



Auckland
Regional Council
TE RAUHITANGA TAIAO

Current and Future Freight Movements in the Auckland Region and GPS Targets

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This document supports the development of the Auckland Regional Land Transport Strategy 2010. It is the culmination of work developed by the Technical Advisory Committee (TAC) to support the Auckland Regional Transport Committee. The TAC includes representatives from all local territorial authorities, Auckland Regional Transport Authority, Auckland District Public Health Board and other technical experts.

Reviewed by:

A handwritten signature in black ink, appearing to read 'Don Houghton', written in a cursive style.

Name: Don Houghton

Position: Group Manager, Transport

Organisation: ARC

Date: May 2009

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Current and Future Freight Movements in the Auckland Region and GPS Targets

Richard Paling

Prepared for

Auckland Regional Council by Richard Paling, Richard Paling Consulting Ltd, 120A
Riddell Road, Glendowie, Auckland

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1 Purpose

This report has been prepared to assist the Auckland Regional Transport Committee with preparation of the Auckland Regional Land Transport Strategy 2010.

2 Introduction and background to the study

2.1 Introduction

There has been increasing attention paid to the movement of freight in New Zealand reflecting its importance in supporting economic development and the desire to achieve more sustainable solutions. Arising from this is a need to manage freight movement more effectively and to ensure that these objectives are supported; this in turn requires a better understanding of the freight sector. To address the lack of information, the Ministry of Transport (MOT), Ministry of Economic Development (MED) and Land Transport New Zealand (now NZTA) commissioned a group led by Richard Paling Consulting to undertake the National Freight Demand Study (NFDS) to investigate freight patterns and develop possible forecasts for the future.

The NFDS was focused on the national position but the information collected can be used to look in more detail at regional flows. This information has been used to investigate current and future freight patterns within the Auckland region.

2.2 The approach used by the NFDS

While earlier freight studies such as the national freight matrix study had focussed on a top down approach looking at the totality of freight movements based primarily from roadside counts, the NFDS took a different method/approach. The NFDS was based on a bottom-up approach considering the freight task associated with the movements of 17 major commodities. These are set out in table 1.1.

The totals derived from this approach were then factored up using estimates of the freight task in general, to give an overall matrix of flows which were then compared against observed traffic counts.

In the NFDS report and in the work described below, use is made of the overall estimates of the freight task and of the position for the 17 commodities for which the information is more detailed and specific.

There are essentially two main ways of measuring the freight task, the tonnes lifted or the tonne-kms travelled. In the NFDS much of the analysis is in terms of the tonnes lifted but for this report some further work has been done examining the position in terms of the tonne-kms travelled.

2.3 Freight flows impacting on the region

The freight flows which potentially impact on the Auckland region can be divided into three main categories:

- movements wholly within the Auckland region,
- movements to and from the Auckland region,
- movements passing through the Auckland region.

Each of these may be affected or managed to a different extent by policy decisions made by agencies within or for the Auckland region, although the extent to which changes are feasible will also depend on traffic characteristics which also differ between these three categories of movement.

In principle, internal movements may be more sensitive to policy decisions and actions taken by agencies within the region. Typically, these movements tend to be very short and are often very dispersed. With the likely policy tools available, and bearing in mind the importance of the freight sector in the economy of Auckland, it may therefore be difficult to achieve changes in modal splits for these movements to help to meet GPS targets except in particular instances, such as the development of inland ports at Wiri and possibly elsewhere.

Trips to and from the region may be influenced by regional agencies for part of their journey, the section within the Auckland regional boundary including one end of the trip; but outside the region, the influence of regional agencies acting on their own may be more limited. However trip lengths will tend to be longer than for intra-regional movements and therefore potentially give more opportunity for diversion away from road to rail or coastal shipping if suitable conditions can be created. Co-operation with agencies in other regions may be important if these opportunities are to be realised.

For through movements, the influence of regional agencies is typically less, although investment in capacity within the region may alter the balance between alternative modes. In the case of Auckland, improvements to the rail network for example, may facilitate increases in rail traffic between Northland and points south. Changes to the highway network, by for example the provision of new capacity or the introduction of road pricing, could alter the balance between the use of road and alternative modes such as rail or coastal shipping. However because of the more limited ability of regional agencies to influence through traffic, this has been ignored when considering the development and way of achieving GPS targets.

2.4 GPS targets

Although there is a need to align with GPS targets for the movement of freight, these have not currently been defined for freight at a regional level. Insofar as guidance exists, it is for the share of rail and coastal shipping in the movement of freight to increase by 2015. For 2040 the targets are to:

- increase coastal shipping's share of moving inter-regional freight from the current 15 per cent currently to at least 30 percent of freight tonne-kms by 2040,
- increase rail's share of moving freight from the current 18 percent to at least 25 per cent by 2040 (Although not specified it is assumed that this relates to tonne-kms. It is also not specified as to whether this target relates to all freight movements or just inter-regional movements, but again has been assumed to apply to inter-regional flows).

While these targets relate to inter-regional freight movements, this note also considers in some detail the patterns of internal freight flows, although as noted above the inherent nature of these means that in practice, the potential for influencing modal split may be limited, although there may be particular opportunities with regard to port traffic as evidenced for example in the development of rail connections to the Wiri Inland Port. There may also be scope to encourage improved efficiency of movement within particular modes, with for example improved back loading and load consolidation.

Regional agencies may also have some influence over through movements and these are also considered briefly.

The forecasts in the NFDS relate to 2031 only and no attempt was made to forecast to a date further into the future. For 2031 an interim position has been assumed for the GPS targets which, based on a linear growth of mode shares between the current position and 2041, would amount to a 23 per cent modal share for rail and about a 25 per cent modal share for coastal shipping. Nationally these represent increases of 29 per cent and 70 to 75 per cent over the current modal shares and for the purposes of this report it has been assumed that similar percentage increases would apply to the current Auckland position.

3 Current freight flows

3.1 Introduction

Information on the current patterns of freight movements impacting on the Auckland region has been primarily derived from the national freight demands study. This considered the detailed movement patterns for a range of key commodities. These were estimated to account for about 70 per cent of the total freight task. Figures from the NFDS cover both the selected commodities and estimates of the total freight task.

3.2 Overall movements

The overall movements of freight impacting on the Auckland region on 2006/07 are summarised in table 2.1. It should be noted that the “through movements” include those by sea as well as those by road and rail.

All movements (million tonnes)		
Type of movement	million tonnes	per cent of total
Internal movements within the Auckland Region	33.7	55%
Movements to or from the Auckland Region	24.0	39%
Through movements	3.9	6%
Total	61.6	100%

Table 2.1: Freight movements impacting on the Auckland region 2006/07

3.3 Internal movements within the Auckland region

3.3.1 Overall movements

Internal movements comprise over half the total in tonnage terms within the Auckland region, although the average trip length of these movements is estimated to be relatively low at about 20-25 kms.

3.3.2 Breakdown by commodity

The breakdown of internal movements by commodity for those identified in the NFDS is set out in table 2.2 and figure 2.1.

Commodity	Tonnes	Percent of total
Dairy Products	0.1	0.5%
Logs and Timber Products	1.2	5.4%
Meat and Livestock	0.0	0.0%
Horticulture	0.6	2.4%
Petroleum	2.4	10.6%
Coal	0.0	0.0%
Aggregate	8.2	36.2%
Limestone, Fertiliser, Cement and Concrete	3.4	14.8%
Other Minerals and Metals	2.0	9.0%
Retailing and Couriers	4.8	21.1%
Total	22.7	100.0%

Table 2.2: Breakdown of internal freight tonnages selected commodities 2006/07 (million tonnes)

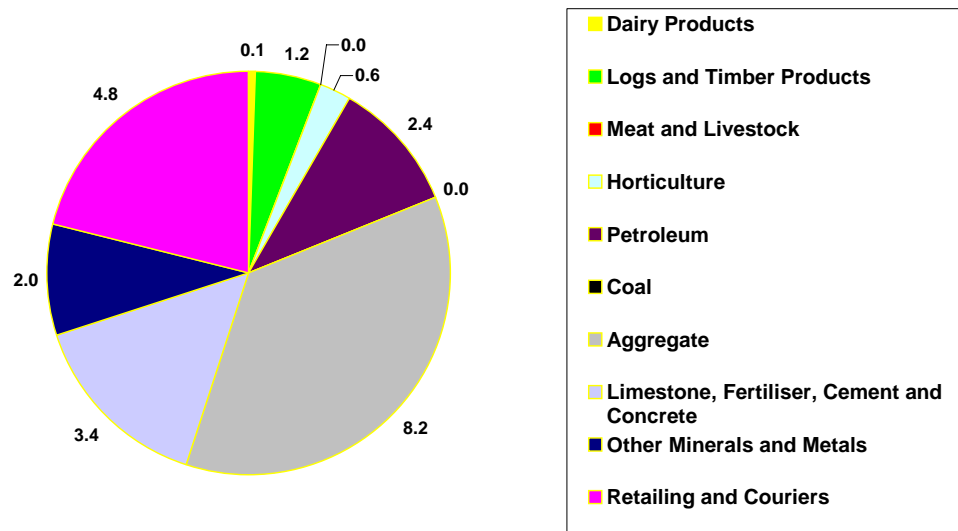


Figure 2.1: Breakdown of internal traffic within Auckland by commodity 2006/07 (million tonnes)

Freight movements within the region are dominated by movements of:

- aggregate,
- retail and courier items,

- limestone, fertiliser, cement and concrete, the majority of which are associated with the construction industry,
- petroleum products from the pipeline served terminal at Wiri.

For all of these in general the potential for any significant diversion to rail is small. However, there may exist some opportunities for movements between the port quayside and an inland port, such as that being developed at Wiri. The possible rail movements for this are estimated at up to about 100,000 TEUs per year, which with an average container load of 12 tonnes, would amount to about 1 million tonnes per year. While this is a valuable shift to rail, this would only represent about three per cent of the total internal traffic in the region. Over the longer term the development of the rail connection to the inland port could encourage increased use of rail for inter-regional movements.

3.3.3 Modal split

In 2006/07 almost all freight moving within the region was carried by road. The volume carried by rail amounted about 45,000 tonnes or 0.1 per cent of the total. There is some movement of freight by sea between the mainland and the islands in the Hauraki Gulf. There is no readily available information on this but the volumes transported are small.

3.4 Movements to and from the region: Tonnes lifted

3.4.1 Overall position

Movements of freight to and from the region in 2006/07 amounted to about 24 million tonnes or about 40 per cent of the total freight impacting on the region. This fairly high figure reflects the importance of Auckland as a major port and distribution hub, and also the levels of demands of its large population which needs to be supplied from outside the region, particularly in terms of aggregate and other building materials.

3.4.2 Flows by commodity

The breakdown of freight transported to and from the region by commodity is set out in table 2.3 and figure 2.2.

Commodity	Tonnes	Percent of total
Dairy Products	1.1	6.7%
Logs and Timber Products	1.6	9.7%
Meat and Livestock	0.2	1.2%
Horticulture	0.5	3.0%
Petroleum	0.8	4.8%
Coal	0.8	5.2%
Aggregate	4.8	29.4%
Limestone, Fertiliser, Cement and Concrete	1.1	6.6%
Other Minerals and Metals	0.8	5.1%
Retailing and Couriers	4.6	28.2%
Total	16.2	100%

Table 2.3: Breakdown on inter-regional freight tonnages selected commodities 2006/07 (million tonnes)

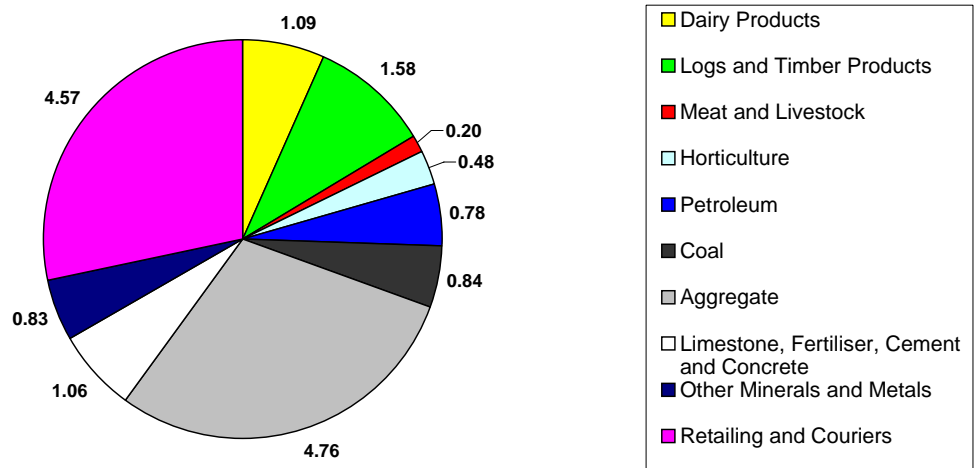


Figure 2.2: Inter-regional freight traffic by commodity for selected commodities 2006/07 (million tonnes)

The high volume of aggregate brought into the region reflects the needs of the construction industry. Current regional sources of supply are becoming exhausted and there are difficulties associated with finding new commercially attractive extraction sites given the high value of land for alternative purposes and of obtaining consents for these. As a consequence substantial and increasing volumes of aggregates have to be imported from neighbouring regions.

The high volume of retail and courier goods reflects the linked roles of Auckland as a port and as a distribution hub, and also the demands generated by the relatively large population in the region. The large flows of limestone, fertiliser, cement and concrete

and of logs and timber products reflect the needs of a construction industry serving a large market.

3.4.3 Flows by corridor

Six main corridors for movements to and from the region have been identified:

- Auckland-Northland
- Auckland-Waikato
- Auckland-Bay of Plenty and Gisborne
- Auckland-Hawkes Bay
- Auckland-Taranaki
- Auckland to areas further south including Manawatu, Wellington and the South Island.

The total estimated flows for each of these are set out in table 2.4 and figure 2.3.

Between Auckland and:	Total freight movements	Per cent of inter-regional flows
Northland	4.9	20%
Waikato	11.6	48%
BOP/Gisborne	3.0	13%
Hawkes Bay	0.5	2%
Taranaki	0.3	1%
South	3.8	16%
Total	24.0	100%

Table 2.4: Total freight movements into and out of Auckland by corridor 2006/07 (million tonnes)

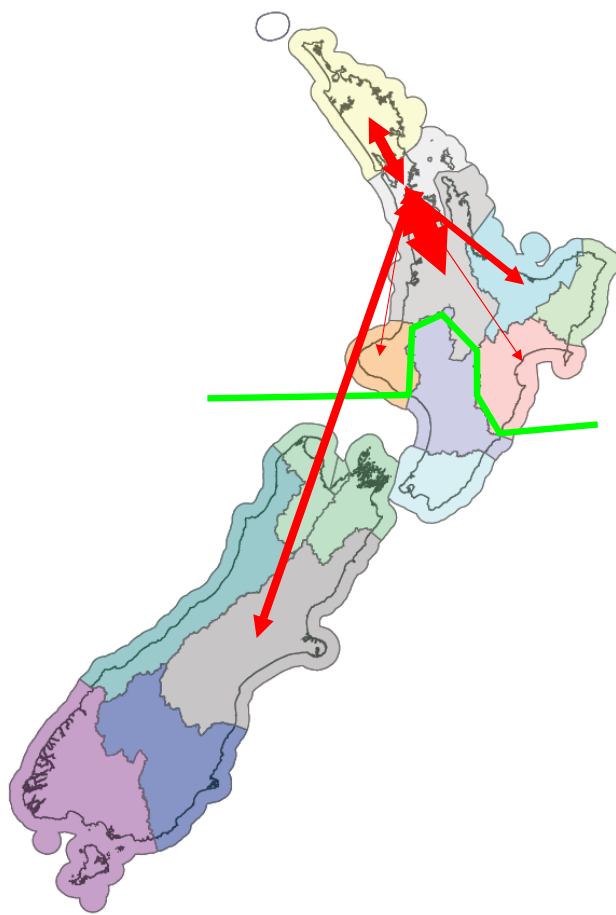


Figure 2.3: Inter-regional freight movements 2006/07 (million tonnes)

The highest freight flows are between Auckland and the neighbouring regions of Northland and Waikato, which between them comprise almost three quarters of the total of inter-regional movements.

The breakdown of corridor flows by commodity is set out in figure 2.4.

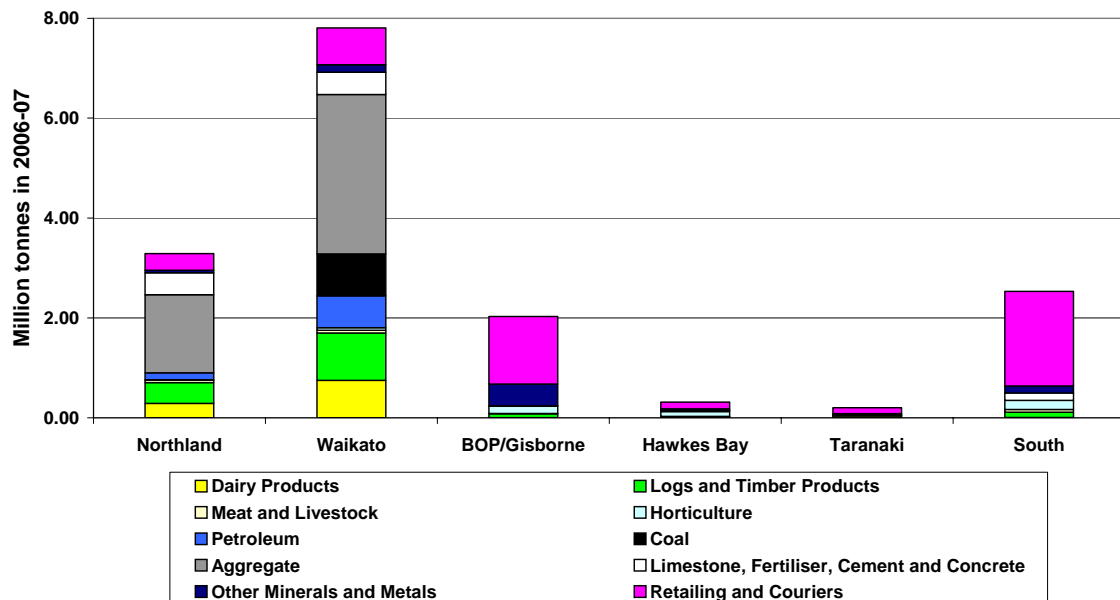


Figure 2.4: Inter-regional freight movements for identified commodities to and from Auckland 2006/07 (million tonnes)

There are particularly high flows between Auckland and the Waikato, which account for almost half the inter-regional flows to and from Auckland. This reflects a number of different movements including:

- movements of aggregates to meet shortfalls in local output in Auckland,
- coal to the Glenbrook Steel Mill,
- petroleum from the Wiri terminal to Waikato,
- goods moving from the port and distribution centres in Auckland to firms and consumers in Waikato,
- exports from Waikato via the port in Auckland particularly of dairy products,
- movements of liquid milk from farms in Auckland to dairy factories in Waikato.

To a smaller extent and excluding petroleum and coal this position is mirrored for Northland.

Flows to the Bay of Plenty and Gisborne which are also fairly substantial are dominated by movements of manufactured goods primarily to and from the Port of Tauranga. Longer distance movements to Manawatu and points further south reflect the importance of Auckland as a manufacturing centre and distribution hub and as a large market for food and consumer goods produced elsewhere in the country.

The modal splits for each of the inter-regional corridors are set out in figure 2.5

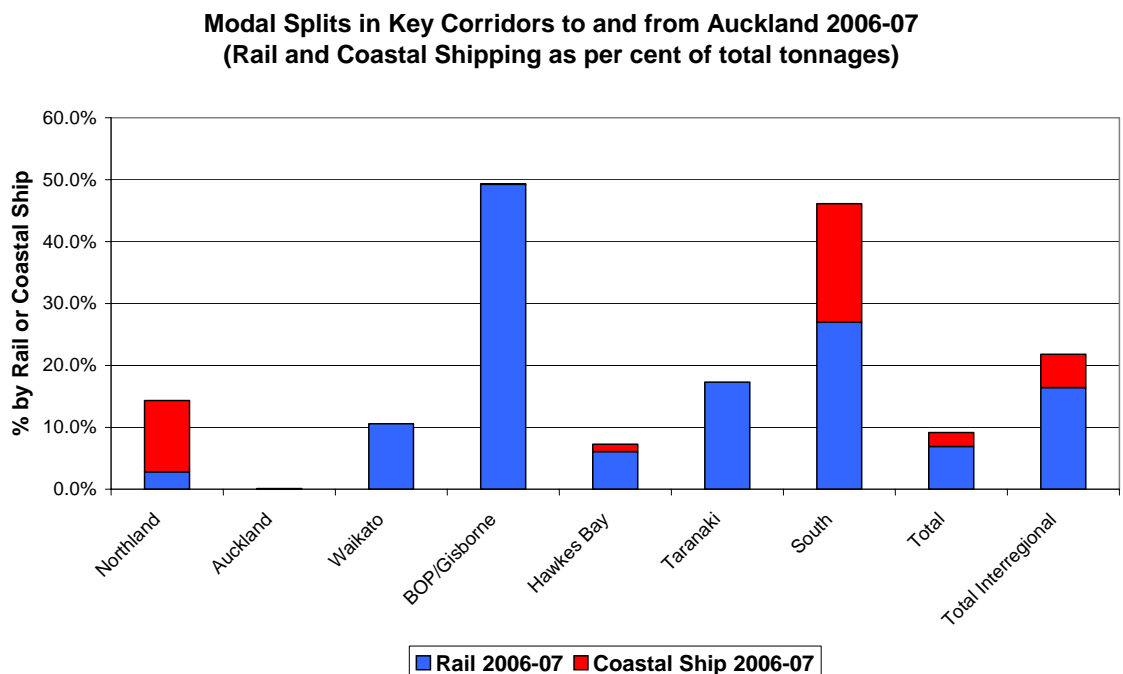


Figure 2.5: Shares of rail and coastal shipping in inter-regional corridors 2006/07 (per cent of total tonnages)

Coastal shipping accounts for a significant part of the tonnes moved for traffic between Auckland and Northland, mainly cement from Whangarei, and between Auckland and the south, consisting of cement from the West Coast and general cargo traffic to urban centres such as Wellington, Nelson and Christchurch. Coastal shipping is handled both on the Waitemata harbour, primarily across the Ports of Auckland facility and on the Manukau Harbour at Onehunga, also owned by Ports of Auckland. Rail has a particularly high share of the traffic between Auckland and Bay of Plenty, reflecting the services from Metroport and also has a high share of the longer distance movements between Auckland and the south.

3.5 Movements to and from the region: tonne-kms

The volume of traffic in each of the corridors measured in terms of tonne-kms rather than tonnes is set out in table 2.5 and figures 2.6 and 2.7. The picture that results is somewhat different to that expressed in terms of tonnes, since the longer distance movements are now given greater weight.

Region	Billion tonne-kms	Per cent of total
Northland	0.81	11%
Auckland	0.77	11%
Waikato	1.41	19%
BOP/Gisborne	0.68	9%
Hawkes Bay	0.20	3%
Taranaki	0.12	2%
South	3.25	45%
Total	7.24	100%
Total Interregional	6.47	89%

Table 2.5: Internal and inter-regional flows by corridor 2006/07 (billion tonne-kms)

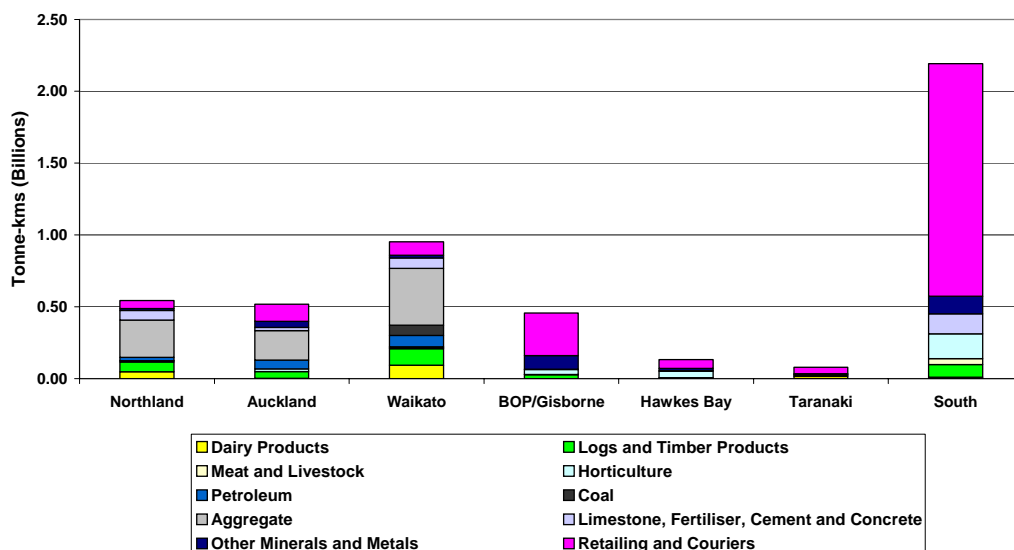


Figure 2.6: Inter-regional freight movements by corridor and commodity for identified commodities 2006/07 (tonne-kms)

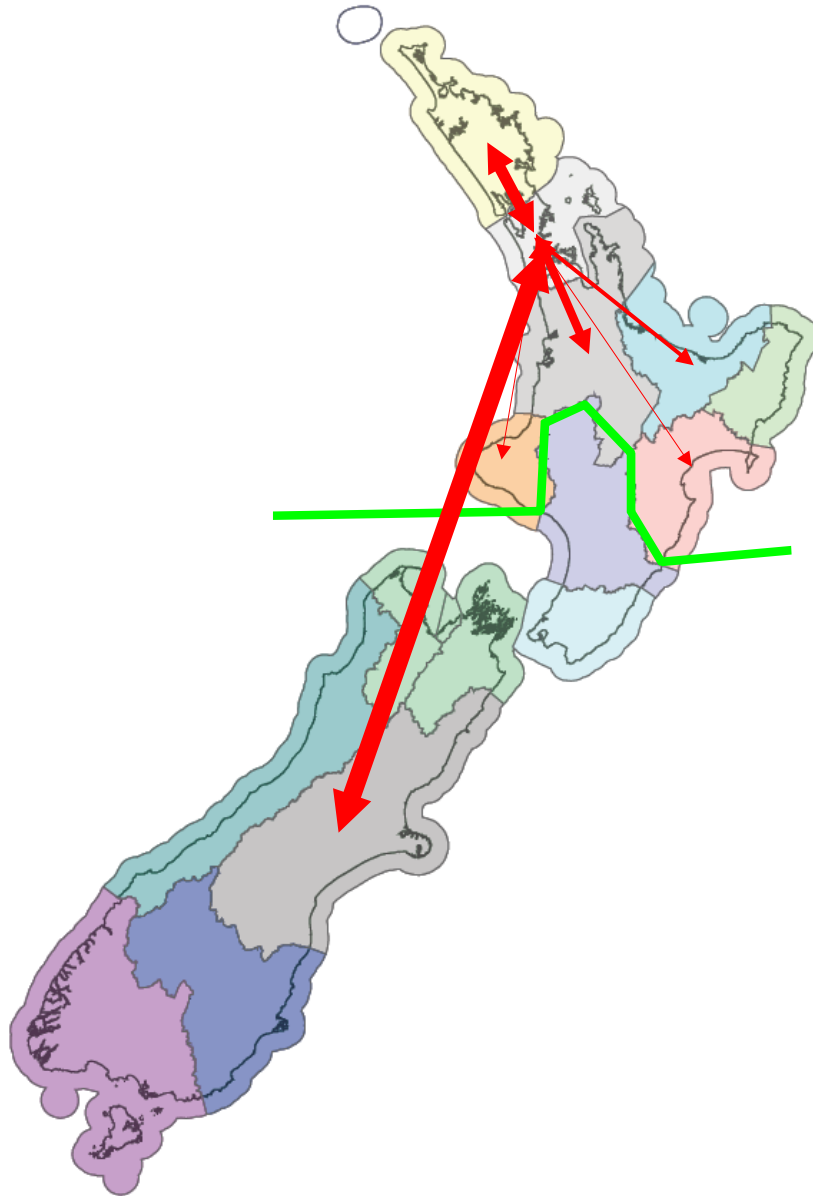


Figure 2.7: Inter-regional flows by corridor 2006/07 (tonne-kms)

In tonne-km terms, much less weight is given to the relatively short distance movements of which aggregates make up a significant part and a much greater weight is given to the longer distance movements to the south containing a high proportion of retail and courier freight.

The modal splits by corridor in terms of tonnes-kms are summarised in table 2.6.

Region	Total Corridor flow (Billion tonne-kms)	Modal Share (Per cent of total)		
		Rail	Coastal Shipping	Road
Northland	0.81	4%	10%	86%
Auckland	0.77	0%	0%	100%
Waikato	1.41	10%	0%	90%
BOP/Gisborne	0.68	49%	0%	51%
Hawkes Bay	0.20	10%	2%	88%
Taranaki	0.12	20%	0%	80%
South	3.25	28%	28%	44%
Total	7.24	20%	14%	66%
Total Interregional	6.47	23%	15%	62%

Table 2.6: Inter-regional flows 2006/07: Modal splits by corridor (tonne-kms)

For the longer distance movements between Auckland and the south, which represent a high proportion of tonne-kms, the shares of rail and coastal shipping are relatively high. As a result, for the internal and inter-regional traffic as a whole as measured in tonne-kms, the overall share of rail is currently having about 20 per cent of total traffic or 23 per cent of traffic excluding purely internal traffic. The share of coastal shipping is somewhat lower, accounting for 14 per cent of all movements or 15 per cent of the inter-regional movements excluding internal traffic.

In terms of the government's GPS targets of 25 per cent for rail and 30 per cent for coastal shipping, taken as referring to inter-regional movements, the shares for the Auckland region are close to the designated figure for rail and somewhat below the target of 30 per cent for coastal shipping.

3.6 Through traffic

Through traffic between Northland and points south of Auckland amounts to almost 4 million tonnes per year. Much of this is represented by petroleum products to and from the Marsden Point refinery to points to the south of Auckland and by cement from the Golden Bay factory at Whangarei, both of which are mainly carried by coastal shipping. Very little through traffic is set out in table 2.7.

Mode	Million tonnes	Percent of total
Total	3.8	100%
Rail	0.0	1%
Sea	2.2	57%
Road	1.6	42%

Table 2.7: Through traffic by mode 2006/07 (million tonnes)

3.7 Movements by pipeline

The analysis above has concentrated on the movement of goods by road, rail and coastal shipping. There are two pipelines which also carry significant volumes into the region. One transport's iron sand in slurry form to the Glenbrook Steel Mill from a mine at Waikato North Head, a distance of about 18 kms, carrying an annual volume of about 1.2 million tonnes. The other supplies refined petroleum products from the Marsden Point refinery at Whangarei to a terminal at Wiri in South Auckland with a branch into the airport. This carries about 2.8 million tonnes per year.

Between the two, these carry a tonnage equivalent to about a sixth of Auckland's inter-regional traffic by road, rail and coastal shipping. Pipelines represent a very efficient way of moving particular commodities and there are proposals to expand the pipeline capacity for the link between Marsden Point and Wiri, in parallel with the expansion of the capacity of the refinery.

3.8 Airfreight

Airfreight is typically composed of high value low volume commodities. International air freight through Auckland airport amounted to about 0.18 million tonnes in 2006/07 but with a value of about \$12 billions. Although there are no comprehensive statistics on domestic air freight, the NFDS estimated that the total volumes of domestic air freight amounted to about 0.1 million tonnes. In terms of the total volumes of goods moved in the region these volumes are very small and their impact on the transport network is therefore relatively limited.

The value of air freight is however very significant and Auckland Airport was the third most important export port by value and the second most important port for imports.

4 Forecast growth in freight movements

4.1 Introduction

The NFDS also makes forecasts of the growth of the freight task for the period up to 2031. As discussed earlier, this is primarily based on forecasts of growth for each of the commodities identified

The forecast growth in freight movements impacting on the Auckland region between 2006/07 and 2031 is set out in table 3.1. For New Zealand as a whole, growth over the period is forecast at about 70 to 75 per cent, with a key driver in this being increases in the demand for aggregates and other building materials.

Type of movement	2006-07	2011	2031	Growth to 2031
Internal movements within the Auckland Region	33.7	36.9	47.4	41%
Movements to or from the Auckland Region	24.0	27.9	50.0	108%
Internal and inter-regional movements	57.7	64.8	97.4	69%
Through movements	3.9	5.6	6.0	54%
Total	61.6	70.4	103.4	68%

Table 3.1: Freight movements impacting on the Auckland region 2006/07 – all commodities (million tonnes)

For the Auckland region the growth in internal and inter-regional movements combined is broadly in line with that for the country as a whole. However, there is particularly high growth forecast for inter-regional movements, reflecting to a large extent the decreasing proportion of the demand for aggregate which can be satisfied from regional sources of supply and increasing reliance on material imported from other neighbouring regions.

The growth in through movements largely reflects the expansion of the refinery at Marsden Point and increases in output from the Golden Bay cement plant at Whangarei. In both cases coastal shipping would be used to carry the increased production.

4.2 Internal movements

The increases in the volumes of internal movements for the identified commodities are set out in table 3.2 and figure 3.1.

	Dairy Products	Logs & Timber Products	Meat and Livestock	Horticulture	Petroleum	Coal	Aggregate	Limestone, Fertiliser, Cement & Concrete	Other Minerals & Metals	Retailing & Couriers	Total	Total Growth from 2006-7
2006-07	0.1	1.2	0.0	0.6	2.4	0.0	8.2	3.4	2.0	4.8	22.7	0%
2011	0.1	1.4	0.0	0.7	2.4	0.0	8.2	4.3	2.0	5.7	24.8	9%
2016	0.1	1.5	0.0	0.8	2.4	0.0	8.2	5.2	2.0	6.7	26.9	19%
2031	0.1	1.9	0.0	1.6	2.4	0.0	8.2	7.5	2.0	8.2	31.9	41%
Growth to 2031	0%	53%	0%	187%	0%	0%	0%	122%	0%	71%	41%	

Table 3.2: Growth in internal traffic by identified commodities 2006/07 to 2031 (million tonnes)

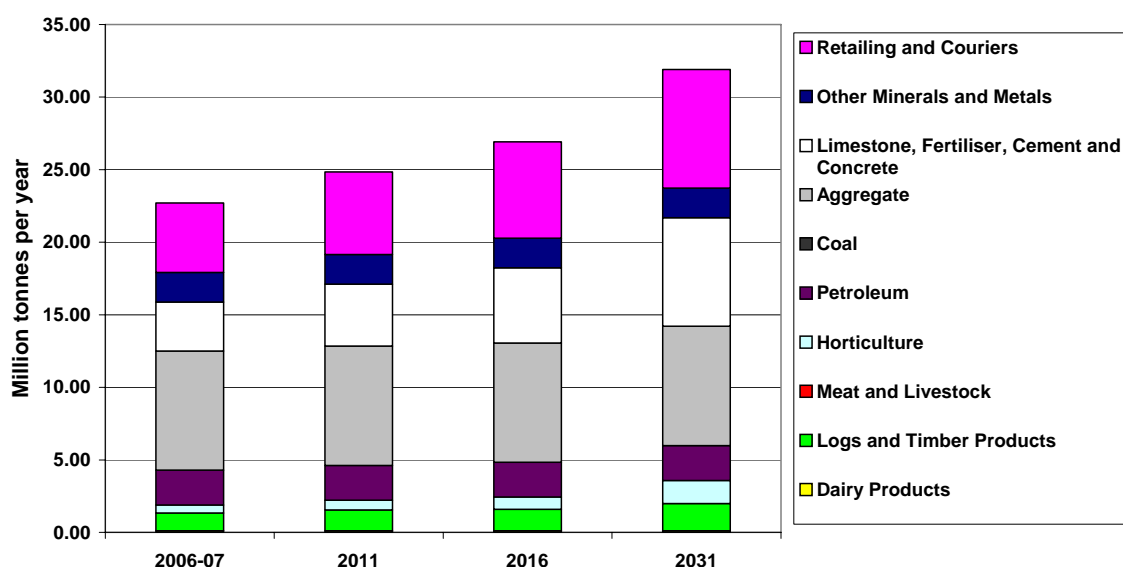


Figure 3.1: Growth in internal freight movements within Auckland 2006/07 to 2031 (million tonnes)

For trips wholly within the Auckland region, the largest growth sectors are horticulture, mainly representing increased exports, limestone, fertiliser, cement and concrete, (mainly supporting the expanding construction sector in the region) and retail and couriers. Although aggregates represent a large share of the total, the forecasts have assumed that the difficulties associated with expanding production will preclude any increase in wholly internal traffic, with increases in demand being met from sources outside the region.

While there is likely to be some growth in rail movements within the Region, reflecting the provision of rail facilities at the Wiri Inland port, the modal share of rail in internal movements will still be only small.

4.3 Inter-regional movements in 2031 – tonnes lifted

4.3.1 Overall movements by corridor

Total inter-regional movements into and out of Auckland are forecast to more than double between 2006/07 and 2031. The flows that result by corridor are set out in figure 3.2.

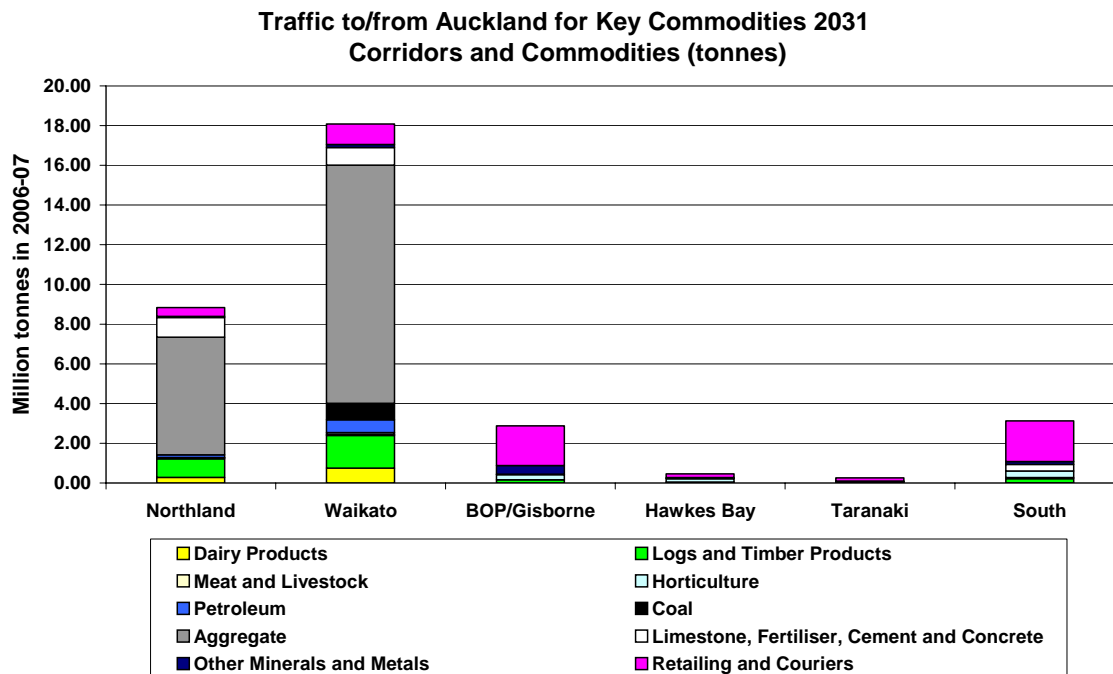


Figure 3.2: Inter-regional flows of identified commodities 2031 (million tonnes)

In tonnage terms inter-regional traffic into and out of the Auckland region is forecast to be dominated by the movement of aggregates, from Waikato and Northland, and it is increases in this which drive the high overall level of growth. The comparison between the position for 2006/07 and 2031 is set out in figure 3.3 and demonstrates the large growth in movements between Auckland and Waikato and between Auckland and Northland.

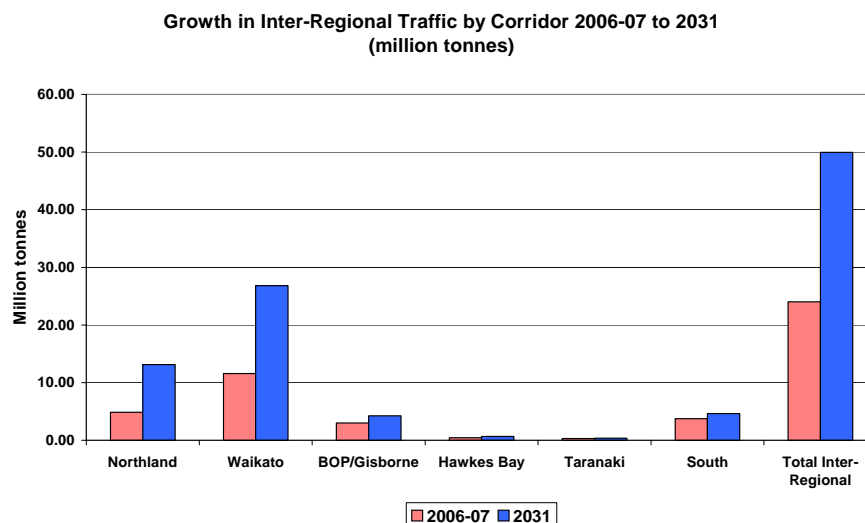


Figure 3.3: Growth in inter-regional traffic by corridor 2006/07 to 2031 (million tonnes)

4.3.2 Modal splits

Forecasts have also been made of the volumes carried by the three main modes and these are summarised in table 3.3 and figure 3.4. These are based on the assumption of “business as usual” and other than the introduction of the emissions trading scheme proposed by the previous government, do not assume any specific interventions to encourage increased use of rail and coastal shipping.

Region	Total tonnes (millions)	Volumes transported (million tonnes)			Modal split 2031 (Per cent of total)		
	2031	Rail	Sea	Road	Rail	Sea	Road
Northland	13.1	0.2	1.1	11.8	2%	8%	90%
Waikato	26.8	1.3	0.0	25.6	5%	0%	95%
BOP/Gisborne	4.3	2.4	0.0	1.9	55%	0%	45%
Hawkes Bay	0.7	0.1	0.0	0.6	8%	1%	91%
Taranaki	0.4	0.1	0.0	0.3	20%	0%	80%
South	4.7	1.7	1.3	1.7	36%	28%	36%
Total Interregional	50.0	5.6	2.4	41.0	11%	5%	84%

Table 3.3: Modal split by corridor 2031 (million tonnes)

It should be noted that even with these limited assumptions, the NFDS noted that the increases in the volumes forecast to be transported by rail and coastal shipping, which were broadly in line with the total growth of traffic and which therefore kept their overall modal shares constant, could be regarded as challenging given the position of very limited growth experienced in recent years.

The ways in which the modal splits are forecast to change over the period are set out in table 3.4 and figure 3.4

Region	Total tonnes (millions)		Modal split 2006-07			Modal split 2031		
	2006-07	2031	Rail	Sea	Road	Rail	Sea	Road
Northland	4.9	13.1	2.8%	11.5%	85.7%	1.5%	8.5%	90.1%
Waikato	11.6	26.8	10.6%	0.0%	89.4%	4.8%	0.0%	95.2%
BOP/Gisborne	3.0	4.3	49.2%	0.1%	50.7%	55.0%	0.1%	44.9%
Hawkes Bay	0.5	0.7	6.1%	1.2%	92.7%	7.7%	1.4%	90.9%
Taranaki	0.3	0.4	17.3%	0.0%	82.7%	19.6%	0.0%	80.4%
South	3.8	4.7	26.9%	19.2%	53.9%	35.6%	28.2%	36.2%
Total Interregional	24.0	50.0	16.4%	5.4%	78.2%	11.2%	4.9%	83.9%

Table 3.4: Changes in modal split by corridor 2006/07 to 2031 (based on tonnes)

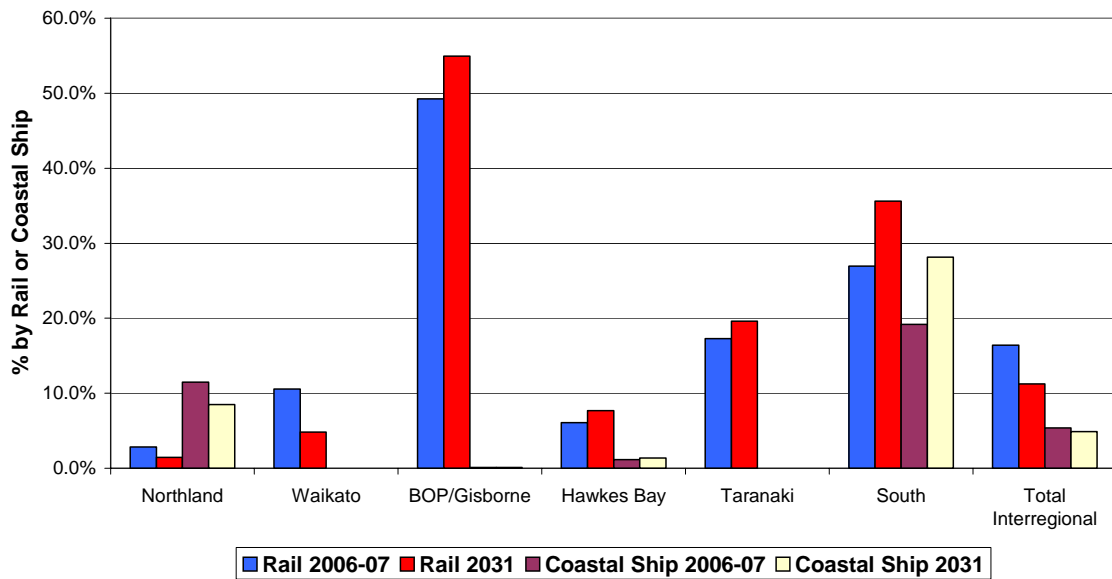


Figure 3.4: Forecast changes in modal splits in inter-regional corridors 2006/07 to 2031

(Rail and coastal shipping as per cent of total tonnages)

While forecasts predict increases in the rail share for movements to the Bay of Plenty and Gisborne and for the longer distance movements further south, overall the effects of these are offset by the declines in the rail share for the larger short distance movements between Auckland and Waikato and Northland. For the Auckland–Waikato corridor, there are significant volumes of rail traffic associated with the Glenbrook Steel Mill. However these are forecast to remain broadly unchanged over the future, and given the overall increases in volumes of freight in the corridor, especially with the growth of aggregates movements, these would therefore represent a decreasing share of the total. Other smaller rail freight movements are forecast to increase but would not counteract the general decline in the rail share.

For Northland there would again be some increases in rail freight mainly related to dairy products and general cargo/NES. However, again these would be small in relation to the overall growth in the corridor and the overall rail modal share is forecast to decline.

For coastal shipping a similar position holds for the Auckland–Northland corridor, with the effects of increases in petroleum and cement traffic being counterbalanced by the much larger growth in total freight in the corridor. This growth would also more than offset the increases in the modal share of coastal shipping for movements further south, giving an overall slight decline in the modal share of coastal shipping overall.

4.4 Inter-regional movements in 2031 – tonne-kms moved

The analysis set out above in this section for 2031 has concentrated on the position in terms of tonnes lifted. In terms of tonne-kms, which takes into account not only the volume of traffic in tonnage terms but also the distance that it is transported, the position is somewhat different.

The breakdown of freight traffic by corridor is set out in table 3.5 and figure 3.5.

Corridor	Total (billion tonne-kms)	Per cent of total traffic
Northland	2.16	18%
Auckland (Internal)	1.02	8%
Waikato	3.37	28%
BOP/Gisborne	0.95	8%
Hawkes Bay	0.30	2%
Taranaki	0.13	1%
South	4.17	34%
Total	12.11	100%
Total Interregional	11.09	92%

Table 3.5: Forecast traffic by corridor 2031 (Tonne-kms)

In terms of tonne-kms, much greater weight is given to the longer distance flow particularly those to and from the south. As reported for 2006/07, these have significantly different characteristics to the shorter distance flows, having a higher proportion of higher value commodities and also a higher proportion of movements using rail and coastal shipping.

The breakdown by commodity is set out in figure 3.5.

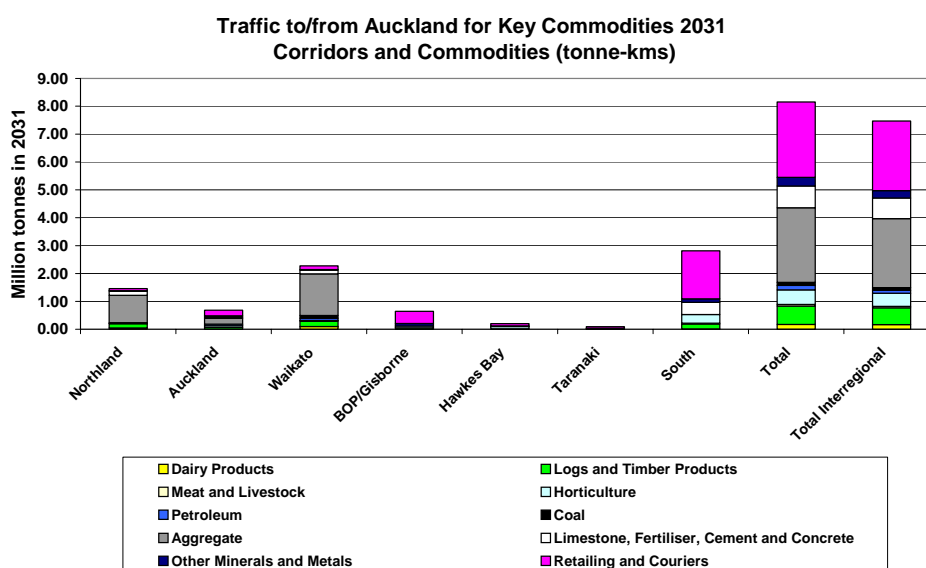


Figure 3.5: Inter-regional freight movements by corridor for identified commodities 2031 (tonne-kms)

The mode splits for traffic measured in tonne-kms are set out in table 3.6.

Region	Tonne-kms (billions)			Per cent of Corridor		
	Rail	Coastal Shipping	Road	Rail	Coastal Shipping	Road
Northland	0.04	0.16	1.97	2%	7%	91%
Auckland	0.00	0.00	1.01	0%	0%	100%
Waikato	0.16	0.00	3.22	5%	0%	95%
BOP/Gisborne	0.53	0.00	0.42	55%	0%	45%
Hawkes Bay	0.04	0.01	0.25	13%	2%	85%
Taranaki	0.03	0.00	0.10	25%	0%	75%
South	1.51	1.78	0.88	36%	43%	21%
Total	2.31	1.94	7.85	19%	16%	65%
Total Interregional	2.31	1.94	6.84	21%	18%	62%

Table 3.6: Modal split by corridor 2031 (tonne-kms)

In considering the movements to or from the south, the modal split in tonne-km terms has a much higher proportion for coastal shipping than when measured in terms of tonnes, reflecting the relatively high volume of traffic to and from the South Island. For inter-regional movements as a whole, coastal shipping is forecast to carry about 18 per cent of the transport task as measured in terms of tonne-kms compared to only about five per cent when measured in terms of tonnes. The rail share of inter-regional movements also increases from 11 per cent to 21 per cent, again emphasising the greater average distances for rail freight as compared to freight transported by road.

The changes between the current modal splits and those forecast for 2031 in terms of tonne-kms are set out in table 3.7 and figure 3.6.

Region	Change in modal split		
	Rail	Coastal Shipping	Road
Northland	-2%	-3%	4%
Auckland	0%	0%	0%
Waikato	-5%	0%	5%
BOP/Gisborne	6%	0%	-6%
Hawkes Bay	3%	0%	-3%
Taranaki	5%	0%	-5%
South	8%	15%	-23%
Total	-1%	2%	-1%
Total Interregional	-2%	2%	0%

Table 3.7: Changes in modal splits 2006/07 to 2031 (per cent of total traffic flows in tonne-km terms)

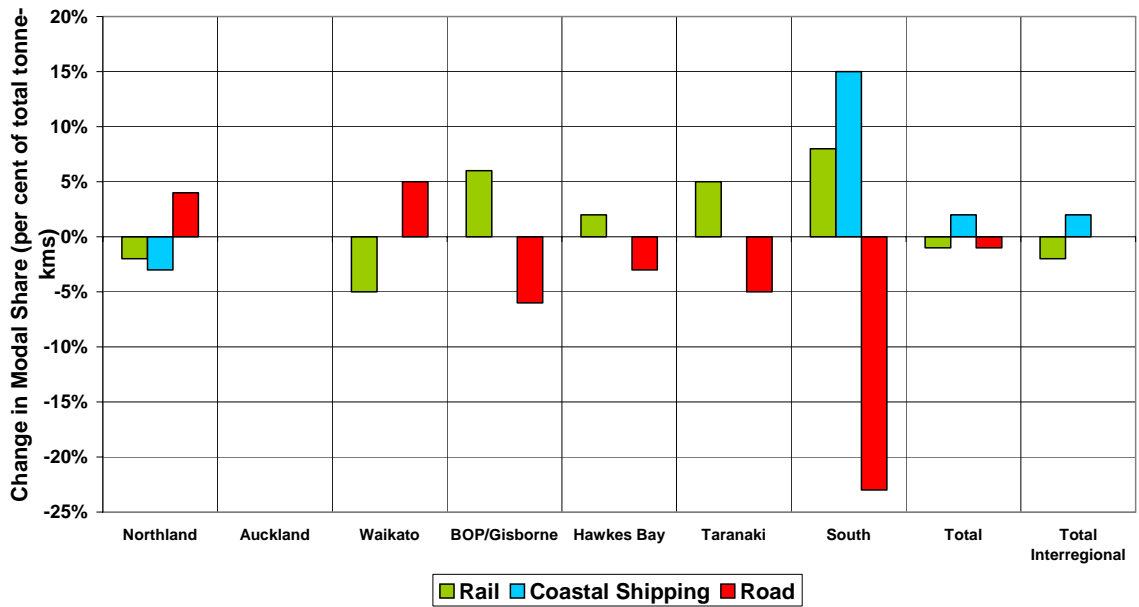


Figure 3.6: Changes in modal share by corridor 2006/07 to 2031 (tonne-kms)

For the shorter distance movements to Northland and Waikato there are forecast to be substantial increases in the volumes transported of which aggregates represent a substantial proportion of the total. Under a business as usual scenario these are assumed to be carried by road and as a result, the shares of rail and where relevant coastal shipping for these corridors are forecast to fall, although this does mask some increase in the volumes carried by these modes. For the longer distance movements, there are increases in the shares forecast to be transported by rail for each of the corridors, with rail capturing a significant part of the total forecast growth. These effects for shorter and longer distance movements broadly cancel out and overall for inter-regional movements as a whole, the share of road is broadly unchanged with rail falling slightly by two percentage points and coastal shipping increasing its modal share by a similar margin.

The way in which the different modes contribute to the growth in tonne-kms is set out in table 3.8.

Region	Growth 2006-07 to 2031 (billion tonne-kms)			Contribution to growth (billion tonne-kms)			Contribution to growth %		
	2006-07 Total	2031 Total	Growth	Rail	C Ship	Road	Rail	C Ship	Road
Northland	0.81	2.16	1.36	0.01	0.08	1.27	0.7%	5.8%	93.5%
Auckland	0.77	1.02	0.25	0.00	0.00	0.25	0.1%	0.0%	99.9%
Waikato	1.41	3.37	1.96	0.02	0.00	1.94	1.1%	0.0%	98.9%
BOP/Gisborne	0.68	0.95	0.27	0.19	0.00	0.08	71.0%	0.2%	28.8%
Hawkes Bay	0.20	0.30	0.10	0.02	0.00	0.08	17.6%	2.8%	79.6%
Taranaki	0.12	0.13	0.02	0.01	0.00	0.01	55.4%	0.0%	44.6%
South	3.25	4.17	0.92	0.59	0.87	-0.54	64.0%	94.7%	-58.7%
Total	7.24	12.11	4.87	0.84	0.95	3.08	17.2%	19.5%	63.2%
Total Interregional	6.47	11.09	4.63	0.84	0.95	2.84	18.1%	20.6%	61.3%

Table 3.8: Growth in tonne-kms by corridor and mode

Of the total growth in inter-regional freight of 4.6 billion tonne-kms between 2006/07 and 2031, road transport is forecast to account for about 61 per cent of the total, rail for 18 per cent of the total and coastal shipping for about 21 per cent. This is illustrated simply in figure 3.7.

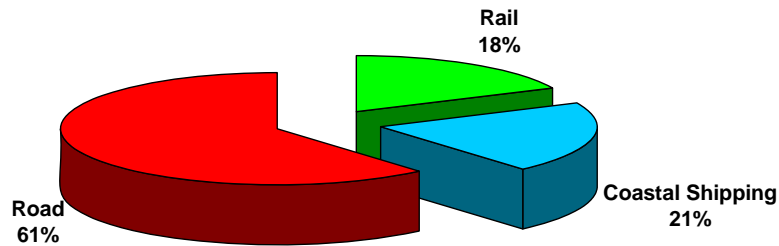


Figure 3.7: Contributions to the Growth in Inter-Regional Tonne-kms by mode 2006/07 to 2031

4.5 Through movements

By 2031 through movements are forecast to increase to about 6 million tonnes per annum. Again this is primarily made up of petroleum and cement, with a relatively high proportion being carried by coastal shipping.

The forecast modal split for the through traffic is set out in table 3.9.

Mode	Million tonnes	Percent of total
Total	6.0	100%
Rail	0.2	3%
Sea	3.5	58%
Road	2.3	39%

Table 3.9: Forecast through traffic by mode 2031

5 Definition of possible GPS targets and potential shortfalls with the business as usual forecasts

It has been suggested in section 1 of this report that an appropriate position for Auckland in relation to the government's GPS targets for rail and coastal shipping by 2031 would be for the rail modal share to be increased by 20 to 25 per cent and the coastal shipping modal share by 70 to 75 per cent; figures that are inline with the growth targeted for the sectors as a whole. The "business as usual" forecasts for Auckland derived from the NFDS would however give some reduction in the rail modal split for inter-regional traffic from 23 per cent to 21 per cent (a decline of about 10 per cent in modal share) and only a modest increase from a share of 15 per cent to one of 18 per cent (an increase of about 15 per cent in modal share for coastal shipping). Both of these fall short of the growth required from the implementation of the government targets.

In terms of tonne-kms, meeting the GPS targets would imply a rail modal share for inter-regional traffic of about 29 per cent representing about 3.2 billion tonne-kms and a coastal shipping share of about 25 per cent representing about 2.8 billion tonne-kms. These can be compared with the BAU forecasts of about 2.3 billion tonne-kms for rail and 1.9 billion tonne-kms of coastal shipping, implying shortfalls of 0.9 billion tonne-kms for rail and 0.9 billion tonne-kms for coastal shipping. Together these shortfalls, totalling about 1.8 billion tonne-kms, represent about 16 per cent of the total forecast inter-regional freight task of the Auckland region in 2031.

The position is summarised in table 4.1.

	Change in modal share in national GPS targets	Regional modal share in 2006/07	Regional modal share in 2031 if GPS targets achieved	Forecast regional modal share on BAU assumptions	2031 billion tonne-kms if GPS targets achieved	2031 billion tonne-kms with BAU forecasts
Rail	+25-30%	23%	29%	21%	3.2	2.3
Coastal shipping	+70-75%	15%	25%	18%	2.8	1.9

Table 4.1: Forecast changes in modal shares and flows and GPS targets

Analysis of the forecast freight patterns for 2031 highlights the issues caused by the substantial growth of relatively short distance inter-regional flows which are difficult to attract to alternative modes, particularly coastal shipping, but which contribute to the overall inter-regional freight task. The rapidly growing movements of aggregates into Auckland are the main contributors to these. As a result, unless there is the opportunity to develop further the movement of aggregates by coastal shipping, the particular circumstances of Auckland with its heavy reliance on movements to and

from the neighbouring regions, one of which (Waikato) does not contain any significant ports, may mean that it may not in practice prove possible to meet the coastal shipping modal split targets unless there are moves to switch traffic from rail to coastal shipping for the longer distance movements.

However, this assumes that there are no radical changes in the patterns of ship calls for vessels engaged in international trade. If these patterns were to change significantly with, for example, direct delivery and collection of imports and exports at a number of ports in New Zealand being replaced with landing or loading cargo at a more limited number of ports, with onward movements by coastal vessel, the share of coastal shipping could, depending on the particular circumstances, increase significantly. If, as a hypothetical example, 30 per cent of Auckland's international trade of 6.4 million tonnes was diverted to Tauranga, and then transported to Auckland by coastal vessel, this would generate about 0.6 billion tonne-kms by coastal shipping, making up a substantial part of the possible shortfall. As an alternative, the diversion to Auckland of vessels that would otherwise dock in the South Island at Lyttelton or Port Chalmers would also generate substantial coastal shipping tonne-kms for the inter-regional movements. Alternatively, if these onward movements were by rail, this could have a significant impact on the rail modal split.

6 Possible ways of helping to achieve GPS targets

6.1 Introduction

Although changes in shipping patterns could have a substantial impact on the modal shares of coastal shipping and potentially rail in inter-regional movements to and from Auckland, there is considerable uncertainty about the direction any changes might follow or indeed if there are likely to be any significant long term changes at all.

Alternative approaches to changing the modal splits have therefore been investigated and these are considered in this section.

Increasing the share for modes other than road will involve commodities in two basic groups:

- Bulk commodities which are currently not carried by the alternative modes, and which will require the provision of specialised handling facilities at both ends of their journeys, and also possibly, the provision of specialised rolling stock.
- Commodities of types which are currently carried by the alternative modes to some extent but for which there may be opportunities for greater market penetration. These would require increases in existing capacity and quality of services and may also require the construction of additional terminals at new locations to supplement existing facilities and to provide better links with the suppliers and customers for these goods. Because of the importance of port-related movements for some commodities there would need to be adequate capacity to support increases in rail hauled freight traffic into and out of the port, both within the port itself and on the rail links connecting to it. In general however such developments can be considered as strengthening existing supply chains rather than the creation of new approaches.

In order to assist the consideration of these changes, the forecast pattern of inter-regional traffic in 2031 in tonne-km terms is set out in table 5.1.

Region	Dairy Products	Logs and Timber Products	Meat and Livestock	Horticulture	Petroleum	Coal	Aggregate	Limestone, Fertiliser, Cement and Concrete	Other Minerals and Metals	Retailing and Couriers	Other/ Not Specified	Total
Northland	0.05	0.15	0.01	0.00	0.02	0.00	0.98	0.15	0.01	0.07	0.71	2.16
Auckland	0.00	0.06	0.00	0.06	0.06	0.00	0.21	0.05	0.04	0.20	0.33	1.02
Waikato	0.09	0.20	0.01	0.01	0.08	0.10	1.49	0.14	0.02	0.13	1.10	3.37
BOP/Gisborne	0.00	0.05	0.00	0.06	0.00	0.00	0.00	0.00	0.09	0.43	0.31	0.95
Hawkes Bay	0.00	0.02	0.00	0.08	0.00	0.00	0.00	0.01	0.02	0.08	0.10	0.30
Taranaki	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.04	0.13
South	0.01	0.18	0.03	0.31	0.00	0.00	0.00	0.43	0.12	1.72	1.36	4.17
Total	0.17	0.66	0.06	0.52	0.16	0.10	2.68	0.79	0.31	2.70	3.95	12.11
Total Interregional	0.16	0.60	0.06	0.46	0.10	0.10	2.47	0.74	0.27	2.50	3.62	11.09

Table 5.1: Forecast patterns of inter-regional movements in 2031 (billion tonne-kms)

6.2 Movement of commodities in bulk

6.2.1 Introduction

The main commodities which are forecast to be handled in bulk inter-regionally are:

- cement – mainly handled by sea,
- petroleum – mainly handled by coastal shipping and pipeline, with onward distribution from Auckland to Waikato by road,
- coal – mainly transported by rail from Huntly to Glenbrook,
- steel – mainly transported by rail from Glenbrook to Tauranga,
- aggregates – transported by road and steel transported by rail.

For cement, coal and steel and for the movements of petroleum into the region, rail and coastal shipping carry almost all the traffic and so the potential for further diversion to these modes is effectively very limited. However, from a review of the types of commodities which are carried by rail elsewhere and the forecast patterns of trade moving inter-regionally to and from Auckland, possible new bulk commodities for rail would include aggregates from Waikato and possibly Northland and petroleum products from Wiri to the Waikato region. At present neither of these products is carried by rail to any significant extent.

6.2.2 Aggregates

The demand for aggregates and other building materials in Auckland is forecast to increase substantially over the period to 2031, with a substantial increase in inter-regional movements. Aggregates are handled by rail in large quantities overseas and there may therefore exist a potential opportunity for their movement by rail in New Zealand. The value of aggregates is however low and the product is therefore unable

to sustain high transport costs. Any rail operation would therefore have to provide a low-cost service, involving dedicated trains between a limited number of loading and discharge points. While this has not been investigated in detail, it is anticipated that this would provide rail access into the aggregates mining site and bulk train operation into one or more large distribution centres within the Auckland region. These would be conveniently located to support main construction areas and with easy access to the strategic freight network or the main state highway network.

Rail served distribution centres for aggregates and building materials exist in other countries overseas and an example of one of these in south London in the UK, handling about 0.3 million tonnes per year is set out in figure 5.1.



Figure 5.1: Rail served aggregates distribution site in London UK

To provide a high level of sustainability benefits there would probably need to be several of these to minimise movements by road, and possible sites would need to be identified and their operational, financial and economic feasibility assessed. There are likely to be considerable challenges in establishing such sites, although the site in figure 5.1 is located close to residential areas. If however a third of the inter-regional

demand for aggregates could be satisfied in this way, this would represent about 0.6 billion tonne-kms transferred to rail and would make up a large part of the shortfall between the BAU forecasts and the assumed GPS targets in the rail modal share.

Any aggregate distribution centre could probably usefully be combined with a concrete plant. This again would reduce the volumes of material transported by road although it would have implications for the site area required and the volumes of traffic which might be generated.

The transport of aggregates could possibly be combined with the movement of lime for use as a building material some of which is currently transported by rail from Waikato to the Glenbrook Steel Mill.

There may also be some opportunities for increasing the volumes of aggregate handled by coastal shipping building on the present operation between the Coromandel and West Auckland, although the scale of this is currently only very small. The feasibility of this, or the rail based operations, would depend on the financial viability of the operation and the extent to which funding might be available to overcome any shortfalls in revenues.

6.2.3 Petroleum products

To a large extent the bulk distribution of petroleum products is undertaken by sea, but an opportunity may exist for the movement of these from the pipeline terminal at Wiri to a regional terminal in the Waikato for onward transport by road to individual filling stations and other customers. This would however require the provision of a rail connection to the Wiri terminal and also the provision of rail terminal to serve the Waikato, probably in the Hamilton area. It would also require the provision of specialised wagons to handle the traffic.

6.3 Other non-bulk commodities

6.3.1 Introduction

The main other commodities flowing into and out of the Auckland region include:

- milk and dairy products,
- logs and timber,
- meat and livestock,
- horticultural products,
- other minerals and metals,
- retailing and courier movements,
- other non-specified commodities.

The potential for rail or coastal shipping to increase their share of these traffics is considered each of these separately.

6.3.2 Milk and dairy products

Liquid milk is transported from the farms in the Auckland region and transported to processing plants in Northland and Waikato. Because of the short distances from a number of dispersed locations transport by rail is impractical. Manufactured dairy products are transported into the region mainly for export. Rail has a relatively high share of this market, and some increase has been assumed for the period to 2031 giving a total rail share of about 60 to 70 per cent. While measures to encourage the use of rail may increase this share, the volumes forecast to be transported by road are only small and any increase in rail traffic is therefore likely to be limited.

6.3.3 Logs and timber

There is some movement of logs and timber into and out of the Auckland region, although the flows are mainly sawn timber and boards inbound as an input to construction and manufacturing activity. The main flows are from Northland and Waikato and the relatively short distances travelled and the dispersion of destinations in Auckland may limit the scope for diversion to rail. In addition, in many instances, the product can be easily damaged on transshipment and so movements which involve more than one mode are often avoided. While improved general rail services would probably attract some additional traffic, the volumes which might shift to rail are again probably fairly limited.

6.3.4 Meat and livestock

The nature of livestock transport means that movements to and from the Auckland region are all undertaken by road, and this position is unlikely to change. Movements of meat products, typically in containers for export are transported by road and rail. Whereas, nationally rail has a share of about 54 per cent as measured in tonne-km terms, and an even higher share for South Island movements, for movements into Auckland the share is much lower at about 25 per cent. In part this may reflect shorter haulage distances, but may also reflect the quality of service offered by rail in the recent past.

On the assumption that an improved level of service can be provided, and with general improvements to rail services, it is likely that the Auckland share can be improved to a figure much closer to that achieved nationally although because of the small size of this sector for North Island movements to Auckland, any increase in rail tonne-kms may be only small.

6.3.5 Horticultural products

Horticultural products represent a fairly important volume of traffic both into and out of Auckland. At present the volumes transported by rail are relatively small, but the forecast rapid growth in the sector with a large growth in the volumes exported, could provide opportunities for rail. For movements outbound from Auckland there is a need to establish suitable facilities for transferring locally grown produce onto rail at locations closer to the growing areas, especially to the south of Auckland, to support export movements and longer distance internal movements by rail or possibly coastal shipping. For inbound movements, there may need to be an expansion of the current intermodal facilities within the urban area to serve the local population and manufacturing, and for export movements.

6.3.6 Other minerals and metals

For other minerals and metals, the main element is steel and aluminium, of which about half is transported by rail. The scope for significant further transfer to rail is therefore probably limited

6.3.7 Retail and courier and other commodities not specified

While specific forecasts have not been made of the modal splits for these commodities, a high proportion of the traffic in tonne-km terms is over longer distances for which rail and coastal shipping are predicted to have substantial shares of the total in 2031. In general, movements by rail will require the intensification of the types of intermodal facilities currently in existence in Auckland and the provision of sufficient track and rolling stock capacity. Operations such as these may also be aided by the introduction of forms of inter-modal transport such as swap bodies (a form of light container particularly suitable for exchange between road and rail) not commonly seen in New Zealand. This may give greater flexibility and efficiency in the movement of food and fast moving consumer goods (FMCG) and similar commodities for the retail sector, but may require the development of new handling techniques and equipment. The ARC may have a particular role in encouraging the dissemination of information and best international practice in these areas.

The position for each of the commodity groups identified is summarised in table 5.2.

Commodity	NFDS BAU Forecasts			Potential for transfer (billion tonne-kms (btk))		Facilities required	Other issues
	Volume in 2031 Interregional Movements (billion tonne-kms)	Rail share	Coastal shipping share	Rail	Coastal Shipping		
BULK COMMODITIES REQUIRING SPECIALISED FACILITIES							
Aggregates	2.47 from Northland and Waikato.	Nil	Very small	0.6 btk mainly from Waikato Potential for movements from Northland probably much more limited.	May be some potential but would require further scoping.	Rail <ul style="list-style-type: none"> Rail connections to producing sites. New specialised distribution centres or centres serving the Auckland region. Provision of specialised dedicated trains. Possible need for track upgrade north of Auckland if aggregate to be shipped by rail from Northland in large quantities. Coastal Shipping <ul style="list-style-type: none"> Connections to producing areas and development of suitable loading facilities. Distribution centre or centres within Auckland with good road access. Possible use of Onehunga. 	<ul style="list-style-type: none"> Need to tie in with Regional Aggregate Strategy under investigation. Economic and financial viability of options. Identification of suitable sites for new depots for rail or coastal shipping services. Provision of supporting infrastructure to support high road flows. Consenting issues. Distribution centres could usefully be linked with concrete plants, especially at Onehunga.
Petroleum	0.08 to Waikato	Nil	Nil	May be some potential.	None	<ul style="list-style-type: none"> Rail connection to pipeline terminal at Wiri. Rail terminal in Waikato to receive product. Provision of appropriate rolling stock. 	<ul style="list-style-type: none"> Identification of suitable site for terminal in Waikato – probably in Hamilton. Economic and financial viability of options.
OTHER NON-BULK COMMODITIES							
Milk and Dairy	0.16 mainly to and from Northland and Waikato.	Liquid milk – nil Dairy products – 70 per cent.	Nil	Current rail share high at about 65-70 per cent but may be further limited opportunities.	None	<ul style="list-style-type: none"> Possibly some expansion of current terminal facilities. Need to ensure sufficient capacity for export traffic. 	
Logs and timber	0.60 2/3 from Northland and Waikato and 1/3 from further south.	Small. Product is mainly sawn timber and boards for Auckland manufacturers and consumers and so is going to a number of destinations. Also damages easily and multiple handling to be avoided.	NA	Limited (say 0.1 btk).	Limited	<ul style="list-style-type: none"> Some expansion of current terminal facilities. 	

Meat and livestock	0.6	Livestock – Nil. Meat products-25 per cent through Auckland.	NA	Some potential since share for Auckland is low in comparison to share achieved elsewhere of 50% or more.	Limited	<ul style="list-style-type: none"> Improved quality of services. Some expansion of current terminal facilities and possible refurbishment and reconnection of private sidings. 	
Horticultural products	0.46 with high proportion of longer distance movements.	Small	NA	Some potential (0.1 booklets?).	Limited	<ul style="list-style-type: none"> Possibly new loading points adjacent to producing areas in south of region. For inward movements would need additional capacity either as expansion of existing facilities or as new purpose built distribution centres. 	
Other minerals and metals	0.27	High – includes steel from Glenbrook to Tauranga.	Movement of aluminium by sea via Tauranga	Limited since rail currently has high share and total volumes small.	Limited since coastal shipping already used for transport of aluminium.	<ul style="list-style-type: none"> Some expansion of current terminal facilities. 	
Retail and couriers and other commodities not specified.	2.5 Retail and couriers. 3.6 Other.	High for longer distance movements to south and for links between Auckland and BOP.	High for longer distance movements.	Potential for transfer from road limited because of relatively high forecast share for rail for longer distance movements and dispersal of locations for shorter distance movements. May be some scope for improving rail share in Auckland/BOP corridor which is mainly port related.	Potential for transfer from road limited, but may be some opportunities for intermediate movements to Hawkes Bay and Taranaki if coastal shipping services developed.	<p>Rail</p> <ul style="list-style-type: none"> Expansion of existing types of facilities to handle possible increases in demand. May need new facilities in receiving areas. 	Possible introduction of new methods of handling including swap bodies.

Table 5.2: Potential for transfer to rail and costal shipping: Summary of findings

7 Overall assessment

7.1 Potential for diversion to rail or coastal shipping

The volumes of freight transported into and out of the Auckland region are substantial and are forecast to increase sharply over the future. This will reflect the general growth in the area and its role as a key manufacturing and distribution hub for New Zealand. It also reflects the growing need to import substantial volumes of aggregates and other building materials as demands in the region grow and local sources of supply are not able to expand to keep pace with this increasing demand. As a result inter-regional traffic is forecast to grow as part of the overall freight task impacting on the Auckland region (internal plus inter-regional traffic) from 41 per cent (24 million tonnes) to 51 per cent (49.9 million tonnes) in tonnage terms and from 89 per cent (6.5 billion tonne-kms) to 91 per cent (11.1 billion tonne-kms) in tonne-km terms. In line with this growth of freight, the inter-regional modal shares in tonne-kms terms are predicted to decline from 23 per cent to 21 per cent for rail and to increase slightly from 15 per cent to 18 per cent for coastal shipping.

While specific GPS targets have not yet been defined at a regional level for the shares of rail and coastal shipping in inter-regional movements, using the national targets, it has been hypothesised that these would be required to increase in a similar proportion to the national totals. These have the share of rail increasing from 18 per cent to 25 per cent by 2040 (an increase in modal share of 39 per cent) and of coastal shipping increasing from 15 per cent to 30 per cent (an increase of 100 per cent in modal share).

The forecasts derived from the NFDS relate to 2031 covering 25 years and on the basis of linear increases in mode share, the GPS targets for 2031 are assumed to include about 75 per cent of the total increases targeted for 2040. This would give increases in mode share of 25 to 30 per cent for rail and 75 per cent for coastal shipping by 2031. On the basis of the observed mode splits for rail and coastal shipping of 23 per cent and 15 per cent respectively, this would therefore give target mode splits for 2031 of 29 per cent for rail and about 25 per cent for coastal shipping. Achieving these targets would require total inter-regional movements by rail of about 3.2 billion tonne-kms compared with a "business as usual" forecast of 2.3 billion tonne-kms and movements by coastal shipping of 2.9 billion tonne-kms compared to the BAU forecast of 1.9 billion tonne-kms.

There would as a result be a considerable shortfall between the totals implied in the GPS targets and those forecast on a BAU approach of about 0.8 billion tonne-kms for rail and about 0.9 billion tonne-kms for coastal shipping, implying that there would need to be considerable interventions to ensure that the GPS targets were achieved. However the nature of the inter-regional traffic movements for the Auckland region

with high flows over the relative short distances to the neighbouring regions of Waikato and Northland where road dominates and high forecast mode shares for rail and coastal shipping for the longer distance movements, limits the extent to which there is scope for further diversion to these modes. There would therefore be particular challenges in achieving the GPS targets, especially for coastal shipping.

The analysis of the flows in the corridor and the commodities carried has identified some opportunities where it may be possible to increase the rail share. Two bulk products, aggregates and petroleum, may offer options for a shift to rail, particularly for movements to and from the Waikato. In other countries these products are extensively carried by rail, and in principle therefore there could be opportunities for them to be carried by rail into and out of the Auckland region.

The potential volumes of aggregates moved are substantial and a diversion of just a third of the flow from the Waikato would result in a switch to rail of 0.5 billion tonne-kms, a substantial part of the deficit identified. If it was possible to achieve a similar percentage switch for aggregates moving from Northland; this would broadly meet the targets for the rail share for 2031. There may also be some scope for increasing the volumes of aggregate handled by coastal shipping, but this has not been quantified.

The movement of large volumes of aggregate by rail would require the development of both loading and unloading/distribution facilities. The latter would need to be located at strategic points within Auckland, where there is sufficient land to develop the terminal and where there is good access to suitable roads for the onward distribution of the products by road to their final destination. Additional (probably specialised) rolling stock would also be required and the trains would have to be programmed into an increasingly busy rail network.

If petroleum was to be distributed by rail from Auckland to Waikato, this would require the provision of a rail connection or pipeline link between the Wiri terminal and the existing rail lines and development of loading and unloading/storage facilities in Wiri and in the Waikato, probably in the Hamilton area.

While both the commodities have been identified as potential candidates for a switch to rail, it should be emphasised that as yet no assessment has been made of the technical, financial and economic feasibility of these proposals. The proposals for aggregates should be seen alongside the work that is currently being undertaken on the aggregates strategy for Auckland.

A review has also been undertaken of the other commodities which are transported to and from the Auckland region. While there are potential opportunities for additional switching to rail, especially if supported by specific interventions by central or local government, the additional volumes likely to switch to rail are relatively small compared to those for aggregates. In general achieving or supporting this switch would require the enhancement of current supply chains through the intensification and expansion of existing forms of capacity and distribution centres, rather than the development of completely new rail based supply chains. Support for these

enhancements which would include the development of new intermodal sites and possible track duplication in particularly congested areas would be required.

For coastal shipping the difficulties of achieving the GPS targets are more acute. Given the pattern of flows forecast in the NFDS, any significant increases in coastal shipping would have to be achieved on the longer distance movements. Because of the limited road share, this would almost certainly involve taking traffic away from rail, which might face considerable resistance at both a commercial level by KiwiRail and at a political level. Again there may be scope for limited increases in the volumes carried and these may need to be supported by measures to increase the capacities of the existing supply chains. Within this, the position for Onehunga Port may be important since it currently provides an important facility for coastal shipping, and this position would be enhanced with the completion of its rail connection.

7.2 The potential role of the regional council

The choice of mode lies with those responsible for the transport of the various commodities and the Regional Council has few effective ways of directly controlling this decision. As a result the main role of the Regional Council is therefore primarily to facilitate the steps necessary to achieve the switch of freight to modes other than road, rather than get involved in the process directly.

There are probably five main ways in which the Region could get involved in this process:

- Assist with the undertaking of feasibility studies to assess the operational, financial and economic viability of the proposals to divert freight from road to other modes.
- Lobby government to ensure that there is long-term funding and other support available to sustain initiatives to transfer commodity flows from road to other modes, where this is unlikely to be available from commercial sources.
- Provide support for the development of new facilities for handling new commodities such as aggregates or for handling the expansion of flows for commodities currently handled by rail or coastal shipping. It would probably be helpful for the Region to identify possible sites as part of its Business Land planning process and to assist in the steps necessary to acquire the consents for these and any necessary supporting infrastructure.
- Support measures to increase the capacity of the rail network and ensure that there is sufficient capacity for coastal shipping both at the main ports within the region and also at the less formal landing points and wharves which may be used for particular types of traffic. The wharf at Henderson used for the transport of aggregate from the Coromandel is an example of these. As part of this, there is a need to clarify the position at Onehunga, which currently and potentially in the future could form an important component of any coastal shipping network, but the future of which appears to be uncertain.
- Assist with the dissemination of information and industry best practice to encourage the use of more sustainable methods of operation.