) Disputed ownership of ships;
b) Claims regarding mortgages or charges over ships;
c) Claims for damage done or sustained by ships;
d) Claims for loss of life or personal injury resulting from a defect of the ship or negligence of the owners or those in control of the ship;
e) Claims relating to the carriage of goods in a ship;
f) Claims regarding salvage, towage or pilotage;
g) Claims for dock or harbour charges;
h) Claims for wages; and
i) Claims for forfeiture or condemnation of a ship or goods.

In the case of claims for wages the Court has discretion whether to refuse to hear an action for wages brought by the master or a crew member of a ship which is not a New Zealand ship.

22.8 SHIP REGISTRATION ACT 1992

This Act distinguishes between ships that are required to be registered and ships that are entitled to be registered.

New Zealand owned ships over 24 meters in length are required to be registered unless they are:

a) Pleasure craft (pleasure craft that make overseas voyages must be registered); or
b) Ships solely used on inland waters; or
c) Barges that do not proceed beyond the coast.

New Zealand owned ships on demise charter to overseas operators may be exempt from registration.

Ships that are entitled to be registered include:

a) Ships on a demise charter to New Zealand-based operators; and
b) Any ship jointly owned either in equal shares or by a majority share by persons entitled to reside in New Zealand indefinitely under the Immigration Act 1987. This could include Australian citizens.

Ships registered under the law of a foreign country cannot be registered in New Zealand.

22.9 Other Relevant Acts and Regulations

Other Acts and regulations relevant to coastal shipping in New Zealand include:

a) The Contributory Negligence Act 1947: This Act aims at apportioning responsibility for accidents when contributory negligence is involved. The provisions of this Act are overridden in the case of claims to which section 94 of the Maritime Transport Act 1994 applies. These are cases where two ships are involved in an incident that causes damage and an apportionment of liability has to be made. This section applies to all ships in New Zealand waters, regardless of their country of registration.

b) The Maritime Crimes Act 1999: This Act applies to all ships and persons on ships within New Zealand waters, regardless of the nationality of the ship or individual. The crimes that this Act covers include seizing or attempting to seize control of a ship, destroying a ship, and doing an act, placing aboard anything, or communicating any false information likely to endanger the safe navigation of the ship. The penalty for these crimes is conviction and up to 14 years imprisonment, or if the conduct is the same as murder or manslaughter, the appropriate imprisonment term for those offences.

c) Submarine Cables and Pipelines Protection Act: This Act applies to all persons within the territorial sea of New Zealand, whether or not that person is on a New Zealand ship or a foreign operated ship. It declares that damaging or allowing a ship's equipment to damage a submarine cable or pipeline is an offence, and a person who commits this offence or who is the owner or master of a ship used in committing this offence is liable to summary conviction and a fine of up to $250,000.

d) Maritime Safety Charges Regulations 2000: The safety charges levied in these regulations are payable by all commercial ships who enter any New Zealand port or operate in New Zealand waters, regardless of their country of registration. This includes all ships engaged in coastal shipping.

e) Maritime Transport (Infringement Fees for Offences relating to Major Maritime Events) Regulations 1983: Under section 200B of the Maritime Transport Act 1994 an enforcement officer has the ability to stop ships entering a designated area, to remove them from a designated area, detain ships in a designated area and board ships to give directions to carry out these powers if a major maritime event is declared. These regulations set a $1,000 fine for an individual who breaches section 200B and $10,000 for a corporation. These regulations apply to all ships operating in New Zealand waters.

f) Equal Pay Act 1972: This Act guarantees equal pay for equal work regardless of the gender of the employee. It will apply to operators of foreign ships only if their employees are employed under a contract governed by New Zealand law.

g) Parental Leave and Employment Protection Act 1987: This Act sets entitlements of employees to paid parental leave. It will only apply to operators of foreign ships who have employees employed under contracts governed by New Zealand law.

h) KiwiSaver Act 2006: This Act sets up the KiwiSaver scheme. Employees on foreign operated ships will only be eligible to enrol and receive employer contributions if they are employed under contracts governed by New Zealand law.

i) Injury Prevention, Rehabilitation and Compensation Act 2001: People who are not ordinarily resident in New Zealand are not covered by this Act if they suffer an injury while aboard the ship on which they arrive, depart or are transported around New Zealand. This means that workers on overseas operated ships are not covered for injuries they sustain while they are aboard their ship or are embarking or disembarking, but will be covered if they sustain an injury while on land. The definition of employer in the Act is someone who is liable to pay income from employment to another person in terms of the Income Tax Act 2007. It is unlikely that this will be applicable to overseas operators, who will therefore not be liable to pay ACC levies under the Act.

j) Commerce Act 1986: The purpose of this Act is to promote competition within New Zealand markets. The Act is applicable to anyone engaged in business in New Zealand. The Act prohibits contracts, arrangements or understandings that substantially limit competition. This is determined by taking into account all factors that affect competition in the relevant

market including competition from goods and services supplied or likely to be supplied by persons not resident or not carrying on business in New Zealand.

k) Companies Act 1993: The Companies Act 1993 sets up a system of registration and reporting for companies in New Zealand. New Zealand companies engaged in coastal shipping are required to comply with these requirements.
Overseas companies carrying on business in New Zealand are required to register under part 18 of the Act. There is no definition or case law in New Zealand defining the term 'carrying on of business', however according to Australian case law a company is 'carrying on business' if it conducts part of its business transactions within the jurisdiction in question and enters into contracts or transactions within that jurisdiction. There is an exception from registration for overseas companies that only conduct an isolated transaction that is completed within 31 days and is not one of a number of similar transactions repeated from time to time.
In the case of overseas operators engaged in coastal shipping, an operator who engages in a single coastal shipping transaction may not be required to register. Companies that engage in coastal shipping on a regular basis would be required to register.
Registration of an overseas company does not incorporate that company under New Zealand law. It is a notification procedure with authorises that company to carry on business within New Zealand.
Overseas companies and their shareholders are not subject to most of the sections of the Companies Act 1993, but are subject to sections regarding the disqualification of Directors, prohibition of persons from managing a company and Court approved arrangements, amalgamations and compromises. However, there are also some special requirements for overseas companies set out in part 18, in particular with regard to alteration of the constitution, liquidation and financial reporting requirements.

l) Financial Reporting Act 1993: Under this Act the definition of company includes an overseas company. Overseas companies registered under part 18 of the Companies Act 1993 must prepare yearly financial statements. These must include statements for both the worldwide group and for the New Zealand branch. These statements must:
   i. Comply with New Zealand accounting standards, unless the Registrar of Companies notifies the company that the accounts are in order with the accounting standards of the country in which the company is registered and those standards are substantially the same as those of New Zealand; and
   ii. Be signed off, approved and dated by two directors of the overseas groups; and
   iii. Must be audited; and
   iv. Must be filed with the Registrar of Companies.

m) Fair Trading Act 1986: This Act controls and prohibits certain conduct in relation to trade, including providing for the disclosure of consumer information and promotion of product safety. This Act will apply to foreign operators engaged in coastal trading in New Zealand as well as domestic carriers. Specifically, the Act prohibits misleading conduct in relation to the nature, characteristics, suitability for a purpose or quantity of services.

n) Transport Accident Investigation Commission Act: This Act establishes a Commission with the power to investigate transport related accidents. Under section 31 of the Maritime Transport Act 1994 the master of any ship in New Zealand waters that is involved in an accident must notify the authority of the incident and this will be referred to the investigation Commission. In the course of conducting this enquiry the commission has the powers of entry and search, restricting access to accident sites or ships involved in accidents and to seize, detain, preserve or treat any thing that may help to determine the cause of the accident. The Commission requires a warrant to access dwelling houses or maraes. Any ship in New Zealand waters is subject to this Act, wherever it is registered.

o) Customs Law Act 1908: This Act refers to 'coastwise trade by ships of certain foreign countries'. It says that if the Governor-General believes that there are prohibitions or restrictions on any commonwealth ship 'carrying goods or passengers coastwise' in a foreign country, the Governor–General may impose restrictions on ships registered in that nation that are engaged in coastwise carriage in New Zealand, or in carriage between

New Zealand and other commonwealth ports. This is subject to any treaty obligations New Zealand has in respect of that foreign country, and should be intended to remedy the disadvantage suffered by commonwealth ships, not to gain advantage. There is no definition of 'coastwise carriage' in the Act.

23 APPENDIX 2: COASTAL SHIPPING - TAXATION

The following is a brief summary of the relevant taxation provisions governing the maritime industry in New Zealand. Its particular focus is on identifying the differences in legal application between domestic and international shipping service providers.

Readers should note that whilst the authors of this report believe the following commentary to be accurate as at the date reported, they do not represent themselves as taxation experts. As such, this report may not present a complete or accurate account of relevant taxation provisions governing the maritime industry in New Zealand and is intended to provide general guidance only.

23.1 INTRODUCTION

The following section presents differences in the NZ tax treatment of domestic and international shipping operators carrying on domestic coastal shipping, and how these are likely to impact on the ability of domestic shipping operators to compete with their international counterparts. Specifically we present:

a) NZ income tax burden on shipping operators;
b) NZ taxation of salary payments (PAYE / income tax) made by shipping operators;
c) NZ tax burden on insurance premiums paid by shipping operators;
d) NZ imposition of ACC levies on shipping operators and their employees; and
e) Goods and services tax as applicable to shipping operators.

23.2 POSSIBLE ARRANGEMENTS FOR OBTAINING SHIPPING SERVICES

In this report we contrast the tax treatment of domestic and international shipping operators, and focus on shipping by consignment, voyage charter and time charter. The tax treatment of bare boat charter fees is not considered.

Unless otherwise stated, references in this section are to the Income Tax Act 2007.

23.3 NZ INCOME TAX BURDEN ON SHIPPING OPERATORS

23.3.1 NZ income tax on payments to non-NZ resident shipowner / operator

Non-resident shipping operators will generally only be subject to tax on NZ source income and only when that income is not subject to protection under a double tax agreement.

a) The taxation of non-resident shipping operations depends on the origin and destination of the cargo they are carrying:
   i. Inbound shipping: Under NZ domestic law, the Inland Revenue's view is that a non-NZ resident shipping operator does derive some NZ source income from inbound shipping. The income from importing goods to NZ is treated as income from a business partly carried on in NZ or from a contract partly performed in NZ (Section YD 5 of the Act). Section YD 5 requires the shipping operator to apportion income and expenditure between NZ and other sources, to give an amount of net income attributable to their NZ activities. As a practical matter, this apportionment exercise gives the non-NZ resident shipping operator room to manage the numbers so as to minimise their NZ source income. In the case of any non-NZ resident who is a resident of a country with which NZ has a tax treaty ("tax treaty resident"), the tax treaty will almost invariably ensure that no NZ income tax can be imposed.

ii. Outbound shipping: Under NZ domestic law, section YD 6(2) purports to impose a final tax equal to 30% x 5% of the gross income from shipping of goods from NZ (i.e. the tax is 1.5%). No deductions for expenses are allowed against this tax. The tax, however, will generally not be applicable. This is because:
   - Section YD 6(3) allows the Commissioner to exempt a non-NZ resident from the tax where the non-NZ resident's country would not impose a similar tax on NZ residents exporting goods from that country. Although it should be checked with the IRD, the IRD has exempted from section YD 6(2) residents of the following countries on this basis: Barbados, Bermuda, Brazil; Chile; Greece; Hong Kong, Israel; Liberia; Netherlands Antilles; New Caledonia; Panama; Papua New Guinea, Poland; Tonga; Vanuatu .
   - Residents of treaty countries would be exempt from the tax by virtue of the tax treaty.

iii. Domestic shipping: The Maritime Transport Act 1994 allows non-NZ resident shipping operators to ship cargo from one port in NZ to another. Under the source rules in subpart YD of the Act, this income is subject to NZ income tax as a matter of NZ domestic law. Again, the requirement to apportion income between domestic and international operations gives non-resident shipping operators flexibility when it comes to allocating income and deductions. Even this NZ income tax may be eliminated by NZ's tax treaties where the transfer of cargo between NZ ports is part of an international voyage. (See, for example, the Japanese, Canadian and UK treaties).

23.3.2 Shipping operator is NZ resident

Where the shipping operator is NZ resident, the NZ resident shipping operator will pay NZ income tax at 30% on the profits from its domestic and international operations. Because of this, a NZ resident shipping operator's freight charges will generally be increased by the NZ tax component. Tax credits may be allowed in NZ for foreign taxes paid, but the credits for foreign taxes will generally be lost if the NZ shipping operator distributes dividends to NZ shareholders. This is because NZ's imputation credit regime does not allow imputation credits for foreign taxes that have been paid. It should also be noted that as a general rule from a NZ income tax perspective it will not help the NZ resident shipping operator to set up a foreign subsidiary to carry out its foreign shipping operations. This is because under the NZ controlled foreign company ("CFC") and foreign investment fund ("FIF") regimes, the NZ resident shipping operator would generally be subject to NZ income tax as income accrues to the foreign subsidiary.

23.3.3 Summary

NZ resident shipping operators are subject to NZ tax on profits from their worldwide operations. In contrast, non-NZ resident shipping operators will in most cases receive relief from NZ tax on inbound and outbound shipping operations under NZ's double tax agreements. This effectively allows non-NZ resident shipping operators to cross-subsidise their NZ domestic operations. Further, in respect of certain jurisdictions, offshore shipping operations may also receive further treaty relief under some double tax agreements.

23.4 NZ Taxation of Salary Payments (PAYE / income Tax) Made by Shipping Operators

The NZ tax statute provides in subpart RD that, for the purpose of collecting income tax from employees by instalments, where an employee receives a "PAYE income payment" (generally defined to include "salary or wages" so long as they are not tax-exempt) from an employer, the employer shall deduct PAYE. The effect of the statute interpreted literally is that when a NZ resident or non-NZ resident shipowner pays "salary or wages" to a NZ resident employee, the shipowner must on a literal interpretation of the statute withhold PAYE. However it is generally accepted that the decision of the House of Lords in Clark v Oceanic Contractors [1983] 1 All ER 133 eliminates the obligation to withhold PAYE in circumstances where the PAYE

mechanism would have extraterritorial effect. Thus, for example, where a non-NZ resident employer with no taxable presence in NZ pays salaries to an employee who is working outside NZ, we believe that Clark would produce the result that PAYE need not be withheld (Clark might even suggest that a NZ resident employee temporarily engaged in NZ by a non-resident without a permanent establishment in NZ would not need to have PAYE deducted).

Further, there are statutory exemptions from PAYE. The exemptions from PAYE / income tax for payments by non-NZ resident operators to non-NZ resident employees are:

a) The 92 day rule: Under section CW 19 of the Act, non-NZ residents working in NZ are exempt from tax on remuneration earned for work in NZ, provided that:
   i. the visit lasts less than 92 days; and
   ii. the visitor's home country charges tax on the remuneration; and
   iii. the work is done for a non-NZ resident.

   A non-NZ resident shipowner employing non-NZ residents would ordinarily satisfy requirements (i) and (iii). Generally the Immigration Act would require a visa for non-NZ residents working in NZ for more than 28 days at a time (section 11 of the Immigration Act 1987). So, it is quite likely that most foreign seafarers will meet the 92 day requirement. Requirement (ii) creates a technical obstacle - if put to the test, the non-NZ resident employee would need to establish that he / she was taxed in their home country. However, as a practical matter we believe that the IRD does not make any inquiry as to whether non-NZ resident employees do in fact pay tax in the foreign jurisdiction. We believe that in practice no NZ tax is in fact paid on these salary payments.
b) 183 day rule in DTAs: In addition to the NZ domestic law exemption, NZ's double tax agreements increase the tax-exempt period to 183 days in certain circumstances. These double tax agreements generally apply to exempt remuneration derived by a resident of the treaty country from NZ tax where:
   i. the treaty country resident is present in NZ for a period or periods not exceeding in the aggregate 183 days in any consecutive 12 month period; and
   ii. the remuneration is paid by a non-NZ resident employer and is not borne by a NZ permanent establishment of the non-NZ resident employer. Although a few treaties require that the remuneration is taxable in the treaty country, most treaties do not even require that the non-NZ resident's remuneration is taxable in the treaty country.

The general effect of these rules is to increase the NZ tax burden on shipowners and employees the closer the nexus the shipping operator has to NZ:

a) where NZ resident employees are used, NZ resident shipping operators will need to deduct PAYE from salaries paid. Where there is a non-NZ resident shipping operator, it may be possible under the Clark principle for no NZ PAYE to be deducted. However, the NZ resident employee should still have a NZ income tax obligation in respect of his / her salary. The result is that in considering the value of their salary, NZ resident employees will take into account that they ultimately will have to pay NZ tax. This does not mean NZ resident employees will be able to demand higher wages, most international seafarers will probably not be paying income tax and that is the market that the NZ resident is operating in - presumably the NZ resident employee going into international shipping will endeavour to arrange their affairs so that he / she is not resident in NZ and does not have to pay tax (this result should be able to be achieved);
b) where a NZ resident employs non-NZ resident employees, PAYE and NZ income tax should only be required to be paid for salary earned in NZ. For a non-NZ resident, as a practical matter no PAYE would be deducted.

23.4.1 Summary

In many cases non-NZ resident employees of non-NZ resident shipping operators will not be subject to tax in their country of residence (because they are resident in a tax haven jurisdiction). In the domestic shipping context, this means that it is more expensive for NZ resident shipping operators to employ staff, because they will have to pay higher wages in order to gross-up the NZ tax burden.

23.5 NZ Imposition of ACC Levies on Shipping Operators and Their Employees

In general, ACC levies fall into two categories; those imposed on employers, and those imposed on employees. The levies imposed on employers are generally calculated by reference to the PAYE income payments made by an employer, at a rate determined by the employer's business industry description (which is essentially designed to take account of the different risks of injury to employees inherent in different industries). Similarly, levies imposed on employees are based on, in general terms, the PAYE income payments received by an employee.

The result of this would seem to be that only employers who withhold PAYE and employees who receive payments of salary and wages on which PAYE is withheld will suffer the burden of ACC levies. As discussed in Appendix 1, NZ resident shipowners employing NZ residents will be required to deduct PAYE from salary and wages. In addition, NZ resident shipping operators employing NZ residents will be liable to withhold the employee ACC levies from payments of salary and wages, and pay the employer ACC levies.

As we anticipate that non-NZ resident shipping operators are likely to employ non-residents (or that any NZ resident employees are likely to arrange their affairs to become non-resident), typically non-NZ resident shipping operators will not be required to withhold employee ACC levies from payments of salary and wages, nor will they be required to pay the employer ACC levies.

23.5.1 Summary

The application of ACC levies to NZ resident shipping operators and not to non-NZ resident shipping operators leads to a competitive disadvantage for NZ resident shipping operators, as it is more expensive to do business.

23.6 NZ Tax Burden on Insurance Premiums

23.6.1 Non NZ resident shipowners / operators

We make the operating assumption that a non NZ resident shipowner / operator is ordinarily resident in a tax haven and does not have to withhold any tax on insurance premiums paid to a non NZ resident insurer. Similarly, if the insurer is again a tax haven resident (as we understand frequently to be the case), the operating assumption quite possibly should be that no tax liability arises in its home country on the premiums.

Even where the non-resident shipowner insures cargo in NZ waters either as part of an international voyage or carrying goods between NZ ports, no NZ tax liability will ordinarily arise in respect of the premiums. This is because section YD 8 would not generally produce the result that a premium paid by a non NZ resident shipowner to a non NZ resident insurer has a NZ source. Section YD 8(5)(c) does establish a NZ source for premiums paid to non NZ residents, but only where the contract is entered into by the non NZ resident for purposes of a business carried on in NZ through a fixed establishment in NZ. A non NZ resident shipping operator would normally be careful to avoid having a NZ fixed establishment.

23.6.2 NZ resident shipowners / operators

If a NZ resident shipping operator insures with a NZ resident insurer, the premiums charged by the NZ resident insurer will take account of the fact that the NZ resident insurer is liable for NZ income tax on its net income (the same generally applies for a non NZ resident insurer operating in NZ through a NZ branch office).

If a NZ resident shipping operator, as is more likely to be the case, insures with a non NZ resident without a NZ branch office, section YD 8(5)(b) ensures that the premium paid to the non NZ resident insurer is NZ source income. Section YD 8(2) then deems 10% of the gross premium to be profit on which NZ tax must be paid at a 30% rate. This results in a NZ effective tax equal to 3% of the gross premiums. This tax is collected by means of withholding tax withheld by the NZ resident ship operator or its insurance broker. We understand that as a general rule a non NZ resident insurer is not liable for income tax because it will generally operate in a tax haven. In this case, the non NZ resident insurer will not obtain the benefit of a tax credit for the NZ tax paid and will likely require the NZ resident ship operator to gross up the premium to take account of the NZ tax.

23.7 Goods and Services Tax

23.7.1 Importation of ships

A ship bought by a NZ company for use in the NZ coastal trade is subject to GST. This is generally only a timing disadvantage because a GST refund is obtainable by way of a GST input credit. International trade ships are generally classed as "temporary imports" during their time in NZ (this is evidently the case so long as the ships are in NZ for less than 12 months) and are therefore not subject to GST.

23.7.2 GST on cargo fees

A NZ resident shipowner must charge GST for carrying cargo between NZ ports. A non NZ resident shipowner will generally not be liable to register for GST, unless they supply more than $60,000 of domestic shipping services to non-registered persons. Whether or not GST is charged will generally make no substantive difference to the customer provided that the customer is able to claim a GST input credit equal to the amount of GST paid (although there may be compliance and timing advantages to the customer if no GST is charged).

No GST needs to be charged in respect of the service of exporting from or importing goods to NZ, whether by a NZ resident or a non NZ resident shipowner (because the supply of the services will either not be subject to GST or will be zero-rated for GST purposes).

23.7.3 GST on consumables

"Consumable stores" (goods for passengers and crew aboard an aircraft or ship to consume and goods necessary to operate or maintain an aircraft or ship including fuel and lubricants but excluding spare parts and equipment) supplied to a foreign-going ship are zero-rated for GST. A foreign-going ship is defined as a ship on a voyage, or going to a destination outside New Zealand, other than a pleasure craft or a fishing ship. This includes a ship headed to a destination outside New Zealand that makes stops in New Zealand.

NZ domestic shipping operators are likely to suffer a timing disadvantage in respect of consumable stores, as they will have to pay GST on consumable stores they acquire, and must claim an input tax credit for the GST.

23.8 TAXATION MATRIX – CURRENT NEW ZEALAND TAX LAW AND PRACTICE

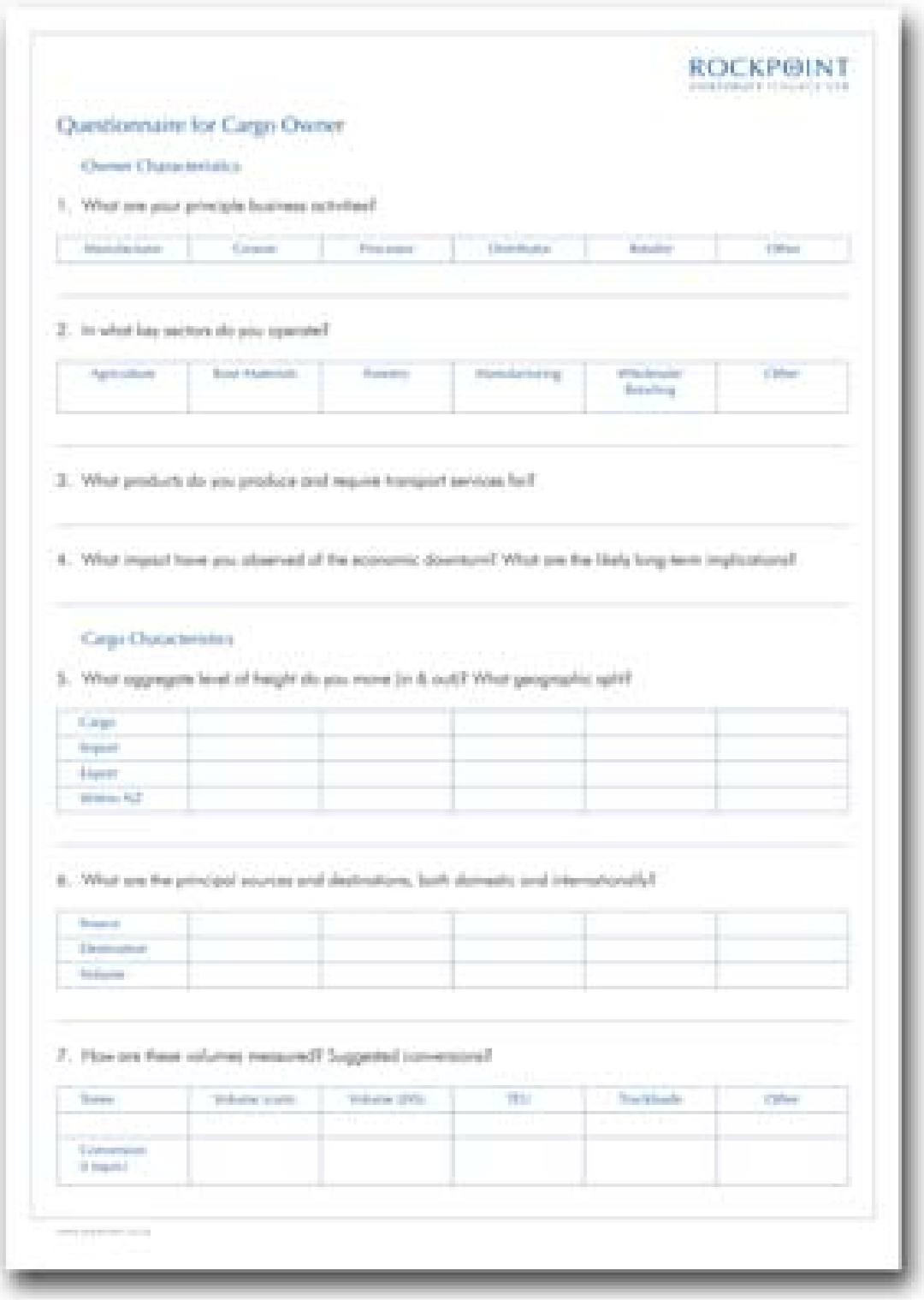
Taxation Matrix – Current NZ Tax Law and Practice			
	NZ owner/operator and NZ employees	**NZ owner using foreign sub and non-NZ employees**	**Non-NZ owner/operator and non-NZ employees**
NZ Income Tax on Profits - International	Full tax: 30%; in BBC case = also NZ tax on charter payments (subject to DTA)	Generally full tax: 30%; no NZ tax in BBC case where non-NZ sub pays charter payments	No tax: YD 6 + DTA exemption + practicality
NZ Income Tax on Profits – NZ	Full tax: 30%	Full tax: 30%	Full tax: 30%; DTA elimination + practicality
NZ Tax on Salaries – International	Full tax: (PAYE + income tax at 19.5%, 33% and 39%)	If non-NZ resident employee = as for third column; if NZ resident employee, PAYE may need to be withheld = depends on Clark case; full NZ income tax	No tax
NZ Tax on Salaries - NZ	Full tax: (PAYE + income tax at 19.5%, 33% and 39%)	If non-NZ resident employee = as for third column; if NZ resident employee = PAYE may need to be withheld (Clark); full NZ income tax	No tax: 92 day rule; 183 day rule + practicality
NZ Tax on Insurance Premiums (assumes non NZ insurer)	NZ tax: at 3% of gross premium	No NZ tax	No NZ tax

BBC = Bare Boat Charter

DTA = Double Tax Agreement

Clark = House of Lords in Clark v Oceanic Contractors [1983] 1 All ER 133

24 APPENDIX 3: QUESTIONNAIRE



ROCKPOINT

Questionnaire for Cargo Owner

Owner Characteristics

1. What are your principle business activities?

2. In what key sectors do you operate?

3. What products do you produce and require transport services for?

4. What impact have you observed of the economic downturn? What are the likely long term implications?

Cargo Characteristics

5. What aggregate level of freight do you move (in & out)? What geographic split?

6. What are the principal sources and destinations, both domestic and internationally?

7. How are these volumes measured? Suggested conversions?

ROCKPOINT

8. Can you quantify these volumes over a convenient time period? Are these flows seasonal? What growth over the last one/five years? How stable/irregular? Factors? Growth?

Annual					
Quarterly					
Seasonality					
Yr-on-Growth					
Growth Drivers					

Freight Task

9. Does your cargo have characteristics which dictate/limit/impact on freight options?

Unit Value	BT	Perishable	Stackable/volume	Texture	Other

10. What are the principal factors influencing freight selection? Are there any constraints which limit your current transport options? What is the relevant importance of these factors?

	Product (eg perishable?)	Cost/Price	Time	Reliability/ Service	Safety	Other
Importance (1=Low 5=Hi)						

	Storage	Inventory/ BT	Payment Terms	Environment	Other
Importance (1=Low 5=Hi)					

11. Who makes the detailed freight mode decisions?

CEO/MD	Logistics Manager	Operations	Freight Forwarder	Customer	Other

12. Do you review/change your freight option/provider regularly? Who undertakes these reviews?

Never	Annually	Quarterly	Monthly	Per Shipment	Other

ROCKPOINT

13. Do you use coastal shipping services? If yes, please rate the current performance of coastal shipping services on the following factors.

14. Would you consider other transport modes? Why/why not? Key drivers?

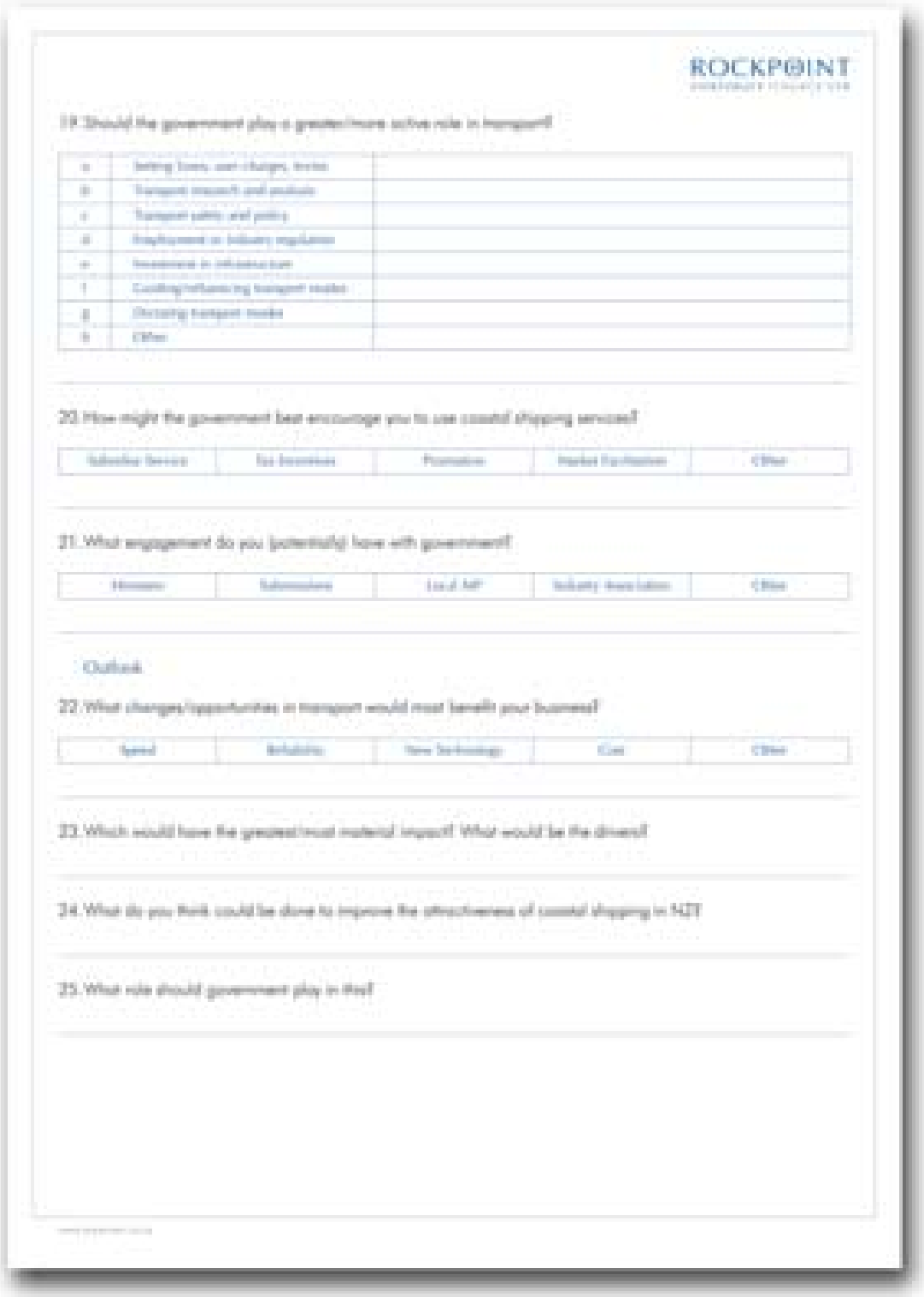
15. What future freight efficiencies could be achieved? What are the impediments?

16. Would you prepared to accept a freight option with less desirable costs or operational characteristics if it provided environmental benefits. What would be the limits on this?

17. What is the basis of payment for freight services (FOB, CIF, Thru Bill of Lading, Other)? Does this impact your modal choice?

Role of Government in Transport Infrastructure and Policies

18. What do you consider to be the government's principal role in transport and why?



ROCKPOINT

19. Should the government play a greater/more active role in transport?

a	Setting taxes, user charges, levies	
b	Transport research and analysis	
c	Transport safety and policy	
d	Employment or industry regulation	
e	Investment in infrastructure	
f	Curbing/influencing transport modes	
g	Choosing transport modes	
h	Other	

20. How might the government best encourage you to use coastal shipping services?

Subsidise Service	Tax Incentives	Promotion	Market Facilitation	Other

21. What engagement do you (potentially) have with government?

Ministers	Submissions	Local MP	Industry Associations	Other

Outlook

22. What changes/opportunities in transport would most benefit your business?

Speed	Reliability	New Technology	Cost	Other

23. Which would have the greatest/most material impact? What would be the drivers?

24. What do you think could be done to improve the attractiveness of coastal shipping in NZ?

25. What role should government play in this?

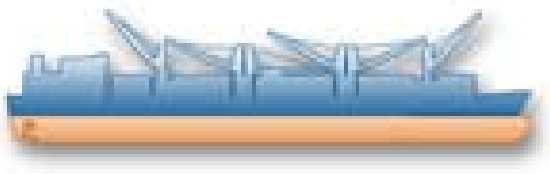
25 APPENDIX 4: GLOSSARY

Freight Terms

- Break Bulk Cargo – any loose goods that must be loaded individually, including pallets, project cargo, vehicles and equipment, that is, not as Bulk nor in Container.
- Bulk Cargo – goods of homogeneous characteristics which are transported unbound.
- Cargo – reference to the goods or articles being transported, either specific or general.
- Container – standard "box" for shipping goods, being 20' by 8' by 8.5', termed Twenty Foot Equivalent Unit ('TEU'). Variants: FEU (40'), hi-cube (10.5'), reefer (refrigerated).
- Consignment – a general term to describe a 'package' of goods for transport.
- Exports – Goods of domestic origin being sent to foreign destinations.
- Freight – as for cargo, also shipment, consignment, goods etc.
- Gross Weight – The full weight of a shipment, including goods and packaging / container.
- Imports – Goods of foreign origin being brought to New Zealand.
- Manifest – A full list of a ship's cargo from all bills of lading (individual consignments).
- Shipper – the party owning goods / freight in transit.
- Tare Weight – weight of a container / packaging without the weight of the goods.

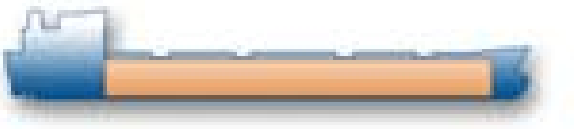
Ship Terms

- Ship = Vessel
- Knot – One nautical mile per hour. 1 Nautical Mile = 6,080 feet = 1,852 metres.
- Containership – a LOLO ship designed specifically for containers (also Cellular Ship).
- Displacement – ship weight in tonnes, weight of water displaced by hull below waterline.



- Deadweight Tonnage ('DWT') – actual displacement in loaded condition less lightweight.
- Lightweight – actual weight of the ship without fuel, passengers, provisions or cargo.
- Gross Register Tonnage ('GRT') – total internal volume of a ship, with few exemptions. 1GRT=100feet^3 = 2.83m^3. Typically the basis upon which ports calculate wet charges. Similar to newer measure, Gross Tonnage ("GT"), and Register Tonnage ("RT").

- Net Register Tonnage ('NRT') – volume of hold space in a ship. Similar to Net Tonnage.



- Hatch (Hatchcover) – panels installed over holds upon which deck cargo is stacked. Lifting containers on / off deck (above hatch) is faster than from the hold (below hatch).
- LOLO – Lift-On Lift-Off, ships where cargo is lifted on / off, including via ship cranes.
- RORO – Roll-On Roll-Off, ships permitting vehicles to drive aboard, including as cargo.
- Geared – ships with own cranes to load / unload cargo without assistance from shore.

Shipping Terms

- Bunkers – Ship's fuel, usually a heavy fuel oil.
- Bunker Adjustment Factor ("BAF") – a freight fuel surcharge.
- Cabotage – a law requiring coastal cargo to be carried by domestic ships.
- CIF – where seller's price includes Cost, Insurance and Freight to agreed destination.
- CY-CY – Container Yard to Container Yard, a port term used in this report as a depot / exchange facility between long-haul and collection / delivery service (rail or road).
- Draught – water depth available at a port, channel or place at lowest astronomical tide.
- FOB – Free on Board, seller / shipper covers all costs including delivery aboard a ship.
- Freight Forwarder – an independent business which handles shipments for shippers.
- Harmonized System (HS) – A standard global nomenclature to classify traded goods.
- IMO – International Maritime Organisation, UN agency to facilitate merchant shipping.
- Integrated Carriers – Carriers that operate multiple transport modes (sea, road, rail, air).
- Intermodal – transfer of goods in-transit between modes (ship, truck, rail, plane).
- Pilotage – Assisting the master of a ship in navigation when entering or leaving a port.
- SOLAS – Safety of Life at Sea.
- Transhipment – domestic carriage of import-export cargo using different ship to international leg.
- Wharfage – A port charge for handling incoming or outgoing cargo.
- Coastal Shipping – Movement of cargo between New Zealand ports, broadly equivalent to "Short Sea Shipping", definitions differ in other countries / regions.

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