Domestic Container Supply Study
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Executive summary

E1. Main purpose of study.

The main purpose of the Container Supply Study was to look into the size of the container pool available for NZ domestic containerised freight distribution – both in the present environment, and in a future "hubbing" environment.

The project scope included investigating and suggesting solutions to supply restraints that exist today or are expected to exist in the future.

E2. Methodology.

The study consisted of three parts; collecting data and discuss the data quality with all NZ ports involved in containerised coastal and international cargo exchange, Collecting data and discussing coastal container movements with International Shipping lines as well as with Container Leasing companies to verify the data from the ports, and finally interpreting the data and make recommendations.

E3. Existing International cargo movements

Latest public numbers from ports indicate that around 2.4 million Teu are handled collectively. Sometimes this number is translated as the total NZ external trade, but during this study it became clear that this number is reflecting the chargeable container moves that ports are doing. The number includes transhipment cargo that is handled twice, restows and shifting of cargo onboard vessels as well as coastal domestic movements. Total international container moves in and out of ports amount to about 1.55 million Teu of which 970,000 Teu are full dry containers, 220,000 Teu are full reefer containers and 360,000 Teu are empty containers.

Split into imports and exports, New Zealand imports 480,000 Teu full dry containers, 28,000 Teu full reefers and 256,000 Teu empty containers. We export 486,000 Teu full dry containers, 192,000 Teu full reefers and 104,000 Teu empty containers. Although there seems to be a relatively balanced dry container trade, there are large imbalances within each container size, with a surplus of 20' and lack of 40'.

E4. Existing Coastal cargo movements.

Overall coastal cargo movements can be divided into transshipment cargo, which is international cargo moving between two New Zealand ports depending on port call patterns of international lines and could change when these patterns change, and domestic coastal cargo which is relatively stable and grows with other domestic activity.

There is also a large component of empty containers moving around in New Zealand satisfying the need for equipment for export cargo. Due to the imbalanced NZ trade and large variations in trade patterns in different ports, the empty container movements change

with international lines' call patterns as some of the demand is supplied directly from international vessels discharging empty containers from predominantly Australia, and some is supplied by moving equipment around NZ.

Total full domestic coastal cargo, excluding Cook Strait ferries was 45,000 Teu in 2008 while the empty domestic movements were around 110,000 Teu. Of the full volume it is expected that international lines move about 2/3 and NZ domestic carriers move about 1/3. Of the empty containers the large majority (90 – 95%) are moved by international carriers.

E5. Future cargo growth.

The National Transport Strategy document of 2008 assumed total domestic cargo growth at 3 % between 2008 and 2020, 2.2 % between 2021 and 2030 and 2% between 2031 and 2040. In addition, the Sea Change Strategy states that the goal is to double the sea freight portion of domestic cargo movements from 15 % to 30 % by 2040.

There has been no public and accurate estimation of the containerised portion of the domestic freight or sea freight and a large portion of present sea freight is dominated by large commodities like fuel oils and cement. This study has not tried to establish that share, and the main aim is to look at the equipment requirements to satisfy the demands of the containerised trade.

It has therefore been assumed that the National Transport Strategy growth numbers and the Sea Change goals should be applied to present domestic containerised sea freight. Doing that, it is estimated that the current full container volume will nearly double to 85,000 Teu by 2020.

E6. Container supply.

Containers for the domestic trade are generally supplied by two means;

1. A leased fleet operated by the main NZ coastal operator Pacifica Shipping and to some extent by some of the wholesale operators like Cubic Transport.
2. Free units supplied by international shipping lines in return for delivering those units to a location where they are needed by the line.

Most of the supply of free units is driven by the domestic trade between the ports Auckland / Tauranga to Christchurch. There are some additional units used into Dunedin, Nelson and also north from Christchurch but in very limited numbers.

When free units are supplied by international lines and these lines also have vessels going between the ports where the units are used, it is often required that these units are loaded on the supplying lines' own vessels which effectively shuts out some of this cargo from domestic coastal carriers.

E7. Future container supply.

This study shows that the present domestic trade volumes are at the upper limit of what can be supplied by the above means and that future supply is constrained. The main reason for this is that the port receiving the largest domestic volumes, Lyttelton, is balanced in its

international 40' dry trade (the most common equipment type used for domestic cargo) and equipment for future domestic trade growth will not be supplied by international carriers unless this equipment is repositioned afterwards to areas where it needed.

The needs are generally in regional export ports where the domestic inbound trade is small or at least not sufficient and the international lines are presently supplying these ports directly from other countries or by repositioning empty container between NZ ports.

Should international lines move towards a hubbing model, which seems likely within 1 – 3 years, further reduction in equipment available for domestic trade is likely as lines will move empties directly into ports where the greatest need is, which is not where the domestic trade needs the units.

E8. Solutions.

There are three possible solutions to the equipment supply problem:

a. More access to international lines' equipment

b. Convert some cargo into 20' units

c. Lease units for domestic cargo.

All of the above will come at a cost and although the market will eventually include this cost in the domestic freight cost, it will take time and not be beneficial for the trade to reach the goals in the National Transport Strategy and Sea Change.

The costs for the above alternatives are all in the range of $ 250 – 620 based on following:

a. Domestic operators will have to reposition equipment to a place where they are needed which will cost anywhere between $ 250 – 600 depending on place..

b. Low efficiency in using 20' units compared to 40' high cube units adds a cost per cubic metre which adds about $ 500 to a 40' equivalent load.

c. Lease costs plus repositioning costs back to load port will add up to $ 620 per 40' unit.

In addition, web or other based trading or exchange platforms will improve visibility of available equipment and may possibly increase accessible volumes slightly by showing previously unknown sources of equipment, but are not expected to increase the supply in a major way.

E9. Recommendations.

We recommend that short term (3 years) stepped funding is made available to assist in the change of cost to the market and to reach the goals of trade growth. This funding could take the following forms and is further detailed in Chapter 15:

- Assist wholesale transport operators with the cost of repositioning of equipment from discharge port to the area where it is needed, including leased equipment back to load port.
- Form a pool of either leased or owned units to provide additional equipment to operators when no other equipment can be found.

- Assist with leasing costs for the operators that are prepared to lease additional equipment.
- Any such funding should be limited in time and should be stepped down to zero over a period of three years.
- These measures would allow the market to adjust to the higher cost of equipment supply, encourage the growth of national freight on coastal ships and enable operators to confidently contract with large cargo suppliers, knowing that equipment would be available.

Main Report.

1. Introduction and scope of study.

The overall objectives of the whole project (investigation and implementation) were to:

- Map total imbalance between imports and exports as expressed in containerised units and per container type where possible.
- Map empty container movements on the New Zealand coast as well as domestic cargo being moved in containers on vessels between ports in New Zealand.
- Determine the possible future scope of hubbing operations by international lines and what effect this will have on container availability for domestic cargo.
- Determine what actions can be taken to increase the pool of containers available for domestic coastal cargo.
- Attempt to put a cost to the actions suggested as per above.

The study aimed to provide data that can be used for providing solutions to address issues such as:

- Increase the total share of cargo carried by coastal service providers.
- Reduce future cost increases of moving domestic cargo as well as centralised international cargo around New Zealand.
- Streamline the utilisation of containers for coastal cargo moves in New Zealand.

To form an accurate picture of the container moves as well as the availability of containers, data was attempted to be collected from following sources:

- Port data
- Shipping line data
- Container leasing company data

The data quality in the study was dependent on the willingness of the above groups to supply such data as no mandatory data collection for container moves exist in New Zealand today. The level of detail of the data varied depending on the source and some assumptions have been made where detailed data was not provided. For this reason, the data from the shipping lines and the ports was compared with the aim to increase the quality of the data as well as capture data that may be missing from one of the sources.

As no control data exists in sufficient detail, some extrapolation as well as estimation was part of the data collection and is mentioned where this was the case.

Due to commercial and competitive issues, only port pair data is provided so that no individual shipping line can be identified. In the same manner, all comments and opinions given to the authors are anonymous to avoid any identification of individual lines.

2. Definitions.

For the purpose of this study, following definitions have been used:

International cargo.

This is cargo that has moved to/from a port either directly from/to international port or via a transhipment port in New Zealand.

Domestic coastal cargo.

This is cargo that has moved from one NZ port to another with domestic cargo. This cargo has moved through the gates of both ports and not been transshipped.

Feeder cargo.

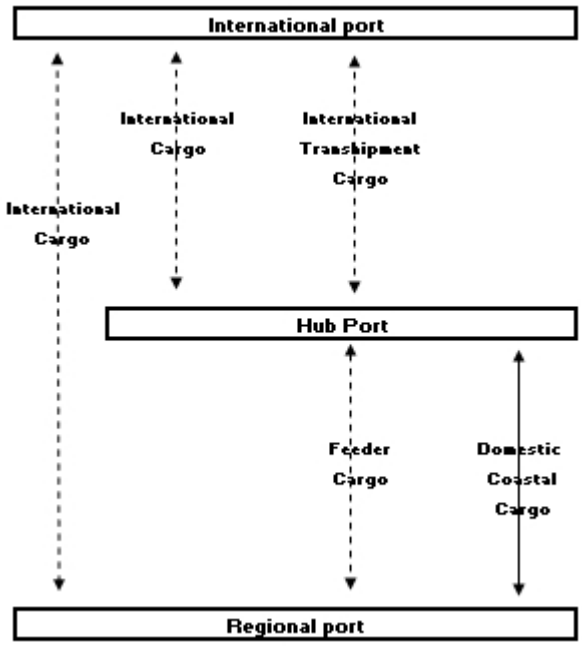
This is international cargo that as part of the voyage has been transshipped in another NZ port but has not moved out through the gates of that port. Feeder cargo is part of the international cargo for the origin or destination port, but not for the transhipment port.

International Transhipment cargo.

This is international cargo which is moved via a hub port to become feeder cargo and moved to or from a regional port.

The various types of moves can graphically be described as follows:

Table 2.1 – Cargo types.



Hub Port.

A port that is used for transhipment of cargo. In the loosest meaning, this can be any port that has transhipment cargo, in reality meaning a port that has positioned itself as a hub in a coastal or regional shipping distribution network.

Regional Port.

A port that is not a major hub port i.e. has most of its cargo movements as either direct international cargo or feeder cargo to/from a hub port.

Empty feeder vs. empty coastal.

As per above, coastal move is cargo that has moved through the gate of the port rather than being discharged by one vessel and later being loaded by another at the same terminal. For empty containers, this becomes even more an issue of definition.

Many ports have container depots on site, which operates as separate entities and often owned and operated by separate companies outside the port's control. If an empty container is moved from the stacking area in the terminal into the container depot, that is in most cases considered a gate move, both for the terminal and for the depot and reported as such to the controlling party, most often a shipping line.

The units may then be moved back into the terminal to be loaded on a vessel for another NZ port where the units are needed. This move will then be considered a coastal move even if it technically could be seen as a transhipment move as the containers have never been moved outside the port area. However, as the various units in a depot, even if situated on port land, are also servicing the needs of cargo interests in the port's hinterland, it is not possible to know how many are going back out on vessels and how many are going out to the areas around the port without a very detailed analysis, on individual container basis.

This data is not available at present and therefore we have made the definition as per above for empty containers as well.

In reality, this most probably inflates the number of coastal moves of empty containers in the tables, some of them which should be seen as feeder moves. This does not makes much difference for the numbers as the units still have to move and might be available for coastal domestic cargo.

3. Data collection.

The data collected was for full calendar year 2008. The data format was as per following matrix:

Table 3.1 Data collection template.

				Disch. Port 1	Disch. Port 2	Disch. Port 3
Load Port	Full	20'	Dry			
			Reefer			
		40'	Dry			
			Reefer			
	Empty	20'	Dry			
			Reefer			
		40'	Dry			
			Reefer			

Port data is collected by ports and is for port pairs per equipment type. For each pair of ports, the numbers for load port and discharge port has been compared and where there is a wide discrepancy, an effort has been made to understand the basis for this discrepancy and correct, where possible.

Following ports were contacted to provide port pair data:

Auckland

Tauranga

Napier

Wellington

New Plymouth

Nelson

Lyttelton

Timaru

Port Chalmers

Bluff

Of the ports contacted, most ports responded with data on a similar level of detail and where that did not happen initially, numbers presented to those ports were later confirmed or corrected. The ports of Whangarei, Gisborne, Westport, Greymouth and Picton were excluded due to their very limited use of shipping containers in domestic trade.

A number of international shipping lines were contacted to discuss the availability of empty containers and to provide data with the aim of collate the port data. For commercial reasons, confidentiality asked for by all participants and was granted in order to receive information. Lines will not be named in the report, neither will it be evident which lines gave information and which preferred not to. As the lines' information was mainly used for

verifying purposes as well as having a dialogue about reasons for and against letting coastal operators use their equipment, the confidentiality will not impact on the result of the study.

A total of 13 international container lines were contacted for discussions and data collection. Of these, 3 failed to respond to the approach, 3 lines responded but did not supply any data, 2 lines supplied verbal numbers and the remaining 5 lines replied with data of a variable level of detail. As there is no compulsion to supply data, the study had to accept the level of data that was supplied.

In addition, some discussions were had with most of the lines that did respond and the reasoning for each line behind lending equipment or not lending equipment for domestic coastal cargo was explored.

A smaller number of container leasing companies were contacted for a similar discussion about container positioning. Again, some expressed a wish for confidentiality and none are therefore named in the report.

A discussion was also had with a domestic coastal operator to confirm shares of volumes carried as well as proportions of the leased container fleet vs. free repositioning of international units.

4. Data accuracy.

This exercise relies heavily on the various data capture routines that are employed in all ports as there is no wide ranging and compulsory data collection in New Zealand today. The detail and direction of these systems vary from port to port which has been evident in the data captured from the ports.

For the purpose of this study and to separate container stocks available for domestic cargo from international cargo that may be transshipped along the coast we asked each port to only report cargo that were domestic coastal cargo and in addition international cargo from and to each port. The intention was to capture all international cargo at the true origin port or final destination port rather at the transhipment port to avoid any double counting and to single out true domestic cargo from the transhipment cargo. The resulting data was supposed to leave transhipment cargo aside as irrelevant for this study.

In reality and due to the inability of many ports to separate domestic cargo from transhipment cargo there is often a volume discrepancy between a hub port like Auckland and Tauranga and regional ports that have some of their cargo coming in or going out via hub ports.

The main reasons for discrepancies are:

- Transhipment cargo.

  While hub ports can easily see transhipment cargo as cargo that is loaded and discharged without going in or out via the gate, regional ports often cannot make this distinction. Cargo is loaded for the port that is given by the controlling party and if that is a shipping line, it may be loaded for another New Zealand port where the unit is transshipped to another vessel for a foreign destination.

  When data is compared between load and discharge ports, this discrepancy can be seen in many cases and can be corrected.

- Inland transport

  There are several inland equipment depots operating which have a large throughput of full and empty containers. Examples are Metroport in Auckland, Te Rapa in Hamilton and Woolston in Christchurch.

  These depots act as staging areas for equipment and distort the straight load / discharge patterns for ports like Auckland, Tauranga and Lyttelton. In Auckland's and Tauranga's case, it is common for containers to enter through one port, moved around according to cargo requirements and then being staged in either Metroport or Te Rapa before being moved out full or empty via the other ports. Part of this cargo and equipment can also be moved in our out via Napier or Port Taranaki.

  The transport between the depots and ports would be via rail or road but no public record exists of these movements, especially per equipment type or for full vs. empty containers.

- Equipment type

  While full containers generally are recorded correctly in the various terminal systems, empty containers are often seen as either 20' or 40' units as it is not relevant for the port to save any data on the type of unit.

Where possible, this has been corrected by comparing with the port at the other end of the chain, but in some cases ports at both ends have similar recording routines and this correction has not been possible. In some of these cases, a discussion with the ports in question has been had and an estimate of the equipment type split has been made. In addition, data from shipping lines have been used to try to estimate the split between types.

Other discrepancies mainly come from following causes:

- Differences in data collection accuracy,
- Destination changes by shipping lines en route between coastal cargo which is common for especially empty containers,
- Mistakes and later corrections by port staff that may cause double counting or missing some data.

Where discrepancies were found which had no logical explanation, following steps were taken to try to correct the data:

- Comparing data between ports in conjunction with each ports total in/out balance.

  For instance, if a port has a total imbalance for one type of equipment and the coastal cargo movements do not correct that imbalance, some manual correction has been done. Some allowances have been made for inland movement between ports.

- Total equipment balance for the country as a whole has been compared with the totals from each port with the assumption that the country as a whole should balance its equipment over a year.

  For instance, if the total exports, full and empty of a certain equipment type are not in balance with the total imports, full and empty, there is some kind of discrepancy in the data and in most cases, some of the port data must be incorrect. Smaller discrepancies have been accepted as possibly being overflows from one year to another.

- Some of the above imbalances come from the inability of some ports to deliverer empty container data showing them as reefers or dry containers.

  When this is the case, the authors have attempted to correct the data based on the findings as per 1 and 2 above.

- Where no other possibility was left to explain discrepancies, an average number between load and discharge port has been used.

Adding up all the possibilities above, it is acknowledged that the resulting data tables are a result of a partly subjective evaluation of the data but with no mandatory data collection in place with recognized formats this is most probably the best outcome that can be had.

The results from this study should be compared with other studies made within the Sea Change environment to identify areas where data reliability may be low.

5. Changes in shipping patterns during the year.

The data available is, due to the nature of the shipping business, a moving target. Some shipping lines change port patterns, enter and leave trades and enter and leave consortia during any chosen year.

The year 2008 was more volatile than earlier years due to the global financial crisis and it is expected that this will continue to be the case in the foreseeable future.

Examples of changes to the national shipping patterns that has occurred during 2008:

- Gold Star Line entered and departed the New Zealand trade. During their short spell in NZ they traded between Auckland, Timaru and New Plymouth and added some volumes to the movements between these ports.
- Tasman Orient Line called Bluff as part of their Asian services for the first half of the year. They carried most of the port's coastal volumes and a reasonable part of the international volumes. Since TOL's departure from the port, those volumes have decreased.
- Timaru had two international lines, Hamburg Süd and Maersk Line calling direct in their US East Coast and Europe services for the first half of the year. For the second half, Maersk Line runs a feeder vessel and there are also direct calls of a combined Hamburg Süd / Maersk service, but as this service also calls Port Otago, volumes for Timaru changed significantly mid year.
- Both CMA CGM and Hapag Lloyd ceased calling New Zealand with their European services via Suez Canal during 2008. Although the volumes are still moving through the various ports, it is likely that some cargo movement patterns have changed slightly over time.
- Pacifica Shipping introduced a coastal vessel between Auckland, Tauranga, Lyttelton and Port Otago towards the end of the year. Some cargo has moved on this vessel but the impact on the overall 2008 volumes has not been significant.
- The "SE Asian VSA - NZX" changed their vessel deployment and streamlined their service from 9 smaller vessels to 5 larger vessels and ceased calling Nelson. As a result, some changes in Nelson volumes would have occurred.

This type of changes is on-going and will continue over time.

6. Equipment balance for total International trade.

The total numbers for all ports show a considerable imbalance for different cargo and equipment types.

Table 6.1 International cargo and equipment numbers (units, rounded to nearest 100)

		Full containers				Empty containers			
		20'		40'		20'		40'	
		Dry	Reefer	Dry	Reefer	Dry	Reefer	Dry	Reefer
Auckland	Imports	103900	5600	75100	5900	1800	13500	400	3600
	Exports	42500	16600	32700	7200	25200		7800	
Tauranga *	Imports	46200	1500	29000	1100	1100	14500	17800	17500
	Exports	50000	17500	57600	11100	10700		5400	
Napier	Imports	5000	800	3100	900	10000	8500	5800	12000
	Exports	19300	9500	7000	12600	1000		2400	
Wellington	Imports	16200	400	6400	200	2100	1500	1900	
	Exports	15400	1800	6500	900	4200		1300	
New Plymouth	Imports	1700		300		800	2500	500	500
	Exports	4500	7200	5100	1800	1400		300	
Nelson	Imports	2600	100	1400	100	200	3100	2500	2400
	Exports	4900	5800	6700	5000	1300	100	600	400
Lyttelton	Imports	26800	900	13600	500	1100	8300	100	3500
	Exports	22800	9300	13100	4400	8200		5500	
Timaru	Imports	1600	100	400	100	3700	5500	2700	1600
	Exports	9400	6800	6500	3000	300	100	200	100
Port Otago	Imports	6100	100	2900	500	2500	12500	3700	1800
	Exports	16000	13400	13000	5400	1000		200	
Bluff	Imports	1400		200		2200	500	1100	300
	Exports	3300	600	1700	400	200			

* Tauranga data includes Metroport cargo

Table 6.2 International cargo and equipment balances

	Full containers (thousand units)				Empty containers (thousand units)			
	20'		40'		20'		40'	
	Dry	Reefer	Dry	Reefer	Dry	Reefer	Dry	Reefer
Imports	212	9	132	9	25	70	37	43
Exports	188	89	150	52	53		24	1
Balance	24	-80	-18	-43	-28	70	13	42
	Combined full / empty (thousand units)							
Imports	237	79	169	52				
Exports	241	89	184	53				
Balance	-4	-10	-15	-1				

The data shows that the New Zealand containerised trade is very unbalanced with exports overshadowing imports except for 20' dry containers. This creates a need for import of empty containers overall while some synergies can be achieved by moving empty containers domestically from supply areas to demand areas. Despite this, and due to different container balances for different shipping lines, the movement of empty containers is greater than the need to balance the imports and exports.

Around 148,000 empty 20' containers and over 105,000 empty 40' containers are moved in or out of New Zealand in 2008, while the actual need is around 80,000 20' reefers and 61,000 40' containers, dry and reefer.

The reason to this imbalance is the geographical distance between import and export ports. Most of the surplus empty containers are in Auckland while the requirements for both empty dry and refrigerated containers are mainly in regional export ports such as Port Otago, Timaru, Nelson, Port Taranaki and to a degree Tauranga. The only port apart from Auckland that show a surplus of dry containers is Lyttelton but the surplus is relatively small.

Some lines supply empty containers into export ports from Australia or other countries, especially those lines that has more than one trade in and out of New Zealand. Such lines always look at a bigger picture when balancing their equipment needs in the Australasia region and it is often cheaper to supply units ex Australia than having to load / discharge in Auckland and possibly have to shift the units en route to the port where they are needed.

7. Coastal containerised cargo and empty container volumes between New Zealand ports.

Coastal cargo in New Zealand is governed by population bases for consumables and to a degree by production centers requiring materials for their production. These two groupings normally coincide, but for some types of production, typically agribusiness productions such as dairy and meat, they may be based away from major population centers.

Examples of this are the main Fonterra plans outside New Plymouth, Timaru and Invercargill and some of the major meat abattoirs.

As a result, most domestic cargo moving via sea is falling into these categories:

1. Distribution of consumables from distribution centers in Auckland
2. Distribution of production materials from the large manufacturing base in Auckland and to a degree in Tauranga. Examples are glass bottles and packaging.
3. Empty containers needed for exports from the large surplus in the Auckland region.

It is important to look at larger regions rather than ports as there is a rather large inland transport component, both for delivering cargo and repositioning empty containers. In the tables where we have summarized the regional balances, we have categorized the regions as follows:

Northern Region: Auckland and Tauranga

Central Region: Napier, Wellington, Nelson and Port Taranaki (New Plymouth)

Southern Region: Lyttelton, Timaru, Port Otago and Bluff

The additional complication of the cargo situation in central North Island and Waikato and the Metroport operation in south Auckland means that the individual port balances can show considerable discrepancies as cargo is discharged in one port; the empty container may be used for cargo some distance from the discharge port and cargo then loaded out from a different port.

However, most discrepancies disappear when ports are grouped as per above as most of the land based transports appear to occur within each of these regions.

The tables below are based on data from load and discharge ports and modified where there is a large discrepancy showing, as described in the chapter Data Accuracy.

Some ports, especially regional export ports will find a large difference from the data supplied as much of what is shown as coastal cargo in their data bases is in reality international transhipment cargo.

Table 7.1 Northern Region ports (units).

				AKL	TRG	NPE	WLG	NPL	NSN	LYT	TIU	POE	BLU
Auckland	Full	20'	Dry		10	14	69		392	4249	14	1454	
			Reefer		2		1		9	84	13	3	
		40'	Dry		18	13	17		1495	7604	580	558	
			Reefer		2				2	304		19	
	Empty	20'	Dry		879	2040	126	1100	913	1315	3440	4870	
			Reefer					2818			700	423	
		40'	Dry		3665	2625	108	3005	350	808	1292	4700	
			Reefer					800	350		1372	1650	
Tauranga	Full	20'	Dry	63			3			2020		82	
			Reefer	17						24			
		40'	Dry	95						2412		189	
			Reefer	55						13		2	
	Empty	20'	Dry	179		195	6	267	3	2070	52	403	
			Reefer					329			50		
		40'	Dry	74		448	20	350		345		13	6
			Reefer					83					

Conclusions:

- Main cargo leg is from Auckland and Tauranga to Lyttelton
- Main empty repositioning legs are from Auckland to regional export ports

Table 7.2 Central Region ports (units).

				AKL	TRG	NPE	WLG	NPL	NSN	LYT	TIU	POE	BLU
Napier	Full	20'	Dry	8	11		32			44		86	
			Reefer	9	8								
		40'	Dry	66	6		2			26		26	
			Reefer	32	4								
	Empty	20'	Dry	185	454		16		143	125		20	
			Reefer						319			52	
		40'	Dry	245	364		1		11	230		333	
			Reefer						596			191	
Wellington	Full	20'	Dry	9	36	6		3		1	39	2	
			Reefer	1		1							
		40'	Dry	8	3	3					1	4	
			Reefer										
	Empty	20'	Dry	9	560	300		40	711	1	4	851	8
			Reefer					119	621				85
		40'	Dry	90	880	458		1077	494	8			
			Reefer					86	478				2
New Plymouth	Full	20'	Dry	2							146	2	3
			Reefer								9	9	
		40'	Dry	6							32	2	
			Reefer	2	1						35	3	
	Empty	20'	Dry	58	1						104	142	
			Reefer	18							20	7	
		40'	Dry	80	15						79	83	
			Reefer	2					65		5	35	
Nelson	FCL	20'	Dry	60	7			2					
			Reefer	5									
		40'	Dry	60	4								
			Reefer	24								1	
	Empty	20'	Dry	53	1	152	9	6			8	167	
			Reefer			32		20					
		40'	Dry	49	101	52		61		2		27	
			Reefer			84		21			60	14	

Conclusions:

- Small cargo volumes in general
- Most moves are empty containers to other regional ports
- Some repositioning of empty back to hub ports exists.

Table 7.3 Southern Region ports (units).

				AKL	TRG	NPE	WLG	NPL	NSN	LYT	TIU	POE	BLU
Lyttelton	Full	20'	Dry	1068	641	121	106	650				15	
			Reefer	95		5	4	1				1	
		40'	Dry	776	26	18	47					4	
			Reefer	21	3	1	7					1	
	Empty	20'	Dry	166	597	1513	467	458	1342			815	60
			Reefer					392	373			31	
		40'	Dry	256	1356	1282	333	1077	974			467	
			Reefer					86	264			7	
Timaru	Full	20'	Dry	26	86	13	16			1		10	
			Reefer	3	3	19						5	
		40'	Dry	22	49	3	1			20		10	
			Reefer	12								2	
	Empty	20'	Dry	22	7	111		26	1			265	
			Reefer					2	9			5	30
		40'	Dry	27	123	35			8			229	219
			Reefer			95			101			41	
Port Otago	Full	20'	Dry	210	121	173	401			47	227		
			Reefer	57	8	33	14			27	14		
		40'	Dry	128	74	29	399			49	93		
			Reefer	15	1	7	16			3	66		
	Empty	20'	Dry	34	90	154	51			61			
			Reefer	7	600	725	70		69	58	550		
		40'	Dry	46	10	225	36			10			
			Reefer	2	160	284	1		237	24	60		
Bluff	Full	20'	Dry		30		152					5	
			Reefer		6		27						
		40'	Dry			2	49						
			Reefer				22						
	Empty	20'	Dry		150					5		90	
			Reefer		53								
		40'	Dry		105								
			Reefer										

Conclusions:

- Most cargo is from Lyttelton north, but much smaller volumes compared to north to south.
- Some supply of empty equipment to other regional ports which can be assumed to be coming from both Australia and domestic cargo moves into Lyttelton.

Table 7.4 Intra Regional coastal cargo (units except where Teu is specified))

				North	Central	South	Total loaded
Northern Region	Full	20'	Dry	73	478	7819	8370
			Reefer	19	10	124	153
		40'	Dry	113	1525	11343	12981
			Reefer	57	2	338	397
	Empty	20'	Dry	1058	4650	12150	17858
			Reefer		3147	1173	4320
		40'	Dry	3739	6906	7164	17809
			Reefer		1233	3022	4255
	Full	Teu		432	3542	31305	35279
	Empty	Teu		8536	24075	33695	66306
Central Region	Full	20'	Dry	133	43	323	499
			Reefer	23	1	18	42
		40'	Dry	153	5	91	249
			Reefer	63		39	102
	Empty	20'	Dry	1321	1377	1430	4128
			Reefer	18	1111	164	1293
		40'	Dry	1824	2154	762	4740
			Reefer	2	1330	307	1639
	Full	Teu		588	54	601	1243
	Empty	Teu		4991	9456	3732	18179
Southern Region	Full	20'	Dry	2182	1632	305	4119
			Reefer	172	103	47	322
		40'	Dry	1075	548	176	1799
			Reefer	52	53	72	177
	Empty	20'	Dry	1066	4123	1296	6485
			Reefer	660	1640	674	2974
		40'	Dry	1923	3970	925	6818
			Reefer	162	1068	132	1362
	Full	Teu		4608	2937	848	8393
	Empty	Teu		5896	15839	4084	25819
Total coastal	Full	Teu		5628	6533	32754	44915
	Empty	Teu		19423	49370	41511	110304

Conclusions:

- 78% of all domestic coastal cargo originates in the Northern region
- 60% of all empties also originates in the Northern region

Identifying the main coastal trade lanes and using the above statistics for 2008 gives the following ranking lists for movement of containers on the NZ coast.

Table 7.5 - Full containers, port pair ranking.

Rank	Load	Disch.	Teu
1	Akl	Lyt	20149
2	Trg	Lyt	6894
3	Akl	Nsn	3395
4	Akl	Poe	2611
5	Lyt	Akl	2757
6	Poe	Wlg	1245
7	Akl	Tiu	1187
8	Lyt	Trg	699
9	Lyt	Npl	651
10	Poe	Tiu	559

Table 7.6 – Empty containers, port pair ranking.

Rank	Load	Disch.	Teu
1	Akl	Poe	17993
2	Akl	Npl	11528
3	Akl	Tiu	9468
4	Akl	Trg	8209
5	Akl	Npe	7290
6	Lyt	Nsn	4191
7	Lyt	Npe	4077
8	Lyt	Trg	3309
9	Wlg	Nsn	3276
10	Lyt	Npl	3176

These tables illustrate the dominant cargo and equipment flows on the NZ coast. If the main Akl / Trg – Lyt cargo is excluded, there are no main arteries on the NZ coast, rather various smaller secondary trade lanes.

The empty container flows should be read in conjunction with international positioning of empty containers into the various ports as they tend to complement each others. Should the call pattern change and the international equipment balance change as we have recently seen in Asia, these numbers would fluctuate, depending on where the lines have their own, individual supply.

8. Equipment and cargo balance for New Zealand regions.

There is a substantial imbalance between discharged units in the northern ports of Auckland and Tauranga where most of the consumption is and the export related ports of regional New Zealand where the largest need for empty containers are.

When calculating imbalances, ideally the inland movement of containers should be taken into account to achieve the best result possible. It is expected that the main study of domestic cargo movements presently underway is looking at this data as it is outside the scope of this study.

Based on the total import / export data and combined with the coastal movements, following tables shows the cargo and equipment imbalances in each of the New Zealand regions examined, as expressed by port load and discharge numbers. We have grouped the various types of transport which occur for each port and within each group of port data can be seen how the equipment flows affect that port.

A positive numbers means that the port has a surplus of the equipment type, i.e. more units are discharged than loaded, and a negative number shows that he port has a demand, i.e. has loaded more that has been discharged.

Table 8.1 Regional container balances – Northern Region (thousand units)

		20'		40'	
		Dry	Reefer	Dry	Reefer
Auckland	International cargo	61	-11	42	-1
	Coastal cargo	-5		-9	
	Int'l empty	-23	14	-7	4
	Coastal empty	-14	-4	-16	-4
	AKL balance	19	-1	10	-1
Tauranga	International cargo	-4	-16	-29	-10
	Coastal cargo	-1		-3	
	Int'l empty	-10	15	12	18
	Coastal empty			5	
	TRG balance	-15	-1	-15	8
Upper North Island balance		4	-2	-5	7

Conclusions:

- Auckland has a large international surplus of dry cargo.
- Tauranga has on the other hand a need for more empty dry and reefer containers to cover exports and draws most of the dry units from the Auckland surplus, loaded as full cargo via the Metroport link.
- Both Auckland and Tauranga are loading coastal dry cargo and in addition, Auckland is loading large volumes of coastal empty containers, dry and reefer.
- Both ports has a demand of reefer containers (as all of NZ has) which are sourced internationally.

The Central region has lower throughput in general, compared to the main import / export ports such as Auckland Tauranga, Lyttelton and Port Otago. That also means that any imbalances are generally of a smaller magnitude and easier to rectify. There is also a certain element of land transport of cargo and equipment between the ports as well as from / to Auckland and Tauranga.

Table 8.2 Regional container balances – Central Region (thousand units)

		20'		40'	
		Dry	Reefer	Dry	Reefer
Napier	International cargo	-14	-9	-4	-12
	Coastal cargo				
	Int'l empty	9	9	3	12
	Coastal empty	4		4	
	NPL balance	-1		3	
Wellington	International cargo	1	-1		-1
	Coastal cargo	1			
	Int'l empty	-2	2	1	
	Coastal empty	-2	-1	-3	-1
	WLG balance	-2		-2	-2
Nelson	International cargo	-2	-6	-5	-5
	Coastal cargo			1	
	Int'l empty	-1	3	2	2
	Coastal empty	3	1	1	2
	NSN balance		-2	-1	-1
Port Taranaki	International cargo	-3	-6	-5	-5
	Coastal cargo			1	
	Int'l empty	-1	3	2	2
	Coastal empty	1	1	2	12
	NPL balance	-3	-2		-1
Central region balance		-6	-4		-4

Conclusions:

- Most of the ports have a demand for empty containers as they are mainly export ports, with the exception of Wellington.
- This demand for empty containers is mainly supplied domestically by Auckland in addition to sourcing internationally.

For the southern region, export volumes are higher and of the ports there is only Lyttelton that has any resemblance of balance.

Table 8.3 Regional container balances – Southern Region (thousand units)

		20'		40'	
		Dry	Reefer	Dry	Reefer
Lyttelton	International cargo	4	-8	1	-4
	Coastal cargo	4		9	
	Int'l empty	-7	8	-5	4
	Coastal empty	-2	-1	-4	
	LYT balance	-1	-1	1	
Timaru	International cargo	-8	-7	-6	-3
	Coastal cargo			1	
	Int'l empty	3	5	2	1
	Coastal empty	3	1	1	1
	TIU balance	-2	-1	-2	-1
Port Otago	International cargo	-10	-13	-10	-5
	Coastal cargo			-1	
	Int'l empty	2	13	4	2
	Coastal empty	7	-2	6	2
	POE balance	-1	-2	-1	-1
Bluff	International cargo	-2	-1	-2	
	Coastal cargo				
	Int'l empty	2		1	
	Coastal empty				
	BLU balance		-1	-1	
Southern region balance		-4	-5	-3	-2

Conclusions:

- Lyttelton is reasonably balanced in its 20' and 40' dry international trade but still have a sizeable coastal import of the same types. This is rectified by shipping 20' and 40' empty containers out internationally and to other NZ ports in need.
- Port Otago is seriously imbalanced in all container types and relies on coastal and international supply of empty containers.
- To a degree this is also valid for Timaru although volumes are smaller. The vicinity to Christchurch makes it easier for some lines to supply and ship out via Lyttelton. Without this closeness to Lyttelton, it is likely that Timaru would have had a larger international imbalance.

9. International shipping lines' approach.

Of the total coastal cargo in Table 7.4, 45,000 teu full containers, it is estimated that existing domestic coastal operators in 2008 were carrying around 15,000 teu and the international carriers the remaining 30,000 teu.

Of the 110,000 empty containers, the international lines carried the absolute majority with maybe 10,000 teu carried by local lines.

In terms of container usage, it can be estimated from numbers given from various lines that about 2/3 of the coastal cargo carried by international lines, 20,000 teu were carried on their own vessels in their own containers, partly by giving them to wholesale operators to use, partly and to a lesser degree by contracting directly with domestic cargo interests.

The remaining 1/3, 10,000 units were available to coastal wholesale operators to use as they see fit. Most empty containers are moving on the lines' own vessels in conjunction with VSA partners.

Lines' approach to using their equipment for domestic cargo vary widely and most lines also have their own reasoning for doing so, or not doing so, depending on their own circumstances.

Following are the most common points raised by lines in the discussions;

1. Line's own network coverage.

   Lines that only cover a small number of ports in NZ still need to service areas outside this network. Due to the nature of contracting with larger importers and exporters, a minimum coverage is normally required and it is expected that the line take responsibility for delivery to and picking up from a number of points which will be regarded as "normal" coverage. This may come at an extra cost to the cargo owners, but the transport legs, including repositioning of empty containers are still required.

   This is especially prevalent for the Canterbury area (Lyttelton and Timaru) for lines that do not call those ports.

2. Line's own cargo balance.

   Different lines have a different trading philosophy. Some lines regard a couple of large export accounts as important to underpin their service even if this requires large numbers of empty repositioning, while others are basing their cargo movement from and to certain ports around balancing the equipment in and out.

3. Equipment turn times.

   Most lines today work with KPI and other steering mechanisms to minimize costs in their equipment fleet. Some of those revolve around how many times each unit can be used for revenue generating cargo during a year and other around how many units needs to be owned or leased to carry out the required work.

   The time a unit is out of this cycle is sometimes regarded as inefficiency and resisted by some of the lines, making them less open to let others use their units.

4. Revenue legs.

   Some lines regard the coastal cargo move as a revenue leg and do not have an internal problem to justify the use of the unit for domestic cargo on their own vessels. These lines will normally not allow their units to be used on other lines' vessels.

5. Repositioning cost minimization.

If a line has a need to reposition a large number of containers on a regular basis, either earning revenue on the unit on their own vessels or letting someone else use the units on other lines' vessels will eliminate the cost of the repositioning, but will in turn increase the unit fleet needed to service their NZ trade.

How this is balanced varies from line to line.

In terms of rating the reasons for giving containers to wholesale operators to use for domestic cargo, following were the most common reasons:

1. Need to get units to ports where they were needed.
2. Repositioning units at a lesser cost.
3. Earning revenue on the units while repositioning

Reasons to not give units to be used for domestic cargo were

1. Balanced trade
2. Increasing turn around time for units, increasing the fleet needed for servicing the NZ trade.
3. Increased risk for damage to units.

It should be recognised that international shipping lines have a secondary interest, if any interest at all, in the coastal business only and that any increase of equipment supply will be a result of changes to their main trade, international cargo.

Therefore, the only viable way to increase this supply source would be to incentivise the lines to give more equipment to the coastal operators to use and to make the supply more visible.

Any incentive would have to be large enough to overcome the possible negatives listed above and are likely to cost more that a leasing or repositioning solution. This is based on the calculation that any unit taken for coastal cargo will be out of circulation for the lines for a time and may have to be replaced by another unit in the fleet. In addition, there has to be liability coverage for damages, possible disputes and reasonable revenue for the line to offset the time the unit is out of circulation.

We do not believe that any incentive to lines will be more efficient or less costly than the help to lease and/or repositioning the units. In addition, it is difficult to quantify the incentive needed for lines as this is likely to be different for different lines and to different ports. We therefore recommend leaving this instrument to the market.

10. International lines' coastal network

Among the international lines that have a suitable network to carry coastal cargo, the approach is quite different. Some embrace the coastal traffic as a part of their business and trade while others carry coastal cargo on a discretionary basis, using the various criteria in Chapter 7 to validate the cargo. Due to the competitive situation, it is unusual for any line to carry and cargo for another international line, even if it is coastal cargo.

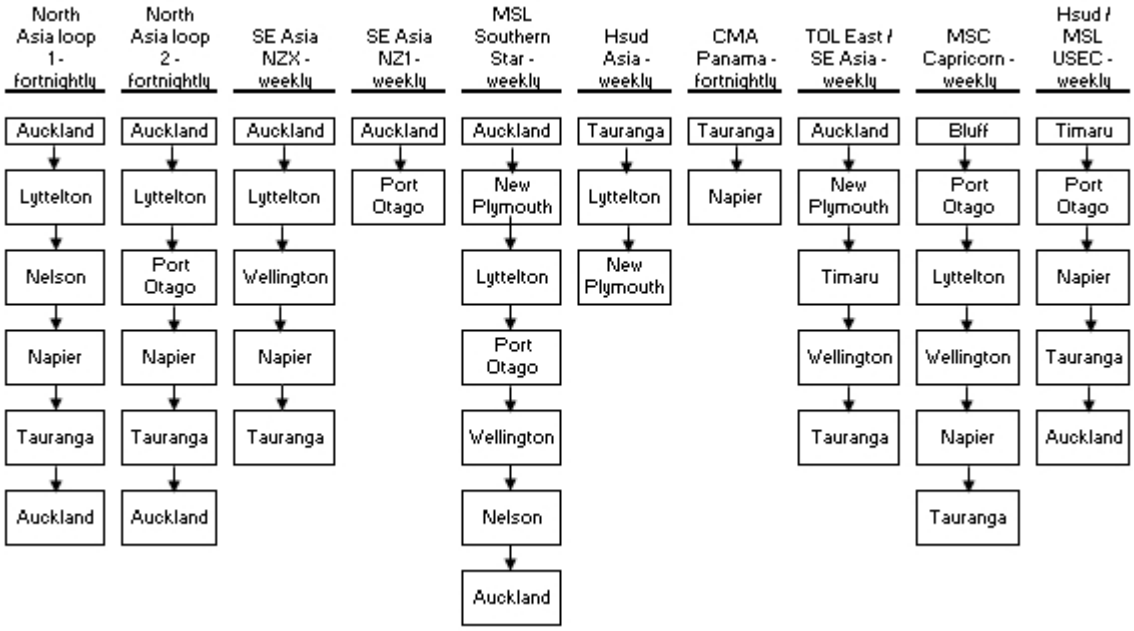
There are also a couple of lines that do not carry any coastal cargo, again using the criteria in Chapter 7 to justify this.

This shows that the approach to the coastal cargo by international lines is not straight forward and depends on each individual line's situation. From this follows that any change to their service offering, whether this is due to port call changes, financial constraints or new directions regarding equipment utilisation, will affect their ability or wish to carry coastal cargo.

It is clearly a byproduct of their normal trade, albeit a successful one for some of the lines.

Table 10.1 shows which service loops presently service various NZ ports in a coastal sense. Many of the loops have several lines participating in Vessel Sharing Agreements and even within some loops, the approach to carrying coastal cargo differs between different lines. Any changes within these VSA to the call patters and any changes to the mix of lines within each VSA will change the dynamics for coastal cargo.

Table 10.1 – International lines' coastal call pattern.



In the main domestic trade lane, Auckland (and partly Tauranga) to Lyttelton, there are only four of the above loops that can offer a weekly service; North Asia combined loops 1 and 2, Southern Star (MSL), NZX SE Asia service and Hamburg Süd's Asia service.
There may, however be other lines that offer equipment to be used for this trade, but any wholesaler in this trade will be limited to the above loops to service this market.

It should be recognised that within the four loops mentioned, there are nine different shipping lines involved, some who offer space and equipment, others that do not.

11. Development of the hubbing concept.

As background, the following is an assessment of the developments of the international shipping services to and from New Zealand. In most trades to and from New Zealand, international shipping companies work in operational consortia, called Vessels Sharing Agreements (VSA), similar to airlines' code share arrangements. This enables several lines to service one market with less operational cost exposure and share space on each others vessels.

1. Asian trades.

There are four major service configurations presently in place:

a. The JKC vessel sharing agreement to Japan / Korea / China with mainly Asian carriers.

   This consortium is presently upgrading to larger tonnage but is keeping the call pattern as the vessels are not too large to fit in existing ports. A future streamlined service could offer the same service with 4 or 5 larger and faster vessels and fewer port calls

   It is possible that this may happen towards the end of 2009 but it may also be delayed by present financial circumstances. This service presently carries most of the domestic cargo on the coast and much of that capability may disappear if port rotations are rationalized.

b. The Hamburg Süd service to China / Japan.

   This is in competition to the previous service and is also carrying a part of the coastal cargo. It is possible that this service may either fold into a rationalized service as per a. above to reduce costs or find additional partners to enhance and enlarge the service.

c. Maersk / MISC / Hapag Lloyd NZ1 shuttle to SE Asia.

   This service utilizes the largest vessels calling NZ (4100 TEU) and is doing so in a "shuttle" service with few ports. It is expected that this service will stay much the same.

d. The NZX vessel sharing agreement between PIL, OOCL, NYK and MOL to SE Asia.

   This service is in direct competition to the above service under c. but is doing so with smaller vessels and presumably higher cost. It is envisaged that this service which is just reconfigured may change again to fewer ports, larger vessels and one vessel less sometime during 2009. This service is also carrying a portion (albeit smaller) of domestic cargo.

2. US Trades.

These trades are divided into US east coast and US west coast services.

a. USWC VSA

   All lines involved in this trade are also being members in the VSA. These vessels only call Auckland and Tauranga and rely on feeder transport to and from other ports.

b. USEC

Here, there are two consortia, the weekly Hamburg Süd / Maersk VSA service and the bi-weekly CMA CGM service. Only the HSüd / Maersk service calls Auckland southbound while both services call several New Zealand ports north bound and calling Australian ports in between. This may or may not see changes next year, but is reasonably streamlined as it is.

3. Europe trades.

There are only two direct services to Europe left, the services listed under USEC above, which both continue to Europe. All others now terminate in Australia or are transshipped in SE Asia. It is likely that at some stage, most if not all Europe services will be via Asia and transship on to the very large vessels presently being built for major shipping lines.

This will mean that the services to SE Asia will most likely require larger vessels and also trigger further consolidation with more lines engaged in likely SE Asia VSA's. This will in turn trigger the larger type of vessels possible around 6,000 – 7,000 TEU, calling NZ and requiring extended feeder services.

4. Summary.

We expect the time frame for development of future hubbing to be within two years. While it is not expected that all lines and all trades will rationalize to the same extent, it is reasonable to believe that up to 50% of the services may become part of a network with larger vessels and fewer port calls.

International hubbing trends.

The assumptions are based on international trends where feeder services are servicing large populations in many countries despite having direct services some years ago.

Examples:

1. The Baltic.

   This area encompasses Western Russia, Poland, Eastern Germany, Estonia, Latvia, Lithuania, Finland and Eastern Sweden.

   The area has no direct containerised shipping links with areas outside northern Europe and is completely serviced via short haul feeder services, mainly to ports like Hamburg, Rotterdam and Zeebrugge/Antwerp.

   Total population base in this area is around 190 million people and although some cargo moves via rail and road connections direct to North European ports, it should be noted that all major international shipping lines have opted for a feeder service to all these countries.

2. Caribbean

   This area is more like New Zealand and South Pacific, but still with a respectable population base, 57 million people if the Central American republics (excluding

Mexico and Panama) are included. Few of these countries have direct international services by major international shipping lines and are serviced via feeders.

3. Far East

   This is by far the most powerful example. This area is serviced by all of the top 20 – 30 lines in the world, have the largest ports, the largest cargo exchange in the world and the largest population.

   Despite this, the trade is extremely streamlined with only a handful of large ports servicing a population base of over 1,900 million people. Most lines only call ports like Singapore, Port Klang, Hong Kong, Shanghai, Kaohsiung, Yokohama, Kobe, Busan and Qingdao. The remainder of the markets is serviced purely by feeders.

In contrast, New Zealand has 9 ports that are serviced weekly by several international lines to the major markets of North America, Asia and Europe, servicing a population base of just 4.5 million. This has been acknowledged by major lines as unsustainable but so far, commercial competitiveness has prevented a change.

We now see a slow change towards servicing New Zealand via some kind of transhipment and exporters are now getting used to the idea of transshipping sensitive cargo in various ports.

Examples of these recent changes are:

1. Maersk discontinuing their NZ – Europe service via US East Coast and transshipping all their Europe cargo in SE Asia. In addition, they are servicing all NZ ports except five with their own feeder service, only accepting Maersk cargo. Maersk is the largest container shipping line in the world.
2. Hapag Lloyd discontinuing their direct Europe service and transshipping their cargo either via Australia or SE Asia. Hapag Lloyd is the 5th largest container shipping line in the world.
3. CMA CGM discontinuing one of their direct Europe service and transshipping via Australia. CMA CGM is the 3rd largest container shipping line in the world.

None of these changes have impacted directly on the general service of NZ ports as there are still a number of lines calling most ports, with the exception of the Maersk feeder service, replacing a number of direct calls. What it has done, however, is changing the development from a head on competition between lines in each port to a trend towards streamlining the service delivery in New Zealand.

For the domestic trade, this may change the environment in following ways:

- There will be fewer opportunities to use international vessels for the domestic trade.
- Many of the empty containers presently shipped directly into regional ports may be landed in hub ports and have to be feedered to export ports. This may take some equipment away from the domestic coastal trade as the needs of the international lines will to a large degree not follow the needs of the domestic trade.
- The use of these empty containers may not be allowed as the hub concept will add to the time the empty containers are in New Zealand until they can be used for cargo.

- Some lines will allow the use of containers for the same reasons as they do today, minimize the costs to bring them to market, while others will prefer to cut down on the time for equipment to spend in NZ. It is not possible to quantify this as the plans for change are not finalized and costed.

Looking the present empty repositioning, including domestic coastal cargo for each regional port, it can be seen that in the area where most coastal domestic cargo is moving, Akl / Trg – Lyt, there is no need for further equipment as the international trade is reasonably balanced.

This can be expected to change with more volume being feedered directly into each port and looking at regional ports, there is presently a large number of empty containers moved into these ports. However, in the port with the largest coastal import volumes, Lyttelton, there is a surplus of 20' and 40' dry containers and it is unlikely that further equipment will be made available for this trade in a hubbing situation.

Areas with a larger need for equipment and especially 40' dry in which most domestic cargo is moving, do not have a large domestic container trade. These are ports like Nelson, New Plymouth, Napier, Timaru and Port Otago.

As a result, we can expect that there will be a large need for empty 40' containers for the domestic trade that cannot be filled by the international imbalance situation. It is difficult to put a number on this development as it is line dependent, but using the number of 40' empty containers presently shipped from Lyttelton to other regional ports, 4,200 during 2008, will give a pointer towards the additional number of units needed for coastal cargo should a major shift to hubbing occur.

12. Coastal cargo development.

There are no studies that have quantified the total domestic containerised trade as performed by the three modes, road, rail and sea. There are total numbers of the domestic trade from the National Freight Study in 2008 and it is estimated that the coastal shipping sector carries about 15% of this volume. As there are large volumes of bulk cargo such as cement and fuels that moves on vessels, it is uncertain how the present containerised volume compares.

What can be said though is that if we relate the Sea Change overall goal to the coastal containerised trade, the volume should double in line with the growth target of 30% on ships in 30 years.

In addition, it is expected to have an annual freight growth of 3% between 2008 and 2020 as per the NZ Transport Strategy 2008 document. The combined effect of these increases means that the coastal trade in full containers will increase from 45,000 Teu in 2008 to about 85,000 Teu in 2020, in effect creating an additional demand on empty containers of initially 3,000 teu per annum, growing to 5,000 teu per annum in 2020, mainly 40' dry units.

There are no signs that there will be any supply of these units from the international shipping community as the main port, Lyttelton, is in balance for its international 40' dry trade. We also assume that imports and exports for ports like Lyttelton will grow at similar paces, not changing the present equipment balance in any major way. Therefore, this additional supply will have to be filled by the domestic trade itself at an added cost.

Table 12.1 – Coastal containerised trade growth in Teu.

Year	Total cont. trade	Trade growth	Coastal volume	Share of total trade
2008	300000	3.0%	45000	15.0%
2009	309000	3.0%	47895	15.5%
2010	318270	3.0%	50923	16.0%
2011	327818	3.0%	54090	16.5%
2012	337653	3.0%	57401	17.0%
2013	347782	3.0%	60862	17.5%
2014	358216	3.0%	64479	18.0%
2015	368962	3.0%	68258	18.5%
2016	380031	3.0%	72206	19.0%
2017	391432	3.0%	76329	19.5%
2018	403175	3.0%	80635	20.0%
2019	415270	3.0%	85130	20.5%

13. Future equipment supply for domestic trade.

The stated need of around 3,000 additional teu per annum is estimated to be almost completely 40' dry, equalling 1500 units. It can also be assumed from discussions with international lines that, once hubbing becomes more widespread, a tighter equipment control will be applied and no extra units will be made available to coastal operators. It can instead be assumed that fewer units will be available due to the present equipment flow.

As an example, one carrier which makes equipment available today is using Lyttelton as a repair and refurbishment area and also earning revenue on moving this equipment to Lyttelton. However, most of the units are not used in the Lyttelton area and is moved to another port from there.

In a hubbing situation, these units would most likely move directly to the ports where they are needed and could create a need for at least additional 4,000 – 5,000 units to be added to the domestic equipment fleet.

We can therefore assume that an additional 1500 x 40' units will be required each year based on trade growth and at least an additional 4 – 5,000 x 40' units will be required once hubbing is becoming more common in the next 2 – 3 years.

For each unit used in a move from Auckland to Lyttelton or any other port, following timing sequence can be used, based on a weekly coastal service:

Week 1	checked, delivered to customer, packed and delivered to port for loading.
Week 2	In transit Akl – Lyt
Week 3	Discharged, redelivered to port for loading empty back to Akl
Week 4	In transit Lyt – Akl

As a consequence, for each unit of cargo moving in this sector, this unit will be tied up for 4 weeks. With some co-ordination between customers, vessel operators and depots, this may be reduced somewhat but is normally balanced by customers holding onto equipment longer than anticipated.

With an immediate need of 1500 40' cargo units per annum, it is assumed that with a slight seasonality, up to 35 additional units of cargo per week may have to be moved. With 4 units needed for each unit of cargo, a stock of at least 140 x 40' units will need to be maintained.

As a general rule, it can be assumed that for every 1000 freight units needed on an annual basis; about 100 actual units need to be available.

In a leasing situation, and using the 4 week scenario above, following approximate costing would apply.

Leasing cost	28 days @ 2.00 US$	@ 0.5	NZ$ 112.00
Depot storage	Akl 1 week / Lyt 1 week	@ $ 1.40 / day	NZ$ 19.60
Depot lifts	$ 22 per lift * 4 lifts		NZ$ 88.00
Maintenance	Average $ 50 / cycle		NZ$ 50.00
Total additional leasing cost per unit and cycle			NZ$ 270.00

For additional 1500 annual 40' freight units, this gives a cost of $ 405,000 per annum. If units can be used in a closed loop between ports, vessels, shipper and consignee, the depot costs could be avoided but this is not certain.

The other additional cost will be of repositioning the equipment to ports where the cargo is available, in most cases Auckland and Tauranga. With present levels of stevedoring costs, it can be assumed that the cost of repatriating one 40' empty container from South Island to North Island will be in the vicinity of $ 300 – 400, depending on the individual stevedoring contracts.

Using a cost of$ 350 per 40' unit, additional 1500 annual freight units gives a cost of $ 525,000, and adding up the two costs will add about $ 930,000 for each additional 1500 annual 40' freight units.

In the present competitive situation, the freight levels has been set by the international lines with empty units available that need to be moved anyway. This is a result of the removal of cabotage some years ago on the NZ coast which allowed the international carriers to carry coastal cargo as part of an international voyage.

This has been a huge cost benefit for New Zealand industry and allowed cargo to be distributed around the country for a much lower cost than was previously the case. The wholesale transport industry that was built up around this system of international carriers with "free" units is very efficient and competitive and has allowed a steady growth of this transport sector.

This growth has now entered a phase where the industry encounter the problem of equipment supply as the future volumes that will need to be moved is larger than the present available equipment pool from international lines.

14. Possible solutions.

There are three ways to increase the equipment pool and all three come at a cost. Eventually, the market will adapt and pay this cost, especially if the hubbing concept gains traction and becomes a reality relatively soon. But there will still be a lag which will affect various operators differently based on how they approach the market.

For the domestic market as a whole, there will be a need for more equipment but some individual operators, including international lines, may still operate only when the equipment can be used for free. This will create a competitive situation where operators with larger volumes, which may need to have to access more equipment to service their existing customer base, will have to pay for that extra equipment without being able to charge for the extra cost while smaller operators may chose to only accept cargo when equipment is available. This will not be beneficial for the domestic trade growth as a whole.

With the low freight rates on the NZ coast as a result of the international competition, there is little possibility for wholesale operators to increase rates in one large step to handle new demands on equipment and we estimate that the timeframe for the market to fully adapt to higher domestic freight costs will be 2 – 3 years. By that time, the market will be able to handle the increased cost structure and the international shipping situation will most likely look different and be more prone to hubbing.

We see the following possible solutions to the equipment supply problems that will arise due to increased volumes.

1. Shift a portion of the cargo volumes from 40' units to 20' units.

   The study shows that there is still a need for 20' empty units to be shifted into individual ports, but not sufficient to handle the total growth of domestic trade.

   The domestic trade may shift a portion of the cargo into 20' containers which are not as cost effective in carrying the typical domestic cargo, which will add cost compared to the present situation. A typical 20' dry container will be able to load about 49% of that cargo that can be loaded into a 40' standard container and 43% of what can fit into a 40' high cube container at about 65% of the sea freight cost.

   However, if light cargo that normally fills a 40' high cube container was to be loaded into a 20' container, the cost per m^3 would increase by about 50%, or close to $ 500 per 40' equivalent load at today's wholesale sea freight prices.

2. Gain access to more of the international line's equipment.

   With the main destination of domestic cargo, Lyttelton, being balanced in terms of equipment needs, there will be a cost involved in moving the resulting empty container from the Christchurch area to where it may be needed again.

   a) Units can be re-distributed from Christchurch to areas in the surrounding regions. The obvious demand areas are Fonterra's plants in Clandeboye (Timaru) and Edendale (outside Invercargill), the Nelson area for its forestry export, and possibly for general requirements in South Canterbury and Otago.

      The cost will depend on the destination of the container but varies between $ 280 – 600.

b) Units can be returned to the place they came from to be either re-positioned overseas or used in the Bay of Plenty / Waikato region which has a demand. This is not a preferred option by international lines as it does not achieve anything for them and increases the time the equipment is out of revenue earning mode.

To do this will therefore incur two types of cost, the stevedoring / freight component to ship the unit back and an incentive to the controlling shipping line to take units out of their normal rotation to use for what can be several weeks. While the freight cost is relatively easy to determine as per Chapter 13, the incentive will be dependent on individual lines and their policy as well as trading patterns.

3. Lease units to use for purely domestic cargo.

c) Each operator can lease units as required to cover their own extra cost. As per calculation in Chapter 13, there is an additional cost of around $ 620 per 40' unit to cover an additional 1500 annual 40' freight units. Although this cost could be averaged out over the total volume any operator is moving, it will still increase the cost which size will depend on the mix of individual operators' equipment fleet

d) There may be a pool of units leased by an independent company with the sole purpose of supplying containers for the domestic trade.

Of the options, it will be as easy and possibly similar or even lesser cost to lease equipment as it would be to return units to where international lines want them, depending on the needs of the lines and incentive needed to get access to the units.

In addition to the solutions to the equipment supply discussed above, there is also an attempt under way to establish a web based container and freight trading site which will visualize the demand and supply situation for both full and empty containers.

The site is meant to work in a similar way to Trade Me and another auction sites where players on the supply side can post either cargo or equipment on the site, together with a required price and players on the demand side can counter bid for the same equipment or cargo in order to move it to where it is needed.

It is not anticipated that the site will change the demand and supply situation in any major way, but it will help to make all players aware of what is available and at what price. It will also help the market to adapt to a situation when a price of moving equipment domestically is becoming more visible and easier to charge to the end user. That will make the move towards a more cost driven equipment market place faster.

15. Recommendations.

Based on the above discussions, we have come to the following conclusions:

1. The growing domestic freight demand will not be matched by growth in "free" equipment supply.
2. Equipment supply may be further diminished should a hubbing solution be the predominant way international lines service New Zealand, which is likely but cannot presently be timed.
3. Good container supply will be crucial to encourage the growth of the sea transport of consumables and manufactured goods in New Zealand, which will in turn be crucial for the industrial sector.
4. The international lines have set the low freight cost level which the rest of the industry will have to work with. This is beneficial as long as "free" equipment can be used and cargo shipped on the lines that supply this equipment.
5. When equipment has to be sourced elsewhere or cargo is to be shipped on other modes of transport such as domestic coastal shipping, existing freight levels are difficult to compete with.
6. The development in international shipping shows that both space and equipment supply may be limited in the future, and that the domestic sector will have to find a solution partly independent of the international lines.
7. In the present environment, there is no inducement to increase freight volumes in line with the National Transport Strategy and Sea Change goals. From a commercial profit perspective, most operators would sit back and wait for the freight buyers to come to them and while that will eventually balance the supply and demand situation, it will slow down the process of achieving the above targets.

For any solution that involves funding, it is important to find a practical application that adheres to following criteria:

1. It is time limited.
2. Need has to be proven
3. There is a step-down mechanism forcing a long term change in the equipment supply market.
4. It is low cost to administer.
5. It is closely linked to the domestic market development.

<u>Based on the above reasoning, we recommend following:</u>

1. Equipment supply should be encouraged in such a way that coastal shipping growth will be assisted rather than restrained.
2. Any such encouragement will have to include a way to level the cost factor of increased equipment supply without changing the competitive situation.

3. Any such encouragement should be limited in time and should be stepped down to zero over a period of three years.
4. We envisage the best way to do this would be to approach the problem in the following way:
    a. Assist wholesale transport operators with the repositioning of equipment from discharge port to the area where it is needed. It will have to be shown that the move is necessary and not an easy way to access funding. It is envisaged that the levels of funding for each of these units would need to be around $ 300 / unit for year 1, $ 200 / unit for year 2 and $ 100 / unit for year 3. After year 3, funding should cease, which will over time force participants to move towards full market funding.
    b. Funding should be limited to the projected increase in coastal shipping to areas where no international demand of more equipment is evident and as per projected freight growth equivalent, 1500 x 40' units if immediate hubbing is not evident, and for an additional number equivalent to units withdrawn from the domestic market, if hubbing becomes prevalent. The mechanism for calculating this will have to be established.
    c. Form a pool of either leased or owned units to provide additional equipment to operators when no other equipment can be found. Some control mechanisms need to be in place to ensure that this is not an easy option and therefore also need to be limited as to the volume provided. Alternatively, funding can be increased to cover part of the lease cost, phased out in a similar way as the repositioning cost under point a.
    d. It is expected that this equipment would be provided free for the first year, at 33% of the cost for year 2 and 66% of the cost for year 3, then at full cost recovery.
    e. Both of these measurements would allow for the market to adjust to the higher cost of equipment supply, encourage the growth of national freight on coastal ships and enable operators to confidently contract with large cargo suppliers, knowing that equipment would be available.
5. The measures described would be costed as follows:

Table 15.1 - Equipment pool costs

	No change in hubbing by International lines				Large change in hubbing by International lines			
	Add'l freight untis	Cost	Share	Total cost	Add'l freight untis	Cost	Share	Total cost
Year 1	1500	$270	100%	$405,000	5500	$270	100%	$1,485,000
Year 2	3000	$270	66%	$534,060	7000	$270	66%	$1,247,000
Year 3	4500	$270	33%	$400,950	8500	$270	33%	$757,000

Table 15.2 - Repositioning costs

	No change in hubbing by International lines			Large change in hubbing by International lines		
	Add'l freight units	Cost	Total cost	Add'l freight units	Cost	Total cost
Year 1	1500	$300	$ 450,000	5500	$300	$ 1,650,000
Year 2	3000	$200	$ 600,000	7000	$200	$ 1,400,000
Year 3	4500	$100	$ 450,000	8500	$100	$ 850,,000

The funding calculated could be justified by using following criteria:

- Assistance in achieving the goals stated in the National Transport Strategy and Sea Change
- Assistance with the market change which is expected as a result of International lines' move towards hubbing.

The practical application of any funding would have to be in a centralized national set-up and each operator would have to apply for funding out of this set-up regularly, possibly monthly, once it can be proved that the cargo moved were qualified for funding. It will be important that any practical application would be streamlined to avoid any additional costs which could easily increase the total cost of the scheme out of proportion.

The set-up would also have to be simple and easy to govern to avoid cost overheads that would increase the total funding needed out of proportion.